



# Enabling Connectivity for Industrial Transformation

• Network Infrastructure • Edge Connectivity • Industrial Computing

# Your Trusted Partner in Automation

**Transforming your ideas into tomorrow's  
innovations with robust connectivity  
technologies**

Moxa is a leader in industrial networking and communications, enabling connectivity for the automated world of today and tomorrow and enhancing cybersecurity for industrial automation systems. We achieve this by collaborating with customers and partners to transform their unique ideas into feasible network solutions for mission-critical applications.



## Enabling Connectivity for **Automation Networks**

Communications and networking within the industrial automation world have become increasingly sophisticated and complex. This is because greater cross-system collaboration and integration can be achieved when networks are converged into a single-system architecture that is based on open standards and technologies. With distinctive technical capabilities and values that stand out from the competition, Moxa is uniquely positioned to deliver on this transformation towards converged automation networks.

The value we bring with our connectivity solutions is building reliable and secure networks that connect all the requirements for automation and improving productivity and efficiency in many industrial applications, such as smart rail, smart grid, intelligent transportation, smart manufacturing, oil and gas, and maritime.



## Enabling Connectivity in **Critical Environments**

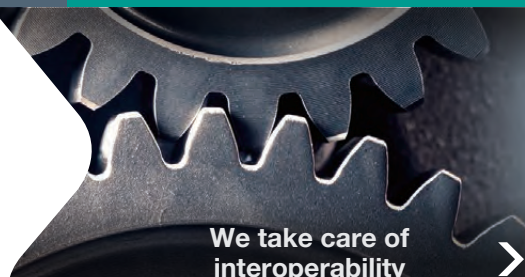
Moxa develops reliable connectivity solutions that enable devices to connect, communicate, and collaborate with systems, processes, and people, realizing critical connectivity for automation harsh environments and uninhabitable terrains — establishing connectivity from the ocean floor to the highest peak, as well as from earth to outer space. It helps make people's lives better and properties more secure by addressing the challenges of withstanding extreme temperatures, hazardous gases, and intense radiation.

With over 30 years of experience in connectivity for industrial automation, Moxa has connected more than 65 million devices worldwide and delivered lasting business value by empowering industry with leading-edge connectivity, industrial computing, and communication networks that provide maximum reliability and security.



# Enabling IIoT Connectivity From Edge to Cloud

With rapid globalization and information digitalization, industrial operators have begun to adopt Industrial Internet of Things (IIoT) applications to enhance operational efficiency. Moxa is here to provide you with practical technologies to optimize network infrastructure and simplify industrial edge-to-cloud connectivity for accelerating OT/IT convergence. You also have our strong commitment to protecting connectivity from edge to cloud.



We take care of interoperability



So you can keep your legacy machines



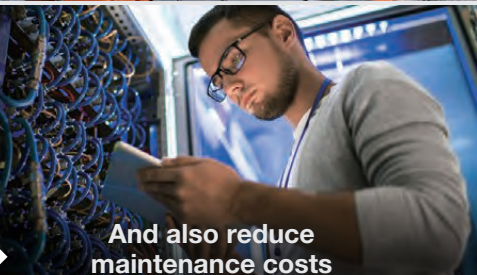
And also interconnect with various platforms



We take care to keep it simple



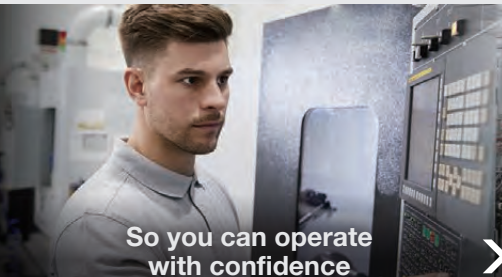
So you can set up devices easily



And also reduce maintenance costs



We take care of device security



So you can operate with confidence



And also identify threats to your assets



We take care of reliability



So you can operate at -40°C



Or even at 75°C



# Cloud Infrastructure and Analytics

## Connectivity

Optimizing network infrastructure



Industrial Network Infrastructure

Unifying connectivity of diverse OT and IT interfaces



Industrial Edge Connectivity

Integrating OT data to IT platforms with ease



Industrial Computing

## Devices

CANopen

OPC UA

dnp

PROFI BUS

PROFI NET

DeviceNet

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## Industrial Edge Connectivity

- 45** Serial Device Servers
- 67** Serial Converters
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- 79** USB-to-serial Converters/USB Hubs
- 85** Multiport Serial Boards
- 93** Controllers and I/Os
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## Industrial Computing

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## Unmanaged Switches

Moxa has a large portfolio of industrial unmanaged switches that have been specifically designed for industrial Ethernet infrastructure. Our unmanaged Ethernet switches uphold the stringent standards that are required for operational reliability in harsh environments.



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## DIN-rail Managed Switches

Our DIN-rail managed switches feature industrial-grade reliability, network redundancy, and security features based on the IEC 62443 standard. The compact DIN-rail managed switches have a variety of copper and fiber port combinations that provide customers with greater flexibility when deploying networks.



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## Rackmount Managed Switches

The industrial rackmount switches provide modular flexibility with 24 to 52-port routing and switching capabilities, security features based on the IEC 62443 standard, and millisecond-level, fast multicast traffic redundancy to strengthen IIoT infrastructures as in city, transportation, manufacturing, and surveillance applications.



# Ethernet Switches

Moxa provides a wide range of industrial Ethernet switches that feature industrial-grade reliability, network redundancy, strengthened security, easy management, and competitive price-to-performance ratios. Our comprehensive portfolio includes unmanaged switches, managed switches, PoE switches, rackmount switches, and switches designed for use in the rail industry that meet parts of the EN 50155 standard.



Ethernet Switches  
Product Pages



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## PoE Switches

We provide a wide range of PoE/PoE+ switches with up to 48-port fiber optic Gigabit PoE+ ports and up to 60 W output per port to deliver high-speed data transmission while powering high-power devices over long distances. With an industrial-grade design, our PoE switches provide surge protection of 3 kV per LAN port, and Smart PoE management features to simplify PoE network deployment and maintenance.



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## EN 50155 Ethernet Switches

Moxa is an IRIS-certified company that offers a large portfolio of rugged Ethernet switches that comply with the mandatory sections of the EN 50155 standard. These products have been deployed in many rail and metro systems around the world. With our innovative solutions and technologies, we help train builders achieve overall transport safety, efficiency, and significant cost and time savings on railway operation and maintenance.



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## Ethernet Extenders

Our Ethernet extenders simplify long-distance network deployment and reduce construction costs with existing twisted-pair copper wires. Our Ethernet extenders can achieve transmission speeds up to 100 Mbps and feature plug-and-play deployment, DSL bypass, millisecond-level redundancy, and multiple industry certifications, making them suitable for a variety of industrial applications.

# Unmanaged Switches



| Product Series                                                | EDS-G308                       | EDS-G205 | EDS-316            | EDS-309 | EDS-308 | EDS-305 | EDS-208A                        | EDS-205A | EDS-208 | EDS-205            |
|---------------------------------------------------------------|--------------------------------|----------|--------------------|---------|---------|---------|---------------------------------|----------|---------|--------------------|
| Ethernet Interface                                            |                                |          |                    |         |         |         |                                 |          |         |                    |
| Max. Number of Ports                                          | 8                              | 5        | 16                 | 9       | 8       | 5       | 8                               | 5        | 8       | 5                  |
| 10/100/1000BaseT(X) Ports (RJ45 connector)                    | Up to 8                        | 4        | –                  | –       | –       | –       | –                               | –        | –       | –                  |
| 10/100BaseT(X) Ports (RJ45 connector)                         | –                              | –        | Up to 16           | 6       | Up to 8 | Up to 5 | Up to 8                         | Up to 5  | Up to 8 | 5                  |
| Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP+)         | Up to 2                        | 1        | –                  | –       | –       | –       | –                               | –        | –       | –                  |
| 100BaseFX Ports (multi-mode SC connector)                     | –                              | –        | Up to 2            | Up to 3 | Up to 2 | Up to 1 | Up to 2                         | Up to 1  | Up to 1 | –                  |
| 100BaseFX Ports (multi-mode ST connector)                     | –                              | –        | Up to 2            | Up to 3 | Up to 2 | Up to 1 | Up to 2                         | Up to 1  | Up to 1 | –                  |
| 100BaseFX Ports (single-mode SC connector)                    | –                              | –        | Up to 2            | –       | Up to 2 | Up to 1 | Up to 2                         | Up to 1  | –       | –                  |
| 100BaseFX Ports (single-mode SC connector, 80 km)             | –                              | –        | Up to 2            | –       | Up to 2 | Up to 1 | –                               | –        | –       | –                  |
| Input Voltage                                                 |                                |          |                    |         |         |         |                                 |          |         |                    |
| 24 VDC                                                        | –                              | –        | –                  | –       | –       | ✓       | –                               | –        | ✓       | ✓                  |
| 12/24/48 VDC                                                  | ✓                              | ✓        | ✓                  | ✓       | ✓       | –       | ✓                               | ✓        | –       | –                  |
| Alarm Contact Channels                                        |                                |          |                    |         |         |         |                                 |          |         |                    |
| 1 Relay Output With Current Carrying Capacity of 1 A @ 24 VDC | ✓                              | ✓        | ✓                  | ✓       | ✓       | ✓       | –                               | –        | –       | –                  |
| Installation Options                                          |                                |          |                    |         |         |         |                                 |          |         |                    |
| DIN-rail Mounting                                             | ✓                              | ✓        | ✓                  | ✓       | ✓       | ✓       | ✓                               | ✓        | ✓       | ✓                  |
| Wall Mounting (with optional kit)                             | ✓                              | ✓        | ✓                  | ✓       | ✓       | ✓       | ✓                               | ✓        | –       | –                  |
| Operating Temperature                                         |                                |          |                    |         |         |         |                                 |          |         |                    |
| 0 to 60°C (32 to 140°F)                                       | –                              | –        | –                  | –       | –       | ✓       | –                               | –        | –       | –                  |
| -10 to 60°C (14 to 140°F)                                     | ✓                              | ✓        | ✓                  | ✓       | ✓       | –       | ✓                               | ✓        | ✓       | ✓                  |
| -40 to 75°C (-40 to 167°F)                                    | ✓                              | ✓        | ✓                  | ✓       | ✓       | ✓       | ✓                               | ✓        | –       | –                  |
| Standards and Certifications                                  |                                |          |                    |         |         |         |                                 |          |         |                    |
| EMI                                                           | CISPR 32, FCC Part 15B Class A |          |                    |         |         |         |                                 |          |         |                    |
| Safety                                                        | UL 508, UL 60950-1             |          | UL 508, UL 60950-1 |         |         |         | UL 508                          |          |         | UL 508, EN 60950-1 |
| Hazardous Locations                                           | ATEX, Class I Division 2       |          |                    |         |         |         | ATEX, Class I Division 2, IECEx |          | –       |                    |
| Railway                                                       | EN 50121-4                     |          | –                  |         |         |         | EN 50121-4                      |          | –       |                    |
| Traffic Control                                               | –                              |          |                    |         |         |         | NEMA TS2                        |          | –       |                    |
| Power Substation                                              | –                              |          |                    |         |         |         |                                 |          |         |                    |
| Maritime                                                      | ABS, DNV GL, LR, NK            |          | DNV GL             | –       |         | DNV GL  | ABS, DNV GL, LR, NK             |          |         | –                  |

# Unmanaged Switches



|                                                               | EDS-2018-ML                      | EDS-2016-ML          | EDS-2010-ML | EDS-2008-EL                        | EDS-2008-ELP | EDS-2005-EL | EDS-2005-ELP |
|---------------------------------------------------------------|----------------------------------|----------------------|-------------|------------------------------------|--------------|-------------|--------------|
| Ethernet Interface                                            |                                  |                      |             |                                    |              |             |              |
| Max. Number of Ports                                          | 18                               | 16                   | 10          | 8                                  | 8            | 5           | 5            |
| 10/100/1000BaseT(X) Ports (RJ45 connector)                    | –                                | –                    | –           | –                                  | –            | –           | –            |
| 10/100BaseT(X) Ports (RJ45 connector)                         | 16                               | Up to 16             | 8           | Up to 8                            | 8            | 5           | 5            |
| Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP+)         | 2                                | –                    | 2           | –                                  | –            | –           | –            |
| 100BaseFX Ports (multi-mode SC connector)                     | –                                | Up to 2 <sup>1</sup> | –           | Up to 1                            | –            | –           | –            |
| 100BaseFX Ports (multi-mode ST connector)                     | –                                | Up to 2 <sup>1</sup> | –           | Up to 1                            | –            | –           | –            |
| 100BaseFX Ports (single-mode SC connector)                    | –                                | Up to 2 <sup>1</sup> | –           | –                                  | –            | –           | –            |
| Input Voltage                                                 |                                  |                      |             |                                    |              |             |              |
| 12/24/48 VDC                                                  | ✓                                | ✓                    | ✓           | ✓                                  | ✓            | ✓           | ✓            |
| DIP Switch Configuration                                      |                                  |                      |             |                                    |              |             |              |
| Quality of Service (QoS)                                      | ✓                                | ✓                    | ✓           | ✓                                  | ✓            | ✓           | ✓            |
| Broadcast Storm Protection (BSP)                              | ✓                                | ✓                    | ✓           | ✓                                  | ✓            | ✓           | ✓            |
| Port Break Alarm                                              | ✓                                | ✓                    | ✓           | –                                  | –            | –           | –            |
| Alarm Contact Channels                                        |                                  |                      |             |                                    |              |             |              |
| 1 Relay Output with Current Carrying Capacity of 1 A @ 24 VDC | ✓                                | ✓                    | ✓           | –                                  | –            | –           | –            |
| Installation Options                                          |                                  |                      |             |                                    |              |             |              |
| DIN-rail Mounting                                             | ✓                                | ✓                    | ✓           | ✓                                  | ✓            | ✓           | ✓            |
| Wall Mounting (with optional kit)                             | ✓                                | ✓                    | ✓           | ✓                                  | ✓            | ✓           | ✓            |
| Operating Temperature                                         |                                  |                      |             |                                    |              |             |              |
| -10 to 60°C (14 to 140°F)                                     | ✓                                | ✓                    | ✓           | ✓                                  | ✓            | ✓           | ✓            |
| -40 to 75°C (-40 to 167°F)                                    | ✓                                | ✓                    | ✓           | ✓                                  | –            | ✓           | –            |
| Standards and Certifications                                  |                                  |                      |             |                                    |              |             |              |
| EMI                                                           | CISPR 32, FCC Part 15B Class A   |                      |             | CISPR 22, 32, FCC Part 15B Class A |              |             |              |
| Safety                                                        | UL 61010-2-201, EN 62368-1 (LVD) |                      |             |                                    |              |             |              |
| Hazardous Locations                                           | –                                |                      |             |                                    |              |             |              |
| Railway                                                       | EN 50121-4                       |                      |             | –                                  |              |             |              |
| Traffic Control                                               | NEMA TS2                         | –                    | NEMA TS2    | –                                  |              |             |              |
| Power Substation                                              | –                                |                      |             |                                    |              |             |              |
| Marine                                                        | –                                |                      |             |                                    |              |             |              |

1. EDS-2016-ML fiber models will be available in the second half of 2020.



# DIN-rail Managed Switches



|                                                      | MDS-G4028                                      | MDS-G4020                         | MDS-G4012                        |
|------------------------------------------------------|------------------------------------------------|-----------------------------------|----------------------------------|
| <b>Ethernet Interface</b>                            |                                                |                                   |                                  |
| Max. Number of Ports                                 | 28                                             | 20                                | 12                               |
| Modular 10/100/1000BaseT(X) or 1000BaseSFP Ports     | Up to 28 (up to 24 for SFP ports)              | Up to 20 (up to 16 for SFP ports) | Up to 12 (up to 8 for SFP ports) |
| Modular 10/100BaseT(X) or 100BaseSFP Ports           | Up to 24                                       | Up to 16                          | Up to 8                          |
| Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP) | –                                              | –                                 | –                                |
| <b>Optical Fiber</b>                                 |                                                |                                   |                                  |
| 100Base Fiber                                        | Up to 24                                       | Up to 16                          | Up to 8                          |
| 1000Base Fiber                                       | Up to 24                                       | Up to 16                          | Up to 8                          |
| <b>Filter</b>                                        |                                                |                                   |                                  |
| 802.1p Class of Service                              | ✓                                              | ✓                                 | ✓                                |
| 802.1Q VLAN                                          | ✓                                              | ✓                                 | ✓                                |
| IGMP v1/v2/v3 Snooping                               | ✓                                              | ✓                                 | ✓                                |
| <b>Industrial Protocols</b>                          |                                                |                                   |                                  |
| EtherNet/IP                                          | –                                              | –                                 | –                                |
| Modbus TCP                                           | –                                              | –                                 | –                                |
| PROFINET                                             | –                                              | –                                 | –                                |
| <b>Management</b>                                    |                                                |                                   |                                  |
| DHCP Option 82                                       | –                                              | –                                 | –                                |
| Port Mirror                                          | ✓                                              | ✓                                 | ✓                                |
| RMON                                                 | ✓                                              | ✓                                 | ✓                                |
| SNMPv1/v2c/v3                                        | ✓                                              | ✓                                 | ✓                                |
| Syslog                                               | ✓                                              | ✓                                 | ✓                                |
| Console Port                                         | ✓                                              | ✓                                 | ✓                                |
| Telnet/SSH                                           | ✓                                              | ✓                                 | ✓                                |
| TFTP                                                 | ✓                                              | ✓                                 | ✓                                |
| <b>Redundancy Protocols</b>                          |                                                |                                   |                                  |
| STP/RSTP/MSTP                                        | no MSTP                                        | no MSTP                           | no MSTP                          |
| Turbo Ring/Turbo Chain                               | ✓                                              | ✓                                 | ✓                                |
| <b>Security</b>                                      |                                                |                                   |                                  |
| HTTPS/SSL                                            | ✓                                              | ✓                                 | ✓                                |
| TACACS+                                              | ✓                                              | ✓                                 | ✓                                |
| MAC Sticky                                           | ✓                                              | ✓                                 | ✓                                |
| MAB Authentication                                   | –                                              | –                                 | –                                |
| RADIUS                                               | ✓                                              | ✓                                 | ✓                                |
| SSH                                                  | ✓                                              | ✓                                 | ✓                                |
| Access Control List                                  | –                                              | –                                 | –                                |
| Layer 3 Switching                                    | –                                              | –                                 | –                                |
| <b>Input Voltage</b>                                 |                                                |                                   |                                  |
| 12 VDC                                               | –                                              | –                                 | –                                |
| 24 VDC                                               | ✓                                              | ✓                                 | ✓                                |
| 48 VDC                                               | ✓                                              | ✓                                 | ✓                                |
| 110 VAC/VDC                                          | ✓                                              | ✓                                 | ✓                                |
| 220 VAC/VDC                                          | ✓                                              | ✓                                 | ✓                                |
| <b>Installation</b>                                  |                                                |                                   |                                  |
| DIN-rail Mounting                                    | ✓                                              | ✓                                 | ✓                                |
| Wall Mounting (with optional kit)                    | ✓                                              | ✓                                 | ✓                                |
| Rack Mounting (with optional kit)                    | ✓                                              | –                                 | –                                |
| <b>Operating Temperature</b>                         |                                                |                                   |                                  |
| 0 to 60°C (32 to 140°F)                              | –                                              | –                                 | –                                |
| –10 to 60°C (14 to 140°F)                            | ✓                                              | ✓                                 | ✓                                |
| –40 to 75°C (–40 to 167°F)                           | ✓                                              | ✓                                 | ✓                                |
| <b>Standards and Certifications</b>                  |                                                |                                   |                                  |
| EMI                                                  | CISPR 32, FCC Part 15B Class A                 |                                   |                                  |
| Safety                                               | UL 62368-1, IEC/EN 62368-1, IEC/EN 60950-1     |                                   |                                  |
| Hazardous Locations                                  | ATEX, Class I Division 2                       |                                   |                                  |
| Railway                                              | EN 50121-4                                     |                                   |                                  |
| Traffic Control                                      | NEMA TS2                                       |                                   |                                  |
| Power Substation                                     | IEC 61850 Edition 2 Class 1, IEEE 1613 Class 1 |                                   |                                  |
| Marine                                               | –                                              |                                   |                                  |

# DIN-rail Managed Switches



| Product Series                                       | EDS-828                        | EDS-728  | EDS-619                        | EDS-616  | EDS-611 | EDS-608 |
|------------------------------------------------------|--------------------------------|----------|--------------------------------|----------|---------|---------|
| Ethernet Interface                                   |                                |          |                                |          |         |         |
| Max. Number of Ports                                 | 28                             | 28       | 19                             | 16       | 11      | 8       |
| Modular 10/100/1000BaseT(X) or 1000BaseSFP Ports     | Up to 4                        | Up to 4  | –                              | –        | –       | –       |
| Modular 10/100BaseT(X) or 100BaseSFP Ports           | Up to 24                       | Up to 24 | Up to 16                       | Up to 16 | Up to 8 | Up to 8 |
| Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP) | –                              | –        | 3                              | –        | 3       | –       |
| Optical Fiber                                        |                                |          |                                |          |         |         |
| 100Base Fiber                                        | Up to 24                       | Up to 24 | Up to 16                       | Up to 16 | Up to 8 | Up to 8 |
| 1000Base Fiber                                       | Up to 4                        | Up to 4  | Up to 3                        | –        | Up to 3 | –       |
| Filter                                               |                                |          |                                |          |         |         |
| 802.1p Class of Service                              | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| 802.1Q VLAN                                          | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| IGMP v1/v2/v3 Snooping                               | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| Industrial Protocols                                 |                                |          |                                |          |         |         |
| EtherNet/IP                                          | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| Modbus TCP                                           | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| PROFINET                                             | –                              | –        | –                              | –        | –       | –       |
| Management                                           |                                |          |                                |          |         |         |
| DHCP Option 82                                       | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| Port Mirror                                          | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| RMON                                                 | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| SNMPv1/v2c/v3                                        | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| Syslog                                               | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| Console Port                                         | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| Telnet/SSH                                           | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| TFTP                                                 | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| Redundancy Protocols                                 |                                |          |                                |          |         |         |
| STP/RSTP/MSTP                                        | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| Turbo Ring/Turbo Chain                               | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| Security                                             |                                |          |                                |          |         |         |
| HTTPS/SSL                                            | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| TACACS+                                              | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| MAC Sticky                                           | –                              | –        | –                              | –        | –       | –       |
| MAB Authentication                                   | –                              | –        | –                              | –        | –       | –       |
| RADIUS                                               | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| SSH                                                  | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| Access Control List                                  | ✓                              | –        | –                              | –        | –       | –       |
| Layer 3 Switching                                    | ✓                              | –        | –                              | –        | –       | –       |
| Input Voltage                                        |                                |          |                                |          |         |         |
| 12 VDC                                               | –                              | –        | ✓                              | ✓        | ✓       | ✓       |
| 24 VDC                                               | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| 48 VDC                                               | –                              | –        | ✓                              | ✓        | ✓       | ✓       |
| Installation                                         |                                |          |                                |          |         |         |
| DIN-rail Mounting                                    | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| Wall Mounting (with optional kit)                    | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| Operating Temperature                                |                                |          |                                |          |         |         |
| 0 to 60°C (32 to 140°F)                              | ✓                              | ✓        | ✓                              | ✓        | ✓       | ✓       |
| -10 to 60°C (14 to 140°F)                            | –                              | –        | –                              | –        | –       | –       |
| -40 to 75°C (-40 to 167°F)                           | –                              | –        | ✓                              | ✓        | ✓       | ✓       |
| Standards and Certifications                         |                                |          |                                |          |         |         |
| EMI                                                  | CISPR 32, FCC Part 15B Class A |          |                                |          |         |         |
| Safety                                               | EN 60950-1, UL 508, UL 60950-1 |          | EN 60950-1, UL 508, UL 60950-1 |          |         |         |
| Hazardous Locations                                  | –                              |          | ATEX, Class I Division 2       |          |         |         |
| Railway                                              | –                              |          | EN 50121-4                     |          |         |         |
| Traffic Control                                      | –                              |          | NEMA TS2                       |          |         |         |
| Power Substation                                     | –                              |          |                                |          |         |         |
| Maritime                                             | ABS, DNV GL, LR, NK            |          |                                |          |         |         |

# DIN-rail Managed Switches



| Product Series                                        | EDS-G516E                      | EDS-G512E                                       | EDS-G509            | EDS-G508E                | EDS-528E                         | EDS-518E                 | EDS-510E |
|-------------------------------------------------------|--------------------------------|-------------------------------------------------|---------------------|--------------------------|----------------------------------|--------------------------|----------|
| Ethernet Interface                                    |                                |                                                 |                     |                          |                                  |                          |          |
| Max. Number of Ports                                  | 16                             | 12                                              | 9                   | 8                        | 28                               | 18                       | 10       |
| 10/100/1000BaseT(X) Ports (RJ45 connector)            | 12                             | 8                                               | 4                   | 8                        | –                                | –                        | –        |
| 10/100BaseT(X) Ports (RJ45 connector)                 | –                              | –                                               | –                   | –                        | 24                               | Up to 14                 | 7        |
| Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP+) | –                              | –                                               | 5                   | –                        | 4                                | 4                        | 3        |
| 100/1000Base SFP Slots                                | 4                              | 4                                               | –                   | –                        | –                                | –                        | –        |
| 100BaseFX Ports (ST or SC connector)                  | –                              | –                                               | –                   | –                        | –                                | Up to 2                  | –        |
| Filter                                                |                                |                                                 |                     |                          |                                  |                          |          |
| 802.1p Class of Service                               | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| 802.1Q VLAN                                           | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| IGMP v1/v2/v3 Snooping                                | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| Industrial Protocols                                  |                                |                                                 |                     |                          |                                  |                          |          |
| EtherNet/IP                                           | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| Modbus TCP                                            | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| PROFINET                                              | ✓                              | ✓                                               | –                   | ✓                        | ✓                                | ✓                        | ✓        |
| Management                                            |                                |                                                 |                     |                          |                                  |                          |          |
| DHCP Option 82                                        | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| Port Mirror                                           | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| RMON                                                  | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| SNMPv1/v2c/v3                                         | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| Syslog                                                | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| Console Port                                          | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| Telnet/SSH                                            | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| TFTP                                                  | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| Redundancy Protocols                                  |                                |                                                 |                     |                          |                                  |                          |          |
| STP/RSTP/MSTP                                         | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| Turbo Ring/Turbo Chain                                | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| Security                                              |                                |                                                 |                     |                          |                                  |                          |          |
| HTTPS/SSL                                             | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| TACACS+                                               | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| MAC Sticky                                            | ✓                              | ✓                                               | –                   | ✓                        | ✓                                | ✓                        | ✓        |
| MAB Authentication                                    | ✓                              | ✓                                               | –                   | ✓                        | ✓                                | ✓                        | –        |
| RADIUS                                                | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| Access Control List                                   | ✓                              | ✓                                               | –                   | ✓                        | ✓                                | ✓                        | –        |
| Layer 3 Switching                                     | –                              | –                                               | –                   | –                        | –                                | –                        | –        |
| Input Voltage                                         |                                |                                                 |                     |                          |                                  |                          |          |
| 12 VDC                                                | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| 24 VDC                                                | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| 48 VDC                                                | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| -48 VDC                                               | ✓                              | ✓                                               | –                   | ✓                        | ✓                                | ✓                        | ✓        |
| 110/220 VDC/VAC                                       | –                              | –                                               | –                   | –                        | ✓                                | –                        | –        |
| Installation                                          |                                |                                                 |                     |                          |                                  |                          |          |
| DIN-rail Mounting                                     | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| Wall Mounting (with optional kit)                     | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| Operating Temperature                                 |                                |                                                 |                     |                          |                                  |                          |          |
| 0 to 60°C (32 to 140°F)                               | –                              | –                                               | ✓                   | –                        | –                                | –                        | –        |
| -10 to 60°C (14 to 140°F)                             | ✓                              | ✓                                               | –                   | ✓                        | ✓                                | ✓                        | ✓        |
| -40 to 75°C (-40 to 167°F)                            | ✓                              | ✓                                               | ✓                   | ✓                        | ✓                                | ✓                        | ✓        |
| Standards and Certifications                          |                                |                                                 |                     |                          |                                  |                          |          |
| EMI                                                   | CISPR 32, FCC Part 15B Class A |                                                 |                     |                          |                                  |                          |          |
| Safety                                                | UL 508                         | All models: UL 508 PoE models: EN 60950-1 (LVD) | UL 508, EN 60950-1  | UL 508                   | UL 61010-2-201, EN 60950-1 (LVD) | UL 508, EN 60950-1 (LVD) | UL 508   |
| Hazardous Locations                                   | ATEX, Class I Division 2       | non-PoE models: ATEX, Class I Division 2        | –                   | ATEX, Class I Division 2 | –                                | ATEX, Class I Division 2 |          |
| Railway                                               | EN 50121-4                     |                                                 |                     |                          |                                  |                          |          |
| Traffic Control                                       | NEMA TS2                       | non-PoE models: NEMA TS2                        | –                   | NEMA TS2                 | –                                | NEMA TS2                 |          |
| Power Substation                                      | IEC 61850-3, IEEE 1613         |                                                 | –                   | IEC 61850-3, IEEE 1613   |                                  |                          |          |
| Maritime                                              | ABS, DNV GL, LR, NK            | ABS, DNV GL, LR, NK                             | ABS, DNV GL, LR, NK | ABS, DNV GL, LR, NK      | –                                | ABS, DNV GL, LR, NK      |          |



# DIN-rail Managed Switches



| Product Series                                        | EDS-518A                                              | EDS-516A | EDS-510A | EDS-508A | EDS-505A |
|-------------------------------------------------------|-------------------------------------------------------|----------|----------|----------|----------|
| Ethernet Interface                                    |                                                       |          |          |          |          |
| Max. Number of Ports                                  | 18                                                    | 16       | 10       | 8        | 5        |
| 10/100/1000BaseT(X) Ports (RJ45 connector)            | –                                                     | 4        | Up to 3  | –        | –        |
| 10/100BaseT(X) Ports (RJ45 connector)                 | Up to 16                                              | 12       | 7        | Up to 8  | Up to 5  |
| Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP+) | 2                                                     | –        | –        | –        | –        |
| 1000Base SFP Slots                                    | –                                                     | –        | Up to 3  | –        | –        |
| 100BaseFX Ports (ST or SC connector)                  | Up to 2                                               | –        | –        | Up to 2  | Up to 2  |
| Filter                                                |                                                       |          |          |          |          |
| 802.1p Class of Service                               | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| 802.1Q VLAN                                           | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| IGMP v1/v2/v3 Snooping                                | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| Industrial Protocols                                  |                                                       |          |          |          |          |
| EtherNet/IP                                           | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| Modbus TCP                                            | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| PROFINET                                              | –                                                     | –        | –        | –        | –        |
| Management                                            |                                                       |          |          |          |          |
| DHCP Option 82                                        | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| Port Mirror                                           | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| RMON                                                  | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| SNMPv1/v2c/v3                                         | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| Syslog                                                | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| Console Port                                          | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| Telnet/SSH                                            | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| TFTP                                                  | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| Redundancy Protocols                                  |                                                       |          |          |          |          |
| STP/RSTP/MSTP                                         | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| Turbo Ring/Turbo Chain                                | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| Security                                              |                                                       |          |          |          |          |
| HTTPS/SSL                                             | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| TACACS+                                               | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| MAC Sticky                                            | –                                                     | –        | –        | –        | –        |
| MAB Authentication                                    | –                                                     | –        | –        | –        | –        |
| RADIUS                                                | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| Access Control List                                   | –                                                     | –        | –        | –        | –        |
| Layer 3 Switching                                     | –                                                     | –        | –        | –        | –        |
| Input Voltage                                         |                                                       |          |          |          |          |
| 12 VDC                                                | –                                                     | –        | –        | ✓        | ✓        |
| 24 VDC                                                | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| 48 VDC                                                | –                                                     | –        | –        | ✓        | ✓        |
| Installation                                          |                                                       |          |          |          |          |
| DIN-rail Mounting                                     | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| Wall Mounting (with optional kit)                     | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| Operating Temperature                                 |                                                       |          |          |          |          |
| 0 to 60°C (32 to 140°F)                               | ✓                                                     | ✓        | –        | –        | –        |
| -10 to 60°C (14 to 140°F)                             | –                                                     | –        | ✓        | ✓        | ✓        |
| -40 to 75°C (-40 to 167°F)                            | ✓                                                     | ✓        | ✓        | ✓        | ✓        |
| Standards and Certifications                          |                                                       |          |          |          |          |
| EMI                                                   | CISPR 32, FCC Part 15B Class A                        |          |          |          |          |
| Safety                                                | EN 60950-1, UL 60950-1, CSA C22.2 No. 60950-1, UL 508 |          |          |          |          |
| Hazardous Locations                                   | ATEX, Class I Division 2                              |          |          |          |          |
| Railway                                               | –                                                     |          |          |          |          |
| Traffic Control                                       | –                                                     |          | NEMA TS2 | –        |          |
| Power Substation                                      | –                                                     |          |          |          |          |
| Maritime                                              | DNV GL, NK                                            | DNV GL   | –        |          |          |

# DIN-rail Managed Switches



| Product Series                        | EDS-408A                                                                                                                                 | EDS-405A                    | EDS-405A-PTP | SDS-3008                                       |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------|------------------------------------------------|
| <b>Ethernet Interface</b>             |                                                                                                                                          |                             |              |                                                |
| Max. Number of Ports                  | 8                                                                                                                                        | 5                           | 5            | 8                                              |
| 10/100BaseT(X) Ports (RJ45 connector) | Up to 8                                                                                                                                  | Up to 5                     | 5            | 8                                              |
| 100BaseFX Ports (ST or SC connector)  | Up to 3                                                                                                                                  | Up to 2                     | –            | –                                              |
| <b>Optical Fiber</b>                  |                                                                                                                                          |                             |              |                                                |
| 100Base Fiber                         | Up to 3                                                                                                                                  | Up to 2                     | –            | –                                              |
| 1000Base Fiber                        | –                                                                                                                                        | –                           | –            | –                                              |
| <b>Filter</b>                         |                                                                                                                                          |                             |              |                                                |
| 802.1p Class of Service               | ✓                                                                                                                                        | ✓                           | ✓            | Fixed profiles                                 |
| 802.1Q VLAN                           | ✓                                                                                                                                        | ✓                           | ✓            | ✓                                              |
| IGMP v1/v2/v3 Snooping                | ✓                                                                                                                                        | ✓                           | ✓            | Enabled by EtherNet/IP function                |
| <b>Industrial Protocols</b>           |                                                                                                                                          |                             |              |                                                |
| EtherNet/IP                           | ✓                                                                                                                                        | ✓                           | ✓            | ✓                                              |
| Modbus TCP                            | ✓                                                                                                                                        | ✓                           | ✓            | ✓                                              |
| PROFINET                              | -PN models                                                                                                                               | -PN models                  | –            | ✓                                              |
| <b>Management</b>                     |                                                                                                                                          |                             |              |                                                |
| DHCP Option 82                        | ✓                                                                                                                                        | ✓                           | ✓            | –                                              |
| Port Mirror                           | ✓                                                                                                                                        | ✓                           | ✓            | ✓                                              |
| RMON                                  | ✓                                                                                                                                        | ✓                           | ✓            | –                                              |
| SNMPv1/v2c/v3                         | ✓                                                                                                                                        | ✓                           | ✓            | ✓                                              |
| Syslog                                | ✓                                                                                                                                        | ✓                           | ✓            | ✓                                              |
| Console Port                          | ✓                                                                                                                                        | ✓                           | ✓            | –                                              |
| Telnet/SSH                            | Telnet only                                                                                                                              | Telnet only                 | Telnet only  | ✓                                              |
| TFTP                                  | ✓                                                                                                                                        | ✓                           | ✓            | ✓                                              |
| <b>Redundancy Protocols</b>           |                                                                                                                                          |                             |              |                                                |
| STP/RSTP/MSTP                         | ✓                                                                                                                                        | ✓                           | ✓            | STP/RSTP only                                  |
| Turbo Ring/Turbo Chain                | ✓                                                                                                                                        | ✓                           | ✓            | –                                              |
| <b>Security</b>                       |                                                                                                                                          |                             |              |                                                |
| HTTPS/SSL                             | –                                                                                                                                        | –                           | –            | ✓                                              |
| TACACS+                               | –                                                                                                                                        | –                           | –            | –                                              |
| MAC Sticky                            | –                                                                                                                                        | –                           | –            | –                                              |
| MAB Authentication                    | –                                                                                                                                        | –                           | –            | –                                              |
| RADIUS                                | –                                                                                                                                        | –                           | –            | –                                              |
| Access Control List                   | –                                                                                                                                        | –                           | –            | –                                              |
| Layer 3 Switching                     | –                                                                                                                                        | –                           | –            | –                                              |
| <b>Input Voltage</b>                  |                                                                                                                                          |                             |              |                                                |
| 12 VDC                                | ✓                                                                                                                                        | ✓                           | ✓            | ✓                                              |
| 24 VDC                                | ✓                                                                                                                                        | ✓                           | ✓            | ✓                                              |
| 48 VDC                                | ✓                                                                                                                                        | ✓                           | ✓            | ✓                                              |
| -24 VDC                               | ✓                                                                                                                                        | –                           | –            | –                                              |
| -48 VDC                               | ✓                                                                                                                                        | –                           | –            | ✓                                              |
| <b>Installation</b>                   |                                                                                                                                          |                             |              |                                                |
| DIN-rail Mounting                     | ✓                                                                                                                                        | ✓                           | ✓            | ✓                                              |
| Wall Mounting (with optional kit)     | ✓                                                                                                                                        | ✓                           | ✓            | –                                              |
| <b>Operating Temperature</b>          |                                                                                                                                          |                             |              |                                                |
| 0 to 60°C (32 to 140°F)               | –                                                                                                                                        | –                           | –            | –                                              |
| -10 to 60°C (14 to 140°F)             | ✓                                                                                                                                        | ✓                           | ✓            | ✓                                              |
| -40 to 75°C (-40 to 167°F)            | ✓                                                                                                                                        | ✓                           | ✓            | ✓                                              |
| <b>Standards and Certifications</b>   |                                                                                                                                          |                             |              |                                                |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                           |                             |              |                                                |
| Safety                                | All models:<br>EN 60950-1, UL 508<br>EDS-408A/408A-T,<br>EDS-408A-MM-SC/MM-ST/<br>SS-SC Series,<br>EDS-408A-EIP/PN Series:<br>UL 60950-1 | UL 508, UL 60950-1          | UL 508       | EN 60950-1 (LVD),<br>UL 61010-2-201,<br>UL 508 |
| Hazardous Locations                   | EDS-408A/408A-T,<br>EDS-408A-MM-SC/MM-ST/<br>SS-SC Series,<br>EDS-408A-EIP/PN Series:<br>ATEX, Class I Division 2                        | ATEX, Class I<br>Division 2 | –            | –                                              |
| Railway                               | EN 50121-4                                                                                                                               | –                           | –            | –                                              |
| Traffic Control                       | NEMA TS2                                                                                                                                 | NEMA TS2                    | –            | –                                              |
| Power Substation                      | –                                                                                                                                        | –                           | –            | –                                              |
| Maritime                              | EDS-408A/408A-T,<br>EDS-408A-MM/SS Series: NK<br>EDS-408A/408A-T,<br>EDS-408A-MM/SS Series,<br>EDS-408A-EIP/PN Series:<br>DNV GL         | DNV GL                      | –            | –                                              |



| Product Series                        | PT-508/510                                       | PT-G503-PHR-PTP |
|---------------------------------------|--------------------------------------------------|-----------------|
| <b>Ethernet Interface</b>             |                                                  |                 |
| Max. Number of Ports                  | 8/10                                             | 3               |
| Gigabit Ethernet 10/100/1000 BaseT(X) | –                                                | 3               |
| Gigabit Ethernet 1000BaseSFP          | –                                                | 3               |
| Fast Ethernet 10/100 BaseT(X)         | 6/8                                              | –               |
| Fast Ethernet 100BaseFX               | 2/2                                              | –               |
| <b>Filter</b>                         |                                                  |                 |
| 802.1Q VLAN                           | ✓                                                | –               |
| IGMP v1/v2/v3                         | ✓                                                | –               |
| 802.1p Class of Service               | ✓                                                | –               |
| <b>Management</b>                     |                                                  |                 |
| DHCP Option 82                        | ✓                                                | ✓               |
| SNMPv1/v2c/v3                         | ✓                                                | ✓               |
| Fiber Check                           | –                                                | ✓               |
| <b>Power Substation</b>               |                                                  |                 |
| IEC 61850 QoS                         | –                                                | –               |
| GOOSE Check                           | –                                                | –               |
| MMS Server                            | –                                                | ✓               |
| <b>Redundancy Protocols</b>           |                                                  |                 |
| STP                                   | ✓                                                | –               |
| RSTP                                  | ✓                                                | ✓               |
| MSTP                                  | ✓                                                | –               |
| Turbo Ring/Turbo Chain                | ✓                                                | –               |
| PRP / HSR                             | –                                                | ✓               |
| <b>Security</b>                       |                                                  |                 |
| Access Control List                   | –                                                | –               |
| Broadcast Storm Protection            | –                                                | –               |
| HTTPS/SSL                             | ✓                                                | ✓               |
| RADIUS / TACACS+                      | ✓                                                | ✓               |
| Port Lock                             | ✓                                                | –               |
| Rate Limit                            | ✓                                                | –               |
| SSH                                   | ✓                                                | ✓               |
| <b>Time Management</b>                |                                                  |                 |
| SNTP / NTP Server / Client            | ✓                                                | ✓               |
| IEEE 1588v2 PTP (hardware-based)      | –                                                | ✓               |
| <b>Available Power Input</b>          |                                                  |                 |
| 24/48 VDC                             | ✓                                                | ✓               |
| 110/220 VDC/VAC                       | ✓                                                | ✓               |
| <b>Operating Temperature</b>          |                                                  |                 |
| -40 to 85°C (-40 to 167°F)            | ✓ <sup>1</sup>                                   | ✓               |
| <b>Standards and Certifications</b>   |                                                  |                 |
| Safety                                | UL 508                                           |                 |
| EMI                                   | EN 55032 Class A, CISPR 32, FCC Part 15B Class A |                 |
| Power Substation                      | IEC 61850-3, IEEE 1613                           |                 |

1. Cold start requires minimum of 100 VAC at -40°C.

# Rackmount Managed Switches



| Product Series                                              | ICS-G7852A                     | ICS-G7850A | ICS-G7848A | ICS-G7752A | ICS-G7750A | ICS-G7748A | ICS-G7828A | ICS-G7826A |
|-------------------------------------------------------------|--------------------------------|------------|------------|------------|------------|------------|------------|------------|
| Modular Switch                                              | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | –          | –          |
| Ethernet Interface                                          |                                |            |            |            |            |            |            |            |
| Max. Number of Ports                                        | 52                             | 50         | 48         | 52         | 50         | 48         | 28         | 26         |
| 10GbE SFP+ Slots                                            | 4                              | 2          | –          | 4          | 2          | –          | 4          | 2          |
| Combo Ports<br>(10/100/1000BaseT(X) or<br>100/1000BaseSFP+) | –                              | –          | –          | –          | –          | –          | 4          | 4          |
| Gigabit Ethernet<br>10/100/1000                             | Up to 48                       | Up to 48   | Up to 48   | Up to 48   | Up to 48   | Up to 48   | 20         | 20         |
| Filter                                                      |                                |            |            |            |            |            |            |            |
| IGMP v1/v2/v3                                               | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| 802.1p Class of Service                                     | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| 802.1Q VLAN                                                 | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| Management                                                  |                                |            |            |            |            |            |            |            |
| Port Mirror                                                 | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| RMON                                                        | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| DHCP Option 82                                              | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| LLDP                                                        | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| SNMPv1/v2c/v3                                               | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| Console Port                                                | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| Telnet/SSH                                                  | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| TFTP                                                        | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| Redundancy Protocols                                        |                                |            |            |            |            |            |            |            |
| STP/RSTP/MSTP                                               | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| Turbo Ring/Turbo Chain                                      | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| Layer 3 Software Features                                   |                                |            |            |            |            |            |            |            |
| Layer 3 Switching                                           | ✓                              | ✓          | ✓          | –          | –          | –          | ✓          | ✓          |
| Multicast Routing                                           | ✓                              | ✓          | ✓          | –          | –          | –          | ✓          | ✓          |
| VRRP                                                        | ✓                              | ✓          | ✓          | –          | –          | –          | ✓          | ✓          |
| Security                                                    |                                |            |            |            |            |            |            |            |
| MAB Authentication                                          | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| HTTPS/SSL                                                   | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| Sticky MAC                                                  | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| TACACS+                                                     | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| RADIUS                                                      | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| Access Control List                                         | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| 802.1X                                                      | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| Available Power Input                                       |                                |            |            |            |            |            |            |            |
| 24 VDC                                                      | –                              | –          | –          | –          | –          | –          | –          | –          |
| 48 VDC                                                      | –                              | –          | –          | –          | –          | –          | –          | –          |
| 110/220 VAC                                                 | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| Installation                                                |                                |            |            |            |            |            |            |            |
| Rack Mounting                                               | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| Operating Temperature                                       |                                |            |            |            |            |            |            |            |
| -10 to 60°C (14 to 140°F)                                   | ✓                              | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          |
| -40 to 75°C (-40 to 167°F)                                  | –                              | –          | –          | –          | –          | –          | ✓          | ✓          |
| Standards and Certifications                                |                                |            |            |            |            |            |            |            |
| EMI                                                         | CISPR 32, FCC Part 15B Class A |            |            |            |            |            |            |            |
| Safety                                                      | UL 60950-1, EN 60950-1         |            |            |            |            |            |            |            |
| Railway                                                     | EN 50121-4                     |            |            |            |            |            |            |            |

# Rackmount Managed Switches



| Product Series                                           | ICS-G7528A                     | ICS-G7526A | IKS-G6824A | IKS-G6524A | IKS-G728A                                 | IKS-G726A              |
|----------------------------------------------------------|--------------------------------|------------|------------|------------|-------------------------------------------|------------------------|
| Modular Switch                                           | –                              | –          | –          | –          | ✓                                         | ✓                      |
| <b>Ethernet Interface</b>                                |                                |            |            |            |                                           |                        |
| Max. Number of Ports                                     | 28                             | 26         | 24         | 24         | 28                                        | 26                     |
| 10GbE SFP+ Slots                                         | 4                              | 2          | –          | –          | –                                         | –                      |
| Combo Ports<br>10/100/1000BaseT(X) or<br>100/1000BaseSFP | 4                              | 4          | 4          | 4          | 4                                         | 2                      |
| Gigabit Ethernet<br>10/100/1000                          | 20                             | 20         | 20         | 20         | –                                         | –                      |
| Fast Ethernet 10/100                                     | –                              | –          | –          | –          | Up to 24                                  | Up to 24               |
| <b>Filter</b>                                            |                                |            |            |            |                                           |                        |
| 802.1p Class of Service                                  | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| 802.1Q VLAN                                              | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| IGMP v1/v2/v3                                            | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| <b>Management</b>                                        |                                |            |            |            |                                           |                        |
| Port Mirror                                              | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| DHCP Option 82                                           | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| LLDP                                                     | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| SNMPv1/v2c/v3                                            | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| Console Port                                             | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| Telnet/SSH                                               | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| TFTP                                                     | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| <b>Redundancy Protocols</b>                              |                                |            |            |            |                                           |                        |
| STP/RSTP/MSTP                                            | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| Turbo Ring/Turbo Chain                                   | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| <b>Layer 3 Software Features</b>                         |                                |            |            |            |                                           |                        |
| Layer 3 Switching                                        | –                              | –          | ✓          | –          | –                                         | –                      |
| Multicast Routing                                        | –                              | –          | ✓          | –          | –                                         | –                      |
| VRRP                                                     | –                              | –          | ✓          | –          | –                                         | –                      |
| <b>Security</b>                                          |                                |            |            |            |                                           |                        |
| MAB Authentication                                       | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| HTTPS/SSL                                                | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| Sticky MAC                                               | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| TACACS+                                                  | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| RADIUS                                                   | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| Access Control List                                      | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| 802.1X                                                   | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| <b>Available Power Input</b>                             |                                |            |            |            |                                           |                        |
| 24 VDC                                                   | –                              | –          | –          | –          | ✓                                         | ✓                      |
| 48 VDC                                                   | –                              | –          | –          | –          | ✓                                         | ✓                      |
| 110/220 VAC                                              | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| <b>Installation</b>                                      |                                |            |            |            |                                           |                        |
| Rack Mounting                                            | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| <b>Operating Temperature</b>                             |                                |            |            |            |                                           |                        |
| -10 to 60°C (14 to 140°F)                                | ✓                              | ✓          | ✓          | ✓          | –                                         | –                      |
| -40 to 75°C (-40 to 167°F)                               | ✓                              | ✓          | ✓          | ✓          | ✓                                         | ✓                      |
| <b>Standards and Certifications</b>                      |                                |            |            |            |                                           |                        |
| EMI                                                      | CISPR 32, FCC Part 15B Class A |            |            |            |                                           |                        |
| Safety                                                   | UL 60950-1, EN 60950-1         |            |            |            |                                           |                        |
| Railway                                                  | EN 50121-4                     |            |            |            |                                           |                        |
| Maritime                                                 | –                              |            |            |            | non-PoE models:<br>ABS, DNV GL, LR,<br>NK | ABS, DNV GL, LR,<br>NK |



# Rackmount Managed Switches



| Product Series                        | PT-G7828                                   | PT-G7728 | PT-7728-PTP                                      | PT-7828        | PT-7728        | PT-7528                                     | PT-7710                                       | PT-G7509       |
|---------------------------------------|--------------------------------------------|----------|--------------------------------------------------|----------------|----------------|---------------------------------------------|-----------------------------------------------|----------------|
| Modular Switch                        | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | –              |
| Ethernet Interface                    |                                            |          |                                                  |                |                |                                             |                                               |                |
| Max. Number of Ports                  | 28                                         | 28       | 28                                               | 28             | 28             | 28                                          | 10                                            | 9              |
| Gigabit Ethernet 10/100/1000 BaseT(X) | 2 to 26                                    | 2 to 26  | –                                                | –              | –              | –                                           | –                                             | 9              |
| Gigabit Ethernet 1000BaseSFP          | 2 to 26                                    | 2 to 26  | Up to 4                                          | Up to 4        | Up to 4        | Up to 4                                     | Up to 2                                       | 9              |
| Fast Ethernet 10/100 BaseT(X)         | –                                          | –        | Up to 28                                         | Up to 28       | Up to 28       | Up to 28                                    | Up to 10                                      | –              |
| Fast Ethernet 100BaseFX               | –                                          | –        | Up to 24                                         | Up to 24       | Up to 24       | Up to 20                                    | –                                             | –              |
| Filter                                |                                            |          |                                                  |                |                |                                             |                                               |                |
| 802.1Q VLAN                           | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | ✓              |
| IGMP v1/v2/v3                         | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | ✓              |
| 802.1p Class of Service               | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | ✓              |
| Management                            |                                            |          |                                                  |                |                |                                             |                                               |                |
| DHCP Option 82                        | –                                          | –        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | ✓              |
| SNMPv1/v2c/v3                         | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | ✓              |
| Fiber Check                           | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | –                                             | –              |
| Power Substation                      |                                            |          |                                                  |                |                |                                             |                                               |                |
| IEC 61850 QoS                         | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | ✓              |
| GOOSE Check                           | ✓                                          | ✓        | –                                                | –              | –              | –                                           | –                                             | –              |
| MMS Server                            | ✓                                          | ✓        | ✓                                                | –              | ✓              | ✓                                           | –                                             | –              |
| Redundancy Protocols                  |                                            |          |                                                  |                |                |                                             |                                               |                |
| STP                                   | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | ✓              |
| RSTP                                  | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | ✓              |
| MSTP                                  | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | ✓              |
| Turbo Ring/Turbo Chain                | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | ✓              |
| PRP / HSR                             | –                                          | –        | ✓                                                | –              | –              | –                                           | –                                             | –              |
| Layer 3 Software Features             |                                            |          |                                                  |                |                |                                             |                                               |                |
| Multicast Routing                     | ✓                                          | –        | –                                                | ✓              | –              | –                                           | –                                             | –              |
| VRRP                                  | ✓                                          | –        | –                                                | ✓              | –              | –                                           | –                                             | –              |
| Security                              |                                            |          |                                                  |                |                |                                             |                                               |                |
| Access Control List                   | ✓                                          | ✓        | –                                                | ✓              | –              | –                                           | –                                             | –              |
| Broadcast Storm Protection            | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | –              |
| HTTPS/SSL                             | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | ✓              |
| RADIUS / TACACS+                      | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | ✓              |
| Port Lock                             | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | ✓              |
| Rate Limit                            | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | –              |
| SSH                                   | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | ✓              |
| Time Management                       |                                            |          |                                                  |                |                |                                             |                                               |                |
| SNTP / NTP Server / Client            | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | ✓              |
| IEEE 1588v2 PTP (hardware-based)      | ✓                                          | ✓        | ✓                                                | –              | –              | –                                           | –                                             | –              |
| Available Power Input                 |                                            |          |                                                  |                |                |                                             |                                               |                |
| 24/48 VDC                             | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓ <sup>1</sup>                                | ✓              |
| 110/220 VDC/VAC                       | ✓                                          | ✓        | ✓                                                | ✓              | ✓              | ✓                                           | ✓                                             | ✓              |
| Operating Temperature                 |                                            |          |                                                  |                |                |                                             |                                               |                |
| –40 to 85°C (–40 to 167°F)            | ✓                                          | ✓        | ✓ <sup>2</sup>                                   | ✓ <sup>2</sup> | ✓ <sup>2</sup> | ✓ <sup>2</sup>                              | ✓ <sup>2</sup>                                | ✓ <sup>2</sup> |
| Standards and Certifications          |                                            |          |                                                  |                |                |                                             |                                               |                |
| Safety                                | UL 62368-1                                 |          | UL 60950-1                                       |                |                | UL 508                                      | UL 60950-1, EN 60950-1, CSA C22.2 No. 60950-1 |                |
| EMI                                   | CISPR 32, FCC Part 15B Class A             |          | EN 55032 Class A, CISPR 32, FCC Part 15B Class A |                |                |                                             |                                               |                |
| Power Substation                      | IEC 61850-3 Edition 2.0 Class 2, IEEE 1613 |          | IEC 61850-3, IEEE 1613                           |                |                | IEC 61850-3, IEEE 1613 Class 2 <sup>3</sup> | IEC 61850-3, IEEE 1613                        |                |

1. Supports 12/24/48 VDC.

2. Cold start requires minimum of 100 VAC at -40°C.

3. Models with MCS and SSC fiber ports are compliant with IEEE 1613 Class 1.

# PoE Switches



| Product Series                                        | IKS-6728A-8PoE                 | EDS-G512E-8PoE        | EDS-P510A-8PoE     | EDS-P510            | EDS-P506E-4PoE                                    | EDS-G205A-4PoE                                    | EDS-P206A-4PoE                                    |
|-------------------------------------------------------|--------------------------------|-----------------------|--------------------|---------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| <b>Ethernet Interface</b>                             |                                |                       |                    |                     |                                                   |                                                   |                                                   |
| Max. Number of Ports                                  | 28                             | 12                    | 10                 | 10                  | 6                                                 | 5                                                 | 6                                                 |
| Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP+) | 4                              | –                     | 2                  | 3                   | 2                                                 | –                                                 | –                                                 |
| PoE Ports (10/100BaseT(X), RJ45 connector)            | Up to 24                       | –                     | 8                  | 4                   | 4                                                 | –                                                 | 4                                                 |
| PoE Ports (10/100/1000BaseT(X), RJ45 connector)       | –                              | 8                     | –                  | –                   | –                                                 | 4                                                 | –                                                 |
| 10/100/1000BaseT(X) Ports (RJ45 connector)            | –                              | –                     | –                  | –                   | –                                                 | Up to 1                                           | –                                                 |
| 10/100BaseT(X) Ports (RJ45 connector)                 | Up to 16                       | –                     | –                  | 3                   | –                                                 | –                                                 | Up to 2                                           |
| 100/1000BaseSFP Slots                                 | –                              | 4                     | –                  | –                   | –                                                 | Up to 1                                           | –                                                 |
| 100BaseFX Ports                                       | –                              | –                     | –                  | –                   | –                                                 | –                                                 | Up to 2                                           |
| <b>Filter</b>                                         |                                |                       |                    |                     |                                                   |                                                   |                                                   |
| 802.1Q VLAN                                           | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | –                                                 | –                                                 |
| 802.1p Class of Service                               | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | –                                                 | –                                                 |
| IGMP v1/v2/v3 Snooping                                | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | –                                                 | –                                                 |
| <b>Management</b>                                     |                                |                       |                    |                     |                                                   |                                                   |                                                   |
| Port Mirror                                           | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | –                                                 | –                                                 |
| DHCP Option 82                                        | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | –                                                 | –                                                 |
| LLDP                                                  | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | –                                                 | –                                                 |
| SNMPv1/v2c/v3                                         | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | –                                                 | –                                                 |
| Fiber Check                                           | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | –                                                 | –                                                 |
| <b>Redundancy Protocols</b>                           |                                |                       |                    |                     |                                                   |                                                   |                                                   |
| Link Aggregation                                      | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | –                                                 | –                                                 |
| STP/RSTP                                              | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | –                                                 | –                                                 |
| MSTP                                                  | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | –                                                 | –                                                 |
| Turbo Ring/Turbo Chain                                | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | –                                                 | –                                                 |
| <b>Security</b>                                       |                                |                       |                    |                     |                                                   |                                                   |                                                   |
| MAB Authentication                                    | ✓                              | ✓                     | –                  | –                   | ✓                                                 | –                                                 | –                                                 |
| Sticky MAC                                            | ✓                              | ✓                     | –                  | –                   | ✓                                                 | –                                                 | –                                                 |
| TACACS+                                               | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | –                                                 | –                                                 |
| RADIUS                                                | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | –                                                 | –                                                 |
| HTTPS/SSL                                             | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | –                                                 | –                                                 |
| 802.1X                                                | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | –                                                 | –                                                 |
| Access Control List                                   | ✓                              | ✓                     | –                  | –                   | ✓                                                 | –                                                 | –                                                 |
| <b>Input Voltage</b>                                  |                                |                       |                    |                     |                                                   |                                                   |                                                   |
| 12/24 VDC                                             | –                              | –                     | –                  | –                   | ✓                                                 | ✓                                                 | ✓                                                 |
| 48 VDC                                                | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | ✓                                                 | ✓                                                 |
| <b>Power Over Ethernet</b>                            |                                |                       |                    |                     |                                                   |                                                   |                                                   |
| 802.3af/at                                            | ✓                              | ✓                     | ✓                  | 802.3af only        | ✓                                                 | ✓                                                 | ✓                                                 |
| High Power PoE                                        | ✓                              | ✓                     | ✓                  | –                   | ✓                                                 | ✓                                                 | ✓                                                 |
| Total PD Consumption (max.)                           | 720 W                          | 240 W                 | 240 W              | 61.6 W              | 180 W @ 48 VDC<br>150 W @ 24 VDC<br>62 W @ 12 VDC | 144 W @ 48 VDC<br>120 W @ 24 VDC<br>62 W @ 12 VDC | 120 W @ 48 VDC<br>120 W @ 24 VDC<br>62 W @ 12 VDC |
| Each PoE Port (max.)                                  | 36 W                           | 36 W                  | 36 W               | 15.4 W              | 60 W                                              | 36 W                                              | 30 W                                              |
| <b>Installation</b>                                   |                                |                       |                    |                     |                                                   |                                                   |                                                   |
| DIN-rail Mounting                                     | –                              | ✓                     | ✓                  | ✓                   | ✓                                                 | ✓                                                 | ✓                                                 |
| Wall Mounting (with optional kit)                     | –                              | ✓                     | ✓                  | ✓                   | ✓                                                 | ✓                                                 | ✓                                                 |
| Rack Mounting                                         | ✓                              | –                     | –                  | –                   | –                                                 | –                                                 | –                                                 |
| <b>Operating Temperature</b>                          |                                |                       |                    |                     |                                                   |                                                   |                                                   |
| 0 to 60°C (32 to 140°F)                               | –                              | –                     | –                  | ✓                   | –                                                 | ✓                                                 | –                                                 |
| –10 to 60°C (14 to 140°F)                             | –                              | ✓                     | ✓                  | –                   | ✓                                                 | –                                                 | ✓                                                 |
| –40 to 75°C (–40 to 167°F)                            | ✓                              | ✓                     | ✓                  | ✓                   | ✓                                                 | ✓                                                 | ✓                                                 |
| <b>Standards and Certifications</b>                   |                                |                       |                    |                     |                                                   |                                                   |                                                   |
| EMI                                                   | CISPR 32, FCC Part 15B Class A |                       |                    |                     |                                                   |                                                   |                                                   |
| EMC                                                   | EN 55032/24                    | EN 61000-6-2/-6-4     | EN 55032/24        | EN 55032/24         | EN 61000-6-2/-6-4                                 | EN 61000-6-2/-6-4                                 | EN 55032/24                                       |
| Safety                                                | UL 60950-1,<br>EN 60950-1      | UL 508,<br>EN 60950-1 | UL 508             | UL 508              | UL 61010-2-201,<br>EN 61010-2-201                 | UL 508                                            | UL 508                                            |
| Hazardous Locations                                   | –                              | –                     | Class I Division 2 | –                   | –                                                 | –                                                 | –                                                 |
| Railway                                               | EN 50121-4                     | EN 50121-4            | EN 50121-4         | –                   | EN 50121-4                                        | EN 50121-4                                        | –                                                 |
| Traffic Control                                       | –                              | –                     | NEMA TS2           | –                   | NEMA TS2                                          | –                                                 | –                                                 |
| Maritime                                              | –                              | –                     | –                  | ABS, DNV GL, LR, NK | –                                                 | –                                                 | –                                                 |

# EN 50155 Ethernet Switches



| Product Series                                                                    | TN-G4516                                      | TN-G6512 | TN-4516A                   | TN-4516A-PoE | TN-4516A-PoE-ODC | TN-4524A-PoE | TN-4528A-PoE | TN-4528A-PoE-ODC |
|-----------------------------------------------------------------------------------|-----------------------------------------------|----------|----------------------------|--------------|------------------|--------------|--------------|------------------|
| Ethernet Interface                                                                |                                               |          |                            |              |                  |              |              |                  |
| Max. Number of Ports                                                              | 16                                            | 12       | 16                         | 16           | 16               | 24           | 28           | 28               |
| 10/100/1000 BaseT(X) Ports (M12 X-coded 8-pin female connector)                   | 4                                             | 4        | Up to 4                    | –            | –                | –            | –            | –                |
| 10/100 BaseT(X) Ports (M12 D-coded 4-pin female connector)                        | –                                             | –        | 12                         | –            | –                | 8            | 8            | 8                |
| 10G Ports (M12 connector with bypass relay)                                       | Up to 2                                       | –        | –                          | –            | –                | –            | –            | –                |
| PoE Ports (10/100 BaseT(X), M12 D-coded 4-pin female connector)                   | –                                             | –        | –                          | 12           | 12               | 16           | 16           | 16               |
| PoE Ports (100/1000 BaseT(X), M12 X-coded 8-pin female connector)                 | 8                                             | 8        | –                          | Up to 4      | 2                | –            | Up to 4      | 2                |
| PoE Ports (10G BaseT(X), M12 connector)                                           | Up to 4                                       | –        | –                          | –            | –                | –            | –            | –                |
| 10/100/1000 BaseT(X) Ports (M12 X-coded 8-pin female connector with bypass relay) | –                                             | –        | Up to 2                    | Up to 2      | –                | –            | Up to 2      | –                |
| 10/100/1000 BaseT(X) Ports, Q-ODC Fiber Connector                                 | –                                             | –        | –                          | –            | 2                | –            | –            | 2                |
| Filter                                                                            |                                               |          |                            |              |                  |              |              |                  |
| 802.1Q                                                                            | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| IGMP v1/v2/v3                                                                     | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| Port-based VLAN                                                                   | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| Management                                                                        |                                               |          |                            |              |                  |              |              |                  |
| DHCP Option 66/67/82                                                              | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| IPv4/IPv6                                                                         | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| QoS/CoS/ToS                                                                       | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| Redundancy Protocols                                                              |                                               |          |                            |              |                  |              |              |                  |
| MSTP                                                                              | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| RSTP                                                                              | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| Turbo Ring v1/v2                                                                  | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| Turbo Ring With DRC                                                               | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| Security                                                                          |                                               |          |                            |              |                  |              |              |                  |
| HTTPS/SSL                                                                         | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| TACACS+                                                                           | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| Port Lock                                                                         | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| RADIUS                                                                            | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| Time Management                                                                   |                                               |          |                            |              |                  |              |              |                  |
| IEEE 1588 PTP v1/v2                                                               | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| NTP Server/Client                                                                 | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| Power Parameters                                                                  |                                               |          |                            |              |                  |              |              |                  |
| Input Voltage                                                                     | 24/36/48/72/96/110 VDC, redundant dual inputs |          |                            |              |                  |              |              |                  |
| Power Connector                                                                   | M12 K-coded male connector                    |          | M23 connector              |              |                  |              |              |                  |
| Total PoE Power Budget                                                            | 120 W                                         | 96 W     | –                          | 120 W        |                  |              |              |                  |
| Physical Characteristics                                                          |                                               |          |                            |              |                  |              |              |                  |
| IP Rating                                                                         | IP40                                          | IP67     | IP42                       |              |                  |              |              |                  |
| Protection                                                                        | -CT models: PCB conformal coating (optional)  |          |                            |              |                  |              |              |                  |
| Environmental Limits                                                              |                                               |          |                            |              |                  |              |              |                  |
| Operating Temperature                                                             | -40 to 70°C (-40 to 158°F)                    |          | -40 to 75°C (-40 to 167°F) |              |                  |              |              |                  |
| Standards and Certifications                                                      |                                               |          |                            |              |                  |              |              |                  |
| EN 50121-4                                                                        | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| EN 50155 <sup>1</sup>                                                             | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |
| EN 45545-2                                                                        | ✓                                             | ✓        | ✓                          | ✓            | ✓                | ✓            | ✓            | ✓                |

1. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed description, please visit our website.

# EN 50155 Ethernet Switches



| Product Series                                                                    | TN-5508A                                                     | TN-5508A-8PoE | TN-5510A | TN-5510A-8PoE | TN-5510A-ODC          |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------|---------------|----------|---------------|-----------------------|
| Ethernet Interface                                                                |                                                              |               |          |               |                       |
| Max. Number of Ports                                                              | 8                                                            | 8             | 10       | 10            | 10                    |
| 10/100/1000 BaseT(X) Ports (M12 X-coded 8-pin female connector)                   | –                                                            | –             | Up to 2  | Up to 2       | –                     |
| 10/100 BaseT(X) Ports (M12 D-coded 4-pin female connector)                        | 8                                                            | –             | 8        | –             | Up to 8               |
| PoE Ports (10/100 BaseT(X), M12 D-coded 4-pin female connector)                   | –                                                            | 8             | –        | 8             | Up to 8               |
| PoE Ports (100/1000 BaseT(X), M12 X-coded 8-pin female connector)                 | –                                                            | –             | –        | –             | –                     |
| 10/100/1000 BaseT(X) Ports (M12 X-coded 8-pin female connector with bypass relay) | –                                                            | –             | Up to 2  | Up to 2       | –                     |
| 10/100/1000 BaseT(X) Ports, Q-ODC Fiber Connector                                 | –                                                            | –             | –        | –             | 2                     |
| Filter                                                                            |                                                              |               |          |               |                       |
| 802.1Q                                                                            | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| IGMP v1/v2/v3                                                                     | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| Port-based VLAN                                                                   | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| Management                                                                        |                                                              |               |          |               |                       |
| DHCP Option 66/67/82                                                              | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| IPv4/IPv6                                                                         | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| QoS/CoS/ToS                                                                       | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| Redundancy Protocols                                                              |                                                              |               |          |               |                       |
| MSTP                                                                              | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| RSTP                                                                              | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| Turbo Ring                                                                        | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| Turbo Ring With DRC                                                               | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| Security                                                                          |                                                              |               |          |               |                       |
| HTTPS/SSL                                                                         | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| TACACS+                                                                           | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| Port Lock                                                                         | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| RADIUS                                                                            | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| Time Management                                                                   |                                                              |               |          |               |                       |
| IEEE 1588 PTP v1/v2                                                               | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| NTP Server/Client                                                                 | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| Power Parameters                                                                  |                                                              |               |          |               |                       |
| Input Voltage                                                                     | 24/36/48/72/96/110 VDC, redundant dual inputs                |               |          |               |                       |
| Power Connector                                                                   | M23 connector                                                |               |          |               |                       |
| Total PoE Power Budget                                                            | –                                                            | 120 W         | –        | 120 W         | 120 W (for PoE model) |
| Physical Characteristics                                                          |                                                              |               |          |               |                       |
| IP Rating                                                                         | IP54                                                         |               |          |               |                       |
| Protection                                                                        | TN-5500A Series -CT models: PCB conformal coating (optional) |               |          |               |                       |
| Environmental Limits                                                              |                                                              |               |          |               |                       |
| Operating Temperature                                                             | -40 to 75°C (-40 to 167°F)                                   |               |          |               |                       |
| Standards and Certifications                                                      |                                                              |               |          |               |                       |
| EN 50121-4                                                                        | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| EN 50155 <sup>1</sup>                                                             | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |
| EN 45545-2                                                                        | ✓                                                            | ✓             | ✓        | ✓             | ✓                     |

1. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed description, please visit our website.

# EN 50155 Ethernet Switches



| Product Series                                                                    | TN-5516A                                                     | TN-5516A-8PoE | TN-5518A | TN-5518A-8PoE |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------|---------------|----------|---------------|
| Ethernet Interface                                                                |                                                              |               |          |               |
| Max. Number of Ports                                                              | 16                                                           | 16            | 18       | 18            |
| 10/100/1000 BaseT(X) Ports (M12 X-coded 8-pin female connector)                   | —                                                            | —             | Up to 2  | Up to 2       |
| 10/100BaseT(X) Ports (M12 D-coded 4-pin female connector)                         | 16                                                           | 8             | 16       | 8             |
| 10/100BaseT(X) Ports (M12 D-coded 4-pin female connector with bypass relay)       | —                                                            | —             | —        | —             |
| PoE Ports (10/100 BaseT(X), M12 D-coded 4-pin female connector)                   | —                                                            | 8             | —        | 8             |
| PoE Ports (100/1000 BaseT(X), M12 X-coded 8-pin female connector)                 | —                                                            | —             | —        | —             |
| 10/100/1000 BaseT(X) Ports (M12 X-coded 8-pin female connector with bypass relay) | —                                                            | —             | Up to 2  | Up to 2       |
| 10/100/1000 BaseT(X) Ports, Q-ODC Fiber Connector                                 | —                                                            | —             | —        | —             |
| Filter                                                                            |                                                              |               |          |               |
| 802.1Q                                                                            | ✓                                                            | ✓             | ✓        | ✓             |
| IGMP v1/v2/v3                                                                     | ✓                                                            | ✓             | ✓        | ✓             |
| Port-based VLAN                                                                   | ✓                                                            | ✓             | ✓        | ✓             |
| Management                                                                        |                                                              |               |          |               |
| DHCP Option 66/67/82                                                              | ✓                                                            | ✓             | ✓        | ✓             |
| IPv4/IPv6                                                                         | ✓                                                            | ✓             | ✓        | ✓             |
| QoS/CoS/ToS                                                                       | ✓                                                            | ✓             | ✓        | ✓             |
| Redundancy Protocols                                                              |                                                              |               |          |               |
| MSTP                                                                              | ✓                                                            | ✓             | ✓        | ✓             |
| RSTP                                                                              | ✓                                                            | ✓             | ✓        | ✓             |
| Turbo Ring                                                                        | ✓                                                            | ✓             | ✓        | ✓             |
| Turbo Ring With DRC                                                               | ✓                                                            | ✓             | ✓        | ✓             |
| Security                                                                          |                                                              |               |          |               |
| HTTPS/SSL                                                                         | ✓                                                            | ✓             | ✓        | ✓             |
| TACACS+                                                                           | ✓                                                            | ✓             | ✓        | ✓             |
| Port Lock                                                                         | ✓                                                            | ✓             | ✓        | ✓             |
| RADIUS                                                                            | ✓                                                            | ✓             | ✓        | ✓             |
| Time Management                                                                   |                                                              |               |          |               |
| IEEE 1588 PTP v1/v2                                                               | ✓                                                            | ✓             | ✓        | ✓             |
| NTP Server/Client                                                                 | ✓                                                            | ✓             | ✓        | ✓             |
| Power Parameters                                                                  |                                                              |               |          |               |
| Input Voltage                                                                     | 24/36/48/72/96/110 VDC, redundant dual inputs                |               |          |               |
| Power Connector                                                                   | M23 connector                                                |               |          |               |
| Total PoE Power Budget                                                            | —                                                            | 120 W         | —        | 120 W         |
| Physical Characteristics                                                          |                                                              |               |          |               |
| IP Rating                                                                         | IP54                                                         |               |          |               |
| Protection                                                                        | TN-5500A Series -CT models: PCB conformal coating (optional) |               |          |               |
| Environmental Limits                                                              |                                                              |               |          |               |
| Operating Temperature                                                             | -40 to 75°C (-40 to 167°F)                                   |               |          |               |
| Standards and Certifications                                                      |                                                              |               |          |               |
| EN 50121-4                                                                        | ✓                                                            | ✓             | ✓        | ✓             |
| EN 50155 <sup>1</sup>                                                             | ✓                                                            | ✓             | ✓        | ✓             |
| EN 45545-2                                                                        | ✓                                                            | ✓             | ✓        | ✓             |

1. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed description, please visit our website.



# EN 50155 Ethernet Switches



| Product Series                                                                    | TN-5305                                                                                      | TN-5308                                                             | TN-5308-PoE                | TN-5816A                                      | TN-5818A |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----------------------------|-----------------------------------------------|----------|
| Ethernet Interface                                                                |                                                                                              |                                                                     |                            |                                               |          |
| Max. Number of Ports                                                              | 5                                                                                            | 8                                                                   | 8                          | 16                                            | 18       |
| 10/100/1000 BaseT(X) Ports (M12 X-coded 8-pin female connector)                   | –                                                                                            | –                                                                   | –                          | –                                             | –        |
| 10/100BaseT(X) Ports (M12 D-coded 4-pin female connector)                         | 5                                                                                            | 8                                                                   | Up to 4                    | 12                                            | 12       |
| 10/100BaseT(X) Ports (M12 D-coded 4-pin female connector with bypass relay)       | –                                                                                            | –                                                                   | –                          | 4                                             | 4        |
| PoE Ports (10/100 BaseT(X), M12 D-coded 4-pin female connector)                   | –                                                                                            | –                                                                   | Up to 8                    | –                                             | –        |
| PoE Ports (100/1000 BaseT(X), M12 X-coded 8-pin female connector)                 | –                                                                                            | –                                                                   | –                          | –                                             | –        |
| 10/100/1000 BaseT(X) Ports (M12 X-coded 8-pin female connector with bypass relay) | –                                                                                            | –                                                                   | –                          | –                                             | 2        |
| 10/100/1000 BaseT(X) Ports, Q-ODC Fiber Connector                                 | –                                                                                            | –                                                                   | –                          | –                                             | –        |
| Filter                                                                            |                                                                                              |                                                                     |                            |                                               |          |
| 802.1Q                                                                            | –                                                                                            | –                                                                   | –                          | ✓                                             | ✓        |
| IGMP v1/v2/v3                                                                     | –                                                                                            | –                                                                   | –                          | ✓                                             | ✓        |
| Port-based VLAN                                                                   | –                                                                                            | –                                                                   | –                          | ✓                                             | ✓        |
| Management                                                                        |                                                                                              |                                                                     |                            |                                               |          |
| DHCP Option 66/67/82                                                              | –                                                                                            | –                                                                   | –                          | ✓                                             | ✓        |
| IPv4/IPv6                                                                         | –                                                                                            | –                                                                   | –                          | IPv4                                          | IPv4     |
| QoS/CoS/ToS                                                                       | –                                                                                            | –                                                                   | –                          | ✓                                             | ✓        |
| Redundancy Protocols                                                              |                                                                                              |                                                                     |                            |                                               |          |
| MSTP                                                                              | –                                                                                            | –                                                                   | –                          | –                                             | –        |
| RSTP                                                                              | –                                                                                            | –                                                                   | –                          | ✓                                             | ✓        |
| Turbo Ring                                                                        | –                                                                                            | –                                                                   | –                          | ✓                                             | ✓        |
| Turbo Ring With DRC                                                               | –                                                                                            | –                                                                   | –                          | –                                             | –        |
| Security                                                                          |                                                                                              |                                                                     |                            |                                               |          |
| HTTPS/SSL                                                                         | –                                                                                            | –                                                                   | –                          | ✓                                             | ✓        |
| TACACS+                                                                           | –                                                                                            | –                                                                   | –                          | –                                             | –        |
| Port Lock                                                                         | –                                                                                            | –                                                                   | –                          | –                                             | –        |
| RADIUS                                                                            | –                                                                                            | –                                                                   | –                          | ✓                                             | ✓        |
| Time Management                                                                   |                                                                                              |                                                                     |                            |                                               |          |
| IEEE 1588 PTP v1/v2                                                               | –                                                                                            | –                                                                   | –                          | ✓                                             | ✓        |
| NTP Server/Client                                                                 | –                                                                                            | –                                                                   | –                          | ✓                                             | ✓        |
| Power Parameters                                                                  |                                                                                              |                                                                     |                            |                                               |          |
| Input Voltage                                                                     | 18 to 30 VAC (47 to 63 Hz), 24 to 36 VDC                                                     | -LV Series: 12 to 48 VDC<br>-MV Series: 72 to 110 VDC               | 48 VDC                     | 24/36/48/72/96/110 VDC, redundant dual inputs |          |
| Power Connector                                                                   | M12 A-coded male connector                                                                   | -LV Series: M12 A-coded male connector<br>-MV Series: M23 connector | M12 A-coded male connector | M23 connector                                 |          |
| Total PoE Power Budget                                                            | –                                                                                            | –                                                                   | –                          | –                                             | –        |
| Physical Characteristics                                                          |                                                                                              |                                                                     |                            |                                               |          |
| IP Rating                                                                         | IP67                                                                                         | IP40                                                                |                            | IP54                                          |          |
| Protection                                                                        | –                                                                                            | -CT models: PCB conformal coating                                   |                            |                                               |          |
| Environmental Limits                                                              |                                                                                              |                                                                     |                            |                                               |          |
| Operating Temperature                                                             | Standard Models: -25 to 60°C (-13 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F) |                                                                     |                            | -40 to 75°C (-40 to 167°F)                    |          |
| Standards and Certifications                                                      |                                                                                              |                                                                     |                            |                                               |          |
| EN 50121-4                                                                        | ✓                                                                                            | ✓                                                                   | ✓                          | ✓                                             | ✓        |
| EN 50155 <sup>1</sup>                                                             | ✓                                                                                            | ✓                                                                   | ✓                          | ✓                                             | ✓        |
| EN 45545-2                                                                        | ✓                                                                                            | ✓                                                                   | ✓                          | ✓                                             | ✓        |

1. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed description, please visit our website.

# Ethernet Extenders

Preliminary



| Product Series                                                            | IEX-408E                                                            | IEX-402-SHDSL                  | IEX-402-VDL2                   |
|---------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------|--------------------------------|
| <b>Ethernet Interface</b>                                                 |                                                                     |                                |                                |
| 10/100BaseT(X) Ports (RJ45 connector)                                     | 6                                                                   | 1                              | 1                              |
| Combo Port, RJ-11 (RJ45 connector) or Detachable 2-contact Terminal Block | 2                                                                   | 1                              | 1                              |
| <b>Input Voltage</b>                                                      |                                                                     |                                |                                |
| 110/220 VDC/VAC                                                           | ✓                                                                   | –                              | –                              |
| 12/24/48 VDC                                                              | ✓                                                                   | ✓                              | ✓                              |
| <b>Filter</b>                                                             |                                                                     |                                |                                |
| Port-based VLAN                                                           | ✓                                                                   | –                              | –                              |
| 802.1Q VLAN                                                               | ✓                                                                   | –                              | –                              |
| 802.1p Class of Service                                                   | ✓                                                                   | ✓                              | ✓                              |
| IGMP v1/v2c/v3 Snooping                                                   | ✓                                                                   | –                              | –                              |
| GVRP                                                                      | ✓                                                                   | –                              | –                              |
| GMRP                                                                      | ✓                                                                   | –                              | –                              |
| <b>Industrial Protocols</b>                                               |                                                                     |                                |                                |
| EtherNet/IP                                                               | ✓                                                                   | –                              | –                              |
| Modbus TCP                                                                | ✓                                                                   | –                              | –                              |
| PROFINET                                                                  | ✓                                                                   | –                              | –                              |
| <b>Management</b>                                                         |                                                                     |                                |                                |
| BOOTP                                                                     | ✓                                                                   | –                              | –                              |
| LLDP                                                                      | ✓                                                                   | ✓                              | ✓                              |
| DHCP Server                                                               | ✓                                                                   | –                              | –                              |
| DHCP Client                                                               | ✓                                                                   | ✓                              | ✓                              |
| DHCP Option 82                                                            | ✓                                                                   | –                              | –                              |
| RMON                                                                      | ✓                                                                   | –                              | –                              |
| SNMPv1/v2c/v3                                                             | ✓                                                                   | ✓                              | ✓                              |
| Syslog                                                                    | ✓                                                                   | ✓                              | ✓                              |
| Console Port                                                              | ✓                                                                   | ✓                              | ✓                              |
| Telnet/SSH                                                                | ✓                                                                   | –                              | –                              |
| TFTP                                                                      | ✓                                                                   | ✓                              | ✓                              |
| <b>Redundancy Protocols</b>                                               |                                                                     |                                |                                |
| STP/RSTP                                                                  | ✓                                                                   | –                              | –                              |
| MSTP                                                                      | ✓                                                                   | –                              | –                              |
| Link Aggregation                                                          | ✓                                                                   | –                              | –                              |
| Turbo Ring / Turbo Chain                                                  | ✓                                                                   | –                              | –                              |
| <b>Security</b>                                                           |                                                                     |                                |                                |
| HTTPS/SSL                                                                 | ✓                                                                   | –                              | –                              |
| RADIUS                                                                    | ✓                                                                   | –                              | –                              |
| TACACS+                                                                   | ✓                                                                   | –                              | –                              |
| Port Lock                                                                 | ✓                                                                   | –                              | –                              |
| Broadcast Storm Protection                                                | ✓                                                                   | –                              | –                              |
| Sticky MAC                                                                | ✓                                                                   | –                              | –                              |
| NTP Authentication                                                        | ✓                                                                   | –                              | –                              |
| <b>Operating Temperature</b>                                              |                                                                     |                                |                                |
| -10 to 60°C (14 to 140°F)                                                 | ✓                                                                   | ✓                              | ✓                              |
| -40 to 75°C (-40 to 167°F)                                                | ✓                                                                   | ✓                              | ✓                              |
| <b>Max. Supported Speed/Distance Over Twisted-pair Copper</b>             |                                                                     |                                |                                |
| 100 Mbps / 3 km                                                           | ✓                                                                   | –                              | ✓                              |
| 15.3 Mbps / 8 km                                                          | –                                                                   | ✓                              | –                              |
| <b>Standards and Certifications</b>                                       |                                                                     |                                |                                |
| EMI                                                                       | CISPR 32, FCC Part 15B Class A                                      | CISPR 32, FCC Part 15B Class A | CISPR 32, FCC Part 15B Class A |
| Safety                                                                    | All models: UL 61010-2-201<br>IEX-408E-2VDSL2-LV Series: EN 60950-1 | UL 508                         | UL 508                         |
| Hazardous Locations                                                       | –                                                                   | –                              | ATEX, Class I Division 2       |
| Railway                                                                   | EN 50121-4                                                          | EN 50121-4                     | EN 50121-4                     |
| Traffic Control                                                           | NEMA TS2                                                            | –                              | NEMA TS2                       |
| Power Substation                                                          | –                                                                   | –                              | –                              |
| Maritime                                                                  | –                                                                   | –                              | –                              |



# Secure Routers

Moxa offers industrial secure routers with a high-performance design to protect critical automation assets and ensure secure remote access via VPN technology for smart factory, transportation, rail, as well as oil and gas applications. With the IEC 61162-460 certification, our secure router is the ideal choice to enhance the safety of maritime applications. In addition, the Ethernet router complies with the IEC 61375-2-5 standard making it suitable for deployment on Ethernet train backbones and consist networks.



Secure Routers  
Product Pages

# Secure Routers / EN 50155 Secure Routers



| Product Series                                                              | Secure Routers                                                                                                                                  |                                                               |                                                       | EN 50155 Routers                                                      |
|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------|-----------------------------------------------------------------------|
|                                                                             | EDR-810                                                                                                                                         | EDR-G902                                                      | EDR-G903                                              | TN-5916                                                               |
| Input/Output Interface                                                      |                                                                                                                                                 |                                                               |                                                       |                                                                       |
| Alarm Contact Channels                                                      | Resistive load: 1 A @ 24 VDC                                                                                                                    | 1 relay output with current carrying capacity of 1 A @ 24 VDC |                                                       | 2 x relay output with current carrying capacity of 1 A @ 30 VDC       |
| Digital Input Channels                                                      | +13 to +30 V for state 1, -30 to +3 V for state 0, Max. input current: 8 mA                                                                     |                                                               |                                                       | –                                                                     |
| Ethernet Interface                                                          |                                                                                                                                                 |                                                               |                                                       |                                                                       |
| 10/100BaseT(X) Ports (RJ45 connector)                                       | 8                                                                                                                                               | –                                                             | –                                                     | –                                                                     |
| 10/100BaseT(X) Ports (M12 D-coded 4-pin female connector)                   | –                                                                                                                                               | –                                                             | –                                                     | 12                                                                    |
| 10/100BaseT(X) Ports (M12 D-coded 4-pin female connector with bypass relay) | –                                                                                                                                               | –                                                             | –                                                     | 4                                                                     |
| 100/1000BaseSFP Slots                                                       | 2                                                                                                                                               | –                                                             | –                                                     | –                                                                     |
| 10/100/1000BaseT(X) Ports (RJ45 connector)                                  | –                                                                                                                                               | 1                                                             | –                                                     | –                                                                     |
| Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP+)                       | –                                                                                                                                               | 1                                                             | 3                                                     | –                                                                     |
| Ethernet Software Features                                                  |                                                                                                                                                 |                                                               |                                                       |                                                                       |
| Management                                                                  | Web console (TFTP/ HTTPS), SNMP (v1, v2, v3), CLI (Telnet/ SSH), DHCP Server                                                                    |                                                               |                                                       |                                                                       |
| Multicast Routing                                                           | DVMRP, PIM-SM, PIM-SSM                                                                                                                          | –                                                             | –                                                     | –                                                                     |
| Routing                                                                     | Throughput: 10,000 packets per second (max. 100 Mbps)                                                                                           | Throughput: 25,000 packets per second (max. 300 Mbps)         | Throughput: 40,000 packets per second (max. 500 Mbps) | –                                                                     |
| Routing Redundancy                                                          | VRRP                                                                                                                                            |                                                               |                                                       |                                                                       |
| Time Management                                                             | NTP Server/Client, SNTP                                                                                                                         |                                                               |                                                       |                                                                       |
| Unicast Routing                                                             | OSPF, RIPv1/V2, Static Route                                                                                                                    |                                                               |                                                       | Static Route, RIPv1/V2                                                |
| Filter                                                                      | IGMP v1/v2/v3                                                                                                                                   | –                                                             | –                                                     | 802.1Q, IGMP v1/v2, Static Multicast                                  |
| DoS and DDoS Protection                                                     |                                                                                                                                                 |                                                               |                                                       |                                                                       |
| Technology                                                                  | ARP-Flood, FIN Scan, ICMP-Death, NEWWithout-SYN Scan, NMAP-ID Scan, NMAP-Xmas Scan, Null Scan, SYN/FIN Scan, SYN/RST Scan, SYN-Flood, Xmas Scan |                                                               |                                                       | –                                                                     |
| Firewall                                                                    |                                                                                                                                                 |                                                               |                                                       |                                                                       |
| Deep Packet Inspection                                                      | Modbus TCP, Modbus UDP                                                                                                                          |                                                               |                                                       | –                                                                     |
| Stateful Inspection                                                         | Router firewall, Transparent (bridge) firewall                                                                                                  |                                                               |                                                       |                                                                       |
| Throughput (max.)                                                           | 10,000 packets per second (100 Mbps)                                                                                                            | 25,000 packets per second (300 Mbps)                          | 40,000 packets per second (500 Mbps)                  | –                                                                     |
| IPsec VPN                                                                   |                                                                                                                                                 |                                                               |                                                       |                                                                       |
| Concurrent VPN Tunnels (max.)                                               | 10 IPsec VPN tunnels                                                                                                                            | 50 IPsec VPN tunnels                                          | 100 IPsec VPN tunnels                                 | 10 IPsec VPN tunnels                                                  |
| Open VPN                                                                    |                                                                                                                                                 |                                                               |                                                       |                                                                       |
| Concurrent VPN Tunnels                                                      | Client Mode: max. 2 external servers, Server Mode: max. 5 external clients                                                                      |                                                               |                                                       | –                                                                     |
| Protocols                                                                   | OpenVPN (client and server), UDP, and TCP, Tunnel mode (routing) and TAP mode (bridge)                                                          |                                                               |                                                       | –                                                                     |
| Power Parameters                                                            |                                                                                                                                                 |                                                               |                                                       |                                                                       |
| Connection                                                                  | Removable terminal block                                                                                                                        |                                                               |                                                       | M23 connector                                                         |
| Input Voltage                                                               | 12/24/48 VDC, 0.32 A @ 24 VDC                                                                                                                   | 12/24/48 VDC                                                  |                                                       | 24/36/48/72/96/110 VDC, redundant dual inputs, No. of power inputs: 2 |
| Physical Characteristics                                                    |                                                                                                                                                 |                                                               |                                                       |                                                                       |
| Housing                                                                     | Metal                                                                                                                                           |                                                               |                                                       |                                                                       |
| Dimensions                                                                  | 53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in)                                                                                                     | 51 x 152 x 131.1 mm (2.01 x 5.98 x 5.16 in)                   |                                                       | 250 x 175.8 x 116.3 mm (9.84 x 6.92 x 4.58 in)                        |
| Weight                                                                      | 875 g (1.92 lb)                                                                                                                                 | 1,272 g (2.80 lb)                                             | 1,294 g (2.85 lb)                                     | 4,030 g (8.88 lb)                                                     |
| Installation                                                                | DIN-rail mounting, wall mounting (with optional kit)                                                                                            |                                                               |                                                       | DIN-rail mounting (optional), wall mounting                           |
| Environmental Limits                                                        |                                                                                                                                                 |                                                               |                                                       |                                                                       |
| Operating Temperature                                                       | Standard Models: -10 to 60°C (14 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                     |                                                               |                                                       | -40 to 75°C (-40 to 167°F)                                            |
| Storage Temperature                                                         | -40 to 85°C (-40 to 185°F)                                                                                                                      |                                                               |                                                       |                                                                       |
| Ambient Relative Humidity                                                   | 5 to 95% (non-condensing)                                                                                                                       |                                                               |                                                       |                                                                       |
| Standards and Certifications                                                |                                                                                                                                                 |                                                               |                                                       |                                                                       |
| Safety                                                                      | UL 508                                                                                                                                          |                                                               |                                                       | IEC 60905-1, UL 61010-2-201                                           |
| EMC                                                                         | EN 55032/24                                                                                                                                     |                                                               |                                                       |                                                                       |
| Hazardous Locations                                                         | UL/cUL Class I Division 2 Groups A/B/C/D                                                                                                        | –                                                             |                                                       |                                                                       |
| EMI                                                                         | CISPR 32, FCC Part 15B Class A                                                                                                                  |                                                               |                                                       | –                                                                     |
| Radio Frequency                                                             | –                                                                                                                                               |                                                               |                                                       | FCC                                                                   |
| Railway                                                                     | EN 50121-4                                                                                                                                      | –                                                             |                                                       | EN 50121-4, EN 50155 <sup>1</sup> , IEC 60571                         |
| Railway Fire Protection                                                     | –                                                                                                                                               |                                                               |                                                       | EN 45545-2                                                            |
| Traffic Control                                                             | NEMA TS2                                                                                                                                        | –                                                             |                                                       |                                                                       |
| Maritime                                                                    | DNV GL                                                                                                                                          |                                                               | –                                                     |                                                                       |
| Power Substation                                                            | –                                                                                                                                               |                                                               | IEC 61850-3                                           | –                                                                     |

1. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed description, please visit our website.



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## WLAN AP/Bridge/Client

Moxa's extensive collection of industrial-grade wireless 3-in-1 AP/bridge/client products combine a rugged casing with high-performance Wi-Fi connectivity to deliver a secure and reliable wireless network connection that will not fail, even in environments with water, dust, and vibration.



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## Rail Wireless LAN AP/Client

Moxa's field-proven wireless LAN products enable operators to manage carriage-to-carriage and train-to-ground communications with increased efficiency, enabling you to create helpful onboard multimedia services that enhance the safety and comfort of your passengers.



# Wireless AP/Bridge/Client

Moxa's industrial IEEE 802.11n wireless AP/bridge/client products are designed to overcome the challenges of harsh industrial environments. High electromagnetic immunity protects the devices against electromagnetic disturbances, galvanic isolation guards them against voltage instability, and wide-temperature ranges and shock and vibration resistance ensure reliable operation even in difficult environments.



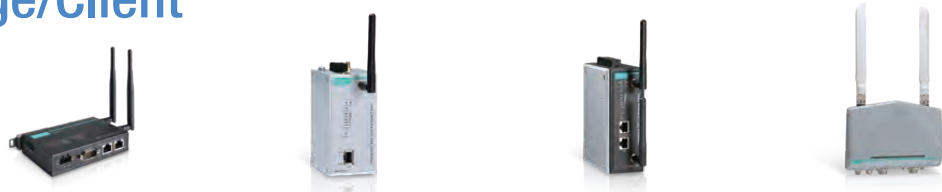
Wireless AP/Bridge/Client  
Product Pages



## Rail Wireless Access Controller

The goal of zero-latency roaming is to allow clients to seamlessly maintain a connection as they move from one access point to another. Moxa provides advanced wireless access controllers together with our controller-based Turbo Roaming technology, enabling millisecond-level roaming across different IP subnets.

# WLAN AP/Bridge/Client



| Product Series               | AWK-1137C                                                                                       | AWK-1131A                                                                                         | AWK-3131A                                                                                          | AWK-4131A                                                             |
|------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| WLAN Interface               |                                                                                                 |                                                                                                   |                                                                                                    |                                                                       |
| WLAN Standards               | 802.11a/b/g/n                                                                                   |                                                                                                   |                                                                                                    |                                                                       |
| WLAN Operation Mode          | Client, Client-Router, Slave, Sniffer                                                           | Access point, Client, Sniffer                                                                     | Access point, Client, Client-Router, Master, Slave, Sniffer                                        |                                                                       |
| Antenna                      | 2, RP-SMA female                                                                                |                                                                                                   |                                                                                                    | 2, N-type female                                                      |
| Antenna Isolation            | ✓                                                                                               | ✓                                                                                                 | ✓                                                                                                  | ✓                                                                     |
| AeroMag Mode                 | AeroMag Client, AeroMag Client-Router                                                           | –                                                                                                 | AeroMag AP, AeroMag Client, AeroMag Client-Router                                                  | AeroMag AP, AeroMag Client, AeroMag Client-Router                     |
| Client-based Turbo Roaming   | ✓                                                                                               | ✓                                                                                                 | ✓                                                                                                  | ✓                                                                     |
| AeroLink Protection          | –                                                                                               | –                                                                                                 | ✓                                                                                                  | ✓                                                                     |
| Ethernet Interface           |                                                                                                 |                                                                                                   |                                                                                                    |                                                                       |
| Ethernet Ports               | 2 x 10/100BaseT(X) ports (RJ45 connector)                                                       | 1 x 10/100/1000BaseT(X) port (RJ45 connector)                                                     | 1 x PoE port, 10/100/1000BaseT(X) (RJ45 connector)                                                 |                                                                       |
| Serial Interface             |                                                                                                 |                                                                                                   |                                                                                                    |                                                                       |
| Serial Port                  | RS-232/422/485, DB9 male                                                                        | –                                                                                                 | –                                                                                                  | –                                                                     |
| Console Port                 | –                                                                                               | RS-232, 8-pin RJ45                                                                                |                                                                                                    |                                                                       |
| Input/Output Interface       |                                                                                                 |                                                                                                   |                                                                                                    |                                                                       |
| Digital Inputs               | –                                                                                               | –                                                                                                 | ✓                                                                                                  | ✓                                                                     |
| Physical Characteristics     |                                                                                                 |                                                                                                   |                                                                                                    |                                                                       |
| IP Rating                    | IP30                                                                                            |                                                                                                   |                                                                                                    | IP68                                                                  |
| Installation                 | DIN-rail mounting, wall mounting (optional)                                                     |                                                                                                   |                                                                                                    | Wall mounting, DIN-rail mounting (optional), pole mounting (optional) |
| Power Parameters             |                                                                                                 |                                                                                                   |                                                                                                    |                                                                       |
| Input Voltage                | 9 to 30 VDC                                                                                     | 12 to 48 VDC, redundant dual inputs                                                               | 12 to 48 VDC, redundant dual inputs, 48 VDC PoE                                                    |                                                                       |
| Power Connector              | 1 removable 3-contact terminal block(s)                                                         | 1 removable 4-contact terminal block(s)                                                           | 1 removable 10-contact terminal block(s)                                                           | M12 A-coded 5-pin male connector                                      |
| Power Isolation              | ✓                                                                                               | ✓                                                                                                 | ✓                                                                                                  | ✓                                                                     |
| Reverse Polarity Protection  | Supported                                                                                       |                                                                                                   |                                                                                                    |                                                                       |
| Environmental Limits         |                                                                                                 |                                                                                                   |                                                                                                    |                                                                       |
| Operating Temperature        | Standard Models: 0 to 60°C (32 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)       |                                                                                                   | Standard Models:<br>-25 to 60°C (-13 to 140°F)<br>Wide Temp. Models:<br>-40 to 75°C (-40 to 167°F) | -40 to 75°C (-40 to 167°F)                                            |
| Standards and Certifications |                                                                                                 |                                                                                                   |                                                                                                    |                                                                       |
| EMC                          | EN 61000-6-2/-6-4, EN 55032/24                                                                  | EN 55032/24                                                                                       | EN 61000-6-2/-6-4                                                                                  |                                                                       |
| EMI                          | CISPR 22, FCC Part 15B Class A                                                                  | CISPR 32, FCC Part 15B Class B                                                                    |                                                                                                    |                                                                       |
| Hazardous Locations          | –                                                                                               | –                                                                                                 | ATEX, Class I Division 2, IECEx                                                                    | –                                                                     |
| Radio                        | ANATEL, EN 300 328, EN 301 489-1/17, EN 301 893, FCC ID SLE-1137C, MIC, NCC, SRRC, WPC, KC, RCM | ANATEL, EN 300 328, EN 301 489-1/17, EN 301 893, FCC ID SLE-WAPN008, MIC, NCC, RCM, SRRC, WPC, KC |                                                                                                    |                                                                       |
| Safety                       | EN 60950-1, UL 60950-1                                                                          |                                                                                                   |                                                                                                    |                                                                       |

## Railway Wireless LAN



| Product Series               | TAP-213                                                                          | TAP-323                                                               | AWK-3131A-M12-RTG                                    | AWK-3131A-SSC-RTG                   | AWK-3131A-RCC                       |
|------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------|-------------------------------------|-------------------------------------|
| WLAN Interface               |                                                                                  |                                                                       |                                                      |                                     |                                     |
| Number of Antenna Connectors | 2                                                                                | 5                                                                     | 2                                                    | 2                                   | 2                                   |
| Number of RF Modules         | 1                                                                                | 2                                                                     | 1                                                    | 1                                   | 1                                   |
| WLAN Antenna Connector       | N-type female                                                                    | N-type female                                                         | QMA                                                  | QMA                                 | QMA                                 |
| WLAN Standards               | 802.11a/b/g/n<br>802.11i Wireless Security                                       |                                                                       |                                                      |                                     |                                     |
| Ethernet Interface           |                                                                                  |                                                                       |                                                      |                                     |                                     |
| Number of LAN Ports          | 2                                                                                | 6                                                                     | 1                                                    | 1                                   | 1                                   |
| LAN Port Type                | M12 X-coded 8-pin female connector, 1 x fiber                                    | 4 x M12 D-coded 4-pin female connector, 2 x fiber                     | M12 D-coded 4-pin female connector                   | SC connector                        | M12 A-coded 8-pin female connector  |
| LAN Port Speed               | 10/100/1000BaseT(X), 1000BaseSFP                                                 | 10/100BaseT(X), 1000BaseSFP                                           | 10/100BaseT(X)                                       | 10/100BaseFX                        | 10/100/1000BaseT(X)                 |
| Serial Interface             |                                                                                  |                                                                       |                                                      |                                     |                                     |
| Console Port                 | USB-M12 console (M12 B-coded 5-pin female connector)                             |                                                                       | RS-232 (RJ45-type)                                   |                                     |                                     |
| Input/Output Interface       |                                                                                  |                                                                       |                                                      |                                     |                                     |
| DI/DO                        | –                                                                                | –                                                                     | ✓                                                    | ✓                                   | ✓                                   |
| DI/DO Connector Type         | –                                                                                | –                                                                     | 1 removable 10-contact terminal block(s)             |                                     |                                     |
| Power Parameters             |                                                                                  |                                                                       |                                                      |                                     |                                     |
| Input Voltage                | 24 to 110 VDC, redundant dual DC power inputs                                    | 110/220 VAC/VDC (85 to 264 VAC, 88 to 300 VDC), redundant dual inputs | 12 to 48 VDC, redundant dual inputs                  | 12 to 48 VDC, redundant dual inputs | 12 to 48 VDC, redundant dual inputs |
| Power Connector              | M12 A-coded 4-pin male connector                                                 | M23 6-pin connector                                                   | 1 removable 10-contact terminal block(s)             |                                     |                                     |
| PoE Support                  | ✓                                                                                | ✓                                                                     | ✓                                                    | –                                   | ✓                                   |
| Reverse Polarity Protection  | Supported                                                                        |                                                                       |                                                      |                                     |                                     |
| Source of Input Power        | PoE (IEEE 802.3af)                                                               |                                                                       |                                                      |                                     |                                     |
| Physical Characteristics     |                                                                                  |                                                                       |                                                      |                                     |                                     |
| IP Rating                    | IP68                                                                             |                                                                       | IP30                                                 |                                     |                                     |
| Installation                 | Wall mounting (standard), DIN-rail mounting (optional), pole mounting (optional) |                                                                       | DIN-rail mounting, wall mounting (with optional kit) |                                     |                                     |

## Rail Wireless Access Controller



| Product Series                             | WAC-1001                                             |
|--------------------------------------------|------------------------------------------------------|
| <b>Ethernet Interface</b>                  |                                                      |
| 10/100/1000BaseT(X) Ports (RJ45 connector) | 1                                                    |
| Total Port Count                           | 1                                                    |
| LAN Port Speed                             | 10/100BaseT(X)                                       |
| <b>Serial Interface</b>                    |                                                      |
| Console Port                               | RS-232 (RJ45)                                        |
| <b>Wireless Access Control</b>             |                                                      |
| WLAN Security Support                      | WPA, WPA2 Personal, WPA2 Enterprise                  |
| Turbo Roaming for Layer 2 Networks         | ✓                                                    |
| Turbo Roaming for Layer 3 Networks         | —                                                    |
| <b>Power Parameters</b>                    |                                                      |
| Input Voltage                              | 12 to 48 VDC, redundant dual inputs                  |
| Source of Input Power                      | 10-pin terminal block                                |
| PoE Support                                | ✓ (IEEE 802.3af)                                     |
| <b>Physical Characteristics</b>            |                                                      |
| IP Rating                                  | IP30                                                 |
| Installation                               | DIN-rail mounting, wall mounting (with optional kit) |



## Cellular Gateways

Moxa's LTE gateways are easy to configure and provide an efficient way to implement high-performance long-distance network applications. These LTE gateways secure your communication channels, enable smart remote management, and provide reliable connections.

# Cellular Gateways/Routers

Moxa's industrial cellular products are designed for wireless wide area network (WWAN) communication with serial and Ethernet devices over cellular networks. To meet the growing demand for increased bandwidth over cellular connections, Moxa's WWAN products now support 4G-LTE communication that enables cellular remote access for devices over the network.



Cellular Gateways/Routers  
Product Pages



## Cellular Routers

Industrial applications involving mobile communications—such as moving vehicles, industrial M2M, and monitoring geographically dispersed sites—must be reliable and fail-safe even in dynamic and radio-hostile environments. Our industrial-grade cellular routers are able to meet this challenge, and enable reliable mobile data access anytime, anywhere.



# Cellular Gateways/Routers



| Product Series                              | Cellular Gateways                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                  |                                                                                              | Cellular Routers                                                                                                                 |                                                                                                                                  |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
|                                             | OnCell 3120-LTE-1                                                                                                                                                                               | OnCell G3150A-LTE                                                                                                                                                                                                                                                                                | OnCell G3470A-LTE                                                                            | OnCell 5104-HSPA                                                                                                                 | WDR-3124A                                                                                                                        |
| Cellular Interface                          |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                  |                                                                                              |                                                                                                                                  |                                                                                                                                  |
| Cellular Standards                          | LTE CAT-1, HSPA, UMTS, EDGE, GPRS, GSM                                                                                                                                                          | LTE CAT-3, HSPA, UMTS, EDGE, GPRS, GSM                                                                                                                                                                                                                                                           |                                                                                              | HSPA, UMTS, EDGE, GPRS, GSM                                                                                                      |                                                                                                                                  |
| Band Options (EU)                           | LTE Band 1 (2100 MHz) /<br>LTE Band 3 (1800 MHz) /<br>LTE Band 8 (900 MHz) /<br>LTE Band 20 (800 MHz) /<br>LTE Band 28 (700 MHz) /<br>UMTS/HSPA 2100 MHz /<br>900 MHz<br>GSM 900 MHz / 1800 MHz | LTE Band 1 (2100 MHz) / LTE Band 3 (1800 MHz) /<br>LTE Band 7 (2600 MHz) / LTE Band 8 (900 MHz) /<br>LTE Band 20 (800 MHz)<br>UMTS/HSPA 2100 MHz / 1900 MHz /<br>850 MHz / 800 MHz / 900 MHz                                                                                                     |                                                                                              | —                                                                                                                                | —                                                                                                                                |
| Band Options (US)                           | —                                                                                                                                                                                               | LTE Band 2 (1900 MHz) / LTE Band 4 (AWS MHz) /<br>LTE Band 5 (850 MHz) / LTE Band 13 (700 MHz) /<br>LTE Band 17 (700 MHz) / LTE Band 25 (1900 MHz)<br>UMTS/HSPA 2100 MHz / 1900 MHz / AWS / 850 MHz /<br>900 MHz<br>Universal quad-band GSM/GPRS/EDGE 850 MHz / 900 MHz /<br>1800 MHz / 1900 MHz |                                                                                              | —                                                                                                                                | —                                                                                                                                |
| Band Options (AU)                           | LTE Band 3 (1800 MHz) /<br>LTE Band 5 (850 MHz) /<br>LTE Band 8 (900 MHz) /<br>LTE Band 28 (700 MHz) /<br>UMTS/HSPA 2100 MHz /<br>850 MHz / 900 MHz                                             | —                                                                                                                                                                                                                                                                                                | —                                                                                            | —                                                                                                                                | —                                                                                                                                |
| Band Options                                | —                                                                                                                                                                                               | —                                                                                                                                                                                                                                                                                                | —                                                                                            | UMTS/HSPA 800 MHz /<br>850 MHz / AWS MHz /<br>1900 MHz / 2100 MHz<br>GSM/GPRS/EDGE 850 MHz /<br>900 MHz / 1800 MHz /<br>1900 MHz | UMTS/HSPA 800 MHz /<br>850 MHz / 900 MHz /<br>1900 MHz / 2100 MHz<br>GSM/GPRS/EDGE 850 MHz /<br>900 MHz / 1800 MHz /<br>1900 MHz |
| No. of SIMs                                 | 2                                                                                                                                                                                               | 2                                                                                                                                                                                                                                                                                                | 2                                                                                            | 2                                                                                                                                | 2                                                                                                                                |
| WLAN Interface                              |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                  |                                                                                              |                                                                                                                                  |                                                                                                                                  |
| WLAN Standards                              | —                                                                                                                                                                                               | —                                                                                                                                                                                                                                                                                                | —                                                                                            | —                                                                                                                                | 802.11a/b/g/n<br>802.11i Wireless Security                                                                                       |
| Ethernet Interface                          |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                  |                                                                                              |                                                                                                                                  |                                                                                                                                  |
| 10/100BaseT(X) Ports (RJ45 connector)       | 2                                                                                                                                                                                               | 1                                                                                                                                                                                                                                                                                                | —                                                                                            | 5                                                                                                                                | —                                                                                                                                |
| 10/100/1000 BaseT(X) Ports (RJ45 connector) | —                                                                                                                                                                                               | —                                                                                                                                                                                                                                                                                                | 4                                                                                            | —                                                                                                                                | 4                                                                                                                                |
| Input/Output Interface                      |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                  |                                                                                              |                                                                                                                                  |                                                                                                                                  |
| Alarm Contact Channels                      | —                                                                                                                                                                                               | 1, resistive load:<br>1 A @ 24 VDC                                                                                                                                                                                                                                                               | 1, resistive load:<br>1 A @ 24 VDC                                                           | 1, resistive load:<br>1 A @ 24 VDC                                                                                               | 1, resistive load:<br>1 A @ 24 VDC                                                                                               |
| Digital Input Channels                      | —                                                                                                                                                                                               | 2                                                                                                                                                                                                                                                                                                | 2                                                                                            | 2                                                                                                                                | 2                                                                                                                                |
| IPsec VPN                                   |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                  |                                                                                              |                                                                                                                                  |                                                                                                                                  |
| Encryption                                  | DES, 3DES, AES, MD5, SHA-1, DH2, DH5                                                                                                                                                            |                                                                                                                                                                                                                                                                                                  |                                                                                              |                                                                                                                                  |                                                                                                                                  |
| OpenVPN                                     |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                  |                                                                                              |                                                                                                                                  |                                                                                                                                  |
| Encryption                                  | Blowfish CBC, DES CBC, DES-EDE3 CBC,<br>AES-128/192/256 CBC                                                                                                                                     |                                                                                                                                                                                                                                                                                                  | —                                                                                            | —                                                                                                                                | —                                                                                                                                |
| Serial Interface                            |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                  |                                                                                              |                                                                                                                                  |                                                                                                                                  |
| No. of Ports                                | 1                                                                                                                                                                                               | 1                                                                                                                                                                                                                                                                                                | —                                                                                            | —                                                                                                                                | —                                                                                                                                |
| Serial Standards                            | RS-232/422/485                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                  | —                                                                                            | —                                                                                                                                | —                                                                                                                                |
| Power Parameters                            |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                  |                                                                                              |                                                                                                                                  |                                                                                                                                  |
| Input Voltage                               | 9 to 36 VDC                                                                                                                                                                                     | Redundant dual inputs, 12 to 48 VDC                                                                                                                                                                                                                                                              |                                                                                              |                                                                                                                                  |                                                                                                                                  |
| Input Current                               | 0.8 A (max.)                                                                                                                                                                                    | 0.7 A @ 12 VDC, 0.2 A @ 48 VDC                                                                                                                                                                                                                                                                   |                                                                                              | 0.95 A @ 12 VDC,<br>0.25 A @ 48 VDC                                                                                              | 0.7 A @ 12 VDC,<br>0.2 A @ 48 VDC                                                                                                |
| Environmental Limits                        |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                  |                                                                                              |                                                                                                                                  |                                                                                                                                  |
| Operating Temperature                       | Standard Models:<br>0 to 55°C (32 to 131°F)<br>Wide Temp. Models:<br>-30 to 70°C (-22 to 158°F) <sup>1</sup>                                                                                    | Standard Models:<br>0 to 55°C (32 to 131°F)<br>Wide Temp. Models:<br>-30 to 70°C (-22 to 158°F)                                                                                                                                                                                                  | Standard Models: -30 to 55°C (-22 to 131°F)<br>Wide Temp. Models: -30 to 70°C (-22 to 158°F) |                                                                                                                                  | Standard Models:<br>0 to 55°C (32 to 131°F)<br>Wide Temp. Models:<br>-30 to 70°C (-22 to 158°F)                                  |
| Standards and Certifications                |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                  |                                                                                              |                                                                                                                                  |                                                                                                                                  |
| Safety                                      | UL 60950-1, UL 62368-1                                                                                                                                                                          | UL 60905-1                                                                                                                                                                                                                                                                                       |                                                                                              |                                                                                                                                  |                                                                                                                                  |
| Hazardous Locations                         | ATEX, Class I Division 2, IECEx                                                                                                                                                                 | ATEX, IECEx                                                                                                                                                                                                                                                                                      | —                                                                                            | —                                                                                                                                | —                                                                                                                                |
| Radio Frequency                             | FCC, PTCRB,<br>EN 301489-1/17, EN 301511,<br>EN 301908-1, AS/CA S042,<br>EN 62311(MPE SAR)                                                                                                      | FCC, EN 301 489-1, EN 301 489-7, EN 301 511                                                                                                                                                                                                                                                      |                                                                                              | FCC Part 22H, FCC Part 24E,<br>EN 301 489-1, EN 301 489-7,<br>EN 301 489-24, EN 301 511,<br>EN 301 908                           | EN 301 489-1,<br>EN 301 489-7, EN 301 511,<br>EN 301 908, EN 300 328,<br>EN 301 893,<br>FCC ID SLE-WAPN005                       |

1. When continuously operating in temperatures below -25°C (-13°F), the device may experience a very brief loss of cellular connectivity. The device will automatically attempt to reconnect and should have no impact on performance.





## Chassis Media Converters

Our TRC series of rackmount chassis media converters provide up to 19 slots and a variety of media converter modules to choose from to fulfill your various media conversion requirements in high-density applications.

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# Ethernet Media Converters

Moxa's industrial Ethernet media converters provide reliable and stable conversion of Ethernet data to fiber optic signals, even in harsh industrial environments.



Ethernet Media Converters  
Product Pages



## Ethernet-to-fiber Media Converters

We offer a wide selection of Ethernet-to-fiber media converters, from entry-level to industrial-grade, covering specific industries such as railway and power applications. They provide a cost-effective solution for your long-distance transmissions requirements.

# Chassis Media Converters



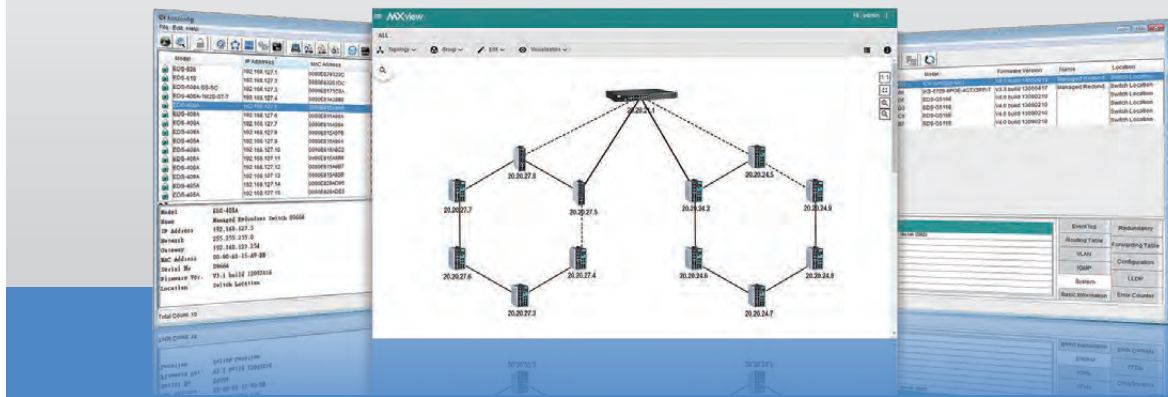
| Product Series                        | TRC-2190                                                                                                                                                                                                                                                                                       | TRC-190                                                                                                                                                                                                                                                                                          | CSM-400                                                                                                                                                                                                                                                                                        | CSM-200                                                                                                                                                                                                                                                                                          |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Ethernet Interface</b>             |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                  |
| 10/100BaseT(X) Ports (RJ45 connector) | 2                                                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                                                                                                                | 1                                                                                                                                                                                                                                                                                              | 1                                                                                                                                                                                                                                                                                                |
| Optical Fiber                         | –                                                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                                                                                                                | 100BaseFX ports<br>Multi-mode, Single-mode,<br>WDM-A Single-mode, or<br>WDM-B Single-mode<br>SC or ST connector                                                                                                                                                                                | 100BaseFX ports<br>Multi-mode or Single-mode<br>SC or ST connector                                                                                                                                                                                                                               |
| Typical Distance                      | –                                                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                                                                                                                | Multi-mode: 4 km or 5 km,<br>Single-mode: 40 km<br>WDM-A: 20 km, WDM-B: 20 km                                                                                                                                                                                                                  | Multi-mode: 4 km or 5 km<br>Single-mode: 40 km                                                                                                                                                                                                                                                   |
| Wavelength (typical)                  | –                                                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                                                                                                                | Multi-mode: 1300 nm,<br>Single-mode: 1310 nm<br>WDM-A: 1310 or 1340 nm,<br>WDM-B: 1550 or 1310 nm                                                                                                                                                                                              | Multi-mode: 1300 nm<br>Single-mode: 1310 nm                                                                                                                                                                                                                                                      |
| Optical Power (TX range)              | –                                                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                                                                                                                | Multi-mode: -10 to -20 dBm<br>Single-mode: 0 to -5 dBm<br>WDM-A/WDM-B: -5 to -15 dBm                                                                                                                                                                                                           | Multi-mode: -10 to -20 dBm<br>Single-mode: 0 to -5 dBm                                                                                                                                                                                                                                           |
| Optical Power (RX range)              | –                                                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                                                                                                                | Multi-mode/MDM-A/MDM-B:<br>-3 to -32 dBm<br>Single-mode: -3 to -34 dBm                                                                                                                                                                                                                         | Multi-mode: -3 to -32 dBm<br>Single-mode: -3 to -34 dBm                                                                                                                                                                                                                                          |
| Optical Power (link budget)           | –                                                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                                                                                                                | Multi-mode: 12 dB<br>Single-mode: 29 dB<br>WDM-A/WDM-B: 17 dB                                                                                                                                                                                                                                  | Multi-mode: 12 dB<br>Single-mode: 29 dB                                                                                                                                                                                                                                                          |
| <b>Power Parameters</b>               |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                  |
| Input Voltage                         | TRC-2190-AC: 100 to 240 VAC<br>TRC-2190-DC-48V:<br>36 to 53 VDC                                                                                                                                                                                                                                | TRC-190-AC: 100 to 240 VAC<br>TRC-190-DC-48: 36 to 53 VDC                                                                                                                                                                                                                                        | 12 VDC                                                                                                                                                                                                                                                                                         | 12 VDC                                                                                                                                                                                                                                                                                           |
| No. of Power Inputs                   | 2                                                                                                                                                                                                                                                                                              | 2                                                                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                                                                                                                |
| Power Consumption                     | TRC-2190-AC:<br>1.5 A @ 100 to 240 VAC<br>TRC-2190-DC-48V:<br>3.2 A @ 48 VDC                                                                                                                                                                                                                   | TRC-190-AC:<br>1.5 A @ 100 to 240 VAC<br>TRC-190-DC-48V:<br>3.2 A @ 48 VDC                                                                                                                                                                                                                       | 220 mA @ 12 VDC                                                                                                                                                                                                                                                                                | 180 mA @ 12 VDC                                                                                                                                                                                                                                                                                  |
| <b>Physical Characteristics</b>       |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                  |
| Dimensions                            | 440 x 260 x 77 mm<br>(17.32 x 10.24 x 3.03 in)                                                                                                                                                                                                                                                 | 440 x 260 x 88 mm<br>(17.32 x 10.24 x 3.46 in)                                                                                                                                                                                                                                                   | 86.8 x 124.3 x 21 mm<br>(3.42 x 4.89 x 0.83 in)                                                                                                                                                                                                                                                | 86.8 x 124.3 x 21 mm<br>(3.42 x 4.89 x 0.83 in)                                                                                                                                                                                                                                                  |
| <b>Environmental Limits</b>           |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                  |
| Operating Temperature                 | -20 to 55°C (-4 to 131°F)                                                                                                                                                                                                                                                                      | 0 to 60°C (32 to 140°F)                                                                                                                                                                                                                                                                          | Standard Models:<br>-20 to 55°C (-4 to 131°F)<br>Wide Temp. Models:<br>-40 to 75°C (-40 to 167°F)                                                                                                                                                                                              | 0 to 55°C (32 to 131°F)                                                                                                                                                                                                                                                                          |
| <b>Standards and Certifications</b>   |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                  |
| EMC                                   | EN 55032/24                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                  |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                  |
| EMS                                   | IEC 61000-4-2 ESD:<br>Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS:<br>80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT:<br>Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-5 Surge:<br>Power: 1 kV; Signal: 1 kV<br>IEC 61000-4-6 CS:<br>150 kHz to 80 MHz: 3 V/m;<br>Signal: 3 V/m<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD:<br>Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS:<br>80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT:<br>Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge:<br>Power: 1 kV; Signal: 1 kV<br>IEC 61000-4-6 CS:<br>150 kHz to 80 MHz: 3 V/m;<br>Signal: 3 V/m<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD:<br>Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS:<br>80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT:<br>Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-5 Surge:<br>Power: 1 kV; Signal: 1 kV<br>IEC 61000-4-6 CS:<br>150 kHz to 80 MHz: 3 V/m;<br>Signal: 3 V/m<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD:<br>Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS:<br>80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT:<br>Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge:<br>Power: 1 kV; Signal: 1 kV<br>IEC 61000-4-6 CS:<br>150 kHz to 80 MHz: 3 V/m;<br>Signal: 3 V/m<br>IEC 61000-4-8 PFMF |
| Safety                                | EN 60950-1, IEC 60950-1                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                  | EN 60950-1, UL 60950-1                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                  |

# Ethernet-to-fiber Media Converters



| Product Series                              | IMC-21                                                       | IMC-21A                                                                                           | IMC-101                                                                                    | IMC-101G                                                                        | IMC-21GA                                                                                          | PTC-101                                                                                       | IMC-P101                                                                                        |
|---------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Ethernet Interface                          |                                                              |                                                                                                   |                                                                                            |                                                                                 |                                                                                                   |                                                                                               |                                                                                                 |
| 10/100 BaseT(X) Ports (RJ45 connector)      | 1                                                            | 1                                                                                                 | 1                                                                                          | –                                                                               | –                                                                                                 | 1                                                                                             | –                                                                                               |
| 10/100/1000 BaseT(X) Ports (RJ45 connector) | –                                                            | –                                                                                                 | –                                                                                          | 1                                                                               | 1                                                                                                 | –                                                                                             | –                                                                                               |
| PoE Ports (10/100 BaseT(X), RJ45 connector) | –                                                            | –                                                                                                 | –                                                                                          | –                                                                               | –                                                                                                 | –                                                                                             | 1                                                                                               |
| 100/1000 BaseSFP Ports                      | –                                                            | –                                                                                                 | –                                                                                          | 1                                                                               | 1                                                                                                 | –                                                                                             | –                                                                                               |
| Optical Fiber                               | 100BaseFX ports Multi-mode or Single-mode SC or ST connector | 100BaseFX ports Multi-mode or Single-mode SC or ST connector                                      | 100BaseFX ports Multi-mode, Single-mode (40 km), or Single-mode (80 km) SC or ST connector | Optional 1000BaseSX/LSX/LX/LH/LHX/ZX/EXZ Multi-mode or Single-mode LC connector | 100/1000 BaseSX/LX or 100/1000 BaseSFP slot Multi-mode SC or LC connector                         | 100BaseT(X) ports Multi-mode or Single-mode SC, ST, or LC connectors                          | 100BaseT(X) ports Multi-mode or Single-mode SC or ST connector                                  |
| Typical Distance                            | Multi-mode: 4 km or 5 km<br>Single-mode: 40 km               |                                                                                                   | Multi-mode: 4 km or 5 km<br>Single-mode: 40 km or 80 km                                    | 40 or 80 or 110 or 120 km                                                       | 1000BaseSX: 500 m<br>1000BaseLX: 10 km                                                            | Multi-mode: 5 km or 4 km<br>Single-mode: 40 km                                                | Multi-mode: 5 km<br>Single-mode: 40 km                                                          |
| Wavelength (typical)                        | Multi-mode: 1300 nm<br>Single-mode: 1310 nm                  |                                                                                                   | Multi-mode: 1300 nm<br>Single-mode: 1310 nm or 1550 nm                                     | 1310 or 1550                                                                    | 1000BaseSX: 850 nm<br>1000BaseLX: 1310 nm                                                         | Multi-mode: 1300 nm<br>Single-mode: 1310 nm                                                   | Multi-mode: 850 nm<br>Single-mode: 1310 nm                                                      |
| Optical Power (TX range)                    | Multi-mode: -10 to -20 dBm<br>Single-mode: 0 to -5 dBm       |                                                                                                   |                                                                                            | +3 to -4 / +5 to 0 / +3 to -2                                                   | 1000BaseSX: -3 to -10 dBm<br>1000BaseLX: -3 to -9 dBm                                             | Multi-mode: -10 to -20 dBm<br>Single-mode: 0 to -5 dBm                                        | Multi-mode/<br>Single-mode: 0 to -8 dBm                                                         |
| Optical Power (RX range)                    | Multi-mode: -3 to -32 dBm<br>Single-mode: -3 to -34 dBm      |                                                                                                   |                                                                                            | -1 to -24 / -9 to -30 / -8 to -33                                               | 1000BaseSX: -3 to -20 dBm<br>1000BaseLX: -3 to -21 dBm                                            | Multi-mode: -32 dBm<br>Single-mode: -34 dBm                                                   | Multi-mode/<br>Single-mode: 0 to -25 dBm                                                        |
| Optical Power (link budget)                 | Multi-mode: 12 dB<br>Single-mode: 29 dB                      |                                                                                                   |                                                                                            | 20 or 24 or 30 or 31                                                            | 1000BaseSX: 10 dBm<br>1000BaseLX: 12 dBm                                                          | Multi-mode: 12 dBm<br>Single-mode: 29 dBm                                                     | Multi-mode: 15 dB<br>Single-mode: 20 dB                                                         |
| Power Parameters                            |                                                              |                                                                                                   |                                                                                            |                                                                                 |                                                                                                   |                                                                                               |                                                                                                 |
| Input Current                               | 300 mA @ 12 VDC                                              | 265 mA @ 12 VDC                                                                                   | 200 mA @ 12 to 45 VDC                                                                      | 229 mA @ 12 VDC                                                                 | 285 mA @ 12 VDC                                                                                   | LV-DC models: 170 mA @ 20 VDC<br>HV-AC models: 73 mA @ 85 VDC<br>HV-DC models: 47 mA @ 88 VDC | 430 mA @ 46 to 57 VDC                                                                           |
| Input Voltage                               | 12 to 48 VDC                                                 | 12 to 48 VDC                                                                                      | 12 to 45 VDC                                                                               | 12 to 48 VDC                                                                    | 12 to 48 VDC                                                                                      | LV-DC models: 20 to 72 VDC<br>HV-AC models: 85 to 264 VAC<br>HV-DC models: 88 to 300 VDC      | 46 to 57 VDC                                                                                    |
| Physical Characteristics                    |                                                              |                                                                                                   |                                                                                            |                                                                                 |                                                                                                   |                                                                                               |                                                                                                 |
| Dimensions                                  | 25 x 109 x 97 mm<br>(0.98 x 4.29 x 3.82 in)                  | 30 x 125 x 79 mm<br>(1.18 x 4.92 x 3.11 in)                                                       | 53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in)                                                |                                                                                 | 30 x 125 x 79 mm<br>(1.19 x 4.92 x 3.11 in)                                                       | 152.15 x 126.46 x 66.65 mm<br>(5.99 x 4.98 x 2.62 in)                                         | 144.5 x 122.3 x 51.65 mm<br>(5.69 x 4.81 x 2.03 in)                                             |
| Environmental Limits                        |                                                              |                                                                                                   |                                                                                            |                                                                                 |                                                                                                   |                                                                                               |                                                                                                 |
| Operating Temperature                       | -10 to 60°C<br>(14 to 140°F)                                 | Standard Models: -10 to 60°C<br>(14 to 140°F)<br>Wide Temp. Models: -40 to 75°C<br>(-40 to 167°F) | Standard Models: 0 to 60°C (32 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)  |                                                                                 | Standard Models: -10 to 60°C<br>(14 to 140°F)<br>Wide Temp. Models: -40 to 75°C<br>(-40 to 167°F) | -40 to 85°C<br>(-40 to 185°F)                                                                 | Standard Models: 0 to 60°C<br>(32 to 140°F)<br>Wide Temp. Models: -40 to 75°C<br>(-40 to 167°F) |
| Standards and Certifications                |                                                              |                                                                                                   |                                                                                            |                                                                                 |                                                                                                   |                                                                                               |                                                                                                 |
| EMC                                         | EN 55032/24                                                  |                                                                                                   |                                                                                            |                                                                                 |                                                                                                   |                                                                                               |                                                                                                 |
| EMI                                         | CISPR 32, FCC Part 15B Class A                               |                                                                                                   |                                                                                            |                                                                                 |                                                                                                   |                                                                                               |                                                                                                 |
| EMS                                         | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV                  | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV                                                       | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV                                                | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV                                     | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV                                                       | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV                                                  | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV                                                    |
|                                             | IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m                     | IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m                                                          | IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m                                                  | IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m                                       | IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m                                                         | IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m                                                      | IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m                                                       |
|                                             | IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV               | IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV                                                    | IEC 61000-4-4 EFT: Power: 1 kV; Signal: 1 kV                                               | IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV                                    | IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV                                                      | IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV                                                  | IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV                                                    |
|                                             | IEC 61000-4-5 Surge: Power: 1 kV; Signal: 1 kV               | IEC 61000-4-5 Surge: Power: 1 kV; Signal: 1 kV                                                    | IEC 61000-4-5 Surge: Power: 1 kV; Signal: 1 kV                                             | IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV                                  | IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV                                                    | IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV                                                | IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV                                                  |
|                                             | IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m    | IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m                                         | IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m                                  | IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m                     | IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m                                       | IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m                                   | IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m                                     |
|                                             | IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs                    | IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs                                                         | IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs                                                  | IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs                                       | IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs                                                         | IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs                                                     | IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs                                                       |
| Safety                                      | EN 60950-1, UL 60950-1                                       |                                                                                                   |                                                                                            |                                                                                 |                                                                                                   |                                                                                               |                                                                                                 |
| Power Substation                            | –                                                            | –                                                                                                 | –                                                                                          | –                                                                               | –                                                                                                 | IEC 61850-3                                                                                   | –                                                                                               |
| Railway                                     | –                                                            | –                                                                                                 | –                                                                                          | –                                                                               | –                                                                                                 | EN 50121-4                                                                                    | –                                                                                               |





Moxa's MXstudio industrial network management suite combines all the tools you need throughout the network's life cycle into one toolbox, including MXview industrial management software, the MXconfig industrial network configuration tool, and the N-Snap industrial network snapshot tool.

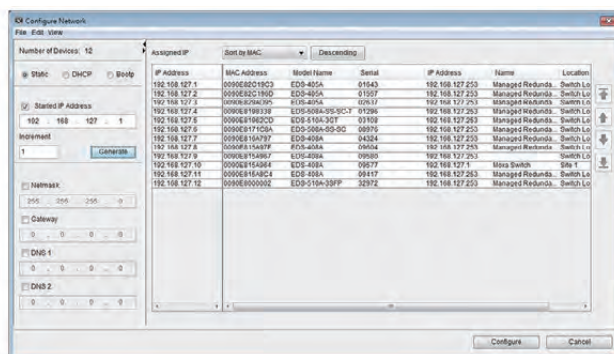
## MXconfig Industrial Network Configuration Tool

### Mass Configuration to Effectively Reduce Setup and Maintenance Costs

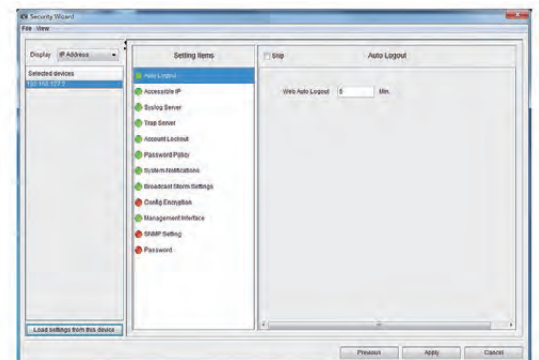
Moxa's MXconfig is a comprehensive Windows-based utility that is used to install, configure, and maintain multiple Moxa devices on industrial networks. MXconfig gives device installers and control engineers a powerful and easy way to mass configure devices, and it effectively reduces setup and maintenance costs.

#### Highlights

- Set the IP addresses of multiple devices with one click
- Configure redundant protocols and VLAN settings
- Modify the network configurations of multiple Moxa devices
- Upload firmware to multiple devices
- Set up security-related parameters with the Security Wizard in just a few clicks



Network Settings



Security Wizard

For a list of supported devices, please visit the MXconfig product page.

# Network Management Software

Moxa's industrial network management software offers visibility of operational technology (OT), allowing network operators to make more informed decisions throughout network deployment, maintenance, and diagnostics. The visualized, engineer-friendly interface presents all network settings, conditions, and traceable records, making it easier for engineers to manage networks.



Network Management  
Software Product Pages

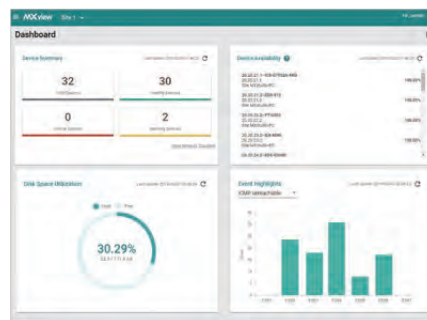
## MXview Industrial Network Management Software

### Visualized, Engineer-friendly Interfaces to Efficiently Manage Networks

Moxa's MXview is designed for configuring, monitoring, and diagnosing network devices on industrial networks. MXview provides an integrated management platform that can discover networking devices and SNMP/IP devices installed on subnets. All selected network components can be managed via a web browser from both local and remote sites—anytime and anywhere.

#### Highlights

- Easily integrate the software into third-party applications with a web widget and RESTful API interface
- Centralize management of device monitoring, configurations, and firmware for 10 different sites with up to 2,000 devices per site
- Check the network status via the dashboard
- Discover and visualize network devices and physical connections automatically
- Monitor the security status of network devices via Security View



Dashboard



Security View

For a list of supported devices, please visit the product page.

## N-Snap Industrial Network Snapshot Tool

### Network Snapshots to Quickly Identify the Root Cause of Network Disruptions

- A standalone data collection tool to take network snapshots for quick troubleshooting
- Compares network and device data, and highlights the differences

The screenshot shows the N-Snap tool interface with a table of network device data. The table has columns for IP, Device Type, MAC, Model, Firmware Version, Name, and Location. Below the table, there are sections for 'Device Info' and 'Event Log'.

| IP            | Device Type | MAC          | Model         | Firmware Version | Name          | Location        |
|---------------|-------------|--------------|---------------|------------------|---------------|-----------------|
| 192.168.127.1 | Switch      | 000000000000 | 192.168.127.1 | 1.0.0.0          | 192.168.127.1 | Switch-Location |
| 192.168.127.2 | Switch      | 000000000000 | 192.168.127.2 | 1.0.0.0          | 192.168.127.2 | Switch-Location |
| 192.168.127.3 | Switch      | 000000000000 | 192.168.127.3 | 1.0.0.0          | 192.168.127.3 | Switch-Location |
| 192.168.127.4 | Switch      | 000000000000 | 192.168.127.4 | 1.0.0.0          | 192.168.127.4 | Switch-Location |
| 192.168.127.5 | Switch      | 000000000000 | 192.168.127.5 | 1.0.0.0          | 192.168.127.5 | Switch-Location |



## Moxa Remote Connect Suite

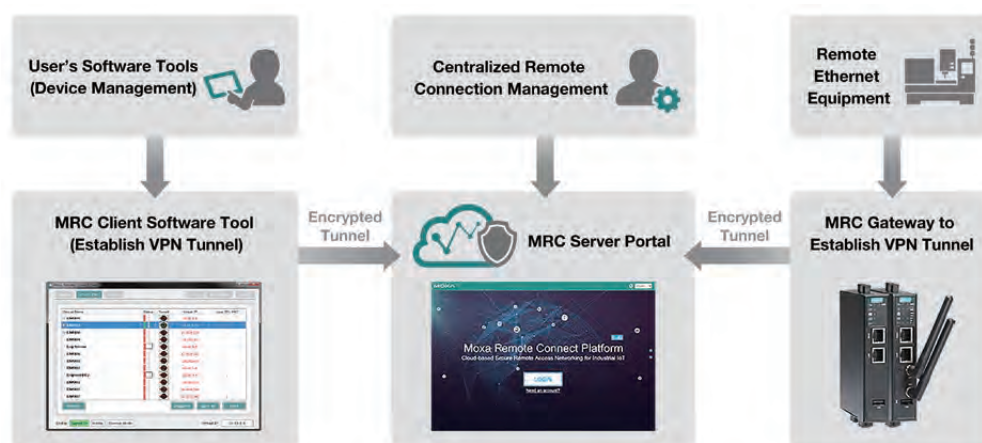
### Effortless Access to Your Remote Machines

Moxa Remote Connect (MRC) is a convenient, secure, and versatile networking solution designed to seamlessly bridge field devices and engineers together over the Internet for industrial applications. The solution includes the MRC Server, MRC Gateway, and MRC Client. The MRC Server is a centralized connection management platform that determines the security level, user privileges, and configurations of the MRC Gateway and MRC Client. The MRC Gateway is a secure gateway that connects Ethernet-ready devices at remote sites to the MRC Client. The MRC Client is a software tool that allows engineers to choose which remote device to connect to from an engineer's laptop. A benefit of the MRC Server is that it gives administrators a lot of control over the remote connection including which periods of time a device can be accessed and the kind of features that are available.

Users can choose either the **BYOS (build your own server)** business model to have full control of their MRC, or **MRC Quick Link**, which is a remote connection service hosted by Moxa to minimize maintenance efforts and allow users to focus more on their business.

### Highlights

- Machine access is fully controlled by machine operators for on-demand maintenance service
- Four types of access control are available to minimize the risks associated with remote access
- Specialized IT knowledge is not required to use the Suite
- Easy to integrate with existing security policies to reduce configuration efforts
- Changes to firewall settings are not required at field sites
- Connect with multiple field machines simultaneously via a virtual IP mapping scheme



# Secure Remote Access

Moxa Remote Connect gives you a secure, easy-to-deploy, flexible, and scalable remote access solution that enables you to remotely configure, maintain, and troubleshoot your devices. It empowers machine builders by creating new business models for them to expand their services and keep their customers satisfied.



Secure Remote Access  
Product Pages

## User Scenarios

The MRC Suite supports multiple connection types and provides numerous benefits. Below are three examples where the Moxa Remote Connect Suite can benefit engineers and businesses.

### ◆ On-demand Remote Maintenance, Diagnosis, and Troubleshooting

To minimize security issues and reduce costs, Moxa Remote Connect allows engineers to build remote connections only when necessary.



### ◆ Remote Monitoring Minimizes Onsite Maintenance

Moxa Remote Connect helps engineers monitor the status of machines operating at remote sites. Continuous monitoring of machine status allows engineers to make adjustments to settings remotely, reducing the need for engineers to make site visits to troubleshoot and fix onsite issues.



### ◆ LAN-like Site-to-site Secure Network Infrastructure

Moxa Remote Connect enables communication between different machines even if the machines are not at the same location. With Moxa Remote Connect, machines can transmit data to and from each other, just as though they were communicating over a local area network (LAN).



## Product Portfolio

### MRC Client Software

A software tool that connects engineers to the MRC Server, enabling them to perform remote troubleshooting and maintenance tasks.



- Windows-based connectivity and control software
- Supported on Microsoft Windows 7/10 (32/64-bit)
- Download for free from Moxa's website

### MRC Server Software

A connection management platform that provides a centralized management portal for users.



- Connection management platform
- Centralized security management
- Supports BYOS and MRC Quick Link Service
- MRC Quick Link includes 5 year free connection service

### MRC Gateway

A secure gateway that connects Ethernet-based edge devices—such as HMIs, PLCs, and cameras—to the MRC Server.



- Ethernet or LTE WAN connectivity
- Supports USA/Europe/Japan LTE bands
- An embedded whitelist firewall enables high levels of access control
- Site-to-site connections or connect up to 25 local devices per gateway



Visit our website to learn how to register your MRC gateways and use MRC Quick Link.



Read the White Paper to learn more about the key considerations when implementing secure remote access to your machines.



Watch a video that shows how Moxa Remote Connect is ideal for making remote access easy, secure, and flexible.





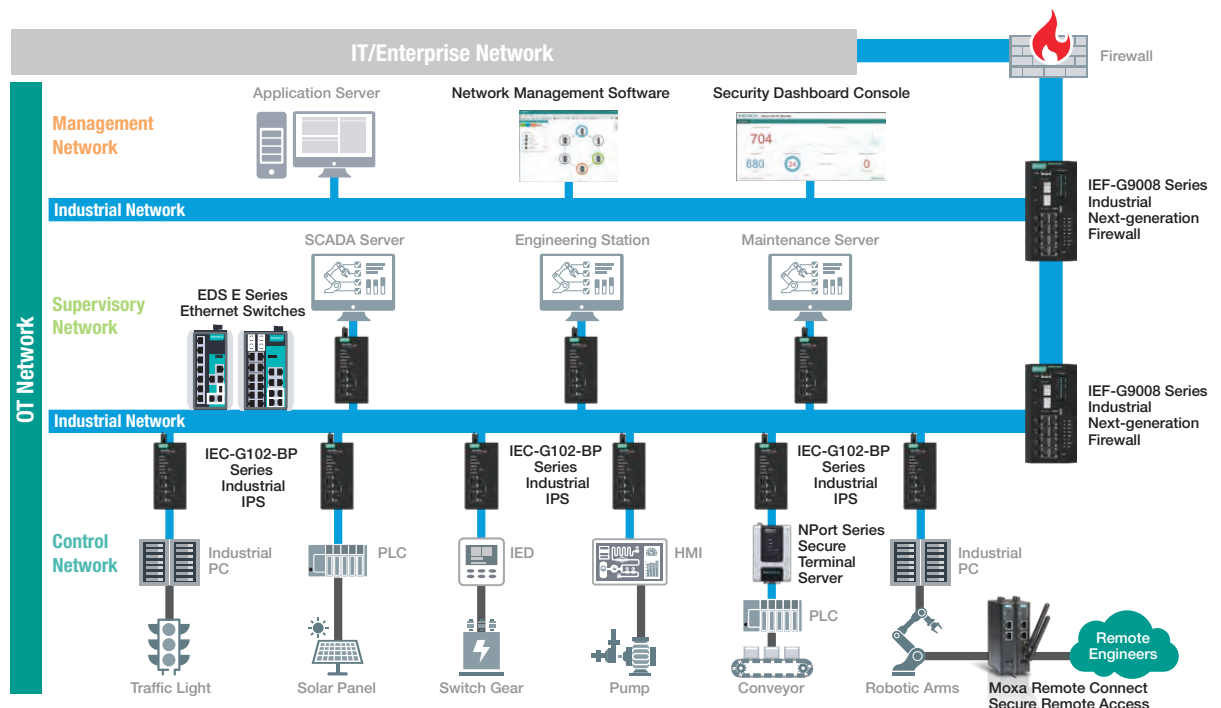
## OT-IT Integrated Security

### Protect OT assets from cyberthreats and mitigate cyberrisks

Moxa has introduced a new product category, Network Security Appliance, that protects industrial networks from intruders and unwanted traffic. It is specifically designed to secure industrial networks from both an Operations Technology (OT) and Information Technology (IT) perspective to better address the surging market demand for a comprehensive cybersecurity solution for industrial networks. Moxa's solution includes critical IT cybersecurity technologies such as an Intrusion Prevention System (IPS), a key component for defense-in-depth strategies, which has been specifically tailored to protect OT networks from cyberthreats without disrupting industrial operations.

- **IEC-G102-BP Series** protects mission-critical assets with an Industrial IPS and whitelisting
- **IEF-G9008 Series** realizes segmentation and IPS protection with an OT firewall, NAT, and VPN
- **Security Dashboard Console (SDC)** provides central management of the IEC-G102-BP Series and IEF-G9008 Series with visibility of critical assets, network analysis, and auto pattern updates

### Defend Industrial Networks at All Levels



# Network Security Appliance

Moxa's Network Security Appliance is designed to protect your critical industrial assets from industrial cybersecurity threats with OT-IT integrated cybersecurity technologies such as OT-centric Deep Packet Inspection (DPI).



Network Security Appliance  
Product Pages

## IEC-G102-BP Series Industrial IPS



### Highlights

- “OT-centric Deep Packet Inspection (DPI)” allows users to create a whitelist of industrial protocols and control the network traffic that can be sent to critical controllers.
- “Monitor” and “Protect” modes offer flexibility for different OT scenarios. The “Monitor” mode gives administrators visibility of potential cyberthreats. In the event of an emergency, administrators can easily switch to “Protect” mode to block and contain any malicious operations.
- Enhance OT Visibility by utilizing Asset Identification and Network Analysis technologies.
- Pattern-based virtual patching complements existing patch management processes by shielding against vulnerabilities. Virtual patching acts as a security tool that OT administrators and operators can use to quickly fix vulnerabilities on affected OT equipment.

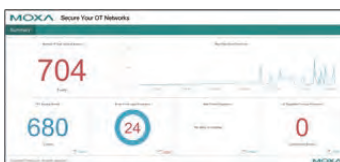
## IEF-G9008 Series Industrial Next-generation Firewall **Preliminary**



### Highlights

- Compact, security-hardened, and rugged hardware design.
- Includes all security features of IEC-G102-BP Series industrial IPS.
- Fine-grained Layer 2 to Layer 7 firewall policy with IPS capability.
- Industrial NAT and network segmentation.

## Security Dashboard Console **Preliminary**



SECURED BY 

### Highlights

- A security management platform that allows administrators or operators to effectively manage and monitor all IEC-G102-BP Series and IEF-G9008 Series devices from one place.
- A user-friendly UI provides an easier way to monitor the devices and execute policy updates, firmware updates, and pattern updates.





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## Secure Terminal Servers

Moxa's terminal servers are equipped with the specialized functions and security features needed to establish reliable terminal connections to a network, and can connect various devices such as terminals, modems, data switches, mainframe computers, and POS devices to make them available to network hosts and processes.



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## Combo Switch / Serial Device Servers

Moxa's NPort S8000 Series combine a serial device server with a full-function managed Ethernet switch, allowing you to save space in your cabinet, reduce overall power consumption, and reduce costs by eliminating the need to purchase and deploy separate devices.



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## Combo I/O / Serial Device Servers

Moxa's NPort IA(W)5000A-I/O Series combines a serial device server, remote I/O, and wireless client into a single device. This design saves on installation space, simplifies device configuration, and reduces operational and maintenance costs.



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## Substation-level Device Servers

The NPort S9000 Series device servers come with a built-in full-function managed Ethernet switch, and are designed specifically for the harsh environmental conditions found in electrical substations.

# Serial Device Servers

With a portfolio of over 500 serial/USB connectivity products, Moxa has been committed to providing reliable industrial solutions for device connectivity since 1987. As a worldwide industry leader, our portfolio includes products with industry-specific certifications for harsh environments, rail applications, intelligent transportation systems, and power automation.



Serial Device Servers  
Product Pages



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## Railway Device Servers

The NPort 5000AI-M12 is compliant with EN 50121-4 and all mandatory sections of EN 50155, covering operating temperature, power input voltage, surge, ESD, and vibration, making it suitable for rolling stock and wayside applications.



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## General-purpose Device Servers

Our NPort device servers make your serial devices network-ready in an instant. Their compact size makes them ideal for connecting devices such as card readers and payment terminals to an IP-based Ethernet LAN.



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## Industrial-grade Device Servers

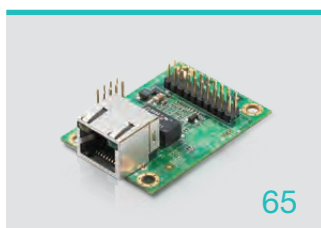
These industrial device servers offer enhanced surge protection and are designed to ensure reliable serial-to-Ethernet connectivity when operating in harsh environments, such as oil and gas and power automation.



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## Wireless Device Servers

Our wireless device servers are the ideal choice for connecting your serial or Ethernet devices—such as PLCs, meters, and sensors—to a wireless network, avoiding the hassle of running a network cable to each device.



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## Embedded Device Servers

Moxa's embedded serial-to-Ethernet device server modules are compact, power-efficient, and easy to integrate.

# Secure Terminal Servers



| Product Series                        | NPort 6150 (-T)                                                                                                                                                                                                                                                                         | NPort 6250 (-T)                          | NPort 6250-M-SC (-T) | NPort 6250-S-SC (-T) | NPort 6450 (-T)                                                                           | NPort 6610-8                                                                                                                                                                                                                                                                          | NPort 6610-16     |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------|----------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Memory                                |                                                                                                                                                                                                                                                                                         |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| SD Slot                               | –                                                                                                                                                                                                                                                                                       | Up to 32 GB (SD 2.0 compatible)          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Ethernet Interface                    |                                                                                                                                                                                                                                                                                         |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| 10/100BaseT(X) Ports (RJ45 connector) | 1, Auto MDI/MDI-X connection                                                                                                                                                                                                                                                            |                                          | –                    | –                    | 1, Auto MDI/MDI-X connection                                                              |                                                                                                                                                                                                                                                                                       |                   |
| 100BaseF(X) Ports (SC connector)      | –                                                                                                                                                                                                                                                                                       | –                                        | 1, Multi-mode        | 1, Single-mode       | –                                                                                         | –                                                                                                                                                                                                                                                                                     | –                 |
| Magnetic Isolation Protection         | 1.5 kV (built-in)                                                                                                                                                                                                                                                                       |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Expansion Modules                     |                                                                                                                                                                                                                                                                                         |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| 10/100BaseT(X) (RJ45)                 | –                                                                                                                                                                                                                                                                                       | –                                        | –                    | –                    | 1 port: NM-TX01 (-T), 2 ports: NM-TX02 (-T)                                               |                                                                                                                                                                                                                                                                                       |                   |
| Multi-mode Fiber (SC)                 | –                                                                                                                                                                                                                                                                                       | –                                        | –                    | –                    | 1 port: NM-FX01-M-SC (-T), 2 ports: NM-FX02-M-SC (-T)                                     |                                                                                                                                                                                                                                                                                       |                   |
| Single-mode Fiber (SC)                | –                                                                                                                                                                                                                                                                                       | –                                        | –                    | –                    | 1 port: NM-FX01-S-SC (-T), 2 ports: NM-FX02-S-SC (-T)                                     |                                                                                                                                                                                                                                                                                       |                   |
| Ethernet Software Features            |                                                                                                                                                                                                                                                                                         |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Configuration Options                 | Web Console (HTTP/HTTPS), Serial Console, Telnet/SSH Console, Windows Utility                                                                                                                                                                                                           |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Management                            | ARP, BOOTP, DHCP Client, DNS, HTTP, IPv4/IPv6, SMTP, SNMPv1/v2c/v3, TCP/IP, Telnet, UDP, PPPoE, ICMP                                                                                                                                                                                    |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Windows Real COM Drivers              | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                                 |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Fixed TTY Drivers                     | SCO UNIX, SCO OpenServer, SCO UnixWare 7, QNX 4.25, QNX 6.x, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                          |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Linux Real TTY Drivers                | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                         |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Android API                           | Android 3.1.x and later                                                                                                                                                                                                                                                                 |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Serial Interface                      |                                                                                                                                                                                                                                                                                         |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Connector                             | DB9 male                                                                                                                                                                                                                                                                                |                                          |                      |                      |                                                                                           | 8-pin RJ45                                                                                                                                                                                                                                                                            |                   |
| No. of Ports                          | 1                                                                                                                                                                                                                                                                                       | 2                                        |                      |                      | 4                                                                                         | 8                                                                                                                                                                                                                                                                                     | 16                |
| Serial Standards                      | RS-232/422/485                                                                                                                                                                                                                                                                          |                                          |                      |                      |                                                                                           | RS-232                                                                                                                                                                                                                                                                                |                   |
| Secure Operation Modes                | Reverse SSH, Secure Pair Connection, Secure Real COM, Secure TCP Client, Secure TCP Server, SSH                                                                                                                                                                                         |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Standard Operation Modes              | Disabled, Ethernet Modem, Pair Connection, PPP, Printer, Real COM, RTelnet, RFC2217, TCP Client, TCP Server, Terminal, UDP                                                                                                                                                              |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Baudrate                              | 50 bps to 921.6 kbps (supports nonstandard baudrates)                                                                                                                                                                                                                                   |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Data Bits                             | 5, 6, 7, 8                                                                                                                                                                                                                                                                              |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Stop Bits                             | 1, 1.5, 2                                                                                                                                                                                                                                                                               |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Parity                                | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                            |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Flow Control                          | RTS/CTS, DTR/DSR, XON/XOFF                                                                                                                                                                                                                                                              |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| RS-485 Data Direction Control         | ADDCC® (automatic data direction control)                                                                                                                                                                                                                                               |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Power Parameters                      |                                                                                                                                                                                                                                                                                         |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Input Current                         | 285 mA @ 12 VDC                                                                                                                                                                                                                                                                         | 333 mA @ 12 VDC                          | 428 mA @ 12 VDC      | 376 mA @ 12 VDC      | 730 mA @ 12 VDC                                                                           | 140 mA @ 100 VAC                                                                                                                                                                                                                                                                      | 192 mA @ 100 VAC  |
| Input Voltage                         | 12 to 48 VDC                                                                                                                                                                                                                                                                            |                                          |                      |                      |                                                                                           | 100 to 240 VAC                                                                                                                                                                                                                                                                        |                   |
| Physical Characteristics              |                                                                                                                                                                                                                                                                                         |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Housing                               | Metal                                                                                                                                                                                                                                                                                   |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Dimensions (without ears)             | 67 x 100.4 x 29 mm (2.64 x 3.95 x 1.14 in)                                                                                                                                                                                                                                              | 77 x 111 x 29 mm (3.03 x 4.37 x 1.14 in) |                      |                      | 158 x 103 x 35 mm (6.22 x 4.06 x 1.38 in)                                                 | 440 x 195 x 44 mm (17.32 x 7.68 x 1.73 in)                                                                                                                                                                                                                                            |                   |
| Weight                                | 700 g (1.54 lb)                                                                                                                                                                                                                                                                         | 730 g (1.61 lb)                          |                      |                      | 1,020 g (2.25 lb)                                                                         | 3,460 g (7.63 lb)                                                                                                                                                                                                                                                                     | 3,580 g (7.89 lb) |
| Interactive Interface                 | –                                                                                                                                                                                                                                                                                       | –                                        | –                    | –                    | LCD panel display (non-T models only), push buttons for configuration (non-T models only) |                                                                                                                                                                                                                                                                                       |                   |
| Installation                          | Desktop, DIN-rail mounting (with optional kit), wall mounting                                                                                                                                                                                                                           |                                          |                      |                      | Rack mounting (with optional kit)                                                         |                                                                                                                                                                                                                                                                                       |                   |
| Environmental Limits                  |                                                                                                                                                                                                                                                                                         |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Operating Temperature                 | Standard Models: 0 to 55°C (32 to 131°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                                                               |                                          |                      |                      |                                                                                           | 0 to 55°C (32 to 131°F)                                                                                                                                                                                                                                                               |                   |
| Standards and Certifications          |                                                                                                                                                                                                                                                                                         |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| EMC                                   | EN 55032/24                                                                                                                                                                                                                                                                             |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                          |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| EMS                                   | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |                                          |                      |                      |                                                                                           | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power 1 kV; Signal 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |                   |
| Safety                                | UL 60950-1                                                                                                                                                                                                                                                                              |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Traffic Control                       | NEMA TS2                                                                                                                                                                                                                                                                                |                                          | –                    |                      |                                                                                           | NEMA TS2                                                                                                                                                                                                                                                                              |                   |
| Declaration                           |                                                                                                                                                                                                                                                                                         |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Green Product                         | RoHS, CrRoHS, WEEE                                                                                                                                                                                                                                                                      |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Warranty                              |                                                                                                                                                                                                                                                                                         |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |
| Warranty Period                       | 5 years                                                                                                                                                                                                                                                                                 |                                          |                      |                      |                                                                                           |                                                                                                                                                                                                                                                                                       |                   |

# Secure Terminal Servers



| Product Series                        | NPort 6610-32                                                                                                                                                                                                                                                                         | NPort 6650-8 (-T)                                                                         | NPort 6650-16 (-T) | NPort 6650-32           | NPort 6610-8-48V (-16/-32)                                                                                                                                                                                                                                       | NPort 6650-8-48V (-16/-32) | NPort 6650-8-HV-T (-16/-32) |                                                                                                                                                                                                                                                                |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Memory                                |                                                                                                                                                                                                                                                                                       |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| SD Slot                               | Up to 32 GB (SD 2.0 compatible)                                                                                                                                                                                                                                                       |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Ethernet Interface                    |                                                                                                                                                                                                                                                                                       |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| 10/100BaseT(X) Ports (RJ45 connector) | 1, Auto MDI/MDI-X connection                                                                                                                                                                                                                                                          |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Magnetic Isolation Protection         | 1.5 kV (built-in)                                                                                                                                                                                                                                                                     |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Expansion Modules                     |                                                                                                                                                                                                                                                                                       |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Module Type                           | 10/100BaseT(X) (RJ45) 1 port: NM-TX01 (-T), 2 ports: NM-TX02 (-T)<br>Multi-mode fiber (SC) 1 port: NM-FX01-M-SC (-T), 2 ports: NM-FX02-M-SC (-T)<br>Single-mode fiber (SC) 1 port: NM-FX01-S-SC (-T), 2 ports: NM-FX02-S-SC (-T)                                                      |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Ethernet Software Features            |                                                                                                                                                                                                                                                                                       |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Configuration Options                 | Web Console (HTTP/HTTPS), Serial Console, Telnet/SSH Console, Windows Utility                                                                                                                                                                                                         |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Management                            | ARP, BOOTP, DHCP Client, DNS, HTTP, IPv4/IPv6, SMTP, SNMPv1/v2c/v3, TCP/IP, Telnet, UDP, PPPoE, ICMP                                                                                                                                                                                  |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Windows Real COM Drivers              | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                               |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Fixed TTY Drivers                     | SCO UNIX, SCO OpenServer, UnixWare 7, QNX 4.25, QNX 6, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                              |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Linux Real TTY Drivers                | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                       |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Android API                           | Android 3.1.x and later                                                                                                                                                                                                                                                               |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Serial Interface                      |                                                                                                                                                                                                                                                                                       |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Connector                             | 8-pin RJ45                                                                                                                                                                                                                                                                            |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| No. of Ports                          | 32                                                                                                                                                                                                                                                                                    | 8                                                                                         | 16                 | 32                      | 8 or 16 or 32                                                                                                                                                                                                                                                    | 8 or 16 or 32              | 8 or 16 or 32               |                                                                                                                                                                                                                                                                |
| Serial Standards                      | RS-232                                                                                                                                                                                                                                                                                | RS-232/422/485                                                                            |                    |                         | RS-232                                                                                                                                                                                                                                                           | RS-232/422/485             |                             |                                                                                                                                                                                                                                                                |
| Secure Operation Modes                | Reverse SSH, Secure Pair Connection, Secure Real COM, Secure TCP Client, Secure TCP Server, SSH                                                                                                                                                                                       |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Standard Operation Modes              | Disabled, Ethernet Modem, Pair Connection, PPP, Printer, Real COM, RTelnet, RFC2217, TCP Client, TCP Server, Terminal, UDP                                                                                                                                                            |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Baudrate                              | 50 bps to 921.6 kbps (supports nonstandard baudrates)                                                                                                                                                                                                                                 |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Data Bits                             | 5, 6, 7, 8                                                                                                                                                                                                                                                                            |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Stop Bits                             | 1, 1.5, 2                                                                                                                                                                                                                                                                             |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Parity                                | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                          |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Flow Control                          | RTS/CTS, DTR/DSR, XON/XOFF                                                                                                                                                                                                                                                            |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| RS-485 Data Direction Control         | ADDC® (automatic data direction control)                                                                                                                                                                                                                                              |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Power Parameters                      |                                                                                                                                                                                                                                                                                       |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Input Current                         | 285 mA @ 100 VAC                                                                                                                                                                                                                                                                      | 140 mA @ 100 VAC                                                                          | 192 mA @ 100 VAC   | 285 mA @ 100 VAC        | 293 mA @ 48 VDC, 200 mA @ 88 VDC                                                                                                                                                                                                                                 |                            |                             |                                                                                                                                                                                                                                                                |
| Input Voltage                         | 100 to 240 VAC                                                                                                                                                                                                                                                                        |                                                                                           |                    |                         | ±48 VDC (20 to 72 VDC, -20 to -72 VDC)                                                                                                                                                                                                                           |                            | 110 VDC (88 to 300 VDC)     |                                                                                                                                                                                                                                                                |
| Physical Characteristics              |                                                                                                                                                                                                                                                                                       |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Housing                               | Metal                                                                                                                                                                                                                                                                                 |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Dimensions (without ears)             | 440 x 195 x 44 mm (17.32 x 7.68 x 1.73 in)                                                                                                                                                                                                                                            |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Weight                                | 3,600 g (7.94 lb)                                                                                                                                                                                                                                                                     | 3,460 g (7.63 lb)                                                                         | 3,580 g (7.89 lb)  | 3,600 g (7.94 lb)       | 8 ports: 3,460 g (7.63 lb), 16 ports: 3,580 g (7.89 lb), 32 ports: 3,600 g (7.94 lb)                                                                                                                                                                             |                            |                             |                                                                                                                                                                                                                                                                |
| Interactive Interface                 | LCD panel display (non-T models only), push buttons for configuration (non-T models only)                                                                                                                                                                                             |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Installation                          | Rack mounting (with optional kit)                                                                                                                                                                                                                                                     |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Environmental Limits                  |                                                                                                                                                                                                                                                                                       |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Operating Temperature                 | 0 to 55°C (32 to 131°F)                                                                                                                                                                                                                                                               | Standard Models: 0 to 55°C (32 to 131°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F) |                    | 0 to 55°C (32 to 131°F) |                                                                                                                                                                                                                                                                  |                            | -40 to 85°C (-40 to 185°F)  |                                                                                                                                                                                                                                                                |
| Standards and Certifications          |                                                                                                                                                                                                                                                                                       |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| EMC                                   | EN 55032/24                                                                                                                                                                                                                                                                           |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                        |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| EMS                                   | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power 1 kV; Signal 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |                                                                                           |                    |                         | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF |                            |                             | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF |
| Safety                                | UL 60950-1                                                                                                                                                                                                                                                                            |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Traffic Control                       | NEMA TS2                                                                                                                                                                                                                                                                              |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Declaration                           |                                                                                                                                                                                                                                                                                       |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Green Product                         | RoHS, CRoHS, WEEE                                                                                                                                                                                                                                                                     |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Warranty                              |                                                                                                                                                                                                                                                                                       |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |
| Warranty Period                       | 5 years                                                                                                                                                                                                                                                                               |                                                                                           |                    |                         |                                                                                                                                                                                                                                                                  |                            |                             |                                                                                                                                                                                                                                                                |

# Secure Terminal Servers



| Product Series                        | CN2610-8-2AC                                                                                                                                                                                                                                                                                       | CN2610-16-2AC     | CN2650-8          | CN2650-16         | CN2650-8-2AC (-T)                                                                         | CN2650-16-2AC (-T) |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-------------------|-------------------------------------------------------------------------------------------|--------------------|
| Ethernet Interface                    |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                           |                    |
| 10/100BaseT(X) Ports (RJ45 connector) | 2                                                                                                                                                                                                                                                                                                  |                   |                   |                   |                                                                                           |                    |
| Magnetic Isolation Protection         | 1.5 kV (built-in)                                                                                                                                                                                                                                                                                  |                   |                   |                   |                                                                                           |                    |
| Ethernet Software Features            |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                           |                    |
| Configuration Options                 | Web Console (HTTP/HTTPS), Windows Utility, Telnet Console, Serial Console, Device Search Utility (DSU)                                                                                                                                                                                             |                   |                   |                   |                                                                                           |                    |
| Management                            | ARP, BOOTP, DDNS, DHCP Client, DNS, HTTP, IPv4, SMTP, SNMPv1/v2c/v3, TCP/IP, Telnet, UDP, ICMP, SLIP                                                                                                                                                                                               |                   |                   |                   |                                                                                           |                    |
| Security                              | HTTPS/SSL, RADIUS, SSH, PAP, CHAP                                                                                                                                                                                                                                                                  |                   |                   |                   |                                                                                           |                    |
| Windows Real COM Drivers              | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                                            |                   |                   |                   |                                                                                           |                    |
| Fixed TTY Drivers                     | SCO UNIX, SCO OpenServer, SCO UnixWare 7, QNX 4.25, QNX 6.x, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                                     |                   |                   |                   |                                                                                           |                    |
| Linux Real TTY Drivers                | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                           |                    |
| Android API                           | Android 3.1.x and later                                                                                                                                                                                                                                                                            |                   |                   |                   |                                                                                           |                    |
| Serial Interface                      |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                           |                    |
| Connector                             | 8-pin RJ45                                                                                                                                                                                                                                                                                         |                   |                   |                   |                                                                                           |                    |
| No. of Ports                          | 8                                                                                                                                                                                                                                                                                                  | 16                | 8                 | 16                | 8                                                                                         | 16                 |
| Serial Standards                      | RS-232                                                                                                                                                                                                                                                                                             |                   | RS-232/422/485    |                   |                                                                                           |                    |
| Baudrate                              | 50 bps to 921.6 kbps                                                                                                                                                                                                                                                                               |                   |                   |                   |                                                                                           |                    |
| Data Bits                             | 5, 6, 7, 8                                                                                                                                                                                                                                                                                         |                   |                   |                   |                                                                                           |                    |
| Stop Bits                             | 1, 1.5, 2                                                                                                                                                                                                                                                                                          |                   |                   |                   |                                                                                           |                    |
| Parity                                | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                                       |                   |                   |                   |                                                                                           |                    |
| Flow Control                          | None, RTS/CTS, DTR/DSR, XON/XOFF                                                                                                                                                                                                                                                                   |                   |                   |                   |                                                                                           |                    |
| Isolation                             | –                                                                                                                                                                                                                                                                                                  | –                 | –                 | –                 | –                                                                                         | –                  |
| RS-485 Data Direction Control         | ADDC® (automatic data direction control)                                                                                                                                                                                                                                                           |                   |                   |                   |                                                                                           |                    |
| Power Parameters                      |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                           |                    |
| No. of Power Inputs                   | 2                                                                                                                                                                                                                                                                                                  | 2                 | 1                 | 1                 | 2                                                                                         | 2                  |
| Input Current                         | 130 mA @ 110 VAC                                                                                                                                                                                                                                                                                   |                   |                   |                   |                                                                                           |                    |
| Input Voltage                         | 100 to 240 VAC, 47 to 63 Hz                                                                                                                                                                                                                                                                        |                   |                   |                   |                                                                                           |                    |
| Physical Characteristics              |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                           |                    |
| Housing                               | Metal                                                                                                                                                                                                                                                                                              |                   |                   |                   |                                                                                           |                    |
| Dimensions (without ears)             | 440 x 198 x 45.5 mm (17.32 x 7.78 x 1.79 in)                                                                                                                                                                                                                                                       |                   |                   |                   |                                                                                           |                    |
| Weight                                | 2,560 g (5.64 lb)                                                                                                                                                                                                                                                                                  | 2,640 g (5.82 lb) | 2,410 g (5.31 lb) | 2,460 g (5.42 lb) | 2,560 g (5.64 lb)                                                                         | 2,640 g (5.82 lb)  |
| Installation                          | 19-inch rack mounting                                                                                                                                                                                                                                                                              |                   |                   |                   |                                                                                           |                    |
| Environmental Limits                  |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                           |                    |
| Operating Temperature                 | 0 to 55°C (32 to 131°F)                                                                                                                                                                                                                                                                            |                   |                   |                   | Standard Models: 0 to 55°C (32 to 131°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F) |                    |
| Standards and Certifications          |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                           |                    |
| EMC                                   | EN 55032/24                                                                                                                                                                                                                                                                                        |                   |                   |                   |                                                                                           |                    |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                                     |                   |                   |                   |                                                                                           |                    |
| EMS                                   | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2.5 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8<br>IEC 61000-4-11 DIPs |                   |                   |                   |                                                                                           |                    |
| Safety                                | UL 60950-1                                                                                                                                                                                                                                                                                         |                   |                   |                   |                                                                                           |                    |
| Declaration                           |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                           |                    |
| Green Product                         | RoHS, CRoHS, WEEE                                                                                                                                                                                                                                                                                  |                   |                   |                   |                                                                                           |                    |
| Warranty                              |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                           |                    |
| Warranty Period                       | 5 years                                                                                                                                                                                                                                                                                            |                   |                   |                   |                                                                                           |                    |

# Secure Terminal Servers



| Product Series                        | CN2650I-8                                                                                                                                                                                                                                                                                          | CN2650I-16        | CN2650I-8-2AC     | CN2650I-16-2AC    | CN2650I-8-HV-T                                                                                                                                                                                                                                           | CN2650I-16-HV-T   |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Ethernet Interface                    |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| 10/100BaseT(X) Ports (RJ45 connector) | 2                                                                                                                                                                                                                                                                                                  |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Magnetic Isolation Protection         | 1.5 kV (built-in)                                                                                                                                                                                                                                                                                  |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Ethernet Software Features            |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Configuration Options                 | Web Console (HTTP/HTTPS), Windows Utility, Telnet Console, Serial Console, Device Search Utility (DSU)                                                                                                                                                                                             |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Management                            | ARP, BOOTP, DDNS, DHCP Client, DNS, HTTP, IPv4, SMTP, SNMPv1/v2c/v3, TCP/IP, Telnet, UDP, ICMP, SLIP                                                                                                                                                                                               |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Security                              | HTTPS/SSL, RADIUS, SSH, PAP, CHAP                                                                                                                                                                                                                                                                  |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Windows Real COM Drivers              | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                                            |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Fixed TTY Drivers                     | SCO UNIX, SCO OpenServer, SCO UnixWare 7, QNX 4.25, QNX 6.x, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                                     |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Linux Real TTY Drivers                | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Android API                           | Android 3.1.x and later                                                                                                                                                                                                                                                                            |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Serial Interface                      |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Connector                             | DB9 male                                                                                                                                                                                                                                                                                           |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| No. of Ports                          | 8                                                                                                                                                                                                                                                                                                  | 16                | 8                 | 16                | 8                                                                                                                                                                                                                                                        | 16                |
| Serial Standards                      | RS-232/422/485                                                                                                                                                                                                                                                                                     |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Baudrate                              | 50 bps to 921.6 kbps                                                                                                                                                                                                                                                                               |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Data Bits                             | 5, 6, 7, 8                                                                                                                                                                                                                                                                                         |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Stop Bits                             | 1, 1.5, 2                                                                                                                                                                                                                                                                                          |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Parity                                | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                                       |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Flow Control                          | None, RTS/CTS, DTR/DSR, XON/XOFF                                                                                                                                                                                                                                                                   |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Isolation                             | 2 kV                                                                                                                                                                                                                                                                                               |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| RS-485 Data Direction Control         | ADDC® (automatic data direction control)                                                                                                                                                                                                                                                           |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Power Parameters                      |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| No. of Power Inputs                   | 1                                                                                                                                                                                                                                                                                                  | 1                 | 2                 | 2                 | 2                                                                                                                                                                                                                                                        | 2                 |
| Input Current                         | 130 mA @ 110 VAC                                                                                                                                                                                                                                                                                   |                   |                   |                   | 200 mA @ 88 VDC                                                                                                                                                                                                                                          |                   |
| Input Voltage                         | 100 to 240 VAC, 47 to 63 Hz                                                                                                                                                                                                                                                                        |                   |                   |                   | 110 VDC (88 to 300 VDC)                                                                                                                                                                                                                                  |                   |
| Physical Characteristics              |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Housing                               | Metal                                                                                                                                                                                                                                                                                              |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Dimensions (without ears)             | 440 x 198 x 45.5 mm (17.32 x 7.80 x 1.77 in)                                                                                                                                                                                                                                                       |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Weight                                | 3,666 g (8.08 lb)                                                                                                                                                                                                                                                                                  | 3,776 g (8.32 lb) | 3,932 g (8.67 lb) | 4,022 g (8.87 lb) | 3,910 g (8.62 lb)                                                                                                                                                                                                                                        | 3,930 g (8.66 lb) |
| Installation                          | 19-inch rack mounting                                                                                                                                                                                                                                                                              |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Environmental Limits                  |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Operating Temperature                 | 0 to 55°C (32 to 131°F)                                                                                                                                                                                                                                                                            |                   |                   |                   | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                               |                   |
| Standards and Certifications          |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| EMC                                   | EN 55032/35                                                                                                                                                                                                                                                                                        |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                                     |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| EMS                                   | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2.5 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8<br>IEC 61000-4-11 DIPs |                   |                   |                   | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m<br>IEC 61000-4-8 |                   |
| Safety                                | UL 62368-1                                                                                                                                                                                                                                                                                         |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Declaration                           |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Green Product                         | RoHS, CRoHS, WEEE                                                                                                                                                                                                                                                                                  |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Warranty                              |                                                                                                                                                                                                                                                                                                    |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |
| Warranty Period                       | 5 years                                                                                                                                                                                                                                                                                            |                   |                   |                   |                                                                                                                                                                                                                                                          |                   |



# Combo Switch / Serial Device Servers



| Product Series                             | NPort S8455I (-T)                                                                                                                                                                                                                                                                                                                                 | NPort S8455I-MM-SC (-T) | NPort S8455I-SS-SC (-T) |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------|
| Ethernet Interface                         |                                                                                                                                                                                                                                                                                                                                                   |                         |                         |
| 10/100BaseT(X) Ports (RJ45 connector)      | 5                                                                                                                                                                                                                                                                                                                                                 | 3                       | 3                       |
| 100BaseFX Ports (multi-mode SC connector)  | –                                                                                                                                                                                                                                                                                                                                                 | 2                       | –                       |
| 100BaseFX Ports (single-mode SC connector) | –                                                                                                                                                                                                                                                                                                                                                 | –                       | 2                       |
| Magnetic Isolation Protection              | 1.5 kV (built-in)                                                                                                                                                                                                                                                                                                                                 |                         |                         |
| Standards                                  | IEEE 802.1D-2004 for Spanning Tree Protocol<br>IEEE 802.1p for Class of Service<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1w for Rapid Spanning Tree Protocol<br>IEEE 802.1X for authentication<br>IEEE 802.3 for 10BaseT<br>IEEE 802.3ad for Port Trunk with LACP<br>IEEE 802.3u for 100BaseT(X) and 100BaseFX<br>IEEE 802.3x for flow control |                         |                         |
| Switch Properties                          |                                                                                                                                                                                                                                                                                                                                                   |                         |                         |
| IGMP Groups                                | 256                                                                                                                                                                                                                                                                                                                                               |                         |                         |
| Max. No. of VLANs                          | 64                                                                                                                                                                                                                                                                                                                                                |                         |                         |
| Priority Queues                            | 4                                                                                                                                                                                                                                                                                                                                                 |                         |                         |
| VLAN ID Range                              | VID 1 to 4094                                                                                                                                                                                                                                                                                                                                     |                         |                         |
| Ethernet Software Features                 |                                                                                                                                                                                                                                                                                                                                                   |                         |                         |
| Configuration Options                      | Web Console (HTTP/HTTPS), Windows Utility, Serial Console, Telnet Console                                                                                                                                                                                                                                                                         |                         |                         |
| Management                                 | BOOTP, Device Search Utility (DSU), DHCP Client, DHCP Option 82, HTTP, IPv4, LLDP, Port Mirror, RMON, SMTP, SNMPv1/v2c/v3, Syslog, TCP/IP, Telnet, Web Console                                                                                                                                                                                    |                         |                         |
| Windows Real COM Drivers                   | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                                                                                           |                         |                         |
| Linux Real TTY Drivers                     | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                                                                                   |                         |                         |
| Fixed TTY Drivers                          | SCO UNIX, SCO OpenServer, UnixWare 7, QNX 4.25, QNX 6, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                                                                                          |                         |                         |
| Android API                                | Android 3.1.x and later                                                                                                                                                                                                                                                                                                                           |                         |                         |
| Redundancy Protocols                       | RSTP, Turbo Chain, Turbo Ring                                                                                                                                                                                                                                                                                                                     |                         |                         |
| Security                                   | HTTPS, SSL, SSH                                                                                                                                                                                                                                                                                                                                   |                         |                         |
| Authentication                             | Local Account Accessibility, RADIUS, TACACS+                                                                                                                                                                                                                                                                                                      |                         |                         |
| Serial Interface                           |                                                                                                                                                                                                                                                                                                                                                   |                         |                         |
| No. of Ports                               | 4                                                                                                                                                                                                                                                                                                                                                 |                         |                         |
| Serial Standards                           | RS-232/422/485                                                                                                                                                                                                                                                                                                                                    |                         |                         |
| Baudrate                                   | 50 to 921.6 kbps                                                                                                                                                                                                                                                                                                                                  |                         |                         |
| Data Bits                                  | 5, 6, 7, 8                                                                                                                                                                                                                                                                                                                                        |                         |                         |
| Stop Bits                                  | 1, 1.5, 2                                                                                                                                                                                                                                                                                                                                         |                         |                         |
| Parity                                     | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                                                                                      |                         |                         |
| Flow Control                               | None, RTS/CTS, XON/XOFF                                                                                                                                                                                                                                                                                                                           |                         |                         |
| Isolation                                  | 2 kV                                                                                                                                                                                                                                                                                                                                              |                         |                         |
| RS-485 Data Direction Control              | ADDC® (automatic data direction control)                                                                                                                                                                                                                                                                                                          |                         |                         |
| Power Parameters                           |                                                                                                                                                                                                                                                                                                                                                   |                         |                         |
| Input Current                              | 935 mA @ 12 VDC                                                                                                                                                                                                                                                                                                                                   |                         |                         |
| Input Voltage                              | 12 to 48 VDC                                                                                                                                                                                                                                                                                                                                      |                         |                         |
| Physical Characteristics                   |                                                                                                                                                                                                                                                                                                                                                   |                         |                         |
| Housing                                    | Metal                                                                                                                                                                                                                                                                                                                                             |                         |                         |
| Dimensions                                 | 73.1 x 134 x 125 mm (2.88 x 5.27 x 4.92 in)                                                                                                                                                                                                                                                                                                       |                         |                         |
| Weight                                     | 578 g (1.27 lb)                                                                                                                                                                                                                                                                                                                                   |                         |                         |
| Installation                               | DIN-rail mounting, wall mounting (with optional kit)                                                                                                                                                                                                                                                                                              |                         |                         |
| Environmental Limits                       |                                                                                                                                                                                                                                                                                                                                                   |                         |                         |
| Operating Temperature                      | Standard Models: 0 to 60°C (32 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                                                                                                                         |                         |                         |
| Standards and Certifications               |                                                                                                                                                                                                                                                                                                                                                   |                         |                         |
| EMC                                        | EN 55032/24                                                                                                                                                                                                                                                                                                                                       |                         |                         |
| EMI                                        | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                                                                                    |                         |                         |
| EMS                                        | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Signal: 1 kV<br>IEC 61000-4-5 Surge: Power: 1 kV; Signal: 0.25 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8                                                                                  |                         |                         |
| Hazardous Locations                        | Class I Division 2                                                                                                                                                                                                                                                                                                                                |                         |                         |
| Safety                                     | EN 60950-1, IEC 60950-1, UL 508, UL 60950-1                                                                                                                                                                                                                                                                                                       |                         |                         |
| Warranty                                   |                                                                                                                                                                                                                                                                                                                                                   |                         |                         |
| Warranty Period                            | 5 years                                                                                                                                                                                                                                                                                                                                           |                         |                         |

# Combo I/O / Serial Device Servers



| Product Series               | NPort IA5150A-6I/O                                                                                                                                                                                                                                                 | NPort IA5250A-6I/O | NPort IA5150A-12I/O | NPort IA5250A-12I/O | NPort IAW5150A-6I/O                                                                                         | NPort IAW5250A-6I/O | NPort IAW5150A-12I/O | NPort IAW5250A-12I/O |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|---------------------|-------------------------------------------------------------------------------------------------------------|---------------------|----------------------|----------------------|
| Memory                       |                                                                                                                                                                                                                                                                    |                    |                     |                     |                                                                                                             |                     |                      |                      |
| microSD Slot                 | Up to 32 GB (SD 2.0 compatible)                                                                                                                                                                                                                                    |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Input/Output Interface       |                                                                                                                                                                                                                                                                    |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Digital Input                | 4 channels                                                                                                                                                                                                                                                         |                    | 8 channels          |                     | 4 channels                                                                                                  |                     | 8 channels           |                      |
| Digital Output               | 2 channels                                                                                                                                                                                                                                                         |                    | 4 channels          |                     | 2 channels                                                                                                  |                     | 4 channels           |                      |
| Alarm Contact                | Relay output with current carrying capacity of 2 A @ 30 VDC                                                                                                                                                                                                        |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Digital Inputs               |                                                                                                                                                                                                                                                                    |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Sensor Type                  | Dry contact; Wet contact (NPN or PNP)                                                                                                                                                                                                                              |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Dry Contact                  | On: short to GND; Off: open                                                                                                                                                                                                                                        |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Wet Contact                  | On: 10 to 30 VDC; Off: 0 to 3 VDC (DI to COM)                                                                                                                                                                                                                      |                    |                     |                     |                                                                                                             |                     |                      |                      |
| I/O Mode                     | DI or event counter                                                                                                                                                                                                                                                |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Counter Freq.                | 20 Hz                                                                                                                                                                                                                                                              |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Digital Outputs              |                                                                                                                                                                                                                                                                    |                    |                     |                     |                                                                                                             |                     |                      |                      |
| I/O Mode                     | DO or pulse output                                                                                                                                                                                                                                                 |                    |                     |                     |                                                                                                             |                     |                      |                      |
| I/O Type                     | Sink                                                                                                                                                                                                                                                               |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Ethernet Interface           |                                                                                                                                                                                                                                                                    |                    |                     |                     |                                                                                                             |                     |                      |                      |
| 10/100 BaseT(X)              | 2 RJ45 ports, auto MDI/MDI-X connection                                                                                                                                                                                                                            |                    |                     |                     | 1 RJ45 port, auto MDI/MDI-X connection                                                                      |                     |                      |                      |
| Ethernet Software Features   |                                                                                                                                                                                                                                                                    |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Configuration                | Web Console (HTTP/HTTPS), Windows Utility, Telnet Console, Serial Console                                                                                                                                                                                          |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Windows Real COM Drivers     | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                            |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Linux Real TTY Drivers       | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                    |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Fixed TTY Drivers            | SCO UNIX, SCO OpenServer, SCO UnixWare 7, QNX 4.25, QNX 6.x, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                     |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Android API                  | Android 3.1.x and later                                                                                                                                                                                                                                            |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Serial Interface             |                                                                                                                                                                                                                                                                    |                    |                     |                     |                                                                                                             |                     |                      |                      |
| No. of Ports                 | 1                                                                                                                                                                                                                                                                  | 2                  | 1                   | 2                   | 1                                                                                                           | 2                   | 1                    | 2                    |
| Serial Standards             | RS-232/422/485 (4 kV serial surge protection)                                                                                                                                                                                                                      |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Baudrate                     | 50 bps to 921.6 kbps                                                                                                                                                                                                                                               |                    |                     |                     | 50 bps to 921.6 kbps (supports nonstandard baudrates)                                                       |                     |                      |                      |
| Data Bits/Stop Bits          | 5, 6, 7, 8/ 1, 1.5, 2                                                                                                                                                                                                                                              |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Parity                       | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                       |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Flow Control                 | None, RTS/CTS, XON/XOFF                                                                                                                                                                                                                                            |                    |                     |                     |                                                                                                             |                     |                      |                      |
| WLAN Interface               |                                                                                                                                                                                                                                                                    |                    |                     |                     |                                                                                                             |                     |                      |                      |
| WLAN Standards               | —                                                                                                                                                                                                                                                                  | —                  | —                   | —                   | 802.11a/b/g/n                                                                                               |                     |                      |                      |
| Transmission Distance        | —                                                                                                                                                                                                                                                                  | —                  | —                   | —                   | Up to 100 meters (in open areas)                                                                            |                     |                      |                      |
| Transmission Rate            | —                                                                                                                                                                                                                                                                  | —                  | —                   | —                   | 802.11a/g: 54 Mbps<br>802.11b: 11 Mbps<br>802.11n: 6.5 to 150 Mbps                                          |                     |                      |                      |
| Wireless Security            | —                                                                                                                                                                                                                                                                  | —                  | —                   | —                   | WEP encryption (64-bit and 128-bit), WPA/WPA2-Personal, WPA/WPA2-Enterprise (IEEE 802.1X/RADIUS, TKIP, AES) |                     |                      |                      |
| WLAN Modes                   | —                                                                                                                                                                                                                                                                  | —                  | —                   | —                   | Ad-hoc mode, Infrastructure mode                                                                            |                     |                      |                      |
| Power Parameters             |                                                                                                                                                                                                                                                                    |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Input Current                | 300 mA @ 12 VDC                                                                                                                                                                                                                                                    |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Input Voltage                | 12 to 48 VDC                                                                                                                                                                                                                                                       |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Physical Characteristics     |                                                                                                                                                                                                                                                                    |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Housing                      | Metal                                                                                                                                                                                                                                                              |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Dimensions                   | 59.6 x 101.4 x 134 mm (2.35 x 4 x 5.28 in)                                                                                                                                                                                                                         |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Weight                       | 740 g (1.63 lb)                                                                                                                                                                                                                                                    | 750 g (1.65 lb)    | 750 g (1.65 lb)     | 760 g (1.68 lb)     | 740 g (1.63 lb)                                                                                             | 760 g (1.68 lb)     | 760 g (1.68 lb)      | 780 g (1.72 lb)      |
| Installation                 | DIN-rail mounting, wall mounting (with optional kit)                                                                                                                                                                                                               |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Environmental Limits         |                                                                                                                                                                                                                                                                    |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Operating Temp.              | 0 to 55°C (32 to 131°F)                                                                                                                                                                                                                                            |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Standards and Certifications |                                                                                                                                                                                                                                                                    |                    |                     |                     |                                                                                                             |                     |                      |                      |
| EMC                          | EN 61000-6-2/-6-4                                                                                                                                                                                                                                                  |                    |                     |                     |                                                                                                             |                     |                      |                      |
| EMI                          | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                     |                    |                     |                     |                                                                                                             |                     |                      |                      |
| EMS                          | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-5 Surge: Power: 1 kV; Signal: Ethernet: 2 kV, Serial: 4 kV<br>IEC 61000-4-6 CS: 10 V<br>IEC 61000-4-8 PFMF |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Radio Frequency Safety       | —                                                                                                                                                                                                                                                                  | —                  | —                   | —                   | EN 300 328, EN 301 893                                                                                      |                     |                      |                      |
| Declaration                  | EN 60950-1, UL 60950-1                                                                                                                                                                                                                                             |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Green Product                | RoHS, CRoHS, WEEE                                                                                                                                                                                                                                                  |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Warranty                     |                                                                                                                                                                                                                                                                    |                    |                     |                     |                                                                                                             |                     |                      |                      |
| Warranty Period              | 5 years                                                                                                                                                                                                                                                            |                    |                     |                     |                                                                                                             |                     |                      |                      |

# Substation-level Device Servers



| Product Series                             | NPort S9450I-WV-T<br>NPort S9450I-HV-T                                                                                                                                                                                                                                                                  | NPort S9450I-2M-SC-WV-T<br>NPort S9450I-2M-SC-HV-T | NPort S9450I-2M-ST-WV-T<br>NPort S9450I-2M-ST-HV-T | NPort S9450I-2S-SC-WV-T<br>NPort S9450I-2S-SC-HV-T | NPort S9450I-2S-ST-WV-T<br>NPort S9450I-2S-ST-HV-T |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|----------------------------------------------------|----------------------------------------------------|----------------------------------------------------|
| Ethernet Interface                         |                                                                                                                                                                                                                                                                                                         |                                                    |                                                    |                                                    |                                                    |
| 10/100BaseT(X) Ports (RJ45 connector)      | 5                                                                                                                                                                                                                                                                                                       | 3                                                  | 3                                                  | 3                                                  | 3                                                  |
| 100BaseFX Ports (multi-mode SC connector)  | –                                                                                                                                                                                                                                                                                                       | 2                                                  | –                                                  | –                                                  | –                                                  |
| 100BaseFX Ports (multi-mode ST connector)  | –                                                                                                                                                                                                                                                                                                       | –                                                  | 2                                                  | –                                                  | –                                                  |
| 100BaseFX Ports (single-mode SC connector) | –                                                                                                                                                                                                                                                                                                       | –                                                  | –                                                  | 2                                                  | –                                                  |
| 100BaseFX Ports (single-mode ST connector) | –                                                                                                                                                                                                                                                                                                       | –                                                  | –                                                  | –                                                  | 2                                                  |
| Magnetic Isolation Protection              | 1.5 kV (built-in)                                                                                                                                                                                                                                                                                       |                                                    |                                                    |                                                    |                                                    |
| Switch Properties                          |                                                                                                                                                                                                                                                                                                         |                                                    |                                                    |                                                    |                                                    |
| IGMP Groups                                | 256                                                                                                                                                                                                                                                                                                     |                                                    |                                                    |                                                    |                                                    |
| Max. No. of VLANs                          | 64                                                                                                                                                                                                                                                                                                      |                                                    |                                                    |                                                    |                                                    |
| Priority Queues                            | 4                                                                                                                                                                                                                                                                                                       |                                                    |                                                    |                                                    |                                                    |
| VLAN ID Range                              | VID 1 to 4094                                                                                                                                                                                                                                                                                           |                                                    |                                                    |                                                    |                                                    |
| Ethernet Software Features                 |                                                                                                                                                                                                                                                                                                         |                                                    |                                                    |                                                    |                                                    |
| Configuration Options                      | Command Line Interface (CLI) through Serial/Telnet/SSH, Web Console (HTTP/HTTPS), Windows Utility                                                                                                                                                                                                       |                                                    |                                                    |                                                    |                                                    |
| Windows Real COM Drivers                   | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                                                 |                                                    |                                                    |                                                    |                                                    |
| Linux Real TTY Drivers                     | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                                         |                                                    |                                                    |                                                    |                                                    |
| Fixed TTY Drivers                          | SCO UNIX, SCO OpenServer, SCO UnixWare 7, QNX 4.25, QNX 6.x, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                                          |                                                    |                                                    |                                                    |                                                    |
| Android API                                | Android 3.1.x and later                                                                                                                                                                                                                                                                                 |                                                    |                                                    |                                                    |                                                    |
| Industrial Protocols                       | Modbus TCP Server (slave), DNP3 TCP Outstation                                                                                                                                                                                                                                                          |                                                    |                                                    |                                                    |                                                    |
| Redundancy Protocols                       | RSTP, Turbo Chain, Turbo Ring                                                                                                                                                                                                                                                                           |                                                    |                                                    |                                                    |                                                    |
| Security                                   | HTTPS/SSL, Local Account Accessibility, TACACS+, RADIUS, SSH                                                                                                                                                                                                                                            |                                                    |                                                    |                                                    |                                                    |
| Serial Interface                           |                                                                                                                                                                                                                                                                                                         |                                                    |                                                    |                                                    |                                                    |
| No. of Ports                               | 4                                                                                                                                                                                                                                                                                                       |                                                    |                                                    |                                                    |                                                    |
| Serial Standards                           | RS-232/422/485                                                                                                                                                                                                                                                                                          |                                                    |                                                    |                                                    |                                                    |
| Baudrate                                   | 50 bps to 921.6 kbps (supports nonstandard baudrates)                                                                                                                                                                                                                                                   |                                                    |                                                    |                                                    |                                                    |
| Isolation                                  | 2 kV                                                                                                                                                                                                                                                                                                    |                                                    |                                                    |                                                    |                                                    |
| Surge                                      | 4 kV                                                                                                                                                                                                                                                                                                    |                                                    |                                                    |                                                    |                                                    |
| RS-485 Data Direction Control              | ADDC® (automatic data direction control)                                                                                                                                                                                                                                                                |                                                    |                                                    |                                                    |                                                    |
| Power Parameters                           |                                                                                                                                                                                                                                                                                                         |                                                    |                                                    |                                                    |                                                    |
| Input Current                              | -WV Series: 520 mA @ 24 VDC<br>-HV Series: 80 mA @ 110 VDC                                                                                                                                                                                                                                              |                                                    |                                                    |                                                    |                                                    |
| Input Voltage                              | -WV Series: 24/48 VDC (18 to 72 VDC)<br>-HV Series: 110/220 VAC/VDC (110 to 220 VAC, 110 to 220 VDC)                                                                                                                                                                                                    |                                                    |                                                    |                                                    |                                                    |
| Physical Characteristics                   |                                                                                                                                                                                                                                                                                                         |                                                    |                                                    |                                                    |                                                    |
| Housing                                    | Metal                                                                                                                                                                                                                                                                                                   |                                                    |                                                    |                                                    |                                                    |
| Dimensions                                 | 80 x 160 x 109 mm (3.15 x 6.30 x 4.29 in)                                                                                                                                                                                                                                                               |                                                    |                                                    |                                                    |                                                    |
| Weight                                     | Product only: 2,540 g (5.60 lb)                                                                                                                                                                                                                                                                         |                                                    |                                                    |                                                    |                                                    |
| Installation                               | DIN-rail mounting, wall mounting (with optional kit)                                                                                                                                                                                                                                                    |                                                    |                                                    |                                                    |                                                    |
| Environmental Limits                       |                                                                                                                                                                                                                                                                                                         |                                                    |                                                    |                                                    |                                                    |
| Operating Temperature                      | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                                                                              |                                                    |                                                    |                                                    |                                                    |
| Standards and Certifications               |                                                                                                                                                                                                                                                                                                         |                                                    |                                                    |                                                    |                                                    |
| EMC                                        | EN 61000-6-2/-6-4                                                                                                                                                                                                                                                                                       |                                                    |                                                    |                                                    |                                                    |
| EMI                                        | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                                          |                                                    |                                                    |                                                    |                                                    |
| EMS                                        | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV<br>IEC 61000-4-5 Surge: Power: 6 kV; Signal: 4 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |                                                    |                                                    |                                                    |                                                    |
| Power Substation                           | IEC 61850-3, IEEE 1613                                                                                                                                                                                                                                                                                  |                                                    |                                                    |                                                    |                                                    |
| Hazardous Locations                        | UL/cUL Class I Division 2 Groups A/B/C/D                                                                                                                                                                                                                                                                |                                                    |                                                    |                                                    |                                                    |
| Safety                                     | EN 61010-2-201, UL 61010-2-201                                                                                                                                                                                                                                                                          |                                                    |                                                    |                                                    |                                                    |
| Declaration                                |                                                                                                                                                                                                                                                                                                         |                                                    |                                                    |                                                    |                                                    |
| Green Product                              | RoHS, CRoHS, WEEE                                                                                                                                                                                                                                                                                       |                                                    |                                                    |                                                    |                                                    |
| Warranty                                   |                                                                                                                                                                                                                                                                                                         |                                                    |                                                    |                                                    |                                                    |
| Warranty Period                            | 5 years                                                                                                                                                                                                                                                                                                 |                                                    |                                                    |                                                    |                                                    |

# Substation-level Device Servers



| Product Series                             | NPort S9650I-8-2HV-E-T (-16)                                                                                                                                                                                                                                                                            | NPort S9650I-8-2HV-MSC-T (-16) | NPort S9650I-8-2HV-SSC-T (-16) | NPort S9650I-8B-2HV-IRIG-T (-16B) | NPort S9650I-8F-2HV-E-T (-16F)   | NPort S9650I-8F-2HV-MSC-T (-16F) | NPort S9650I-8F-2HV-SSC-T (-16F) |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------|-----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Ethernet Interface                         |                                                                                                                                                                                                                                                                                                         |                                |                                |                                   |                                  |                                  |                                  |
| 10/100BaseT(X) Ports (RJ45 connector)      | 4                                                                                                                                                                                                                                                                                                       | 2                              | 2                              | 2                                 | 4                                | 2                                | 2                                |
| 100BaseFX Ports (multi-mode SC connector)  | –                                                                                                                                                                                                                                                                                                       | 2                              | –                              | –                                 | –                                | 2                                | –                                |
| 100BaseFX Ports (single-mode SC connector) | –                                                                                                                                                                                                                                                                                                       | –                              | 2                              | –                                 | –                                | –                                | 2                                |
| Magnetic Isolation Protection              | 1.5 kV (built-in)                                                                                                                                                                                                                                                                                       |                                |                                |                                   |                                  |                                  |                                  |
| Ethernet Software Features                 |                                                                                                                                                                                                                                                                                                         |                                |                                |                                   |                                  |                                  |                                  |
| Configuration Options                      | Command Line Interface (CLI) through Serial/Telnet/SSH, Web Console (HTTP/HTTPS), Windows Utility                                                                                                                                                                                                       |                                |                                |                                   |                                  |                                  |                                  |
| Windows Real COM Drivers                   | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                                                 |                                |                                |                                   |                                  |                                  |                                  |
| Linux Real TTY Drivers                     | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                                         |                                |                                |                                   |                                  |                                  |                                  |
| Fixed TTY Drivers                          | SCO UNIX, SCO OpenServer, SCO UnixWare 7, QNX 4.25, QNX 6.x, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                                          |                                |                                |                                   |                                  |                                  |                                  |
| Android API                                | Android 3.1.x and later                                                                                                                                                                                                                                                                                 |                                |                                |                                   |                                  |                                  |                                  |
| Industrial Protocols                       | Modbus TCP Server (slave), DNP3 TCP Outstation                                                                                                                                                                                                                                                          |                                |                                |                                   |                                  |                                  |                                  |
| Time Management                            | NTP Server/Client, SNTP, IEEE 1588v2 PTP (hardware-based), IRIG-B                                                                                                                                                                                                                                       |                                |                                |                                   |                                  |                                  |                                  |
| Redundancy Protocols                       | RSTP, Turbo Chain, Turbo Ring                                                                                                                                                                                                                                                                           |                                |                                |                                   |                                  |                                  |                                  |
| Security                                   | HTTPS/SSL, Local Account Accessibility, TACACS+, RADIUS, SSH                                                                                                                                                                                                                                            |                                |                                |                                   |                                  |                                  |                                  |
| IRIG-B Interface                           |                                                                                                                                                                                                                                                                                                         |                                |                                |                                   |                                  |                                  |                                  |
| PWM/PPS Output, BNC Connector              | –                                                                                                                                                                                                                                                                                                       | –                              | –                              | 1                                 | –                                | –                                | –                                |
| PWM Input, BNC Connector                   | –                                                                                                                                                                                                                                                                                                       | –                              | –                              | 1                                 | –                                | –                                | –                                |
| PWM/PPS Output, DB9 Female                 | –                                                                                                                                                                                                                                                                                                       | –                              | –                              | -8B Series: 8<br>-16B Series: 16  | –                                | –                                | –                                |
| Serial Interface                           |                                                                                                                                                                                                                                                                                                         |                                |                                |                                   |                                  |                                  |                                  |
| Connector                                  | DB9 male                                                                                                                                                                                                                                                                                                |                                |                                | DB9 female                        | Multi-mode fiber ST connector    |                                  |                                  |
| No. of Ports                               | -8 Series: 8<br>-16 Series: 16                                                                                                                                                                                                                                                                          |                                |                                | -8B Series: 8<br>-16B Series: 16  | -8F Series: 8<br>-16F Series: 16 |                                  |                                  |
| Serial Standards                           | RS-232/422/485                                                                                                                                                                                                                                                                                          |                                |                                |                                   |                                  |                                  |                                  |
| Baudrate                                   | 50 bps to 921.6 kbps (supports nonstandard baudrates)                                                                                                                                                                                                                                                   |                                |                                |                                   |                                  |                                  |                                  |
| Isolation                                  | 2 kV                                                                                                                                                                                                                                                                                                    |                                |                                |                                   |                                  |                                  |                                  |
| Surge                                      | 4 kV                                                                                                                                                                                                                                                                                                    |                                |                                |                                   |                                  |                                  |                                  |
| RS-485 Data Direction Control              | ADDC® (automatic data direction control)                                                                                                                                                                                                                                                                |                                |                                |                                   |                                  |                                  |                                  |
| Power Parameters                           |                                                                                                                                                                                                                                                                                                         |                                |                                |                                   |                                  |                                  |                                  |
| Input Current                              | 0.65 A @ 100 VAC, 0.47A @ 100 VDC                                                                                                                                                                                                                                                                       |                                |                                |                                   |                                  |                                  |                                  |
| Input Voltage                              | 110/220 VAC/VDC (100 to 240 VAC, 100 to 250 VDC)                                                                                                                                                                                                                                                        |                                |                                |                                   |                                  |                                  |                                  |
| Physical Characteristics                   |                                                                                                                                                                                                                                                                                                         |                                |                                |                                   |                                  |                                  |                                  |
| Housing                                    | Metal                                                                                                                                                                                                                                                                                                   |                                |                                |                                   |                                  |                                  |                                  |
| Dimensions                                 | 457 x 32 x 330 mm (18 x 1.25 x 12.99 in)                                                                                                                                                                                                                                                                |                                |                                |                                   |                                  |                                  |                                  |
| Weight                                     | Product only: 5,150 g (11.35 lb)                                                                                                                                                                                                                                                                        |                                |                                |                                   |                                  |                                  |                                  |
| Installation                               | 19-inch rack mounting                                                                                                                                                                                                                                                                                   |                                |                                |                                   |                                  |                                  |                                  |
| Environmental Limits                       |                                                                                                                                                                                                                                                                                                         |                                |                                |                                   |                                  |                                  |                                  |
| Operating Temp.                            | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                                                                              |                                |                                |                                   |                                  |                                  |                                  |
| Standards and Certifications               |                                                                                                                                                                                                                                                                                                         |                                |                                |                                   |                                  |                                  |                                  |
| EMC                                        | EN 61000-6-2/-6-4                                                                                                                                                                                                                                                                                       |                                |                                |                                   |                                  |                                  |                                  |
| EMI                                        | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                                          |                                |                                |                                   |                                  |                                  |                                  |
| EMS                                        | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV<br>IEC 61000-4-5 Surge: Power: 6 kV; Signal: 4 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |                                |                                |                                   |                                  |                                  |                                  |
| Power Substation Safety                    | IEC 61850-3, IEEE 1613<br>EN 61010-2-201, UL 61010-2-201                                                                                                                                                                                                                                                |                                |                                |                                   |                                  |                                  |                                  |
| Declaration                                |                                                                                                                                                                                                                                                                                                         |                                |                                |                                   |                                  |                                  |                                  |
| Green Product                              | RoHS, CRoHS, WEEE                                                                                                                                                                                                                                                                                       |                                |                                |                                   |                                  |                                  |                                  |
| Warranty                                   |                                                                                                                                                                                                                                                                                                         |                                |                                |                                   |                                  |                                  |                                  |
| Warranty Period                            | 5 years                                                                                                                                                                                                                                                                                                 |                                |                                |                                   |                                  |                                  |                                  |

# Railway Device Servers



| Product Series                                               | NPort 5150AI-M12 (-T) (-CT)                                                                                                                                                                                                                                                       | NPort 5250AI-M12 (-T) (-CT) | NPort 5450AI-M12 (-T) (-CT) |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------|
| Ethernet Interface                                           |                                                                                                                                                                                                                                                                                   |                             |                             |
| 10/100BaseT(X) Ports<br>(M12 D-coded 4-pin female connector) | 1                                                                                                                                                                                                                                                                                 |                             |                             |
| Ethernet Software Features                                   |                                                                                                                                                                                                                                                                                   |                             |                             |
| Configuration Options                                        | Web Console (HTTP/HTTPS), Windows Utility, Telnet Console                                                                                                                                                                                                                         |                             |                             |
| Management                                                   | ARP, BOOTP, DHCP Client, DNS, HTTP, HTTPS, IPv4, LLDP, SMTP, SNMPv1/v2c, TCP/IP, Telnet, UDP, ICMP                                                                                                                                                                                |                             |                             |
| Windows Real COM Drivers                                     | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                           |                             |                             |
| Fixed TTY Drivers                                            | SCO UNIX, SCO OpenServer, SCO UnixWare 7, QNX 4.25, QNX 6.x, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                    |                             |                             |
| Linux Real TTY Drivers                                       | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                   |                             |                             |
| Android API                                                  | Android 3.1.x and later                                                                                                                                                                                                                                                           |                             |                             |
| Serial Interface                                             |                                                                                                                                                                                                                                                                                   |                             |                             |
| No. of Ports                                                 | 1                                                                                                                                                                                                                                                                                 | 2                           | 4                           |
| Serial Standards                                             | RS-232/422/485                                                                                                                                                                                                                                                                    |                             |                             |
| Baudrate                                                     | Supports standard baudrates (unit=bps): 50, 75, 110, 134, 150, 300, 600, 1200, 1800, 2400, 4800, 7200, 9600, 19200, 38400, 57600, 115200, 230.4k, 460.8k, 921.6k                                                                                                                  |                             |                             |
| Data Bits                                                    | 5, 6, 7, 8                                                                                                                                                                                                                                                                        |                             |                             |
| Stop Bits                                                    | 1, 1.5, 2                                                                                                                                                                                                                                                                         |                             |                             |
| Parity                                                       | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                      |                             |                             |
| Flow Control                                                 | RTS/CTS (RS-232 only), DTR/DSR (RS-232 only), XON/XOFF                                                                                                                                                                                                                            |                             |                             |
| RS-485 Data Direction Control                                | ADDC® (automatic data direction control)                                                                                                                                                                                                                                          |                             |                             |
| Power Parameters                                             |                                                                                                                                                                                                                                                                                   |                             |                             |
| Input Current                                                | 310 mA @ 12 VDC                                                                                                                                                                                                                                                                   | 360 mA @ 12 VDC             | 440 mA @ 12 VDC             |
| Input Voltage                                                | 12 to 48 VDC                                                                                                                                                                                                                                                                      |                             |                             |
| Power Connector                                              | M12 A-coded 5-pin male connector                                                                                                                                                                                                                                                  |                             |                             |
| Physical Characteristics                                     |                                                                                                                                                                                                                                                                                   |                             |                             |
| Dimensions<br>(without ears or antenna)                      | 80 x 216.6 x 52.9 mm (3.15 x 8.53 x 2.08 in)                                                                                                                                                                                                                                      |                             |                             |
| Weight                                                       | 686 g (1.51 lb)                                                                                                                                                                                                                                                                   |                             |                             |
| Environmental Limits                                         |                                                                                                                                                                                                                                                                                   |                             |                             |
| Operating Temperature                                        | Standard Models: -25 to 55°C (-13 to 131°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                                                      |                             |                             |
| Conformal Coating                                            | NPort 5000AI-M12-CT Series                                                                                                                                                                                                                                                        |                             |                             |
| Standards and Certifications                                 |                                                                                                                                                                                                                                                                                   |                             |                             |
| EMC                                                          | EN 55032/24                                                                                                                                                                                                                                                                       |                             |                             |
| EMI                                                          | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                    |                             |                             |
| EMS                                                          | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 0.5 kV; Signal: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8 PFMF |                             |                             |
| Railway                                                      | EN 50121-4                                                                                                                                                                                                                                                                        |                             |                             |
| Safety                                                       | UL 60950-1                                                                                                                                                                                                                                                                        |                             |                             |
| Declaration                                                  |                                                                                                                                                                                                                                                                                   |                             |                             |
| Green Product                                                | RoHS, CRoHS, WEEE                                                                                                                                                                                                                                                                 |                             |                             |
| Warranty                                                     |                                                                                                                                                                                                                                                                                   |                             |                             |
| Warranty Period                                              | 5 years                                                                                                                                                                                                                                                                           |                             |                             |

# General-purpose Device Servers



| Product Series                        | NPort 5110 (-T)                                                                                                                                                                                                                                                                       | NPort 5130                                          | NPort 5150                                                          | NPort 5110A (-T)                                                                                                                                                                                                                                                                                         | NPort 5130A (-T) | NPort 5150A (-T)           | NPort P5150A (-T)                                                                                                                                                                                                                                                                                   |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet Interface                    |                                                                                                                                                                                                                                                                                       |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| 10/100BaseT(X) Ports (RJ45 connector) | 1                                                                                                                                                                                                                                                                                     |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Magnetic Isolation Protection         | 1.5 kV (built-in)                                                                                                                                                                                                                                                                     |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Standards                             | —                                                                                                                                                                                                                                                                                     | —                                                   | —                                                                   | —                                                                                                                                                                                                                                                                                                        | —                | —                          | PoE (IEEE 802.3af)                                                                                                                                                                                                                                                                                  |
| Ethernet Software Features            |                                                                                                                                                                                                                                                                                       |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Configuration Options                 | Web Console (HTTP), Windows Utility, Telnet Console, Serial Console                                                                                                                                                                                                                   | Web Console (HTTP), Windows Utility, Telnet Console | Web Console (HTTP), Windows Utility, Telnet Console, Serial Console | Web Console (HTTP/HTTPS), Windows Utility, Telnet Console, Serial Console                                                                                                                                                                                                                                |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Management                            | DHCP Client, IPv4, SNMP, SMTP, SNMPv1, Telnet, DNS, HTTP, ARP, BOOTP, UDP, TCP/IP, ICMP                                                                                                                                                                                               |                                                     |                                                                     | DHCP Client, IPv4, LLDP, SMTP, SNMPv1/v2c, Telnet, DNS, HTTP, HTTPS, ARP, BOOTP, UDP, TCP/IP, ICMP                                                                                                                                                                                                       |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Windows Real COM Drivers              | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                               |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Fixed TTY Drivers                     | SCO UNIX, SCO OpenServer, SCO UnixWare 7, QNX 4.25, QNX 6.x, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                        |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Linux Real TTY Drivers                | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                       |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Android API                           | Android 3.1.x and later                                                                                                                                                                                                                                                               |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Serial Interface                      |                                                                                                                                                                                                                                                                                       |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Serial Standards                      | RS-232                                                                                                                                                                                                                                                                                | RS-422/485                                          | RS-232/422/485                                                      | RS-232                                                                                                                                                                                                                                                                                                   | RS-422/485       | RS-232/422/485             |                                                                                                                                                                                                                                                                                                     |
| Baudrate                              | 110 bps to 230.4 kbps                                                                                                                                                                                                                                                                 | 50 bps to 921.6 kbps                                |                                                                     | Supports standard baudrates (unit=bps): 50, 75, 110, 134, 150, 300, 600, 1200, 1800, 2400, 4800, 7200, 9600, 19200, 38400, 57600, 115200, 230.4k, 460.8k, 921.6k                                                                                                                                         |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Data Bits                             | 5, 6, 7, 8                                                                                                                                                                                                                                                                            |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Stop Bits                             | 1, 1.5, 2                                                                                                                                                                                                                                                                             |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Parity                                | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                          |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Flow Control                          | RTS/CTS, DTR/DSR, XON/XOFF                                                                                                                                                                                                                                                            | XON/XOFF                                            | RTS/CTS, DTR/DSR, XON/XOFF                                          |                                                                                                                                                                                                                                                                                                          | XON/XOFF         | RTS/CTS, DTR/DSR, XON/XOFF |                                                                                                                                                                                                                                                                                                     |
| Power Parameters                      |                                                                                                                                                                                                                                                                                       |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Input Current                         | 128 mA @ 12 VDC                                                                                                                                                                                                                                                                       | 200 mA @ 12 VDC                                     |                                                                     | 82.5 mA @ 12 VDC                                                                                                                                                                                                                                                                                         | 89.1 mA @ 12 VDC | 92.4 mA @ 12 VDC           | DC Jack I/P: 125 mA @ 12 VDC<br>PoE I/P: 180 mA @ 48 VDC                                                                                                                                                                                                                                            |
| Input Voltage                         | 12 to 48 VDC                                                                                                                                                                                                                                                                          |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            | 12 to 48 VDC (supplied by power adapter), 48 VDC (supplied by PoE)                                                                                                                                                                                                                                  |
| Physical Characteristics              |                                                                                                                                                                                                                                                                                       |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Dimensions (without ears)             | 52 x 80 x 22 mm (2.05 x 3.15 x 0.87 in)                                                                                                                                                                                                                                               |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            | 77 x 111 x 26 mm (3.03 x 4.37 x 1.02 in)                                                                                                                                                                                                                                                            |
| Weight                                | 340 g (0.75 lb)                                                                                                                                                                                                                                                                       |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            | 300 g (0.66 lb)                                                                                                                                                                                                                                                                                     |
| Installation                          | Desktop, DIN-rail mounting (with optional kit), wall mounting                                                                                                                                                                                                                         |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Environmental Limits                  |                                                                                                                                                                                                                                                                                       |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Operating Temperature                 | Standard Models: 0 to 55°C (32 to 131°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                                                             |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            | Standard Models: 0 to 60°C (32 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                                                                           |
| Standards and Certifications          |                                                                                                                                                                                                                                                                                       |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| EMC                                   | EN 55032/24                                                                                                                                                                                                                                                                           |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                        |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| EMS                                   | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 1 kV<br>IEC 61000-4-5 Surge: Power: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |                                                     |                                                                     | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 0.5 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |                  |                            | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |
| Safety                                | UL 60950-1                                                                                                                                                                                                                                                                            |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Warranty                              |                                                                                                                                                                                                                                                                                       |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |
| Warranty Period                       | 5 years                                                                                                                                                                                                                                                                               |                                                     |                                                                     |                                                                                                                                                                                                                                                                                                          |                  |                            |                                                                                                                                                                                                                                                                                                     |



# General-purpose Device Servers



| Product Series                        | NPort 5210 (-T)                                                                                                                                                                                                                                                                         | NPort 5230 (-T) | NPort 5232 (-T)                  | NPort 5232I (-T)                           | NPort 5210A (-T)                                                                                                                                                                                                                                                                                        | NPort 5230A (-T)     | NPort 5250A (-T)           |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------|
| Ethernet Interface                    |                                                                                                                                                                                                                                                                                         |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| 10/100BaseT(X) Ports (RJ45 connector) | 1                                                                                                                                                                                                                                                                                       |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Magnetic Isolation Protection         | 1.5 kV (built-in)                                                                                                                                                                                                                                                                       |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Ethernet Software Features            |                                                                                                                                                                                                                                                                                         |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Configuration Options                 | Web Console (HTTP), Windows Utility, Telnet Console, Serial Console                                                                                                                                                                                                                     |                 |                                  |                                            | Web Console (HTTP/HTTPS), Windows Utility, Telnet Console, Serial Console                                                                                                                                                                                                                               |                      |                            |
| Management                            | DHCP Client, IPv4, SNMP, SMTP, SNMPv1, DNS, HTTP, ARP, BOOTP, UDP, TCP/IP, Telnet, ICMP                                                                                                                                                                                                 |                 |                                  |                                            | DHCP Client, IPv4, LLDP, SMTP, SNMPv1/v2c, Telnet, DNS, HTTP, HTTPS, ARP, BOOTP, UDP, TCP/IP, ICMP                                                                                                                                                                                                      |                      |                            |
| Windows Real COM Drivers              | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                                 |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Fixed TTY Drivers                     | SCO UNIX, SCO OpenServer, SCO UnixWare 7, QNX 4.25, QNX 6.x, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                          |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Linux Real TTY Drivers                | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                         |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Android API                           | Android 3.1.x and later                                                                                                                                                                                                                                                                 |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Serial Interface                      |                                                                                                                                                                                                                                                                                         |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Connector                             | 8-pin RJ45                                                                                                                                                                                                                                                                              | Terminal block  |                                  |                                            | DB9 male                                                                                                                                                                                                                                                                                                | 5-pin terminal block | DB9 male                   |
| No. of Ports                          | 2                                                                                                                                                                                                                                                                                       |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Serial Standards                      | RS-232                                                                                                                                                                                                                                                                                  | RS-232/422/485  | RS-422/485                       |                                            | RS-232                                                                                                                                                                                                                                                                                                  | RS-422/485           | RS-232/422/485             |
| Baudrate                              | Supports standard baudrates (unit=bps): 110, 134, 150, 300, 600, 1200, 1800, 2400, 4800, 7200, 9600, 19200, 38400, 57600, 115200, 2304000                                                                                                                                               |                 |                                  |                                            | Supports standard baudrates (unit=bps): 50, 75, 110, 134, 150, 300, 600, 1200, 1800, 2400, 4800, 7200, 9600, 19200, 38400, 57600, 115200, 230.4k, 460.8k, 921.6k                                                                                                                                        |                      |                            |
| Data Bits                             | 5, 6, 7, 8                                                                                                                                                                                                                                                                              |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Stop Bits                             | 1, 1.5, 2                                                                                                                                                                                                                                                                               |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Parity                                | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                            |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Flow Control                          | RTS/CTS, DTR/DSR, XON/XOFF                                                                                                                                                                                                                                                              |                 | XON/XOFF                         |                                            | RTS/CTS, DTR/DSR, XON/XOFF                                                                                                                                                                                                                                                                              | XON/XOFF             | RTS/CTS, DTR/DSR, XON/XOFF |
| RS-485 Data Direction Control         | ADDC® (automatic data direction control)                                                                                                                                                                                                                                                |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Isolation                             | —                                                                                                                                                                                                                                                                                       | —               | —                                | 2 kV                                       | —                                                                                                                                                                                                                                                                                                       | —                    | —                          |
| Power Parameters                      |                                                                                                                                                                                                                                                                                         |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Input Current                         | 325 mA @ 12 VDC                                                                                                                                                                                                                                                                         |                 | 280 mA @ 12 VDC, 365 mA @ 12 VDC |                                            | 119 mA @ 12 VDC                                                                                                                                                                                                                                                                                         |                      |                            |
| Input Voltage                         | 12 to 48 VDC                                                                                                                                                                                                                                                                            |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| No. of Power Inputs                   | 1                                                                                                                                                                                                                                                                                       |                 |                                  |                                            | 2                                                                                                                                                                                                                                                                                                       |                      |                            |
| Power Connector                       | 1 removable 3-contact terminal block(s)                                                                                                                                                                                                                                                 |                 |                                  |                                            | 1 removable 3-contact terminal block(s), power input jack                                                                                                                                                                                                                                               |                      |                            |
| Physical Characteristics              |                                                                                                                                                                                                                                                                                         |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Housing                               | Metal                                                                                                                                                                                                                                                                                   |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Dimensions (without ears)             | 67 x 100.4 x 22 mm (2.64 x 3.95 x 0.87 in)                                                                                                                                                                                                                                              |                 |                                  | 67 x 100.4 x 35 mm (2.64 x 3.95 x 1.38 in) | 77 x 111 x 26 mm (3.03 x 4.37 x 1.02 in)                                                                                                                                                                                                                                                                |                      |                            |
| Weight                                | 340 g (0.75 lb)                                                                                                                                                                                                                                                                         | 360 g (0.79 lb) |                                  | 380 g (0.84 lb)                            | 340 g (0.75 lb)                                                                                                                                                                                                                                                                                         |                      |                            |
| Installation                          | Desktop, DIN-rail mounting (with optional kit), wall mounting                                                                                                                                                                                                                           |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Environmental Limits                  |                                                                                                                                                                                                                                                                                         |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Operating Temperature                 | Standard Models: 0 to 55°C (32 to 131°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                                                               |                 |                                  |                                            | Standard Models: 0 to 60°C (32 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                                                                               |                      |                            |
| Standards and Certifications          |                                                                                                                                                                                                                                                                                         |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| EMC                                   | EN 55032/24                                                                                                                                                                                                                                                                             |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                          |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| EMS                                   | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |                 |                                  |                                            | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |                      |                            |
| Safety                                | UL 60950-1                                                                                                                                                                                                                                                                              |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Medical                               | EN 60601-1-2 Class B, EN 55011                                                                                                                                                                                                                                                          | —               | —                                | —                                          | —                                                                                                                                                                                                                                                                                                       | —                    | —                          |
| Maritime                              | —                                                                                                                                                                                                                                                                                       | DNV GL          |                                  |                                            | —                                                                                                                                                                                                                                                                                                       | —                    | —                          |
| Declaration                           |                                                                                                                                                                                                                                                                                         |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Green Product                         | RoHS, CrRoHS, WEEE                                                                                                                                                                                                                                                                      |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Warranty                              |                                                                                                                                                                                                                                                                                         |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |
| Warranty Period                       | 5 years                                                                                                                                                                                                                                                                                 |                 |                                  |                                            |                                                                                                                                                                                                                                                                                                         |                      |                            |

# General-purpose Device Servers



| Product Series                        | NPort 5410                                                                                                                                                                                                                                                                                            |                 | NPort 5430      | NPort 5430I | NPort 5450 (-T)                     | NPort 5450I (-T) |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|-------------|-------------------------------------|------------------|
| Ethernet Interface                    |                                                                                                                                                                                                                                                                                                       |                 |                 |             |                                     |                  |
| 10/100BaseT(X) Ports (RJ45 connector) | 1                                                                                                                                                                                                                                                                                                     |                 |                 |             |                                     |                  |
| Magnetic Isolation Protection         | 1.5 kV (built-in)                                                                                                                                                                                                                                                                                     |                 |                 |             |                                     |                  |
| Ethernet Software Features            |                                                                                                                                                                                                                                                                                                       |                 |                 |             |                                     |                  |
| Configuration Options                 | Web Console (HTTP/HTTPS), Windows Utility, Telnet Console                                                                                                                                                                                                                                             |                 |                 |             |                                     |                  |
| Management                            | ARP, BOOTP, DHCP Client, DNS, HTTP, HTTPS, IPv4, LLDP, SMTP, SNMPv1/v2c, TCP/IP, Telnet, UDP, RTelnet, ICMP                                                                                                                                                                                           |                 |                 |             |                                     |                  |
| Windows Real COM Drivers              | Windows 95/98/ME/NT/2000/XP/Vista/7/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                                                 |                 |                 |             |                                     |                  |
| Fixed TTY Drivers                     | SCO UNIX, SCO OpenServer, SCO UnixWare 7, QNX 4.25, QNX 6.x, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                                        |                 |                 |             |                                     |                  |
| Linux Real TTY Drivers                | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                                       |                 |                 |             |                                     |                  |
| Android API                           | Android 3.1.x and later                                                                                                                                                                                                                                                                               |                 |                 |             |                                     |                  |
| Serial Interface                      |                                                                                                                                                                                                                                                                                                       |                 |                 |             |                                     |                  |
| Connector                             | DB9 male                                                                                                                                                                                                                                                                                              | Terminal block  |                 |             | DB9 male                            |                  |
| No. of Ports                          | 4                                                                                                                                                                                                                                                                                                     |                 |                 |             |                                     |                  |
| Serial Standards                      | RS-232                                                                                                                                                                                                                                                                                                | RS-422/485      |                 |             | RS-232/422/485                      |                  |
| Baudrate                              | Supports standard baudrates (unit=bps): 50, 75, 110, 134, 150, 300, 600, 1200, 1800, 2400, 4800, 7200, 9600, 19200, 38400, 57600, 115200, 230.4k, 460.8k, 921.6k                                                                                                                                      |                 |                 |             |                                     |                  |
| Data Bits                             | 5, 6, 7, 8                                                                                                                                                                                                                                                                                            |                 |                 |             |                                     |                  |
| Stop Bits                             | 1, 1.5, 2                                                                                                                                                                                                                                                                                             |                 |                 |             |                                     |                  |
| Parity                                | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                                          |                 |                 |             |                                     |                  |
| Flow Control                          | RTS/CTS, DTR/DSR, XON/XOFF                                                                                                                                                                                                                                                                            | XON/XOFF        |                 |             | RTS/CTS, DTR/DSR, XON/XOFF          |                  |
| Isolation                             | —                                                                                                                                                                                                                                                                                                     | —               | 2 kV            |             | —                                   | 2 kV             |
| RS-485 Data Direction Control         | ADDC® (automatic data direction control)                                                                                                                                                                                                                                                              |                 |                 |             |                                     |                  |
| Power Parameters                      |                                                                                                                                                                                                                                                                                                       |                 |                 |             |                                     |                  |
| Input Current                         | 350 mA @ 12 VDC                                                                                                                                                                                                                                                                                       | 320 mA @ 12 VDC | 530 mA @ 12 VDC |             | 350 mA @ 12 VDC                     | 554 mA @ 12 VDC  |
| Input Voltage                         | 12 to 48 VDC                                                                                                                                                                                                                                                                                          |                 |                 |             |                                     |                  |
| No. of Power Inputs                   | 2                                                                                                                                                                                                                                                                                                     |                 |                 |             |                                     |                  |
| Power Connector                       | 1 removable 3-contact terminal block(s), power input jack                                                                                                                                                                                                                                             |                 |                 |             |                                     |                  |
| Physical Characteristics              |                                                                                                                                                                                                                                                                                                       |                 |                 |             |                                     |                  |
| Housing                               | Metal                                                                                                                                                                                                                                                                                                 |                 |                 |             |                                     |                  |
| Dimensions (without ears)             | 158 x 103 x 33 mm (6.22 x 4.06 x 1.30 in)                                                                                                                                                                                                                                                             |                 |                 |             |                                     |                  |
| Weight                                | 740 g (1.63 lb)                                                                                                                                                                                                                                                                                       |                 |                 |             |                                     |                  |
| Interactive Interface                 | LCD panel display (standard temp. models only)<br>Push buttons for configuration (standard temp. models only)                                                                                                                                                                                         |                 |                 |             |                                     |                  |
| Installation                          | Desktop, DIN-rail mounting (with optional kit), wall mounting                                                                                                                                                                                                                                         |                 |                 |             |                                     |                  |
| Environmental Limits                  |                                                                                                                                                                                                                                                                                                       |                 |                 |             |                                     |                  |
| Operating Temperature                 | Standard Models: 0 to 55°C (32 to 131°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                                                                             |                 |                 |             |                                     |                  |
| Standards and Certifications          |                                                                                                                                                                                                                                                                                                       |                 |                 |             |                                     |                  |
| EMC                                   | EN 55032/24                                                                                                                                                                                                                                                                                           |                 |                 |             |                                     |                  |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                                        |                 |                 |             |                                     |                  |
| EMS                                   | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 1 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |                 |                 |             |                                     |                  |
| Maritime                              | DNV GL                                                                                                                                                                                                                                                                                                |                 |                 |             | DNV GL (standard temp. models only) |                  |
| Medical                               | EN 60601-1-2 Class B, EN 55011                                                                                                                                                                                                                                                                        | —               | —               |             | EN 60601-1-2 Class B, EN 55011      |                  |
| Safety                                | UL 60950-1                                                                                                                                                                                                                                                                                            |                 |                 |             |                                     |                  |
| Warranty                              |                                                                                                                                                                                                                                                                                                       |                 |                 |             |                                     |                  |
| Warranty Period                       | 5 years                                                                                                                                                                                                                                                                                               |                 |                 |             |                                     |                  |

# General-purpose Device Servers



| Product Series                        | NPort 5610-8                                                                                                                                                                                                                                                                                            | NPort 5610-8-48V                      | NPort 5630-8                | NPort 5610-16     | NPort 5610-16-48V                               | NPort 5630-16               |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------|-------------------|-------------------------------------------------|-----------------------------|
| Ethernet Interface                    |                                                                                                                                                                                                                                                                                                         |                                       |                             |                   |                                                 |                             |
| 10/100BaseT(X) Ports (RJ45 connector) | 1                                                                                                                                                                                                                                                                                                       |                                       |                             |                   |                                                 |                             |
| Magnetic Isolation Protection         | 1.5 kV (built-in)                                                                                                                                                                                                                                                                                       |                                       |                             |                   |                                                 |                             |
| Ethernet Software Features            |                                                                                                                                                                                                                                                                                                         |                                       |                             |                   |                                                 |                             |
| Configuration Options                 | Web Console (HTTP/HTTPS), Windows Utility, Telnet Console                                                                                                                                                                                                                                               |                                       |                             |                   |                                                 |                             |
| Management                            | ARP, BOOTP, DHCP Client, DNS, HTTP, HTTPS, IPv4, LLDP, SMTP, SNMPv1/v2c, TCP/IP, Telnet, UDP, ICMP, RTelnet, RFC2217, PPP, SLIP                                                                                                                                                                         |                                       |                             |                   |                                                 |                             |
| Windows Real COM Drivers              | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                                                 |                                       |                             |                   |                                                 |                             |
| Fixed TTY Drivers                     | SCO UNIX, SCO OpenServer, SCO UnixWare 7, QNX 4.25, QNX 6.x, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                                          |                                       |                             |                   |                                                 |                             |
| Linux Real TTY Drivers                | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                                         |                                       |                             |                   |                                                 |                             |
| Android API                           | Android 3.1.x and later                                                                                                                                                                                                                                                                                 |                                       |                             |                   |                                                 |                             |
| Serial Interface                      |                                                                                                                                                                                                                                                                                                         |                                       |                             |                   |                                                 |                             |
| Connector                             | 8-pin RJ45                                                                                                                                                                                                                                                                                              |                                       |                             |                   |                                                 |                             |
| No. of Ports                          | 8                                                                                                                                                                                                                                                                                                       |                                       |                             | 16                |                                                 |                             |
| Serial Standards                      | RS-232                                                                                                                                                                                                                                                                                                  |                                       | RS-422/485                  |                   | RS-232 RS-422/485                               |                             |
| Baudrate                              | Supports standard baudrates (unit=bps): 50, 75, 110, 134, 150, 300, 600, 1200, 1800, 2400, 4800, 7200, 9600, 19200, 38400, 57600, 115200, 230.4k, 460.8k, 921.6k                                                                                                                                        |                                       |                             |                   |                                                 |                             |
| Data Bits                             | 5, 6, 7, 8                                                                                                                                                                                                                                                                                              |                                       |                             |                   |                                                 |                             |
| Stop Bits                             | 1, 1.5, 2                                                                                                                                                                                                                                                                                               |                                       |                             |                   |                                                 |                             |
| Parity                                | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                                            |                                       |                             |                   |                                                 |                             |
| Flow Control                          | None, RTS/CTS, DTR/DSR, XON/XOFF                                                                                                                                                                                                                                                                        |                                       | None, XON/XOFF              |                   | None, RTS/CTS, DTR/DSR, XON/XOFF None, XON/XOFF |                             |
| RS-485 Data Direction Control         | ADDC® (automatic data direction control)                                                                                                                                                                                                                                                                |                                       |                             |                   |                                                 |                             |
| Power Parameters                      |                                                                                                                                                                                                                                                                                                         |                                       |                             |                   |                                                 |                             |
| Input Current                         | 141 mA @ 100 VAC                                                                                                                                                                                                                                                                                        | 135 mA @ 48 VDC                       | 152 mA @ 100 VAC            | 141 mA @ 100 VAC  | 135 mA @ 48 VDC                                 | 152 mA @ 100 VAC            |
| Input Voltage                         | 100 to 240 VAC, 47 to 63 Hz                                                                                                                                                                                                                                                                             | ±48 VDC, 20 to 72 VDC, -20 to -72 VDC | 100 to 240 VAC, 47 to 63 Hz |                   | ±48 VDC, 20 to 72 VDC, -20 to -72 VDC           | 100 to 240 VAC, 47 to 63 Hz |
| Physical Characteristics              |                                                                                                                                                                                                                                                                                                         |                                       |                             |                   |                                                 |                             |
| Housing                               | Metal                                                                                                                                                                                                                                                                                                   |                                       |                             |                   |                                                 |                             |
| Dimensions (without ears)             | 440 x 45 x 198 mm (17.32 x 1.77 x 7.80 in)                                                                                                                                                                                                                                                              |                                       |                             |                   |                                                 |                             |
| Weight                                | 2,290 g (5.05 lb)                                                                                                                                                                                                                                                                                       | 3,160 g (6.97 lb)                     | 2,510 g (5.53 lb)           | 2,490 g (5.49 lb) | 3,260 g (7.19 lb)                               | 2,560 g (5.64 lb)           |
| Interactive Interface                 | LCD panel display (standard temp. models only)<br>Push buttons for configuration (standard temp. models only)                                                                                                                                                                                           |                                       |                             |                   |                                                 |                             |
| Installation                          | 19-inch rack mounting                                                                                                                                                                                                                                                                                   |                                       |                             |                   |                                                 |                             |
| Environmental Limits                  |                                                                                                                                                                                                                                                                                                         |                                       |                             |                   |                                                 |                             |
| Operating Temperature                 | 0 to 60°C (32 to 140°F)                                                                                                                                                                                                                                                                                 |                                       |                             |                   |                                                 |                             |
| Standards and Certifications          |                                                                                                                                                                                                                                                                                                         |                                       |                             |                   |                                                 |                             |
| EMC                                   | EN 55032/24                                                                                                                                                                                                                                                                                             |                                       |                             |                   |                                                 |                             |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                                          |                                       |                             |                   |                                                 |                             |
| EMS                                   | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2.5 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |                                       |                             |                   |                                                 |                             |
| Medical                               | EN 60601-1-2 Class B, EN 55011                                                                                                                                                                                                                                                                          |                                       |                             |                   |                                                 |                             |
| Safety                                | UL 60950-1                                                                                                                                                                                                                                                                                              |                                       |                             |                   |                                                 |                             |
| Warranty                              |                                                                                                                                                                                                                                                                                                         |                                       |                             |                   |                                                 |                             |
| Warranty Period                       | 5 years                                                                                                                                                                                                                                                                                                 |                                       |                             |                   |                                                 |                             |

# General-purpose Device Servers



| Product Series                        | NPort 5650-8 (-T)                                                                                                                                                                                                                                                                                  | NPort 5650-16 (-T) | NPort 5650-8-M-SC       | NPort 5650-8-S-SC | NPort 5650-16-M-SC | NPort 5650-16-S-SC | NPort 5650-8-HV-T                                                                                                                                                                                                                                         | NPort 5650-16-HV-T |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------|-------------------|--------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Ethernet Interface                    |                                                                                                                                                                                                                                                                                                    |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| 10/100BaseT(X) Ports (RJ45 connector) | 1                                                                                                                                                                                                                                                                                                  |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Fiber Connector                       | —                                                                                                                                                                                                                                                                                                  | —                  | Multi-mode, SC          | Single-mode, SC   | Multi-mode, SC     | Single-mode, SC    | —                                                                                                                                                                                                                                                         | —                  |
| Magnetic Isolation Protection         | 1.5 kV (built-in)                                                                                                                                                                                                                                                                                  |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Ethernet Software Features            |                                                                                                                                                                                                                                                                                                    |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Configuration Options                 | Web Console (HTTP/HTTPS), Windows Utility, Telnet Console                                                                                                                                                                                                                                          |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Management                            | ARP, BOOTP, DHCP Client, DNS, HTTP, HTTPS, IPv4, LLDP, SMTP, SNMPv1/v2c, TCP/IP, Telnet, UDP, ICMP, RTelnet, RFC2217, PPP, SLIP                                                                                                                                                                    |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Windows Real COM Drivers              | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                                            |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Fixed TTY Drivers                     | SCO UNIX, SCO OpenServer, SCO UnixWare 7, QNX 4.25, QNX 6.x, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                                     |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Linux Real TTY Drivers                | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                                    |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Android API                           | Android 3.1.x and later                                                                                                                                                                                                                                                                            |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Serial Interface                      |                                                                                                                                                                                                                                                                                                    |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Connector                             | 8-pin RJ45                                                                                                                                                                                                                                                                                         |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| No. of Ports                          | 8                                                                                                                                                                                                                                                                                                  | 16                 | 8                       |                   | 16                 |                    | 8                                                                                                                                                                                                                                                         | 16                 |
| Serial Standards                      | RS-232/422/485                                                                                                                                                                                                                                                                                     |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Baudrate                              | Supports standard baudrates (unit=bps): 50, 75, 110, 134, 150, 300, 600, 1200, 1800, 2400, 4800, 7200, 9600, 19200, 38400, 57600, 115200, 230.4k, 460.8k, 921.6k                                                                                                                                   |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Data Bits                             | 5, 6, 7, 8                                                                                                                                                                                                                                                                                         |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Stop Bits                             | 1, 1.5, 2                                                                                                                                                                                                                                                                                          |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Parity                                | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                                       |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Flow Control                          | None, RTS/CTS, DTR/DSR, XON/XOFF                                                                                                                                                                                                                                                                   |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| RS-485 Data Direction Control         | ADDC® (automatic data direction control)                                                                                                                                                                                                                                                           |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Power Parameters                      |                                                                                                                                                                                                                                                                                                    |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Input Current                         | 158 mA @ 100 VAC                                                                                                                                                                                                                                                                                   |                    | 174 mA @ 100 VAC        | 164 mA @ 100 VAC  | 174 mA @ 100 VAC   | 164 mA @ 100 VAC   | 152 mA @ 88 VDC                                                                                                                                                                                                                                           |                    |
| Input Voltage                         | 100 to 240 VAC, 47 to 63 Hz                                                                                                                                                                                                                                                                        |                    |                         |                   |                    |                    | 88 to 300 VDC                                                                                                                                                                                                                                             |                    |
| Physical Characteristics              |                                                                                                                                                                                                                                                                                                    |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Housing                               | Metal                                                                                                                                                                                                                                                                                              |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Dimensions (without ears)             | 440 x 45 x 198 mm (17.32 x 1.77 x 7.80 in)                                                                                                                                                                                                                                                         |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Weight                                | 2,310 g (5.09 lb)                                                                                                                                                                                                                                                                                  | 2,510 g (5.53 lb)  | 2,380 g (5.25 lb)       | 2,440 g (5.38 lb) |                    | 2,500 g (5.51 lb)  | 3,720 g (8.20 lb)                                                                                                                                                                                                                                         | 3,820 g (8.42 lb)  |
| Interactive Interface                 | LCD panel display (standard temp. models only)<br>Push buttons for configuration (standard temp. models only)                                                                                                                                                                                      |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Installation                          | 19-inch rack mounting                                                                                                                                                                                                                                                                              |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Environmental Limits                  |                                                                                                                                                                                                                                                                                                    |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Operating Temperature                 | Standard Models:<br>0 to 60°C (32 to 140°F)<br>Wide Temp. Models:<br>-40 to 75°C (-40 to 167°F)                                                                                                                                                                                                    |                    | 0 to 60°C (32 to 140°F) |                   |                    |                    | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                                |                    |
| Standards and Certifications          |                                                                                                                                                                                                                                                                                                    |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| EMC                                   | EN 55032/24                                                                                                                                                                                                                                                                                        |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                                     |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| EMS                                   | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2.5 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8<br>IEC 61000-4-11 DIPs |                    |                         |                   |                    |                    | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 |                    |
| Medical                               | EN 60601-1-2 Class B, EN 55011                                                                                                                                                                                                                                                                     |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Safety                                | UL 60950-1                                                                                                                                                                                                                                                                                         |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Warranty                              |                                                                                                                                                                                                                                                                                                    |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |
| Warranty Period                       | 5 years                                                                                                                                                                                                                                                                                            |                    |                         |                   |                    |                    |                                                                                                                                                                                                                                                           |                    |

# General-purpose Device Servers



| Product Series                        | NPort 5610-8-DTL (-T)                                                                                                                                                                                                                                                                                 | NPort 5650-8-DTL (-T) | NPort 5650I-8-DTL (-T) | NPort 5610-8-DT (-T)                                                                                                                                                                                                                                                                                    | NPort 5610-8-DT-J       | NPort 5650-8-DT (-T)                                                                      | NPort 5650-8-DT-J       | NPort 5650I-8-DT (-T)                                                                     |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------------|
| Ethernet Interface                    |                                                                                                                                                                                                                                                                                                       |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| 10/100BaseT(X) Ports (RJ45 connector) | 1                                                                                                                                                                                                                                                                                                     |                       |                        | 2                                                                                                                                                                                                                                                                                                       |                         |                                                                                           |                         |                                                                                           |
| Magnetic Isolation Protection         | 1.5 kV (built-in)                                                                                                                                                                                                                                                                                     |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Ethernet Software Features            |                                                                                                                                                                                                                                                                                                       |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Configuration Options                 | Web Console (HTTP/HTTPS), Windows Utility, Telnet Console, Serial Console                                                                                                                                                                                                                             |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Management                            | DHCP Client, HTTP, HTTPS, IPv4, LLDP, SMTP, SNMPv1/v2c, Telnet, ARP, RTelnet, DNS, BOOTP, UDP, TCP/IP, ICMP                                                                                                                                                                                           |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Windows Real COM Drivers              | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                                               |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Fixed TTY Drivers                     | SCO UNIX, SCO OpenServer, SCO UnixWare 7, QNX 4.25, QNX 6.x, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                                        |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Linux Real TTY Drivers                | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                                       |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Android API                           | Android 3.1.x and later                                                                                                                                                                                                                                                                               |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Serial Interface                      |                                                                                                                                                                                                                                                                                                       |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Connector                             | DB9 male                                                                                                                                                                                                                                                                                              |                       |                        |                                                                                                                                                                                                                                                                                                         | 8-pin RJ45              | DB9 male                                                                                  | 8-pin RJ45              | DB9 male                                                                                  |
| No. of Ports                          | 8                                                                                                                                                                                                                                                                                                     |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Serial Standards                      | RS-232                                                                                                                                                                                                                                                                                                | RS-232/422/485        |                        | RS-232                                                                                                                                                                                                                                                                                                  |                         | RS-232/422/485                                                                            |                         |                                                                                           |
| Baudrate                              | Supports standard baudrates (unit=bps): 50, 75, 110, 134, 150, 300, 600, 1200, 1800, 2400, 4800, 7200, 9600, 19200, 38400, 57600, 115200, 230.4k, 460.8k, 921.6k                                                                                                                                      |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Data Bits                             | 5, 6, 7, 8                                                                                                                                                                                                                                                                                            |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Stop Bits                             | 1, 1.5, 2                                                                                                                                                                                                                                                                                             |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Parity                                | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                                          |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Flow Control                          | RTS/CTS, DTR/DSR, XON/XOFF                                                                                                                                                                                                                                                                            |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Isolation                             | —                                                                                                                                                                                                                                                                                                     | —                     | 2 kV                   | —                                                                                                                                                                                                                                                                                                       | —                       | —                                                                                         | —                       | 2 kV                                                                                      |
| RS-485 Data Direction Control         | ADDC® (automatic data direction control)                                                                                                                                                                                                                                                              |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Power Parameters                      |                                                                                                                                                                                                                                                                                                       |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Input Current                         | 340 mA @ 12 VDC                                                                                                                                                                                                                                                                                       | 470 mA @ 12 VDC       | 740 mA @ 12 VDC        | 611 mA @ 12 VDC                                                                                                                                                                                                                                                                                         |                         | 615 mA @ 12 VDC                                                                           |                         | 1066 mA @ 12 VDC                                                                          |
| No. of Power Inputs                   | 1                                                                                                                                                                                                                                                                                                     |                       |                        | 2                                                                                                                                                                                                                                                                                                       |                         |                                                                                           |                         |                                                                                           |
| Input Voltage                         | 12 to 48 VDC                                                                                                                                                                                                                                                                                          |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Power Connector                       | Power input jack                                                                                                                                                                                                                                                                                      |                       |                        | 1 removable 3-contact terminal block(s), power input jack                                                                                                                                                                                                                                               |                         |                                                                                           |                         |                                                                                           |
| Physical Characteristics              |                                                                                                                                                                                                                                                                                                       |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Housing                               | Metal                                                                                                                                                                                                                                                                                                 |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Dimensions (without ears)             | 197 x 44 x 125 mm (7.76 x 1.73 x 4.92 in)                                                                                                                                                                                                                                                             |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Weight                                | 1,760 g (3.88 lb)                                                                                                                                                                                                                                                                                     | 1,770 g (3.90 lb)     | 1,850 g (4.08 lb)      | NPort 5610-8-DT: 1,570 g (3.46 lb)<br>NPort 5610-8-DT-T: 1,320 g (2.91 lb)                                                                                                                                                                                                                              | 1,520 g (3.35 lb)       | NPort 5650-8-DT: 1,590 g (3.50 lb)<br>NPort 5650-8-DT-T: 1,340 g (2.94 lb)                | 1,540 g (3.40 lb)       | NPort 5650I-8-DT: 1,660 g (3.66 lb)<br>NPort 5650I-8-DT-T: 1,410 g (3.11 lb)              |
| Interactive Interface                 | —                                                                                                                                                                                                                                                                                                     | —                     | —                      | LCD panel display, push buttons for configuration                                                                                                                                                                                                                                                       |                         |                                                                                           |                         |                                                                                           |
| Installation                          | Desktop, DIN-rail mounting (with optional kit), wall mounting (with optional kit)                                                                                                                                                                                                                     |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Environmental Limits                  |                                                                                                                                                                                                                                                                                                       |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Operating Temperature                 | Standard Models: 0 to 60°C (32 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                                                                             |                       |                        | Standard Models: 0 to 55°C (32 to 131°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                                                                               | 0 to 55°C (32 to 131°F) | Standard Models: 0 to 55°C (32 to 131°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F) | 0 to 55°C (32 to 131°F) | Standard Models: 0 to 55°C (32 to 131°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F) |
| Standards and Certifications          |                                                                                                                                                                                                                                                                                                       |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| EMC                                   | EN 55032/24                                                                                                                                                                                                                                                                                           |                       |                        | EN 55032/35                                                                                                                                                                                                                                                                                             |                         |                                                                                           |                         |                                                                                           |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                                        |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| EMS                                   | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |                       |                        | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 0.5 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |                         |                                                                                           |                         |                                                                                           |
| Safety                                | UL 60950-1                                                                                                                                                                                                                                                                                            |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Declaration                           |                                                                                                                                                                                                                                                                                                       |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Green Product                         | RoHS, CRoHS, WEEE                                                                                                                                                                                                                                                                                     |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Warranty                              |                                                                                                                                                                                                                                                                                                       |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |
| Warranty Period                       | 5 years                                                                                                                                                                                                                                                                                               |                       |                        |                                                                                                                                                                                                                                                                                                         |                         |                                                                                           |                         |                                                                                           |

# Industrial-grade Device Servers



| Product Series                             | NPort IA5150 (-T)                                                                                                                                                                                                                                                                                      | NPort IA5150I (-T) | NPort IA5150-M-SC (-T) | NPort IA5150-S-SC (-T) | NPort IA5150I-M-SC (-T) | NPort IA5150I-S-SC (-T) | NPort IA5250 (-T)         |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------|------------------------|-------------------------|-------------------------|---------------------------|
| Ethernet Interface                         |                                                                                                                                                                                                                                                                                                        |                    |                        |                        |                         |                         |                           |
| 10/100BaseT(X) Ports (RJ45 connector)      | 2                                                                                                                                                                                                                                                                                                      | 2                  | –                      | –                      | –                       | –                       | 2                         |
| 100BaseFX Ports (multi-mode SC connector)  | –                                                                                                                                                                                                                                                                                                      | –                  | 1                      | –                      | 1                       | –                       | –                         |
| 100BaseFX Ports (single-mode SC connector) | –                                                                                                                                                                                                                                                                                                      | –                  | –                      | 1                      | –                       | 1                       | –                         |
| Magnetic Isolation Protection              | 1.5 kV (built-in)                                                                                                                                                                                                                                                                                      |                    |                        |                        |                         |                         |                           |
| Ethernet Software Features                 |                                                                                                                                                                                                                                                                                                        |                    |                        |                        |                         |                         |                           |
| Configuration Options                      | Web Console (HTTP), Windows Utility, Telnet Console, Serial Console                                                                                                                                                                                                                                    |                    |                        |                        |                         |                         |                           |
| Management                                 | ARP, BOOTP, DHCP Client, IPv4, SMTP, SNMPv1/v2c/v3, DNS, HTTP, TCP/IP, ICMP, RTelnet, Telnet, UDP                                                                                                                                                                                                      |                    |                        |                        |                         |                         |                           |
| Windows Real COM Drivers                   | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                                                |                    |                        |                        |                         |                         |                           |
| Linux Real TTY Drivers                     | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                                        |                    |                        |                        |                         |                         |                           |
| Fixed TTY Drivers                          | SCO UNIX, SCO OpenServer, UnixWare 7, QNX 4.25, QNX 6, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                                               |                    |                        |                        |                         |                         |                           |
| Android API                                | Android 3.1.x and later                                                                                                                                                                                                                                                                                |                    |                        |                        |                         |                         |                           |
| Serial Interface                           |                                                                                                                                                                                                                                                                                                        |                    |                        |                        |                         |                         |                           |
| Connector                                  | DB9 male (RS-232), Terminal Block (RS-422/485)                                                                                                                                                                                                                                                         |                    |                        |                        |                         |                         | DB9 male (RS-232/422/485) |
| No. of Ports                               | 1                                                                                                                                                                                                                                                                                                      |                    |                        |                        |                         |                         | 2                         |
| Serial Standards                           | RS-232/422/485                                                                                                                                                                                                                                                                                         |                    |                        |                        |                         |                         |                           |
| Baudrate                                   | Supports standard baudrates (unit=bps): 110, 134, 150, 300, 600, 1200, 1800, 2400, 4800, 7200, 9600, 19200, 38400, 57600, 115200, 2304000                                                                                                                                                              |                    |                        |                        |                         |                         |                           |
| Data Bits                                  | 5, 6, 7, 8                                                                                                                                                                                                                                                                                             |                    |                        |                        |                         |                         |                           |
| Stop Bits                                  | 1, 1.5, 2                                                                                                                                                                                                                                                                                              |                    |                        |                        |                         |                         |                           |
| Parity                                     | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                                           |                    |                        |                        |                         |                         |                           |
| Flow Control                               | RTS/CTS (RS-232 only), DTR/DSR (RS-232 only), XON/XOFF                                                                                                                                                                                                                                                 |                    |                        |                        |                         |                         |                           |
| Isolation                                  | –                                                                                                                                                                                                                                                                                                      | 2 kV               | –                      | –                      | 2 kV                    | 2 kV                    | –                         |
| RS-485 Data Direction Control              | ADDC® (automatic data direction control)                                                                                                                                                                                                                                                               |                    |                        |                        |                         |                         |                           |
| Power Parameters                           |                                                                                                                                                                                                                                                                                                        |                    |                        |                        |                         |                         |                           |
| Input Current                              | 238 mA @ 12 VDC                                                                                                                                                                                                                                                                                        | 257 mA @ 12 VDC    | 315 mA @ 12 VDC        | 328 mA @ 12 VDC        | 339 mA @ 12 VDC         | 333 mA @ 12 VDC         | 238 mA @ 12 VDC           |
| Input Voltage                              | 12 to 48 VDC                                                                                                                                                                                                                                                                                           |                    |                        |                        |                         |                         |                           |
| Physical Characteristics                   |                                                                                                                                                                                                                                                                                                        |                    |                        |                        |                         |                         |                           |
| Housing                                    | Plastic                                                                                                                                                                                                                                                                                                |                    |                        |                        |                         |                         |                           |
| Dimensions                                 | 29 x 89.2 x 118.5 mm (1.14 x 3.51 x 4.67 in)                                                                                                                                                                                                                                                           |                    |                        |                        |                         |                         |                           |
| Weight                                     | 360 g (0.79 lb)                                                                                                                                                                                                                                                                                        |                    |                        |                        |                         |                         | 380 g (0.84 lb)           |
| Installation                               | DIN-rail mounting                                                                                                                                                                                                                                                                                      |                    |                        |                        |                         |                         |                           |
| Environmental Limits                       |                                                                                                                                                                                                                                                                                                        |                    |                        |                        |                         |                         |                           |
| Operating Temperature                      | Standard Models: 0 to 55°C (32 to 131°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                                                                              |                    |                        |                        |                         |                         |                           |
| Standards and Certifications               |                                                                                                                                                                                                                                                                                                        |                    |                        |                        |                         |                         |                           |
| EMC                                        | EN 55032/24                                                                                                                                                                                                                                                                                            |                    |                        |                        |                         |                         |                           |
| EMI                                        | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                                         |                    |                        |                        |                         |                         |                           |
| EMS                                        | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |                    |                        |                        |                         |                         |                           |
| Hazardous Locations                        | ATEX, Class I Division 2, IECEx (for -IEX models)                                                                                                                                                                                                                                                      |                    |                        |                        |                         |                         |                           |
| Safety                                     | UL 508, UL 60950-1                                                                                                                                                                                                                                                                                     |                    |                        |                        |                         |                         |                           |
| Declaration                                |                                                                                                                                                                                                                                                                                                        |                    |                        |                        |                         |                         |                           |
| Green Product                              | RoHS, CRoHS, WEEE                                                                                                                                                                                                                                                                                      |                    |                        |                        |                         |                         |                           |
| Warranty                                   |                                                                                                                                                                                                                                                                                                        |                    |                        |                        |                         |                         |                           |
| Warranty Period                            | 5 years                                                                                                                                                                                                                                                                                                |                    |                        |                        |                         |                         |                           |



# Industrial-grade Device Servers



| Product Series                        | NPort IA5150A (-T)                                                                                                                                                                                                                                                                                     | NPort IA5150AI (-T) | NPort IA5250A (-T)        | NPort IA5250AI (-T) | NPort IA5450A (-T)                         | NPort IA5450AI (-T) |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------|---------------------|--------------------------------------------|---------------------|
| Ethernet Interface                    |                                                                                                                                                                                                                                                                                                        |                     |                           |                     |                                            |                     |
| 10/100BaseT(X) Ports (RJ45 connector) | Supports 2 IP addresses<br>Auto MDI/MDI-X connection                                                                                                                                                                                                                                                   |                     |                           |                     |                                            |                     |
| Magnetic Isolation Protection         | 1.5 kV (built-in)                                                                                                                                                                                                                                                                                      |                     |                           |                     |                                            |                     |
| Ethernet Software Features            |                                                                                                                                                                                                                                                                                                        |                     |                           |                     |                                            |                     |
| Configuration Options                 | Web Console (HTTP/HTTPS), Windows Utility, Telnet Console, Serial Console                                                                                                                                                                                                                              |                     |                           |                     |                                            |                     |
| Management                            | ARP, BOOTP, DHCP Client, DNS, HTTP, HTTPS, ICMP, IPv4, LLDP, RTelnet, SMTP, SNMPv1/v2c, TCP/IP, Telnet, UDP                                                                                                                                                                                            |                     |                           |                     |                                            |                     |
| Windows Real COM Drivers              | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                                                |                     |                           |                     |                                            |                     |
| Linux Real TTY Drivers                | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                                        |                     |                           |                     |                                            |                     |
| Fixed TTY Drivers                     | SCO UNIX, SCO OpenServer, UnixWare 7, QNX 4.25, QNX 6, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                                               |                     |                           |                     |                                            |                     |
| Android API                           | Android 3.1.x and later                                                                                                                                                                                                                                                                                |                     |                           |                     |                                            |                     |
| Serial Interface                      |                                                                                                                                                                                                                                                                                                        |                     |                           |                     |                                            |                     |
| Connector                             | DB9 male (RS-232),<br>Terminal Block (RS-422/485)                                                                                                                                                                                                                                                      |                     | DB9 male (RS-232/422/485) |                     |                                            |                     |
| No. of Ports                          | 1                                                                                                                                                                                                                                                                                                      |                     | 2                         |                     | 4                                          |                     |
| Serial Standards                      | RS-232/422/485                                                                                                                                                                                                                                                                                         |                     |                           |                     |                                            |                     |
| Baudrate                              | Supports standard baudrates (unit=bps): 50, 75, 110, 134, 150, 300, 600, 1200, 1800, 2400, 4800, 7200, 9600, 19200, 38400, 57600, 115200, 230.4k, 460.8k, 921.6k                                                                                                                                       |                     |                           |                     |                                            |                     |
| Data Bits                             | 5, 6, 7, 8                                                                                                                                                                                                                                                                                             |                     |                           |                     |                                            |                     |
| Stop Bits                             | 1, 1.5, 2                                                                                                                                                                                                                                                                                              |                     |                           |                     |                                            |                     |
| Parity                                | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                                           |                     |                           |                     |                                            |                     |
| Flow Control                          | None, RTS/CTS (RS-232 only), DTR/DSR (RS-232 only), XON/XOFF                                                                                                                                                                                                                                           |                     |                           |                     |                                            |                     |
| Isolation                             | –                                                                                                                                                                                                                                                                                                      | 2 kV                | –                         | 2 kV                | –                                          | 2 kV                |
| RS-485 Data Direction Control         | ADDC® (automatic data direction control)                                                                                                                                                                                                                                                               |                     |                           |                     |                                            |                     |
| Power Parameters                      |                                                                                                                                                                                                                                                                                                        |                     |                           |                     |                                            |                     |
| Input Current                         | 220 mA @ 12 VDC                                                                                                                                                                                                                                                                                        | 225 mA @ 12 VDC     | 250 mA @ 12 VDC           | 290 mA @ 12 VDC     | 374 mA @ 12 VDC                            | 512 mA @ 12 VDC     |
| Input Voltage                         | 12 to 48 VDC                                                                                                                                                                                                                                                                                           |                     |                           |                     |                                            |                     |
| Physical Characteristics              |                                                                                                                                                                                                                                                                                                        |                     |                           |                     |                                            |                     |
| Housing                               | Metal                                                                                                                                                                                                                                                                                                  |                     |                           |                     |                                            |                     |
| Dimensions                            | 36 x 105 x 140 mm (1.42 x 4.13 x 5.51 in)                                                                                                                                                                                                                                                              |                     |                           |                     | 45.8 x 134 x 105 mm (1.8 x 5.28 x 4.13 in) |                     |
| Weight                                | 475 g (1.05 lb)                                                                                                                                                                                                                                                                                        |                     | 485 g (1.07 lb)           |                     | 560 g (1.23 lb)                            |                     |
| Installation                          | DIN-rail mounting, wall mounting (with optional kit)                                                                                                                                                                                                                                                   |                     |                           |                     |                                            |                     |
| Environmental Limits                  |                                                                                                                                                                                                                                                                                                        |                     |                           |                     |                                            |                     |
| Operating Temperature                 | Standard Models: 0 to 60°C (32 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                                                                              |                     |                           |                     |                                            |                     |
| Standards and Certifications          |                                                                                                                                                                                                                                                                                                        |                     |                           |                     |                                            |                     |
| EMC                                   | EN 55032/24                                                                                                                                                                                                                                                                                            |                     |                           |                     |                                            |                     |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                                         |                     |                           |                     |                                            |                     |
| EMS                                   | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |                     |                           |                     |                                            |                     |
| Hazardous Locations                   | ATEX, Class I Division 2, IECEx (for -IEX models)                                                                                                                                                                                                                                                      |                     |                           |                     | ATEX, Class I Division 2, IECEx            |                     |
| Safety                                | UL 508                                                                                                                                                                                                                                                                                                 |                     |                           |                     |                                            |                     |
| Declaration                           |                                                                                                                                                                                                                                                                                                        |                     |                           |                     |                                            |                     |
| Green Product                         | RoHS, CRoHS, WEEE                                                                                                                                                                                                                                                                                      |                     |                           |                     |                                            |                     |
| Warranty                              |                                                                                                                                                                                                                                                                                                        |                     |                           |                     |                                            |                     |
| Warranty Period                       | 5 years                                                                                                                                                                                                                                                                                                |                     |                           |                     |                                            |                     |

# Wireless Device Servers



| Product Series                        | NPort W2150A (-T)                                                                                                                                                                                                                                                                                   |                 | NPort W2250A (-T) |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------|
| Ethernet Interface                    |                                                                                                                                                                                                                                                                                                     |                 |                   |
| 10/100BaseT(X) Ports (RJ45 connector) | 1                                                                                                                                                                                                                                                                                                   |                 |                   |
| Magnetic Isolation Protection         | 1.5 kV (built-in)                                                                                                                                                                                                                                                                                   |                 |                   |
| Ethernet Software Features            |                                                                                                                                                                                                                                                                                                     |                 |                   |
| Configuration Options                 | Web Console (HTTP/HTTPS), Windows Utility                                                                                                                                                                                                                                                           |                 |                   |
| Management                            | DHCP Option 82, HTTP, IPv4, SMTP, SNMPv1/v2c/v3, Syslog, Telnet, Web Console                                                                                                                                                                                                                        |                 |                   |
| Windows Real COM Drivers              | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                                             |                 |                   |
| Linux Real TTY Drivers                | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                                     |                 |                   |
| Fixed TTY Drivers                     | SCO UNIX, SCO OpenServer, UnixWare 7, QNX 4.25, QNX 6, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                                            |                 |                   |
| Android API                           | Android 3.1.x and later                                                                                                                                                                                                                                                                             |                 |                   |
| Security                              | HTTPS/SSL, Local Account Accessibility, RADIUS, SSH                                                                                                                                                                                                                                                 |                 |                   |
| WLAN Interface                        |                                                                                                                                                                                                                                                                                                     |                 |                   |
| WLAN Standards                        | 802.11a/b/g/n                                                                                                                                                                                                                                                                                       |                 |                   |
| Modulation Type                       | DSSS<br>OFDM                                                                                                                                                                                                                                                                                        |                 |                   |
| Transmission Distance                 | Up to 100 meters (in open areas)                                                                                                                                                                                                                                                                    |                 |                   |
| Transmission Rate                     | 802.11a/g: 54 Mbps<br>802.11b: 11 Mbps<br>802.11n: 6.5 to 150 Mbps                                                                                                                                                                                                                                  |                 |                   |
| Wireless Security                     | WEP encryption (64-bit and 128-bit)<br>WPA/WPA2-Enterprise (IEEE 802.1X/RADIUS, TKIP, AES)<br>WPA/WPA2-Personal                                                                                                                                                                                     |                 |                   |
| WLAN Modes                            | Ad-hoc Mode, Infrastructure mode                                                                                                                                                                                                                                                                    |                 |                   |
| Serial Interface                      |                                                                                                                                                                                                                                                                                                     |                 |                   |
| No. of Ports                          | 1                                                                                                                                                                                                                                                                                                   | 2               |                   |
| Serial Standards                      | RS-232/422/485                                                                                                                                                                                                                                                                                      |                 |                   |
| Baudrate                              | 50 bps to 921.6 kbps (supports nonstandard baudrates)                                                                                                                                                                                                                                               |                 |                   |
| Data Bits                             | 5, 6, 7, 8                                                                                                                                                                                                                                                                                          |                 |                   |
| Stop Bits                             | 1, 1.5, 2                                                                                                                                                                                                                                                                                           |                 |                   |
| Parity                                | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                                        |                 |                   |
| Flow Control                          | None, RTS/CTS, XON/XOFF                                                                                                                                                                                                                                                                             |                 |                   |
| RS-485 Data Direction Control         | ADDC® (automatic data direction control)                                                                                                                                                                                                                                                            |                 |                   |
| Surge                                 | 1 kV                                                                                                                                                                                                                                                                                                |                 |                   |
| Physical Characteristics              |                                                                                                                                                                                                                                                                                                     |                 |                   |
| Housing                               | Metal                                                                                                                                                                                                                                                                                               |                 |                   |
| Installation                          | Desktop, DIN-rail mounting (with optional kit), wall mounting                                                                                                                                                                                                                                       |                 |                   |
| Dimensions (without ears or antenna)  | 77 x 111 x 26 mm (3.03 x 4.37 x 1.02 in)                                                                                                                                                                                                                                                            |                 |                   |
| Weight                                | 547 g (1.21 lb)                                                                                                                                                                                                                                                                                     | 557 g (1.23 lb) |                   |
| Environmental Limits                  |                                                                                                                                                                                                                                                                                                     |                 |                   |
| Operating Temperature                 | Standard Models: 0 to 55°C (32 to 131°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                                                                           |                 |                   |
| Power Parameters                      |                                                                                                                                                                                                                                                                                                     |                 |                   |
| Input Current                         | 179 mA @ 12 VDC                                                                                                                                                                                                                                                                                     | 200 mA @ 12 VDC |                   |
| Input Voltage                         | 12 to 48 VDC                                                                                                                                                                                                                                                                                        |                 |                   |
| Standards and Certifications          |                                                                                                                                                                                                                                                                                                     |                 |                   |
| EMC                                   | EN 55032/24                                                                                                                                                                                                                                                                                         |                 |                   |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                                      |                 |                   |
| EMS                                   | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |                 |                   |
| Radio Frequency                       | CE (ETSI EN 301 893, ETSI EN 300 328, ETSI EN 301 489-17, ETSI EN 301 489-1), ARIB RCR STD-33, ARIB STD-66                                                                                                                                                                                          |                 |                   |
| Warranty                              |                                                                                                                                                                                                                                                                                                     |                 |                   |
| Warranty Period                       | 5 years                                                                                                                                                                                                                                                                                             |                 |                   |

# Embedded Device Servers



| Product Series                          | MiiNePort E2 (-H, -ST)                                                                                                                                                                                                                                                                                     | MiiNePort E3 (-H, -ST)                                                                                                                                                                                                                                                                     | MiiNePort W1 (-H, -ST)                                                                                                                                                                                                                                                                |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Embedded System                         |                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| CPU                                     | 32-bit Arm Core                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Memory                                  |                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Flash                                   | 2 MB                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                            | 16 MB                                                                                                                                                                                                                                                                                 |
| SDRAM                                   | 4 MB                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                            | 64 MB                                                                                                                                                                                                                                                                                 |
| Form Factor                             |                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Type                                    | Drop-in modules                                                                                                                                                                                                                                                                                            | Pin-header modules                                                                                                                                                                                                                                                                         | Drop-in modules                                                                                                                                                                                                                                                                       |
| Input/Output Interface                  |                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Configurable DIO Channels (by software) | 4                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                            | 8                                                                                                                                                                                                                                                                                     |
| Ethernet Interface                      |                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| 10/100BaseT(X) Port                     | 4-pin pin header, auto MDI/MDI-X connection                                                                                                                                                                                                                                                                | RJ45 connector, auto MDI/MDI-X connection                                                                                                                                                                                                                                                  | Auto MDI/MDI-X connection                                                                                                                                                                                                                                                             |
| Ethernet Software Features              |                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Configuration Options                   | Web Console (HTTP), Windows Utility                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                            | Web Console (HTTP/HTTPS), Windows Utility, Telnet Console, Serial Console                                                                                                                                                                                                             |
| Management                              | ARP, BOOTP, Device Search Utility (DSU), DHCP Client, IPv4, SMTP, SNMPv1, TCP/IP, Telnet, TFTP, UDP, ICMP                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                            | ARP, Device Search Utility (DSU), DHCP Client, DNS, HTTP, IPv4, SMTP, SNMPv1/v2c/v3, TCP/IP, Telnet, UDP, Web Console, ICMP                                                                                                                                                           |
| Windows Real COM Drivers                | Windows 95/98/ME/NT/2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2/2016/2019, Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                                                                    |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Linux Real TTY Drivers                  | Kernel version: 2.4.x, 2.6.x, 3.x, 4.x, and 5.x                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Fixed TTY Drivers                       | SCO UNIX, SCO OpenServer, UnixWare 7, QNX 4.25, QNX 6, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i, Mac OS X                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Android API                             | Android 3.1.x and later                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Serial Interface                        |                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| No. of Ports                            | 1                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Serial Standards                        | TTL                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Baudrate                                | MiiNePort E2 Series: 50 bps to 230.4 kbps<br>MiiNePort E2-H Series: 50 bps to 921.6 kbps                                                                                                                                                                                                                   | MiiNePort E3 Series: 50 bps to 230.4 kbps<br>MiiNePort E3-H Series: 50 bps to 921.6 kbps                                                                                                                                                                                                   | 50 bps to 921.6 kbps<br>(supports nonstandard baudrates)                                                                                                                                                                                                                              |
| Data Bits                               | 5, 6, 7, 8                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                            | 7, 8                                                                                                                                                                                                                                                                                  |
| Stop Bits                               | 1, 1.5, 2                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                            | 1, 2                                                                                                                                                                                                                                                                                  |
| Parity                                  | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                            | None, Even, Odd                                                                                                                                                                                                                                                                       |
| Flow Control                            | None, RTS/CTS, DTR/DSR, XON/XOFF                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                            | None, RTS/CTS, XON/XOFF                                                                                                                                                                                                                                                               |
| WLAN Interface                          |                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Spread Spectrum                         | —                                                                                                                                                                                                                                                                                                          | —                                                                                                                                                                                                                                                                                          | DSSS, OFDM                                                                                                                                                                                                                                                                            |
| Transmission Rate                       | —                                                                                                                                                                                                                                                                                                          | —                                                                                                                                                                                                                                                                                          | 802.11b: 11 Mbps<br>802.11g: 54 Mbps                                                                                                                                                                                                                                                  |
| WLAN Modes                              | —                                                                                                                                                                                                                                                                                                          | —                                                                                                                                                                                                                                                                                          | Ad-hoc mode, Infrastructure mode                                                                                                                                                                                                                                                      |
| Power Parameters                        |                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Input Current                           | 157 mA @ 3.3 VDC                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                            | 400 mA @ 3.3 VDC                                                                                                                                                                                                                                                                      |
| Input Voltage                           | 3.3 to 5 VDC                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Starter Kit                             | ✓                                                                                                                                                                                                                                                                                                          | ✓                                                                                                                                                                                                                                                                                          | ✓                                                                                                                                                                                                                                                                                     |
| Programmable                            | ✓                                                                                                                                                                                                                                                                                                          | —                                                                                                                                                                                                                                                                                          | —                                                                                                                                                                                                                                                                                     |
| Physical Characteristics                |                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Dimensions                              | MiiNePort E2/E2-H Series: 29 x 17 x 12.6 mm<br>(1.14 x 0.67 x 0.50 in)                                                                                                                                                                                                                                     | MiiNePort E3/E3-H Series: 35 x 52.5 x 18 mm<br>(1.38 x 2.07 x 0.71 in)                                                                                                                                                                                                                     | 44.4 x 44.4 x 9.7 mm (1.75 x 1.75 x 0.38 in)                                                                                                                                                                                                                                          |
| Weight                                  | MiiNePort E2/E2-H Series: 5 g (0.01 lb)<br>MiiNePort E2-ST/E2-H-ST: 77 g (0.17 lb)                                                                                                                                                                                                                         | MiiNePort E3/E3-H Series: 12 g (0.03 lb)<br>MiiNePort E3-ST/E3-H-ST: 89 g (0.20 lb)                                                                                                                                                                                                        | 15.35 g (0.03 lb)                                                                                                                                                                                                                                                                     |
| Environmental Limits                    |                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Operating Temperature                   | Standard Models: 0 to 55°C (32 to 131°F)<br>Wide Temp. Models: -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                            | MiiNePort W1/W1-ST: 0 to 55°C (32 to 131°F)<br>MiiNePort W1-T: -40 to 75°C (-40 to 167°F)                                                                                                                                                                                             |
| Standards and Certifications            |                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| EMC                                     | EN 55032/24                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| EMI                                     | CISPR 32, FCC Part 15B Class B                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                            | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                        |
| EMS                                     | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 0.5 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m;<br>Signal: 3 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m;<br>Signal: 3 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m;<br>Signal: 3 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 |
| Radio Frequency                         | —                                                                                                                                                                                                                                                                                                          | —                                                                                                                                                                                                                                                                                          | EN 300 328, EN 301 489                                                                                                                                                                                                                                                                |
| Safety                                  | —                                                                                                                                                                                                                                                                                                          | —                                                                                                                                                                                                                                                                                          | EN 60950-1, UL 60950-1                                                                                                                                                                                                                                                                |
| Declaration                             |                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Green Product                           | RoHS, CRoHS, WEEE                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Warranty                                |                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |
| Warranty Period                         | 5 years                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       |





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## Chassis Media Converters

Our TRC series of rackmount chassis media converters provide up to 19 slots and a variety of media converter modules to choose from to fulfill your different media conversion requirements in high-density applications.



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## Serial-to-fiber Media Converters

Moxa's industrial-grade serial-to-fiber optic converters convert RS-232/422/485 to optical fiber, providing users with an easy and reliable way to communicate with their serial devices.

# Serial Converters

Moxa's serial media converters enable devices with different serial interfaces to communicate effortlessly. Serial-to-serial converters help convert between RS-232 and RS-422/485; serial-to-fiber converters convert all three of these interfaces to optical fiber.



Serial Converters  
Product Pages



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## Serial-to-serial Converters

Moxa's serial-to-serial media converters convert between RS-232, RS-422, and RS-485, avoiding compatibility issues that are often encountered when communicating between different serial interfaces.



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## CAN-to-fiber, PROFIBUS-to-fiber Converters

Moxa's fieldbus-to-fiber converters convert fieldbus to fiber with ease, and also feature easy configuration and effortless troubleshooting. Our industrial-grade ICF converters convert PROFIBUS to fiber, even in harsh environments.



# Chassis Media Converters



| Product Series                        | TRC-2190                                                                                                                                                                                                                                                                     | TRC-190                                                                                                                                                                                                                                                                        | TCF-142-RM                                                                                                                                                                                                                                                                     |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Ethernet Interface</b>             |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                |
| 10/100BaseT(X) Ports (RJ45 connector) | 2                                                                                                                                                                                                                                                                            | –                                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                                                                                              |
| <b>Power Parameters</b>               |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                |
| Input Voltage                         | TRC-2190-AC: 100 to 240 VAC<br>TRC-2190-DC-48V: 36 to 53 VDC                                                                                                                                                                                                                 | TRC-190-AC: 100 to 240 VAC<br>TRC-190-DC-48V: 36 to 53 VDC                                                                                                                                                                                                                     | –                                                                                                                                                                                                                                                                              |
| No. of Power Inputs                   | 2                                                                                                                                                                                                                                                                            | 2                                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                                                                                              |
| Power Consumption                     | TRC-2190-AC: 1.5 A @ 100 to 240 VAC<br>TRC-2190-DC-48V: 3.2 A @ 48 VDC                                                                                                                                                                                                       | TRC-190-AC: 1.5 A @ 100 to 240 VAC<br>TRC-190-DC-48V: 3.2 A @ 48 VDC                                                                                                                                                                                                           | 150 mA @ 12 VDC                                                                                                                                                                                                                                                                |
| <b>Serial Interface</b>               |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                |
| No. of Ports                          | –                                                                                                                                                                                                                                                                            | –                                                                                                                                                                                                                                                                              | 2                                                                                                                                                                                                                                                                              |
| Serial Standards                      | –                                                                                                                                                                                                                                                                            | –                                                                                                                                                                                                                                                                              | RS-232/422/485                                                                                                                                                                                                                                                                 |
| Baudrate                              | –                                                                                                                                                                                                                                                                            | –                                                                                                                                                                                                                                                                              | 50 bps to 921.6 kbps (supports nonstandard baudrates)                                                                                                                                                                                                                          |
| Optical Fiber                         | –                                                                                                                                                                                                                                                                            | –                                                                                                                                                                                                                                                                              | TCF-142-M-SC-RM: 100BaseFX ports (multi-mode SC connector)<br>TCF-142-M-ST-RM: 100BaseFX ports (multi-mode ST connector)<br>TCF-142-S-SC-RM: 100BaseFX ports (single-mode SC connector)<br>TCF-142-S-ST-RM: 100BaseFX ports (single-mode ST connector)                         |
| <b>Serial Signals</b>                 |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                |
| RS-232                                | –                                                                                                                                                                                                                                                                            | –                                                                                                                                                                                                                                                                              | TxD, Rx D, GND                                                                                                                                                                                                                                                                 |
| RS-422                                | –                                                                                                                                                                                                                                                                            | –                                                                                                                                                                                                                                                                              | Tx+, Tx-, Rx+, Rx-, GND                                                                                                                                                                                                                                                        |
| RS-485-4w                             | –                                                                                                                                                                                                                                                                            | –                                                                                                                                                                                                                                                                              | Tx+, Tx-, Rx+, Rx-, GND                                                                                                                                                                                                                                                        |
| RS-485-2w                             | –                                                                                                                                                                                                                                                                            | –                                                                                                                                                                                                                                                                              | Data+, Data-, GND                                                                                                                                                                                                                                                              |
| <b>Physical Characteristics</b>       |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                |
| Dimensions                            | 440 x 260 x 77 mm (17.32 x 10.24 x 3.03 in)                                                                                                                                                                                                                                  | 440 x 260 x 88 mm (17.32 x 10.24 x 3.46 in)                                                                                                                                                                                                                                    | 86.8 x 136.5 x 21 mm (3.42 x 5.37 x 0.83 in)                                                                                                                                                                                                                                   |
| <b>Environmental Limits</b>           |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                |
| Operating Temperature                 | -20 to 55°C (-4 to 131°F)                                                                                                                                                                                                                                                    | 0 to 60°C (32 to 140°F)                                                                                                                                                                                                                                                        | 0 to 60°C (32 to 140°F)                                                                                                                                                                                                                                                        |
| <b>Standards and Certifications</b>   |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                |
| EMC                                   | EN 55032/24                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                |
| EMS                                   | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-5 Surge: Power: 1 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 1 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 1 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF |
| Safety                                | EN 60950-1, IEC 60950-1                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                | EN 60950-1, IEC 60950-1                                                                                                                                                                                                                                                        |

# Serial-to-fiber Media Converters



| Product Series                         | TCF-90                                                                                                                                                                                                                                                                           | TCF-142                                                                                                                                                                                                                                     | ICF-1150                                                                                                                                                                                                                                                                                     |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Serial Interface                       |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |
| No. of Serial Ports                    | 2                                                                                                                                                                                                                                                                                | 2                                                                                                                                                                                                                                           | 2                                                                                                                                                                                                                                                                                            |
| Serial Standards                       | RS-232                                                                                                                                                                                                                                                                           | RS-232/422/485 (7-pin terminal block)                                                                                                                                                                                                       | RS-232/422/485                                                                                                                                                                                                                                                                               |
| Baudrate                               | 300 bps to 115.2 kbps                                                                                                                                                                                                                                                            | 50 bps to 921.6 kbps (supports nonstandard baudrates)                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                              |
| Isolation                              | –                                                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                                           | 2 kV (I models)                                                                                                                                                                                                                                                                              |
| Optical Fiber                          | 100BaseFX ports<br>Multi-mode or Single-mode<br>ST connector                                                                                                                                                                                                                     | 100BaseFX ports<br>Multi-mode or Single-mode<br>SC or ST connector                                                                                                                                                                          | 100BaseFX ports<br>Multi-mode or Single-mode<br>SC or ST connector                                                                                                                                                                                                                           |
| Fiber Cable Requirements               | Multi-mode: 50/125 µm, 800 MHz or 62.5/125 µm, 500 MHz<br>Single-mode: G.652                                                                                                                                                                                                     |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |
| Typical Distance                       | Multi-mode: 5 km, Single-mode: 40 km                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |
| Wavelength (typical)                   | Multi-mode: 850 nm, Single-mode: 1310 nm                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |
| Wavelength (TX range)                  | Multi-mode: 840 to 860 nm, Single-mode: 1290 to 1330 nm                                                                                                                                                                                                                          |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |
| Wavelength (RX range)                  | Multi-mode: 800 to 900 nm, Single-mode: 1100 to 1650 nm                                                                                                                                                                                                                          |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |
| Optical Power (TX range)               | Multi-mode/Single-mode: 0 to -5 dBm                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                             | Multi-mode/Single-mode: 0 to -8 dBm                                                                                                                                                                                                                                                          |
| Optical Power (RX range)               | Multi-mode: 0 to -20 dBm, Single-mode: 0 to -25 dBm                                                                                                                                                                                                                              |                                                                                                                                                                                                                                             | Multi-mode/Single-mode: 0 to -25 dBm                                                                                                                                                                                                                                                         |
| Optical Power (link budget)            | Multi-mode: 15 dB, Single-mode: 20 dB                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |
| Optical Power (dispersion penalty)     | Multi-mode/Single-mode: 1 dB                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |
| Serial Signals                         |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |
| RS-232                                 | TxD, RxD, RTS, CTS,<br>DTR, DSR, DCD, GND                                                                                                                                                                                                                                        | TxD, RxD, GND                                                                                                                                                                                                                               | TxD, RxD, GND                                                                                                                                                                                                                                                                                |
| RS-422                                 | –                                                                                                                                                                                                                                                                                | Tx+, Tx-, Rx+, Rx-, GND                                                                                                                                                                                                                     | Tx+, Tx-, Rx+, Rx-, GND                                                                                                                                                                                                                                                                      |
| RS-485-4w                              | –                                                                                                                                                                                                                                                                                | Tx+, Tx-, Rx+, Rx-, GND                                                                                                                                                                                                                     | Tx+, Tx-, Rx+, Rx-, GND                                                                                                                                                                                                                                                                      |
| RS-485-2w                              | –                                                                                                                                                                                                                                                                                | Data+, Data-, GND                                                                                                                                                                                                                           | Data+, Data-, GND                                                                                                                                                                                                                                                                            |
| Power Parameters                       |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |
| Input Current                          | 20 mA @ 12 VDC                                                                                                                                                                                                                                                                   | 140 mA @ 12 VDC                                                                                                                                                                                                                             | ICF-1150 Series: 264 mA @ 12 VDC<br>ICF-1150I Series: 300 mA @ 12 VDC                                                                                                                                                                                                                        |
| Input Voltage                          | 5 to 12 VDC                                                                                                                                                                                                                                                                      | 12 to 48 VDC                                                                                                                                                                                                                                | 12 to 48 VDC                                                                                                                                                                                                                                                                                 |
| No. of Power Inputs                    | 1                                                                                                                                                                                                                                                                                | 1                                                                                                                                                                                                                                           | 1                                                                                                                                                                                                                                                                                            |
| Physical Characteristics               |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |
| Housing                                | Plastic                                                                                                                                                                                                                                                                          | Metal                                                                                                                                                                                                                                       | Metal                                                                                                                                                                                                                                                                                        |
| Dimensions                             | 42 x 80 x 22 mm (1.65 x 3.15 x 0.87 in)                                                                                                                                                                                                                                          | with ears: 90 x 100 x 22 mm<br>(3.54 x 3.94 x 0.87 in)<br>without ears: 67 x 100 x 22 mm<br>(2.64 x 3.94 x 0.87 in)                                                                                                                         | 30.3 x 70 x 115 mm<br>(1.19 x 2.76 x 4.53 in)                                                                                                                                                                                                                                                |
| Installation                           | Desktop                                                                                                                                                                                                                                                                          | Wall mounting                                                                                                                                                                                                                               | DIN-rail mounting                                                                                                                                                                                                                                                                            |
| Environmental Limits                   |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |
| Operating Temperature                  | 0 to 60°C (32 to 140°F)                                                                                                                                                                                                                                                          | Standard Models: 0 to 60°C (32 to 140°F)<br>Wide Temp. Models: -40 to 75°C<br>(-40 to 167°F)                                                                                                                                                | Standard Models: 0 to 60°C (32 to 140°F)<br>Wide Temp. Models: -40 to 85°C<br>(-40 to 185°F)                                                                                                                                                                                                 |
| Storage Temperature (package included) | -20 to 75°C (-4 to 167°F)                                                                                                                                                                                                                                                        | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                  | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                                                                   |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |
| Standards and Certifications           |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |
| EMC                                    | EN 55032/24                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |
| EMI                                    | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |
| EMS                                    | IEC 61000-4-2 ESD: Contact: 4 kV;<br>Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz:<br>3 V/m<br>IEC 61000-4-4 EFT: Power: 0.5 kV;<br>Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV;<br>Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz:<br>3 V/m<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD: Contact: 4 kV;<br>Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz:<br>10 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV<br>IEC 61000-4-5 Surge: Power: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz:<br>3 V/m<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD: Contact: 8 kV;<br>Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz:<br>3 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal:<br>2 kV<br>IEC 61000-4-5 Surge: Power: 4 kV;<br>Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz:<br>3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF |
| Hazardous Locations                    | –                                                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                                           | Standard models: UL/cUL Class I<br>Division 2 Groups A/B/C/D<br>-IEX models: UL/cUL Class I Division 2<br>Groups A/B/C/D, ATEX Zone 2, IECEx                                                                                                                                                 |
| Safety                                 | EN 60950-1, IEC 60950-1                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                              |

# Serial-to-serial Converters



| Product Series                            | TCC-80/80I                                                                                                                 | TCC-100/100I                                                                                      | TCC-120/120I                                                                                      |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Serial Interface                          |                                                                                                                            |                                                                                                   |                                                                                                   |
| No. of Serial Ports                       | 2                                                                                                                          | 2                                                                                                 | 2                                                                                                 |
| Serial Standards                          | RS-232/422/485                                                                                                             | RS-232/422/485                                                                                    | RS-422/485                                                                                        |
| Baudrate                                  | 300 bps to 115.2 kbps                                                                                                      | 50 bps to 921.6 kbps (supports nonstandard baudrates)                                             |                                                                                                   |
| Isolation                                 | 2 kV (I models)                                                                                                            | 2 kV (I models)                                                                                   | 2 kV (I models)                                                                                   |
| Serial Signals                            |                                                                                                                            |                                                                                                   |                                                                                                   |
| RS-232                                    | TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND                                                                                     | TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND                                                            | —                                                                                                 |
| RS-422                                    | Tx+, Tx-, Rx+, Rx-, GND                                                                                                    | Tx+, Tx-, Rx+, Rx-, GND                                                                           | Tx+, Tx-, Rx+, Rx-, GND                                                                           |
| RS-485-4w                                 | Tx+, Tx-, Rx+, Rx-, GND                                                                                                    | Tx+, Tx-, Rx+, Rx-, GND                                                                           | Tx+, Tx-, Rx+, Rx-, GND                                                                           |
| RS-485-2w                                 | Data+, Data-, GND                                                                                                          | Data+, Data-, GND                                                                                 | Data+, Data-, GND                                                                                 |
| Power Parameters                          |                                                                                                                            |                                                                                                   |                                                                                                   |
| Input Current                             | TCC-80/80-DB9: 10 mA @ 5 VDC<br>TCC-80I/80I-DB9: 20 mA @ 5 VDC                                                             | TCC-100/100-T: 85 mA @ 12 VDC<br>TCC-100I/100I-T: 150 mA @ 12 VDC                                 | TCC-120/120-T: 65 mA @ 12 VDC<br>TCC-120I/120I-T: 180 mA @ 12 VDC                                 |
| Input Voltage                             | 5 to 12 VDC                                                                                                                | 12 to 48 VDC                                                                                      | 12 to 48 VDC                                                                                      |
| No. of Power Inputs                       | 1                                                                                                                          | 1                                                                                                 | 1                                                                                                 |
| Physical Characteristics                  |                                                                                                                            |                                                                                                   |                                                                                                   |
| Housing                                   | Plastic top cover, metal bottom plate                                                                                      | Metal                                                                                             | Metal                                                                                             |
| Dimensions                                | TCC-80/80I: 42 x 80 x 22 mm<br>(1.65 x 3.15 x 0.87 in)<br>TCC-80-DB9/80I-DB9: 42 x 91 x 23.6 mm<br>(1.65 x 3.58 x 0.93 in) | 67 x 100.4 x 22 mm<br>(2.64 x 3.95 x 0.87 in)                                                     | 67 x 100.4 x 22 mm<br>(2.64 x 3.95 x 0.87 in)                                                     |
| Installation                              | Desktop                                                                                                                    | DIN-rail mounting (with optional kit),<br>wall mounting                                           | DIN-rail mounting (with optional kit),<br>wall mounting                                           |
| Environmental Limits                      |                                                                                                                            |                                                                                                   |                                                                                                   |
| Operating Temperature                     | 0 to 60°C (32 to 140°F)                                                                                                    | Standard Models: -20 to 60°C<br>(-4 to 140°F)<br>Wide Temp. Models: -40 to 85°C<br>(-40 to 185°F) | Standard Models: -20 to 60°C<br>(-4 to 140°F)<br>Wide Temp. Models: -40 to 85°C<br>(-40 to 185°F) |
| Storage Temperature<br>(package included) | -20 to 75°C (-4 to 167°F)                                                                                                  | -40 to 85°C (-40 to 185°F)                                                                        | -40 to 85°C (-40 to 185°F)                                                                        |
| Ambient Relative Humidity                 | 5 to 95% (non-condensing)                                                                                                  |                                                                                                   |                                                                                                   |
| Standards and Certifications              |                                                                                                                            |                                                                                                   |                                                                                                   |
| EMC                                       | EN 55032/24                                                                                                                |                                                                                                   |                                                                                                   |
| EMI                                       | CISPR 32, FCC Part 15B Class A                                                                                             |                                                                                                   |                                                                                                   |
| EMS                                       | IEC 61000-4-2 ESD: Contact: 4 kV;<br>Air: 8 kV                                                                             | IEC 61000-4-2 ESD: Contact: 4 kV;<br>Air: 8 kV                                                    | IEC 61000-4-2 ESD: Contact: 4 kV;<br>Air: 8 kV                                                    |
|                                           | IEC 61000-4-3 RS: 80 MHz to 1 GHz:<br>3 V/m                                                                                | IEC 61000-4-3 RS: 80 MHz to 1 GHz:<br>3 V/m                                                       | IEC 61000-4-3 RS: 80 MHz to 1 GHz:<br>3 V/m                                                       |
|                                           | IEC 61000-4-4 EFT: Power: 1 kV;<br>Signal: 0.5 kV                                                                          | IEC 61000-4-4 EFT: Power: 1 kV;<br>Signal: 0.5 kV                                                 | IEC 61000-4-4 EFT: Power: 1 kV;<br>Signal: 0.5 kV                                                 |
|                                           | IEC 61000-4-5 Surge: Power: 1 kV                                                                                           | IEC 61000-4-5 Surge: Power: 1 kV                                                                  | IEC 61000-4-5 Surge: Power: 1 kV                                                                  |
|                                           | IEC 61000-4-6 CS: 150 kHz to 80 MHz:<br>3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF                                         | IEC 61000-4-6 CS: 150 kHz to 80 MHz:<br>3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF                | IEC 61000-4-6 CS: 150 kHz to 80 MHz:<br>3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF                |
| Safety                                    | EN 60950-1, IEC 60950-1                                                                                                    |                                                                                                   |                                                                                                   |

# CAN-to-fiber, PROFIBUS-to-fiber Converters



| Product Series                            | ICF-1170I                                                                                                                                                                                                                                                                                 | ICF-1180I                                                                                                                                                                                                                                                                  | ICF-1280I                                                                                                                                                                                                                                                                   |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Serial Interface                          |                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |
| Optical Fiber                             | 100BaseFX ports<br>Multi-mode<br>ST connector                                                                                                                                                                                                                                             | 100BaseFX ports<br>Multi-mode or Single-mode<br>ST connector                                                                                                                                                                                                               | 100BaseFX ports<br>Multi-mode or Single-mode<br>SC or ST connector                                                                                                                                                                                                          |
| Fiber Cable Requirements                  | 50/125 μm, 800 MHz<br>62.5/125 μm, 500 MHz                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                                                                          | –                                                                                                                                                                                                                                                                           |
| Typical Distance                          | 5 km                                                                                                                                                                                                                                                                                      | Multi-mode: 4 km, Single-mode: 45 km                                                                                                                                                                                                                                       | Multi-mode: 4 km, Single-mode: 45 km                                                                                                                                                                                                                                        |
| Wavelength (typical)                      | 850 nm                                                                                                                                                                                                                                                                                    | Multi-mode: 820 nm,<br>Single-mode: 1310 nm                                                                                                                                                                                                                                | Multi-mode: 820 nm,<br>Single-mode: 1310 nm                                                                                                                                                                                                                                 |
| Wavelength (TX range)                     | 840 to 860 nm                                                                                                                                                                                                                                                                             | –                                                                                                                                                                                                                                                                          | –                                                                                                                                                                                                                                                                           |
| Wavelength (RX range)                     | 800 to 900 nm                                                                                                                                                                                                                                                                             | –                                                                                                                                                                                                                                                                          | –                                                                                                                                                                                                                                                                           |
| Optical Power (TX range)                  | 0 to -5 dBm                                                                                                                                                                                                                                                                               | Multi-mode: -14 dBm, Single-mode: -7 dBm                                                                                                                                                                                                                                   | Multi-mode: -14 dBm, Single-mode: -7 dBm                                                                                                                                                                                                                                    |
| Optical Power (RX range)                  | 0 to -20 dBm                                                                                                                                                                                                                                                                              | Multi-mode: -28 dBm,<br>Single-mode: -29 dBm                                                                                                                                                                                                                               | Multi-mode: -28 dBm,<br>Single-mode: -29 dBm                                                                                                                                                                                                                                |
| Optical Power (link budget)               | 15 dB                                                                                                                                                                                                                                                                                     | Multi-mode: 14 dBm, Single-mode: 21 dBm                                                                                                                                                                                                                                    | Multi-mode: 14 dBm, Single-mode: 21 dBm                                                                                                                                                                                                                                     |
| Optical Power (dispersion penalty)        | 1 dB                                                                                                                                                                                                                                                                                      | –                                                                                                                                                                                                                                                                          | –                                                                                                                                                                                                                                                                           |
| CAN Interface                             |                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |
| No. of Ports                              | 1                                                                                                                                                                                                                                                                                         | –                                                                                                                                                                                                                                                                          | –                                                                                                                                                                                                                                                                           |
| Isolation                                 | 2 kV (built-in)                                                                                                                                                                                                                                                                           | –                                                                                                                                                                                                                                                                          | –                                                                                                                                                                                                                                                                           |
| Signals                                   | CAN_L, CAN_H, CAN Signal GND                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                                                                                          | –                                                                                                                                                                                                                                                                           |
| PROFIBUS Interface                        |                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |
| Industrial Protocols                      | –                                                                                                                                                                                                                                                                                         | PROFIBUS DP                                                                                                                                                                                                                                                                | PROFIBUS DP                                                                                                                                                                                                                                                                 |
| No. of Ports                              | –                                                                                                                                                                                                                                                                                         | 1                                                                                                                                                                                                                                                                          | 1                                                                                                                                                                                                                                                                           |
| Baudrate                                  | –                                                                                                                                                                                                                                                                                         | 9600 bps to 12 Mbps                                                                                                                                                                                                                                                        | 9600 bps to 12 Mbps                                                                                                                                                                                                                                                         |
| Isolation                                 | –                                                                                                                                                                                                                                                                                         | 2 kV (built-in)                                                                                                                                                                                                                                                            | 2 kV (built-in)                                                                                                                                                                                                                                                             |
| Power Parameters                          |                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |
| Input Current                             | 221 mA @ 12 VDC                                                                                                                                                                                                                                                                           | 221 mA @ 12 VDC                                                                                                                                                                                                                                                            | 315 mA @ 12 VDC                                                                                                                                                                                                                                                             |
| Input Voltage                             | 12 to 48 VDC                                                                                                                                                                                                                                                                              | 12 to 48 VDC                                                                                                                                                                                                                                                               | 12 to 48 VDC                                                                                                                                                                                                                                                                |
| No. of Power Inputs                       | 2                                                                                                                                                                                                                                                                                         | 2                                                                                                                                                                                                                                                                          | 2                                                                                                                                                                                                                                                                           |
| Physical Characteristics                  |                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |
| Housing                                   | Metal                                                                                                                                                                                                                                                                                     | Metal                                                                                                                                                                                                                                                                      | Metal                                                                                                                                                                                                                                                                       |
| Dimensions                                | 30.3 x 70 x 115 mm (1.19 x 2.76 x 4.53 in)                                                                                                                                                                                                                                                | 30.3 x 70 x 115 mm (1.19 x 2.76 x 4.53 in)                                                                                                                                                                                                                                 | 39 x 115 x 70 mm (1.54 x 4.53 x 2.76 in)                                                                                                                                                                                                                                    |
| Installation                              | DIN-rail mounting                                                                                                                                                                                                                                                                         | DIN-rail mounting (with optional kit),<br>wall mounting                                                                                                                                                                                                                    | DIN-rail mounting                                                                                                                                                                                                                                                           |
| Environmental Limits                      |                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |
| Operating Temperature                     | Standard Models: 0 to 60°C (32 to 140°F)<br>Wide Temp. Models: -40 to 85°C<br>(-40 to 185°F)                                                                                                                                                                                              | Standard Models: 0 to 60°C (32 to 140°F)<br>Wide Temp. Models: -40 to 75°C<br>(-40 to 167°F)                                                                                                                                                                               | Standard Models: 0 to 60°C (32 to 140°F)<br>Wide Temp. Models: -40 to 75°C<br>(-40 to 167°F)                                                                                                                                                                                |
| Storage Temperature<br>(package included) | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |
| Ambient Relative Humidity                 | 5 to 95% (non-condensing)                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |
| Standards and Certifications              |                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |
| EMC                                       | EN 55032/24                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |
| EMI                                       | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |
| EMS                                       | IEC 61000-4-2 ESD: Contact: 8 kV;<br>Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV;<br>Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV;<br>Signal: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz:<br>3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 0.5 kV;<br>Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 0.5 kV;<br>Signal: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz:<br>3 V/m<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 0.5 kV;<br>Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 0.5 kV;<br>Signal: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz:<br>3 V/m<br>IEC 61000-4-8 PFMF |
| Hazardous Locations                       | –                                                                                                                                                                                                                                                                                         | ATEX, Class I Division 2, IECEx                                                                                                                                                                                                                                            | ATEX, Class I Division 2, IECEx                                                                                                                                                                                                                                             |
| Safety                                    | EN 60950-1, IEC 60950-1                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |



# Find an MGate

| Device A \ Device B     | Modbus RTU/ASCII Slave         | Modbus RTU/ASCII Master        | PROFIBUS Slave | PROFIBUS Master | J1939 | DNP3 Serial Outstation   | DNP3 Serial Master       | DF1     | IEC 60870-5-101 Slave | IEC 60870-5-101 Master |
|-------------------------|--------------------------------|--------------------------------|----------------|-----------------|-------|--------------------------|--------------------------|---------|-----------------------|------------------------|
| Modbus RTU/ASCII Slave  | –                              | MB3000 <sup>1</sup>            | –              | 4101/5111       | 5118  | –                        | –                        | –       | –                     | –                      |
| Modbus RTU/ASCII Master | MB3000 <sup>1</sup>            | –                              | –              | 4101/5111       | 5118  | –                        | –                        | –       | –                     | –                      |
| PROFIBUS Slave          | –                              | –                              | –              | –               | –     | –                        | –                        | –       | –                     | –                      |
| PROFIBUS Master         | 4101/5111                      | 4101/5111                      | –              | –               | –     | –                        | –                        | –       | –                     | –                      |
| J1939                   | 5118                           | 5118                           | –              | –               | –     | –                        | –                        | –       | –                     | –                      |
| DNP3 Serial Outstation  | –                              | –                              | –              | –               | –     | –                        | –                        | –       | –                     | –                      |
| DNP3 Serial Master      | –                              | –                              | –              | –               | –     | –                        | –                        | –       | –                     | –                      |
| DF1                     | –                              | –                              | –              | –               | –     | –                        | –                        | –       | –                     | –                      |
| IEC 60870-5-101 Slave   | –                              | –                              | –              | –               | –     | –                        | –                        | –       | –                     | –                      |
| IEC 60870-5-101 Master  | –                              | –                              | –              | –               | –     | –                        | –                        | –       | –                     | –                      |
| Modbus TCP Server       | 5105                           | MB3000/W5x08 <sup>2</sup> 5109 | 5101           | 5111            | 5118  | –                        | 5109                     | –       | –                     | 5114                   |
| Modbus TCP Client       | MB3000/W5x08 <sup>2</sup> 5109 | 5105/5109                      | 5101           | 5111            | 5118  | 5109                     | 5109                     | –       | 5114                  | –                      |
| Ethernet/IP Adapter     | 5105                           | 5105                           | –              | –               | 5118  | –                        | –                        | EIP3000 | –                     | –                      |
| Ethernet/IP Scanner     | 5105                           | 5105                           | –              | 5111            | 5118  | –                        | –                        | EIP3000 | –                     | –                      |
| PROFINET Controller     | 5103                           | 5103                           | 5102           | 5111            | 5118  | –                        | –                        | –       | –                     | –                      |
| DNP3 TCP Outstation     | –                              | 5109                           | –              | –               | –     | –                        | W5x08 <sup>2</sup> /5109 | –       | –                     | –                      |
| DNP3 TCP Client         | 5109                           | 5109                           | –              | –               | –     | W5x08 <sup>2</sup> /5109 | –                        | –       | –                     | –                      |
| IEC 60870-5-104 Server  | –                              | 5114                           | –              | –               | –     | –                        | –                        | –       | –                     | 5114                   |
| IEC 60870-5-104 Client  | 5114                           | –                              | –              | –               | –     | –                        | –                        | –       | 5114                  | –                      |
| MQTT Broker             | 5105                           | –                              | –              | –               | –     | –                        | –                        | –       | –                     | –                      |

1. Applies only to the MB3270/3660.  
2. W5x08 = W5108/W5208 (supports IEEE 802.11a/b/g/n).

# Protocol Gateways

Our patented fieldbus-to-Ethernet MGate gateways not only connect your serial devices to an Ethernet network, but also allow for multiple connections and can convert between various protocols, such as Modbus TCP and EtherNet/IP.



Protocol Gateways  
Product Pages

| Modbus TCP Server                 | Modbus TCP Client                 | Ethernet/IP Adapter | Ethernet/IP Scanner | PROFINET Controller | DNP3 TCP Outstation      | DNP3 TCP Client          | IEC 60870-5-104 Server | IEC 60870-5-104 Client | MQTT Broker |
|-----------------------------------|-----------------------------------|---------------------|---------------------|---------------------|--------------------------|--------------------------|------------------------|------------------------|-------------|
| 5105                              | MB3000/W5x08 <sup>2</sup><br>5109 | 5105                | 5105                | 5103                | –                        | 5109                     | –                      | 5114                   | 5105        |
| MB3000/W5x08 <sup>2</sup><br>5109 | 5105/5109                         | 5105                | 5105                | 5103                | 5109                     | 5109                     | 5114                   | –                      | –           |
| 5101                              | 5101                              | –                   | –                   | 5102                | –                        | –                        | –                      | –                      | –           |
| 5111                              | 5111                              | –                   | 5111                | 5111                | –                        | –                        | –                      | –                      | –           |
| 5118                              | 5118                              | 5118                | 5118                | 5118                | –                        | –                        | –                      | –                      | –           |
| –                                 | 5109                              | –                   | –                   | –                   | –                        | W5x08 <sup>2</sup> /5109 | –                      | –                      | –           |
| 5109                              | 5109                              | –                   | –                   | –                   | W5x08 <sup>2</sup> /5109 | –                        | –                      | –                      | –           |
| –                                 | –                                 | EIP3000             | EIP3000             | –                   | –                        | –                        | –                      | –                      | –           |
| –                                 | 5114                              | –                   | –                   | –                   | –                        | –                        | –                      | 5114                   | –           |
| 5114                              | –                                 | –                   | –                   | –                   | –                        | –                        | 5114                   | –                      | –           |
| –                                 | –                                 | 5105                | 5105                | 5103                | –                        | 5109                     | –                      | 5114                   | 5105        |
| –                                 | 5109                              | 5105                | 5105                | 5103                | 5109                     | 5109                     | 5114                   | –                      | –           |
| 5105                              | 5105                              | –                   | –                   | –                   | –                        | –                        | –                      | –                      | 5105        |
| 5105                              | 5105                              | –                   | –                   | 5103                | –                        | –                        | –                      | –                      | –           |
| 5103                              | 5103                              | –                   | 5103                | –                   | –                        | –                        | –                      | –                      | –           |
| –                                 | 5109                              | –                   | –                   | –                   | –                        | –                        | –                      | –                      | –           |
| 5109                              | 5109                              | –                   | –                   | –                   | –                        | –                        | –                      | –                      | –           |
| –                                 | 5114                              | –                   | –                   | –                   | –                        | –                        | –                      | –                      | –           |
| 5114                              | –                                 | –                   | –                   | –                   | –                        | –                        | –                      | –                      | –           |
| 5105                              | –                                 | 5105                | –                   | –                   | –                        | –                        | –                      | –                      | –           |



# Industrial Ethernet Gateways



| Product Series                        | MGate MB3180/MB3280/MB3480                                                                                                                                                                                                                                                                                                     | MGate MB3170/MB3270                                                                                                                                                                                                                                 | MGate MB3660                                                                                                                                                                                                                               | MGate W5108/W5208                                                                                                                                                                                                                                                 |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet Interface                    |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |
| 10/100BaseT(X) Ports (RJ45 connector) | 1 (auto MDI/MDI-X connection)                                                                                                                                                                                                                                                                                                  | 2 (1 IP, Ethernet cascade, auto MDI/MDI-X connection)                                                                                                                                                                                               | 2 (2 IP, Ethernet cascade, auto MDI/MDI-X connection)                                                                                                                                                                                      | 1 (auto MDI/MDI-X connection)                                                                                                                                                                                                                                     |
| Magnetic Isolation Protection         | 1.5 kV (built-in)                                                                                                                                                                                                                                                                                                              | 1.5 kV (built-in)                                                                                                                                                                                                                                   | 1.5 kV (built-in)                                                                                                                                                                                                                          | 1.5 kV (built-in)                                                                                                                                                                                                                                                 |
| Ethernet Software Features            |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |
| Industrial Protocols                  | Modbus TCP Client (master), Modbus TCP Server (slave)                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            | DNP3 TCP Master, DNP3 TCP Outstation (slave), Modbus TCP Client (master), Modbus TCP Server (slave)                                                                                                                                                               |
| Management                            | ARP, DHCP Client, DNS, HTTP, HTTPS (MGate MB3180 excluded), SMTP (MGate MB3180 excluded), SNMP Trap (MGate MB3180 excluded), SNMPv1/v2c/v3, TCP/IP, Telnet, UDP, NTP Client (MGate MB3180 excluded)                                                                                                                            | ARP, DHCP Client, DNS, HTTP, HTTPS, SMTP, SNMP Trap, SNMPv1/v2c/v3, TCP/IP, Telnet, UDP, NTP Client                                                                                                                                                 | ARP, DHCP Client, DNS, HTTP, HTTPS, SMTP, SNMP Trap, SNMPv1/v2c/v3, TCP/IP, Telnet, UDP, NTP Client, RADIUS                                                                                                                                | ARP, DHCP Client, DNS, HTTP, HTTPS, SMTP, SNMP Trap, SNMPv1/v2c/v3, TCP/IP, Telnet, SSH, UDP, NTP Client                                                                                                                                                          |
| Serial Interface                      |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |
| No. of Ports                          | MGate MB3180: 1<br>MGate MB3280: 2<br>MGate MB3480: 4                                                                                                                                                                                                                                                                          | MGate MB3170 Series: 1<br>MGate MB3270 Series: 2                                                                                                                                                                                                    | MGate MB3660-8 Series: 8<br>MGate MB3660-16 Series: 16                                                                                                                                                                                     | MGate W5108 Series: 1<br>MGate W5208 Series: 2                                                                                                                                                                                                                    |
| Connector                             | DB9 male                                                                                                                                                                                                                                                                                                                       | MGate MB3170/MB3170I: DB9 male for RS-232 and terminal block for RS-422/485<br>MGate MB3270/MB3270I: 2 x DB9 male                                                                                                                                   | MGate MB3660-8/16: DB9 male<br>MGate MB3660-8/16-J: RJ45                                                                                                                                                                                   | DB9 male                                                                                                                                                                                                                                                          |
| Serial Standards                      | RS-232/422/485 (software selectable)                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |
| Baudrate                              | 50 bps to 921.6 kbps                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |
| Flow Control                          | DTR/DSR, RTS Toggle (RS-232 only), RTS/CTS                                                                                                                                                                                                                                                                                     | DTR/DSR, RTS Toggle (RS-232 only), RTS/CTS                                                                                                                                                                                                          | DTR/DSR, RTS Toggle (RS-232 only), RTS/CTS                                                                                                                                                                                                 | RTS Toggle (RS-232 only), RTS/CTS, XON/XOFF                                                                                                                                                                                                                       |
| RS-485 Data Direction Control         | ADDC® (automatic data direction control)                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |
| Pull High/Low Resistor for RS-485     | 1 kilo-ohm, 150 kilo-ohms                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |
| Terminator for RS-485                 | MGate MB3180: None<br>MGate MB3280/MB3480: 120 ohms                                                                                                                                                                                                                                                                            | 120 ohms                                                                                                                                                                                                                                            | 120 ohms                                                                                                                                                                                                                                   | 120 ohms                                                                                                                                                                                                                                                          |
| Isolation                             | —                                                                                                                                                                                                                                                                                                                              | 2 kV (I models)                                                                                                                                                                                                                                     | 2 kV (I models)                                                                                                                                                                                                                            | 2 kV (built-in)                                                                                                                                                                                                                                                   |
| Serial Software Features              |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |
| Industrial Protocols                  | Modbus RTU/ASCII Master, Modbus RTU/ASCII Slave                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            | Modbus RTU/ASCII Master, Modbus RTU/ASCII Slave, DNP3 Serial Master, DNP3 Serial Outstation (slave)                                                                                                                                                               |
| WLAN Interface                        |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |
| WLAN Standards                        | —                                                                                                                                                                                                                                                                                                                              | —                                                                                                                                                                                                                                                   | —                                                                                                                                                                                                                                          | 802.11a/b/g/n                                                                                                                                                                                                                                                     |
| Power Parameters                      |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |
| Input Voltage                         | 12 to 48 VDC                                                                                                                                                                                                                                                                                                                   | 12 to 48 VDC                                                                                                                                                                                                                                        | All models: Redundant dual inputs<br>AC models: 100 to 240 VAC (47 to 63 Hz)<br>DC models: 20 to 60 VDC (1.5 kV isolation)                                                                                                                 | 9 to 60 VDC                                                                                                                                                                                                                                                       |
| Relays                                |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |
| Contact Current Rating                | —                                                                                                                                                                                                                                                                                                                              | Resistive load: 1 A @ 30 VDC                                                                                                                                                                                                                        | Resistive load: 2 A @ 30 VDC                                                                                                                                                                                                               | Resistive load: 2 A @ 30 VDC                                                                                                                                                                                                                                      |
| Environmental Limits                  |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |
| Operating Temperature                 | 0 to 60°C (32 to 140°F)                                                                                                                                                                                                                                                                                                        | Standard Models: 0 to 60°C (-32 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                          | 0 to 60°C (32 to 140°F)                                                                                                                                                                                                                    | Standard Models: 0 to 60°C (-32 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                                        |
| Standards and Certifications          |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |
| Safety                                | EN 60950-1, UL 60950-1                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            | EN 60950-1, UL 508                                                                                                                                                                                                                                                |
| EMC                                   | EN 55032/24                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            | CISPR 32, FCC Part 15B Class B                                                                                                                                                                                                                                    |
| EMS                                   | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 1 kV (MB3180/MB3280)<br>IEC 61000-4-5 Surge: Power: 1 kV; Signal: 2 kV (MB3480)<br>IEC 61000-4-6 CS: 3 V<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 10 V<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 1 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 10 V<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8 PFMF |
| Hazardous Locations                   | —                                                                                                                                                                                                                                                                                                                              | ATEX, Class I Division 2, IECEx                                                                                                                                                                                                                     | —                                                                                                                                                                                                                                          | ATEX, Class I Division 2, IECEx                                                                                                                                                                                                                                   |
| Radio Frequency                       | —                                                                                                                                                                                                                                                                                                                              | —                                                                                                                                                                                                                                                   | —                                                                                                                                                                                                                                          | EN 300 328, EN 301 489-1/17, EN 301 893                                                                                                                                                                                                                           |
| Maritime                              | —                                                                                                                                                                                                                                                                                                                              | DNV GL                                                                                                                                                                                                                                              | —                                                                                                                                                                                                                                          | —                                                                                                                                                                                                                                                                 |
| Warranty                              |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |
| Warranty Period                       | 5 years                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                   |

# Industrial Ethernet Gateways



| Product Series                        | MGate 4101-MB-PBS                                                                                                                                                                                                                                                              | MGate 5101-PBM-MN                                                                                                                                                                                                                                                | MGate 5102-PBM-PN                                                                                                                                                                                                                                                  | MGate 5103                                                                                                                                                                                                                                                                       | MGate 5111                                                                                                                                                                                                                                                                       |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet Interface                    |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                  |
| 10/100BaseT(X) Ports (RJ45 connector) | –                                                                                                                                                                                                                                                                              | 1<br>(auto MDI/MDI-X connection)                                                                                                                                                                                                                                 | 2<br>(auto MDI/MDI-X connection)                                                                                                                                                                                                                                   | 2<br>(auto MDI/MDI-X connection)                                                                                                                                                                                                                                                 | 2<br>(auto MDI/MDI-X connection)                                                                                                                                                                                                                                                 |
| Magnetic Isolation Protection         | –                                                                                                                                                                                                                                                                              | 1.5 kV (built-in)                                                                                                                                                                                                                                                | 1.5 kV (built-in)                                                                                                                                                                                                                                                  | 1.5 kV (built-in)                                                                                                                                                                                                                                                                | 1.5 kV (built-in)                                                                                                                                                                                                                                                                |
| Ethernet Software Features            |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                  |
| Industrial Protocols                  | –                                                                                                                                                                                                                                                                              | Modbus TCP Client (master),<br>Modbus TCP Server (slave)                                                                                                                                                                                                         | PROFINET IO Device                                                                                                                                                                                                                                                 | EtherNet/IP Adapter,<br>Modbus TCP Client (master),<br>Modbus TCP Server (slave),<br>PROFINET IO Device                                                                                                                                                                          |                                                                                                                                                                                                                                                                                  |
| Management                            | –                                                                                                                                                                                                                                                                              | ARP, DHCP Client, DNS, HTTP, HTTPS, SMTP, SNMP Trap, SNMPv1/v2c/v3, TCP/IP, Telnet, SSH, UDP, NTP Client                                                                                                                                                         |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                  |
| PROFIBUS Interface                    |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                  |
| Industrial Protocols                  | PROFIBUS DP                                                                                                                                                                                                                                                                    | PROFIBUS DP                                                                                                                                                                                                                                                      | PROFIBUS DP                                                                                                                                                                                                                                                        | –                                                                                                                                                                                                                                                                                | PROFIBUS DP                                                                                                                                                                                                                                                                      |
| No. of Ports                          | 1                                                                                                                                                                                                                                                                              | 1                                                                                                                                                                                                                                                                | 1                                                                                                                                                                                                                                                                  | –                                                                                                                                                                                                                                                                                | 1                                                                                                                                                                                                                                                                                |
| Connector                             | DB9 female                                                                                                                                                                                                                                                                     | DB9 female                                                                                                                                                                                                                                                       | DB9 female                                                                                                                                                                                                                                                         | –                                                                                                                                                                                                                                                                                | DB9 female                                                                                                                                                                                                                                                                       |
| Baudrate                              | 9600 bps to 12 Mbps                                                                                                                                                                                                                                                            | 9600 bps to 12 Mbps                                                                                                                                                                                                                                              | 9600 bps to 12 Mbps                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                                                                                | 9600 bps to 12 Mbps                                                                                                                                                                                                                                                              |
| Isolation                             | 2 kV (built-in)                                                                                                                                                                                                                                                                | 2 kV (built-in)                                                                                                                                                                                                                                                  | 2 kV (built-in)                                                                                                                                                                                                                                                    | –                                                                                                                                                                                                                                                                                | 2 kV (built-in)                                                                                                                                                                                                                                                                  |
| Signal                                | PROFIBUS D+,<br>PROFIBUS D-, RTS,<br>Signal Common, 5V                                                                                                                                                                                                                         | PROFIBUS D+,<br>PROFIBUS D-, RTS,<br>Signal Common, 5V                                                                                                                                                                                                           | PROFIBUS D+,<br>PROFIBUS D-, RTS,<br>Signal Common, 5V                                                                                                                                                                                                             | –                                                                                                                                                                                                                                                                                | PROFIBUS D+,<br>PROFIBUS D-, RTS,<br>Signal Common, 5V                                                                                                                                                                                                                           |
| Serial Interface                      |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                  |
| No. of Ports                          | 1                                                                                                                                                                                                                                                                              | –                                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                                                                  | 1                                                                                                                                                                                                                                                                                | 1                                                                                                                                                                                                                                                                                |
| Connector                             | DB9 male                                                                                                                                                                                                                                                                       | –                                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                                                                  | DB9 male                                                                                                                                                                                                                                                                         | DB9 male                                                                                                                                                                                                                                                                         |
| Serial Standards                      | RS-232/422/485                                                                                                                                                                                                                                                                 | –                                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                                                                  | RS-232/422/485                                                                                                                                                                                                                                                                   | RS-232/422/485                                                                                                                                                                                                                                                                   |
| Baudrate                              | 50 bps to 921.6 kbps                                                                                                                                                                                                                                                           | –                                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                                                                  | 50 bps to 921.6 kbps                                                                                                                                                                                                                                                             | 50 bps to 921.6 kbps                                                                                                                                                                                                                                                             |
| RS-485 Data Direction Control         | ADDC® (automatic data direction control)                                                                                                                                                                                                                                       | –                                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                                                                  | ADDC® (automatic data direction control)                                                                                                                                                                                                                                         | ADDC® (automatic data direction control)                                                                                                                                                                                                                                         |
| Isolation                             | 2 kV (I models)                                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                                                                  | 2 kV (built-in)                                                                                                                                                                                                                                                                  | 2 kV (built-in)                                                                                                                                                                                                                                                                  |
| Serial Software Features              |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                  |
| Industrial Protocols                  | Modbus RTU/ASCII Master, Modbus RTU/ASCII Slave, PROFIBUS DP-V0 Slave                                                                                                                                                                                                          | PROFIBUS DP-V1 Master                                                                                                                                                                                                                                            | PROFIBUS DP-V1 Master                                                                                                                                                                                                                                              | Modbus RTU/ASCII Master, Modbus RTU/ASCII Slave                                                                                                                                                                                                                                  | Modbus RTU/ASCII Master, Modbus RTU/ASCII Slave, PROFIBUS DP-V0 Slave                                                                                                                                                                                                            |
| Power Parameters                      |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                  |
| Input Voltage                         | 12 to 48 VDC                                                                                                                                                                                                                                                                   | 12 to 48 VDC                                                                                                                                                                                                                                                     | 12 to 48 VDC                                                                                                                                                                                                                                                       | 12 to 48 VDC                                                                                                                                                                                                                                                                     | 12 to 48 VDC                                                                                                                                                                                                                                                                     |
| Environmental Limits                  |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                  |
| Operating Temperature                 | Standard Models: 0 to 60°C (-32 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                                                     |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                  |
| Standards and Certifications          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                  |
| Safety                                | EN 60950-1, UL 60950-1, EN 62368-1, UL 62368-1                                                                                                                                                                                                                                 | EN 60950-1, UL 60950-1                                                                                                                                                                                                                                           | EN 60950-1, UL 508                                                                                                                                                                                                                                                 | EN 60950-1, UL 508                                                                                                                                                                                                                                                               | EN 60950-1, UL 61010-2-201                                                                                                                                                                                                                                                       |
| EMC                                   | EN 55032/35                                                                                                                                                                                                                                                                    | EN 55032/24                                                                                                                                                                                                                                                      | EN 55032/24                                                                                                                                                                                                                                                        | EN 55032/24                                                                                                                                                                                                                                                                      | EN 61000-6-2/-6-4                                                                                                                                                                                                                                                                |
| EMI                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                 | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                   | CISPR 32, FCC Part 15B Class B                                                                                                                                                                                                                                     | CISPR 32, FCC Part 15B Class B                                                                                                                                                                                                                                                   | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                   |
| EMS                                   | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8 PFMF |
| Hazardous Locations                   | ATEX, Class I Division 2, IECEx                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                  |
| Warranty                              |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                  |
| Warranty Period                       | 5 years                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                  |

# Industrial Ethernet Gateways



| Product Series                        | MGate EIP3170/EIP3270                                                                                                                                                                                                                               | MGate 5105-MB-EIP                                                                                                                                                                                                                                                                | MGate 5109                                                                                           | MGate 5114                                                                                                     | MGate 5118                                                                                                                      |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Ethernet Interface                    |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                      |                                                                                                                |                                                                                                                                 |
| 10/100BaseT(X) Ports (RJ45 connector) | 2 (auto MDI/MDI-X connection)                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                  |                                                                                                      |                                                                                                                |                                                                                                                                 |
| Magnetic Isolation Protection         | 1.5 kV (built-in)                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                  |                                                                                                      |                                                                                                                |                                                                                                                                 |
| Ethernet Software Features            |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                      |                                                                                                                |                                                                                                                                 |
| Industrial Protocols                  | Ethernet/IP (PCCC)                                                                                                                                                                                                                                  | Modbus TCP Client (master),<br>Modbus TCP Server (slave),<br>EtherNet/IP Scanner,<br>EtherNet/IP Adapter, MQTT                                                                                                                                                                   | Modbus TCP Client (master),<br>Modbus TCP Server (slave),<br>DNP3 TCP Master, DNP3 TCP Outstation    | Modbus TCP Client (master),<br>Modbus TCP Server (slave),<br>IEC 60870-5-104 Client,<br>IEC 60870-5-104 Server | EtherNet/IP Adapter,<br>EtherNet/IP Scanner,<br>Modbus TCP Client (master),<br>Modbus TCP Server (slave),<br>PROFINET IO Device |
| Management                            | ARP, DHCP Client, SNMPv1, TCP/IP, Telnet, UDP                                                                                                                                                                                                       | ARP, DHCP Client, DNS, HTTP, HTTPS, SMTP, SNMP Trap, SNMPv1/v2c/v3, TCP/IP, Telnet, SSH, UDP, NTP Client                                                                                                                                                                         |                                                                                                      |                                                                                                                |                                                                                                                                 |
| Serial Interface                      |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                      |                                                                                                                |                                                                                                                                 |
| No. of Ports                          | MGate EIP3170 Series: 1<br>MGate EIP3270 Series: 2                                                                                                                                                                                                  | 1                                                                                                                                                                                                                                                                                | 1                                                                                                    | 1                                                                                                              | 1                                                                                                                               |
| Connector                             | MGate EIP3170 Series:<br>DB9 male for RS-232,<br>Terminal block for RS-422<br>MGate EIP3270 Series:<br>2 x DB9 male                                                                                                                                 | DB9 male                                                                                                                                                                                                                                                                         | DB9 male                                                                                             | DB9 male                                                                                                       | DB9 male                                                                                                                        |
| Serial Standards                      | RS-232/422                                                                                                                                                                                                                                          | RS-232/422/485                                                                                                                                                                                                                                                                   | RS-232/422/485                                                                                       | RS-232/422/485                                                                                                 | RS-232/422/485                                                                                                                  |
| Baudrate                              | 1200 bps to 921.6 kbps                                                                                                                                                                                                                              | 50 bps to 921.6 kbps                                                                                                                                                                                                                                                             | 50 bps to 921.6 kbps                                                                                 | 50 bps to 921.6 kbps                                                                                           | 50 bps to 921.6 kbps                                                                                                            |
| Flow Control                          | RTS/CTS, DTR/DSR (RS-232 only)                                                                                                                                                                                                                      | RTS Toggle (RS-232 only),<br>RTS/CTS                                                                                                                                                                                                                                             | RTS Toggle (RS-232 only),<br>RTS/CTS                                                                 | RTS Toggle (RS-232 only),<br>RTS/CTS                                                                           | RTS Toggle (RS-232 only),<br>RTS/CTS                                                                                            |
| RS-485 Data Direction Control         | —                                                                                                                                                                                                                                                   | ADDC® (automatic data direction control)                                                                                                                                                                                                                                         | ADDC® (automatic data direction control)                                                             | ADDC® (automatic data direction control)                                                                       | ADDC® (automatic data direction control)                                                                                        |
| Pull High/Low Resistor for RS-485     | —                                                                                                                                                                                                                                                   | 1 kilo-ohm, 150 kilo-ohms                                                                                                                                                                                                                                                        | 1 kilo-ohm, 150 kilo-ohms                                                                            | 1 kilo-ohm, 150 kilo-ohms                                                                                      | 1 kilo-ohm, 150 kilo-ohms                                                                                                       |
| Terminator for RS-485                 | —                                                                                                                                                                                                                                                   | 120 ohms                                                                                                                                                                                                                                                                         | 120 ohms                                                                                             | 120 ohms                                                                                                       | 120 ohms                                                                                                                        |
| Isolation                             | 2 kV (I models)                                                                                                                                                                                                                                     | 2 kV (built-in)                                                                                                                                                                                                                                                                  | 2 kV (built-in)                                                                                      | 2 kV (built-in)                                                                                                | 2 kV (built-in)                                                                                                                 |
| Serial Software Features              |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                      |                                                                                                                |                                                                                                                                 |
| Industrial Protocols                  | DF1                                                                                                                                                                                                                                                 | Modbus RTU/ASCII Master,<br>Modbus RTU/ASCII Slave                                                                                                                                                                                                                               | Modbus RTU/ASCII Master,<br>Modbus RTU/ASCII Slave,<br>DNP3 Serial Master,<br>DNP3 Serial Outstation | Modbus RTU/ASCII Master,<br>Modbus RTU/ASCII Slave,<br>IEC 60870-5-101 Master,<br>IEC 60870-5-101 Slave        | J1939, Modbus RTU/ASCII Master,<br>Modbus RTU/ASCII Slave                                                                       |
| Power Parameters                      |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                      |                                                                                                                |                                                                                                                                 |
| Input Voltage                         | 12 to 48 VDC                                                                                                                                                                                                                                        | 12 to 48 VDC                                                                                                                                                                                                                                                                     | 12 to 48 VDC                                                                                         | 12 to 48 VDC                                                                                                   | 12 to 48 VDC                                                                                                                    |
| Relays                                |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                      |                                                                                                                |                                                                                                                                 |
| Contact Current Rating                | Resistive load: 1 A @ 30 VDC                                                                                                                                                                                                                        | Resistive load: 2 A @ 30 VDC                                                                                                                                                                                                                                                     | Resistive load: 2 A @ 30 VDC                                                                         | Resistive load: 2 A @ 30 VDC                                                                                   | Resistive load: 2 A @ 30 VDC                                                                                                    |
| Environmental Limits                  |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                      |                                                                                                                |                                                                                                                                 |
| Operating Temperature                 | Standard Models: 0 to 60°C (-32 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                          |                                                                                                                                                                                                                                                                                  |                                                                                                      |                                                                                                                |                                                                                                                                 |
| Standards and Certifications          |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                      |                                                                                                                |                                                                                                                                 |
| Safety                                | EN 60950-1, UL 508                                                                                                                                                                                                                                  | EN 60950-1, UL 508                                                                                                                                                                                                                                                               | EN 60950-1, UL 508                                                                                   | EN 60950-1, UL 508                                                                                             | EN 60950-1, UL 61010-2-201                                                                                                      |
| EMC                                   | EN 55032/24                                                                                                                                                                                                                                         | EN 55032/24                                                                                                                                                                                                                                                                      | EN 55032/24                                                                                          | EN 55032/24                                                                                                    | EN 61000-6-2/-6-4                                                                                                               |
| EMI                                   | CISPR 32,<br>FCC Part 15B Class A                                                                                                                                                                                                                   | CISPR 32,<br>FCC Part 15B Class B                                                                                                                                                                                                                                                | CISPR 32,<br>FCC Part 15B Class B                                                                    | CISPR 32,<br>FCC Part 15B Class B                                                                              | CISPR 32,<br>FCC Part 15B Class A                                                                                               |
| EMS                                   | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 4 kV<br>IEC 61000-4-6 CS: 10 V<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8 PFMF |                                                                                                      |                                                                                                                |                                                                                                                                 |
| Hazardous Locations                   | ATEX, Class I Division 2, IECEx                                                                                                                                                                                                                     | ATEX, Class I Division 2, IECEx                                                                                                                                                                                                                                                  | ATEX, Class I Division 2, IECEx                                                                      | ATEX, Class I Division 2, IECEx                                                                                | ATEX, Class I Division 2, IECEx                                                                                                 |
| Maritime                              | MGate EIP3170/EIP3170-T/<br>EIP3170I/EIP3170I-T: DNV GL                                                                                                                                                                                             | —                                                                                                                                                                                                                                                                                | —                                                                                                    | —                                                                                                              | —                                                                                                                               |
| Warranty                              |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                      |                                                                                                                |                                                                                                                                 |
| Warranty Period                       | 5 years                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                  |                                                                                                      |                                                                                                                |                                                                                                                                 |





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## USB-to-serial Converters

Moxa's UPort USB-to-serial converters provide computers with high-performance, industrial-grade connections for up to 16 serial devices over a single USB port. A wide range of converters are available with features that include Hi-Speed USB 2.0 with data rates up to 480 Mbps, advanced UARTs for high-end serial performance, COM port mapping, fixed-base COM functionality, and more.

# USB-to-serial Converters/USB Hubs

Moxa's UPort series of USB-to-serial converters and USB hubs provide true Hi-Speed USB 2.0 speeds up to 480 Mbps, 15 kV of ESD protection, and have a metal housing to endure harsh environments, making them ideal for use in ATMs, kiosks, POS stations, and data-acquisition applications.



USB-to-serial Converters/  
USB Hubs Product Pages



## Industrial-grade USB Hubs

The UPort Series USB hubs are industrial-grade, and designed with the ruggedness and reliability needed for industrial applications. Each port has ESD Level 4 protection and can provide true Hi-Speed USB 2.0 data rates up to 480 Mbps—even for heavy-load applications. The UPort Series includes models with dual power inputs, DIN-rail mounting options, and wide temperature models that can operate reliably even in harsh conditions.



# USB-to-serial Converters



| Product Series                         | UPort 1110                                                                                                                                                                                                                                        | UPort 1130 | UPort 1130I   | UPort 1150     | UPort 1150I                             | UPort 1250                                                                                                                                                                                                                        | UPort 1250I     | UPort 1410                                | UPort 1450     | UPort 1450I     |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------|----------------|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------|----------------|-----------------|
| USB Interface                          |                                                                                                                                                                                                                                                   |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| Speed                                  | 12 Mbps                                                                                                                                                                                                                                           |            |               |                |                                         | 12 Mbps, 480 Mbps                                                                                                                                                                                                                 |                 |                                           |                |                 |
| USB Connector                          | USB Type A                                                                                                                                                                                                                                        |            |               |                | USB Type B                              |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| USB Standards                          | USB 1.0/1.1 compliant, USB 2.0 compatible                                                                                                                                                                                                         |            |               |                |                                         | USB 1.1/2.0 compliant                                                                                                                                                                                                             |                 |                                           |                |                 |
| Serial Interface                       |                                                                                                                                                                                                                                                   |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| Serial Standards                       | RS-232                                                                                                                                                                                                                                            | RS-422/485 |               | RS-232/422/485 |                                         |                                                                                                                                                                                                                                   |                 | RS-232                                    | RS-232/422/485 |                 |
| No. of Ports                           | 1                                                                                                                                                                                                                                                 |            |               |                |                                         | 2                                                                                                                                                                                                                                 |                 | 4                                         |                |                 |
| Connector                              | DB9 male                                                                                                                                                                                                                                          |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| Baudrate                               | 50 bps to 921.6 kbps                                                                                                                                                                                                                              |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| Data Bits                              | 5, 6, 7, 8                                                                                                                                                                                                                                        |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| Stop Bits                              | 1, 1.5, 2                                                                                                                                                                                                                                         |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| Parity                                 | None, Even, Odd, Space, Mark                                                                                                                                                                                                                      |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| Flow Control                           | None, RTS/CTS, XON/XOFF                                                                                                                                                                                                                           |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| Isolation                              | —                                                                                                                                                                                                                                                 | —          | 2 kV          | —              | 2 kV                                    | —                                                                                                                                                                                                                                 | 2 kV            | —                                         | —              | 2 kV            |
| Power Parameters                       |                                                                                                                                                                                                                                                   |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| Input Voltage                          | 5 VDC                                                                                                                                                                                                                                             |            |               |                |                                         |                                                                                                                                                                                                                                   | 12 to 48 VDC    | 5 VDC or 12 to 48 VDC <sup>1</sup>        |                | 12 to 48 VDC    |
| Input Current                          | 30 mA @ 5 VDC                                                                                                                                                                                                                                     |            | 65 mA @ 5 VDC | 77 mA @ 5 VDC  | 260 mA @ 5 VDC                          | 360 mA @ 5 VDC                                                                                                                                                                                                                    | 200 mA @ 12 VDC | 260 mA @ 12 VDC                           |                | 360 mA @ 12 VDC |
| Physical Characteristics               |                                                                                                                                                                                                                                                   |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| Housing                                | ABS + Polycarbonate                                                                                                                                                                                                                               |            |               |                | Metal                                   |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| Dimensions                             | 37.5 x 20.5 x 60 mm (1.48 x 0.81 x 2.36 in)                                                                                                                                                                                                       |            |               |                | 52 x 80 x 22 mm (2.05 x 3.15 x 0.87 in) | 77 x 26 x 111 mm (3.03 x 1.02 x 4.37 in)                                                                                                                                                                                          |                 | 204 x 30 x 125 mm (8.03 x 1.18 x 4.92 in) |                |                 |
| Weight (packaged)                      | 200 g (0.44 lb)                                                                                                                                                                                                                                   |            |               |                | 320 g (0.71 lb)                         | 370 g (0.82 lb)                                                                                                                                                                                                                   | 680 g (1.5 lb)  | 1,345 g (2.97 lb)                         |                |                 |
| Weight (product only)                  | 65 g (0.14 lb)                                                                                                                                                                                                                                    |            |               |                | 75 g (0.17 lb)                          | 180 g (0.4 lb)                                                                                                                                                                                                                    |                 | 720 g (1.59 lb)                           |                |                 |
| Environmental Limits                   |                                                                                                                                                                                                                                                   |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| Operating Temperature                  | 0 to 55°C (32 to 131°F)                                                                                                                                                                                                                           |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| Storage Temperature (package included) | -20 to 70°C (-4 to 158°F)                                                                                                                                                                                                                         |            |               |                |                                         | -20 to 75°C (-4 to 167°F)                                                                                                                                                                                                         |                 |                                           |                |                 |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)                                                                                                                                                                                                                         |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| Standards and Certifications           |                                                                                                                                                                                                                                                   |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| EMC                                    | EN 55032/24                                                                                                                                                                                                                                       |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| EMI                                    | CISPR 32, FCC Part 15B Class 1                                                                                                                                                                                                                    |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| EMS                                    | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m<br>IEC 61000-4-8 PFMF |            |               |                |                                         | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV<br>IEC 61000-4-5 Surge: Power: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m<br>IEC 61000-4-8 PFMF |                 |                                           |                |                 |
| Safety                                 | —                                                                                                                                                                                                                                                 |            |               |                |                                         | UL 60950-1                                                                                                                                                                                                                        |                 |                                           |                |                 |
| Declaration                            |                                                                                                                                                                                                                                                   |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |
| Green Product                          | RoHS, CRoHS, WEEE                                                                                                                                                                                                                                 |            |               |                |                                         |                                                                                                                                                                                                                                   |                 |                                           |                |                 |

1. UPort 1410/1450 Series: 5 V for USB port power, 12 V for external power adapter.

# USB-to-serial Converters



| Product Series                         | UPort 1610-8                                                                                                                                                                                                                      |   | UPort 1650-8   |                                                | UPort 1610-16 |                | UPort 1650-16  |                                                                                                                                                                                                                                                     | UPort 2210 |                                          | UPort 2410 |  |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------|------------------------------------------------|---------------|----------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------|------------|--|
| USB Interface                          |                                                                                                                                                                                                                                   |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Speed                                  | 12 Mbps, 480 Mbps                                                                                                                                                                                                                 |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| USB Connector                          | USB Type B                                                                                                                                                                                                                        |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| USB Standards                          | USB 1.1/2.0 compliant                                                                                                                                                                                                             |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Serial Interface                       |                                                                                                                                                                                                                                   |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Serial Standards                       | RS-232                                                                                                                                                                                                                            |   | RS-232/422/485 |                                                | RS-232        |                | RS-232/422/485 |                                                                                                                                                                                                                                                     | RS-232     |                                          |            |  |
| No. of Ports                           | 8                                                                                                                                                                                                                                 |   |                | 16                                             |               |                |                | 2                                                                                                                                                                                                                                                   |            | 4                                        |            |  |
| Connector                              | DB9 male                                                                                                                                                                                                                          |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Baudrate                               | 50 bps to 921.6 kbps                                                                                                                                                                                                              |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Data Bits                              | 5, 6, 7, 8                                                                                                                                                                                                                        |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Stop Bits                              | 1, 1.5, 2                                                                                                                                                                                                                         |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Parity                                 | None, Even, Odd, Space, Mark                                                                                                                                                                                                      |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Flow Control                           | None, RTS/CTS, XON/XOFF                                                                                                                                                                                                           |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Power Parameters                       |                                                                                                                                                                                                                                   |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Input Voltage                          | 12 to 48 VDC                                                                                                                                                                                                                      |   |                | 100 to 240 VAC                                 |               |                |                | 5 VDC                                                                                                                                                                                                                                               |            |                                          |            |  |
| Input Current                          | 580 mA @ 12 VDC                                                                                                                                                                                                                   |   |                | 220 mA @ 100 VAC                               |               |                |                | 140 mA @ 5 VDC                                                                                                                                                                                                                                      |            | 240 mA @ 5 VDC                           |            |  |
| Physical Characteristics               |                                                                                                                                                                                                                                   |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Housing                                | Metal                                                                                                                                                                                                                             |   |                |                                                |               |                |                | Polycarbonate (PC)                                                                                                                                                                                                                                  |            |                                          |            |  |
| Dimensions                             | 204 x 44 x 125 mm (8.03 x 1.73 x 4.92 in)                                                                                                                                                                                         |   |                | 440 x 45.5 x 198.1 mm (17.32 x 1.79 x 7.80 in) |               |                |                | 70 x 35 x 120 mm (2.76 x 1.38 x 4.72 in)                                                                                                                                                                                                            |            | 80 x 35 x 185 mm (3.15 x 1.38 x 7.28 in) |            |  |
| Weight (packaged)                      | 1,435 g (3.16 lb)                                                                                                                                                                                                                 |   |                | 3,485 g (7.68 lb)                              |               |                |                | 325 g (0.72 lb)                                                                                                                                                                                                                                     |            | 455 g (1.00 lb)                          |            |  |
| Weight (product only)                  | 835 g (1.84 lb)                                                                                                                                                                                                                   |   |                | 2,475 g (5.46 lb)                              |               |                |                | 120 g (0.26 lb)                                                                                                                                                                                                                                     |            | 210 g (0.46 lb)                          |            |  |
| Environmental Limits                   |                                                                                                                                                                                                                                   |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Operating Temperature                  | 0 to 55°C (32 to 131°F)                                                                                                                                                                                                           |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Storage Temperature (package included) | -20 to 75°C (-4 to 167°F)                                                                                                                                                                                                         |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)                                                                                                                                                                                                         |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Standards and Certifications           |                                                                                                                                                                                                                                   |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| EMC                                    | EN 55032/24                                                                                                                                                                                                                       |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| EMI                                    | CISPR 32, FCC Part 15B Class 1                                                                                                                                                                                                    |   |                |                                                |               |                |                | CISPR 32, FCC Part 15B Class B                                                                                                                                                                                                                      |            |                                          |            |  |
| EMS                                    | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV<br>IEC 61000-4-5 Surge: Power: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m<br>IEC 61000-4-8 PFMF |   |                |                                                |               |                |                | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 4 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV<br>IEC 61000-4-5 Surge: Power: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m;<br>Signal: 3 V/m<br>IEC 61000-4-8 PFMF |            |                                          |            |  |
| Safety                                 | UL 60950-1                                                                                                                                                                                                                        |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Vibration                              | —                                                                                                                                                                                                                                 | — | —              | —                                              | —             | IEC 60068-2-6  |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Freefall                               | —                                                                                                                                                                                                                                 | — | —              | —                                              | —             | IEC 60068-2-32 |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Declaration                            |                                                                                                                                                                                                                                   |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |
| Green Product                          | RoHS, CRoHS, WEEE                                                                                                                                                                                                                 |   |                |                                                |               |                |                |                                                                                                                                                                                                                                                     |            |                                          |            |  |

# USB Hubs



| Product Series                         | UPort 404                                                                                                                                                                                                                                           | UPort 404-T                | UPort 407                                 | UPort 407-T                | UPort 204                                | UPort 207                                |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------------------------------|----------------------------|------------------------------------------|------------------------------------------|
| USB Interface                          |                                                                                                                                                                                                                                                     |                            |                                           |                            |                                          |                                          |
| Speed                                  | 12 Mbps, 480 Mbps                                                                                                                                                                                                                                   |                            |                                           |                            |                                          |                                          |
| USB Connector                          | USB Type B                                                                                                                                                                                                                                          |                            |                                           |                            |                                          |                                          |
| USB Standards                          | USB 1.1/2.0 compliant                                                                                                                                                                                                                               |                            |                                           |                            |                                          |                                          |
| No. of USB Ports                       | 4                                                                                                                                                                                                                                                   | 4                          | 7                                         | 7                          | 4                                        | 7                                        |
| Power Parameters                       |                                                                                                                                                                                                                                                     |                            |                                           |                            |                                          |                                          |
| Input Voltage                          | 12 to 40 VDC                                                                                                                                                                                                                                        |                            |                                           |                            |                                          |                                          |
| Input Current                          | 1.3 A @ 12 VDC                                                                                                                                                                                                                                      |                            | 2.3 A @ 12 VDC                            |                            | 1.21 A @ 12 VDC                          | 2.17 A @ 12 VDC                          |
| Physical Characteristics               |                                                                                                                                                                                                                                                     |                            |                                           |                            |                                          |                                          |
| Housing                                | Aluminum                                                                                                                                                                                                                                            |                            |                                           |                            | Polycarbonate (PC)                       |                                          |
| Dimensions                             | 80 x 35 x 130 mm (3.15 x 1.38 x 5.12 in)                                                                                                                                                                                                            |                            | 100 x 35 x 192 mm (3.94 x 1.38 x 7.56 in) |                            | 70 x 35 x 120 mm (2.76 x 1.38 x 4.72 in) | 80 x 35 x 185 mm (3.15 x 1.38 x 7.28 in) |
| Weight (packaged)                      | 855 g (1.88 lb)                                                                                                                                                                                                                                     |                            | 965 g (2.13 lb)                           |                            | 805 g (1.77 lb)                          | 890 g (1.96 lb)                          |
| Weight (product only)                  | 850 g (1.87 lb)                                                                                                                                                                                                                                     |                            | 950 g (2.1 lb)                            |                            | 800 g (1.76 lb)                          | 875 g (1.93 lb)                          |
| Installation                           | DIN-rail mounting (optional), wall mounting                                                                                                                                                                                                         |                            |                                           |                            | —                                        |                                          |
| Environmental Limits                   |                                                                                                                                                                                                                                                     |                            |                                           |                            |                                          |                                          |
| Operating Temperature                  | 0 to 60°C (32 to 140°F)                                                                                                                                                                                                                             | -40 to 85°C (-40 to 185°F) | 0 to 60°C (32 to 140°F)                   | -40 to 85°C (-40 to 185°F) | 0 to 60°C (32 to 140°F)                  |                                          |
| Storage Temperature (package included) | -20 to 75°C (-4 to 167°F)                                                                                                                                                                                                                           | -40 to 85°C (-40 to 185°F) | -20 to 75°C (-4 to 167°F)                 | -40 to 85°C (-40 to 185°F) | -20 to 75°C (-4 to 167°F)                |                                          |
| Standards and Certifications           |                                                                                                                                                                                                                                                     |                            |                                           |                            |                                          |                                          |
| EMC                                    | EN 55032/24                                                                                                                                                                                                                                         |                            |                                           |                            |                                          |                                          |
| EMI                                    | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                      |                            |                                           |                            |                                          |                                          |
| EMS                                    | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV<br>IEC 61000-4-5 Surge: Power: 1 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 0 V/m<br>IEC 61000-4-8 PFMF |                            |                                           |                            |                                          |                                          |
| Environmental Testing                  | IEC 60068-2-1                                                                                                                                                                                                                                       |                            |                                           |                            | IEC 60068-2-1, IEC 60068-2-3             |                                          |
| Safety                                 | UL 508                                                                                                                                                                                                                                              |                            |                                           |                            | —                                        |                                          |
| Freefall                               | IEC 60068-2-34                                                                                                                                                                                                                                      |                            |                                           |                            |                                          |                                          |
| Declaration                            |                                                                                                                                                                                                                                                     |                            |                                           |                            |                                          |                                          |
| Green Product                          | RoHS, CRoHS, WEEE                                                                                                                                                                                                                                   |                            |                                           |                            |                                          |                                          |





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## PCI Express (PCIe) Serial Boards

Our PCI Express board is designed for POS and ATM applications, and is a top choice of industrial automation engineers and system integrators. It supports many different operating systems, including Windows, Linux, and even UNIX.



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## Universal PCI Serial Boards

Our Universal PCI serial boards are designed for POS and ATM applications and for use by industrial automation system manufacturers and system integrators.

# Multiport Serial Boards

With over thirty years of experience in multiport serial board technology and development, Moxa is able to offer one of the most comprehensive selections of industrial-grade multiport serial cards on the market. We offer serial boards for a variety of slot types including PCI Express (PCIe) to PC/104.



Multiport Serial Boards  
Product Pages



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## CAN Interface Boards/Modules

Moxa's CANbus serial boards are a result of more than 30 years of fieldbus interface board experience. These serial boards are rugged, high-quality CAN interface modules with features that include ESD surge protection and long-term driver support.



# PCI Express (PCIe) Serial Boards



| Product Series                            | CP-102E                                                                                                                                                                                                                                                          | CP-102EL                           | CP-104EL-A                         | CP-114EL                                                                                                           | CP-116E-A                                                                                                                                                                                                                                                                  |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Serial Interface                          |                                                                                                                                                                                                                                                                  |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Comm. Controller                          | MU860 (16C550C compatible)                                                                                                                                                                                                                                       |                                    | 16C550C compatible                 |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Bus                                       | PCI Express 1.0                                                                                                                                                                                                                                                  |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Connector                                 | DB9 male                                                                                                                                                                                                                                                         | DB25 female                        | DB44 female                        |                                                                                                                    | VHDCI 68                                                                                                                                                                                                                                                                   |
| Max. No. of Boards per PC                 | 8                                                                                                                                                                                                                                                                | 8                                  | 8                                  | 8                                                                                                                  | 4                                                                                                                                                                                                                                                                          |
| No. of Ports                              | 2                                                                                                                                                                                                                                                                | 2                                  | 4                                  | 4                                                                                                                  | 16                                                                                                                                                                                                                                                                         |
| Serial Standards                          | RS-232                                                                                                                                                                                                                                                           |                                    |                                    | RS-232/422/485                                                                                                     |                                                                                                                                                                                                                                                                            |
| Baudrate                                  | 50 bps to 921.6 kbps (supports nonstandard baudrates)                                                                                                                                                                                                            |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Data Bits                                 | 5, 6, 7, 8                                                                                                                                                                                                                                                       |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Stop Bits                                 | 1, 1.5, 2                                                                                                                                                                                                                                                        |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Parity                                    | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                     |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Flow Control                              | None, RTS/CTS, XON/XOFF                                                                                                                                                                                                                                          |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Isolation                                 | —                                                                                                                                                                                                                                                                | —                                  | —                                  | 2 kV (I models)                                                                                                    | —                                                                                                                                                                                                                                                                          |
| Serial Software Features                  |                                                                                                                                                                                                                                                                  |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Windows Drivers                           | DOS, Windows 95/98/ME/NT/2000, Windows XP/2003/Vista/2008/7/8/8.1/10 (x86/x64), Windows 2008 R2/2012/2012 R2 (x64), Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                             |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Linux Drivers                             | Linux kernel 2.4.x, Linux kernel 2.6.x, Linux kernel 3.x                                                                                                                                                                                                         |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| UNIX Drivers                              | QNX 6, SCO OpenServer 5, SCO OpenServer 6, UnixWare 7, Solaris 10, FreeBSD, UnixWare 2.1                                                                                                                                                                         |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Physical Characteristics                  |                                                                                                                                                                                                                                                                  |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Dimensions                                | 85.04 x 100 mm<br>(3.35 x 3.94 in)                                                                                                                                                                                                                               | 67.21 x 100 mm<br>(2.65 x 3.94 in) | 67.21 x 103 mm<br>(2.65 x 4.06 in) | CP-114EL Series:<br>67.21 x 103 mm<br>(2.65 x 4.06 in)<br>CP-114EL-I Series:<br>67.21 x 135 mm<br>(2.65 x 5.31 in) | 97.9 x 88.9 mm (3.85 x 3.50 in)                                                                                                                                                                                                                                            |
| Environmental Limits                      |                                                                                                                                                                                                                                                                  |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Operating Temperature                     | 0 to 55°C (32 to 131°F)                                                                                                                                                                                                                                          |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Storage Temperature<br>(package included) | -20 to 85°C (-4 to 185°F)                                                                                                                                                                                                                                        |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Ambient Relative Humidity                 | 5 to 95% (non-condensing)                                                                                                                                                                                                                                        |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Standards and Certifications              |                                                                                                                                                                                                                                                                  |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| EMC                                       | EN 55032/24                                                                                                                                                                                                                                                      |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| EMI                                       | CISPR 32,<br>FCC Part 15B Class A                                                                                                                                                                                                                                | CISPR 32, FCC Part 15B Class B     |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| EMS                                       | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF |                                    |                                    |                                                                                                                    | IEC 61000-4-2 ESD: Contact: 4 kV;<br>Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to<br>1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV<br>IEC 61000-4-5 Surge: Power: 2 kV;<br>Signal: 4 kV<br>IEC 61000-4-6 CS: 150 kHz to<br>80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF |
| Declaration                               |                                                                                                                                                                                                                                                                  |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Green Product                             | RoHS, CRoHS, WEEE                                                                                                                                                                                                                                                |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| MTBF                                      |                                                                                                                                                                                                                                                                  |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Time                                      | 4,947,552 hrs                                                                                                                                                                                                                                                    |                                    | 3,601,447 hrs                      | CP-114EL Series:<br>2,347,197 hrs<br>CP-114EL-I Series:<br>603,671 hrs                                             | 310,993 hrs                                                                                                                                                                                                                                                                |
| Warranty                                  |                                                                                                                                                                                                                                                                  |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |
| Warranty Period                           | 5 years                                                                                                                                                                                                                                                          |                                    |                                    |                                                                                                                    |                                                                                                                                                                                                                                                                            |

## PCI Express (PCIe) Serial Boards



| Product Series                         | CP-118E-A-I                                                                                                                                                                                                                                                                    | CP-138E-A-I                                                                                                                                                                                                                                                      | CP-118EL-A                    | CP-132EL                                                                                                 | CP-134EL-A-I                                                                                                                                                                                                                                                                   | CP-168EL-A                                                                                                                                                                                                                                                       |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Serial Interface                       |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Comm. Controller                       | 16C550C compatible                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Bus                                    | PCI Express 1.0                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Connector                              | DB78 female                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                  | VHDCI 68                      | DB25 female                                                                                              | DB44 female                                                                                                                                                                                                                                                                    | VHDCI 68                                                                                                                                                                                                                                                         |
| Max. No. of Boards per PC              | 8                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| No. of Ports                           | 8                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                  |                               | 2                                                                                                        | 4                                                                                                                                                                                                                                                                              | 8                                                                                                                                                                                                                                                                |
| Serial Standards                       | RS-232/422/485                                                                                                                                                                                                                                                                 | RS-422/485                                                                                                                                                                                                                                                       | RS-232/422/485                | RS-422/485                                                                                               |                                                                                                                                                                                                                                                                                | RS-232                                                                                                                                                                                                                                                           |
| Baudrate                               | 50 bps to 921.6 kbps (supports nonstandard baudrates)                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Data Bits                              | 5, 6, 7, 8                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Stop Bits                              | 1, 1.5, 2                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Parity                                 | None, Even, Odd, Space, Mark                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Flow Control                           | None, RTS/CTS, XON/XOFF                                                                                                                                                                                                                                                        | None, XON/XOFF                                                                                                                                                                                                                                                   | None, RTS/CTS, XON/XOFF       | None, XON/XOFF                                                                                           |                                                                                                                                                                                                                                                                                | None, RTS/CTS, XON/XOFF                                                                                                                                                                                                                                          |
| Isolation                              | 2 kV                                                                                                                                                                                                                                                                           | 2 kV                                                                                                                                                                                                                                                             | –                             | 2 kV (I models)                                                                                          | 2 kV                                                                                                                                                                                                                                                                           | –                                                                                                                                                                                                                                                                |
| Serial Software Features               |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Windows Drivers                        | DOS, Windows 95/98/ME/NT/2000, Windows XP/2003/Vista/2008/7/8/8.1/10 (x86/x64), Windows 2008 R2/2012/2012 R2 (x64), Windows Embedded CE 5.0/6.0, Windows XP Embedded                                                                                                           |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Linux Drivers                          | Linux kernel 2.4.x, Linux kernel 2.6.x, Linux kernel 3.x                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| UNIX Drivers                           | QNX 6, SCO OpenServer 5, SCO OpenServer 6, UnixWare 7, Solaris 10, FreeBSD, UnixWare 2.1                                                                                                                                                                                       |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Physical Characteristics               |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Dimensions                             | 107 x 136.9 mm (4.21 x 5.39 in)                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  | 68.9 x 88 mm (2.71 x 3.46 in) | CP-132EL-DB9M: 67.21 x 101.97 mm (2.65 x 4.01 in)<br>CP-132EL-I-DB9M: 67.21 x 103.97 mm (2.65 x 4.09 in) | 67.21 x 103 mm (2.65 x 4.06 in)                                                                                                                                                                                                                                                | 64.42 x 102 mm (2.54 x 4.02 in)                                                                                                                                                                                                                                  |
| Environmental Limits                   |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Operating Temperature                  | 0 to 55°C (32 to 131°F)                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Storage Temperature (package included) | -20 to 85°C (-4 to 185°F)                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Standards and Certifications           |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| EMC                                    | EN 55032/24                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| EMI                                    | CISPR 32, FCC Part 15B Class B                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| EMS                                    | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 4 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF |                               |                                                                                                          | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 4 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF |
| Declaration                            |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Green Product                          | RoHS, CRoHS, WEEE                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| MTBF                                   |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Time                                   | 390,883 hrs                                                                                                                                                                                                                                                                    | 221,331 hrs                                                                                                                                                                                                                                                      | 1,359,482 hrs                 | CP-132EL-DB9M: 4,147,133 hrs<br>CP-132EL-I-DB9M: 1,681,099 hrs                                           | 433,077 hrs                                                                                                                                                                                                                                                                    | 2,351,336 hrs                                                                                                                                                                                                                                                    |
| Warranty                               |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |
| Warranty Period                        | 5 years                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                  |                               |                                                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |

# Universal PCI Serial Boards



| Product Series                         | CP-102U                                                                                                                                                              | CP-102UL                                                                                                                                                                        | CP-104UL                                                                                                                                                                                                                                                                                    | CP-104JU                                                                                            | CP-112UL                                                                                                                                                                                                                                                              | CP-114UL                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Serial Interface                       |                                                                                                                                                                      |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Comm. Controller                       | MU860 (16C550C compatible)                                                                                                                                           |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Bus                                    | 32-bit Universal PCI                                                                                                                                                 |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Connector                              | DB9 male                                                                                                                                                             | DB25 female                                                                                                                                                                     | DB44 female                                                                                                                                                                                                                                                                                 | RJ45                                                                                                | DB25 female                                                                                                                                                                                                                                                           | DB44 female                                                                                                                                                                                                                                                                                                                 |
| Max. No. of Boards per PC              | 8                                                                                                                                                                    |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| No. of Ports                           | 2                                                                                                                                                                    |                                                                                                                                                                                 | 4                                                                                                                                                                                                                                                                                           |                                                                                                     | 2                                                                                                                                                                                                                                                                     | 4                                                                                                                                                                                                                                                                                                                           |
| Serial Standards                       | RS-232                                                                                                                                                               |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     | RS-232/422/485                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                             |
| Baudrate                               | 50 bps to 921.6 kbps                                                                                                                                                 |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Data Bits                              | 5, 6, 7, 8                                                                                                                                                           |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Stop Bits                              | 1, 1.5, 2                                                                                                                                                            |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     | –                                                                                                                                                                                                                                                                     | 1, 1.5, 2                                                                                                                                                                                                                                                                                                                   |
| Parity                                 | None, Even, Odd, Space, Mark                                                                                                                                         |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Flow Control                           | None, RTS/CTS, XON/XOFF                                                                                                                                              |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Isolation                              | –                                                                                                                                                                    |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     | 2 kV (I models)                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Serial Software Features               |                                                                                                                                                                      |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Windows Drivers                        | DOS, Windows 95/98/ME/NT/2000, Windows XP/2003/Vista/2008/7/8/8.1/10 (x86/x64), Windows 2008 R2/2012/2012 R2 (x64), Windows Embedded CE 5.0/6.0, Windows XP Embedded |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Linux Drivers                          | Linux kernel 2.4.x, Linux kernel 2.6.x, Linux kernel 3.x                                                                                                             |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| UNIX Drivers                           | QNX 6, SCO OpenServer 5, SCO OpenServer 6, UnixWare 7, Solaris 10, FreeBSD, UnixWare 2.1                                                                             |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Physical Characteristics               |                                                                                                                                                                      |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Dimensions                             | 80 x 120 mm<br>(3.15 x 4.72 in)                                                                                                                                      | 64.5 x 120 mm<br>(2.54 x 4.72 in)                                                                                                                                               | 64.4 x 120 mm<br>(2.54 x 4.72 in)                                                                                                                                                                                                                                                           | 83 x 120 mm<br>(3.27 x 4.72 in)                                                                     | 64.4 x 120 mm<br>(2.54 x 4.72 in)                                                                                                                                                                                                                                     | CP-114UL Series:<br>64.4 x 120 mm<br>(2.54 x 4.72 in)<br>CP-114UL-I Series:<br>64.4 x 130 mm<br>(2.54 x 5.12 in)                                                                                                                                                                                                            |
| Environmental Limits                   |                                                                                                                                                                      |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Operating Temperature                  | Standard Models: 0 to 55°C (32 to 131°F)<br>Wide Temp. Models: -40 to 85°C (-40 to 185°F)                                                                            |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F)                                                                                                                                           |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)                                                                                                                                            |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Standards and Certifications           |                                                                                                                                                                      |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| EMC                                    | EN 55032/24                                                                                                                                                          |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| EMI                                    | CISPR 32, FCC Part 15B Class B                                                                                                                                       |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     | –                                                                                                                                                                                                                                                                     | CISPR 32, FCC Part 15B Class B                                                                                                                                                                                                                                                                                              |
| EMS                                    | IEC 61000-4-2 ESD:<br>Contact: 4 kV;<br>Air: 8 kV<br>IEC 61000-4-3 RS:<br>80 MHz to 1 GHz:<br>3 V/m                                                                  | IEC 61000-4-4 EFT:<br>Power: 1 kV; Signal:<br>0.5 kV<br>IEC 61000-4-5<br>Surge: Power: 2 kV<br>IEC 61000-4-6 CS:<br>150 kHz to 80 MHz:<br>3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 | IEC 61000-4-2 ESD:<br>Contact: 4 kV;<br>Air: 8 kV<br>IEC 61000-4-3 RS:<br>80 MHz to 1 GHz:<br>3 V/m<br>IEC 61000-4-4 EFT:<br>Power: 1 kV; Signal:<br>0.5 kV<br>IEC 61000-4-5<br>Surge: Power: 2 kV<br>IEC 61000-4-6 CS:<br>150 kHz to 80 MHz:<br>3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF | IEC 61000-4-2 ESD:<br>Contact: 4 kV;<br>Air: 8 kV<br>IEC 61000-4-3 RS:<br>80 MHz to 1 GHz:<br>3 V/m | IEC 61000-4-2 ESD:<br>Contact: 4 kV;<br>Air: 8 kV<br>IEC 61000-4-3 RS:<br>80 MHz to 1 GHz:<br>3 V/m<br>IEC 61000-4-4 EFT:<br>Power: 1 kV; Signal:<br>0.5 kV<br>IEC 61000-4-5<br>Surge: Power: 2 kV<br>IEC 61000-4-6 CS:<br>150 kHz to 80 MHz:<br>3 V/m; Signal: 3 V/m | All models:<br>IEC 61000-4-2 ESD:<br>Contact: 4 kV;<br>Air: 8 kV<br>IEC 61000-4-3 RS:<br>80 MHz to 1 GHz:<br>3 V/m<br>CP-114UL-I Series:<br>IEC 61000-4-4 EFT:<br>Power: 1 kV; Signal:<br>0.5 kV<br>IEC 61000-4-5<br>Surge: Power: 2 kV<br>IEC 61000-4-6 CS:<br>150 kHz to 80 MHz:<br>3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 |
| Declaration                            |                                                                                                                                                                      |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Green Product                          | RoHS, CRoHS, WEEE                                                                                                                                                    |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| MTBF                                   |                                                                                                                                                                      |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Time                                   | 574,050 hrs                                                                                                                                                          | 576,401 hrs                                                                                                                                                                     | 558,961 hrs                                                                                                                                                                                                                                                                                 | 571,627 hrs                                                                                         | 219,971 hrs                                                                                                                                                                                                                                                           | 114,223 hrs                                                                                                                                                                                                                                                                                                                 |
| Warranty                               |                                                                                                                                                                      |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |
| Warranty Period                        | 5 years                                                                                                                                                              |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                             |                                                                                                     |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                             |

# Universal PCI Serial Boards



| Product Series                            | CP-118U                                                                                                                                                              | CP-138U                                                            | CP-132UL                          | CP-134U                                                                                                       | CP-168U                                                                                                                                  | POS-104UL                                                                                                                                                                                                                                                                                       |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Serial Interface                          |                                                                                                                                                                      |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Comm. Controller                          | MU860 (16C550C compatible)                                                                                                                                           |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Bus                                       | 32-bit Universal PCI                                                                                                                                                 |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Connector                                 | CP-118U Series:<br>DB62 female<br>CP-118U-I Series:<br>DB78 female                                                                                                   | CP-138U Series:<br>DB62 female<br>CP-138U-I Series:<br>DB78 female | DB25 female                       | DB44 female                                                                                                   | DB62 female                                                                                                                              | DB44 female                                                                                                                                                                                                                                                                                     |
| Max. No. of Boards per PC                 | 8                                                                                                                                                                    |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| No. of Ports                              | 8                                                                                                                                                                    |                                                                    | 2                                 | 4                                                                                                             | 8                                                                                                                                        | 4                                                                                                                                                                                                                                                                                               |
| Serial Standards                          | RS-232/422/485                                                                                                                                                       | RS-422/485                                                         |                                   | 2 x RS-232/422/485<br>2 x RS-422/485                                                                          | RS-232                                                                                                                                   |                                                                                                                                                                                                                                                                                                 |
| Baudrate                                  | 50 bps to 921.6 kbps                                                                                                                                                 |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Data Bits                                 | 5, 6, 7, 8                                                                                                                                                           |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Stop Bits                                 | 1, 1.5, 2                                                                                                                                                            |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Parity                                    | None, Even, Odd, Space, Mark                                                                                                                                         |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Flow Control                              | None, RTS/CTS,<br>XON/XOFF                                                                                                                                           | None, XON/XOFF                                                     |                                   | None, RTS/CTS, XON/XOFF                                                                                       |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Isolation                                 | 2 kV (I models)                                                                                                                                                      |                                                                    |                                   |                                                                                                               | —                                                                                                                                        | 2 kV (I models)                                                                                                                                                                                                                                                                                 |
| Serial Software Features                  |                                                                                                                                                                      |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Windows Drivers                           | DOS, Windows 95/98/ME/NT/2000, Windows XP/2003/Vista/2008/7/8/8.1/10 (x86/x64), Windows 2008 R2/2012/2012 R2 (x64), Windows Embedded CE 5.0/6.0, Windows XP Embedded |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Linux Drivers                             | Linux kernel 2.4.x, Linux kernel 2.6.x, Linux kernel 3.x                                                                                                             |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| UNIX Drivers                              | QNX 6, SCO OpenServer 5, SCO OpenServer 6, UnixWare 7, Solaris 10, FreeBSD, UnixWare 2.1                                                                             |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Physical Characteristics                  |                                                                                                                                                                      |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Dimensions                                | 82 x 135 mm<br>(3.23 x 5.31 in)                                                                                                                                      | 82 x 135 mm<br>(3.23 x 5.31 in)                                    | 64.4 x 120 mm<br>(2.54 x 4.72 in) | CP-134U Series:<br>82.5 x 120 mm<br>(3.24 x 4.72 in)<br>CP-134U-I Series:<br>115 x 120 mm<br>(4.53 x 4.72 in) | 82 x 120 mm<br>(3.23 x 4.72 in)                                                                                                          | 64.4 x 120 mm<br>(2.54 x 4.72 in)                                                                                                                                                                                                                                                               |
| Environmental Limits                      |                                                                                                                                                                      |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Operating Temperature                     | Standard Models: 0 to 55°C (32 to 131°F)<br>Wide Temp. Models: -40 to 85°C (-40 to 185°F)                                                                            |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Storage Temperature<br>(package included) | -40 to 85°C (-40 to 185°F)                                                                                                                                           |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Ambient Relative Humidity                 | 5 to 95% (non-condensing)                                                                                                                                            |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Standards and Certifications              |                                                                                                                                                                      |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| EMC                                       | EN 55032/24                                                                                                                                                          |                                                                    |                                   |                                                                                                               |                                                                                                                                          | EN 61000-6-2/-6-4                                                                                                                                                                                                                                                                               |
| EMI                                       | CISPR 32, FCC Part 15B Class B                                                                                                                                       |                                                                    |                                   |                                                                                                               |                                                                                                                                          | EN 61000-6-4,<br>FCC Part 15B Class B                                                                                                                                                                                                                                                           |
| EMS                                       | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m                                                                              |                                                                    |                                   |                                                                                                               | IEC 61000-4-2 ESD:<br>Contact: 4 kV;<br>Air: 8 kV<br>IEC 61000-4-3 RS:<br>80 MHz to 1 GHz:<br>3 V/m<br>IEC 61000-4-4 EFT:<br>Power: 1 kV | IEC 61000-4-2 ESD:<br>Contact: 4 kV;<br>Air: 8 kV<br>IEC 61000-4-3 RS:<br>80 MHz to 1 GHz:<br>10 V/m<br>IEC 61000-4-4 EFT:<br>Power: 2 kV;<br>Signal: 1 kV<br>IEC 61000-4-5 Surge:<br>Power: 2 kV<br>IEC 61000-4-6 CS:<br>150 kHz to 80 MHz:<br>10 V/m; Signal:<br>10 V/m<br>IEC 61000-4-8 PFMF |
| Declaration                               |                                                                                                                                                                      |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Green Product                             | RoHS, CRoHS, WEEE                                                                                                                                                    |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| MTBF                                      |                                                                                                                                                                      |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Time                                      | 1,073,385 hrs                                                                                                                                                        | 1,147,210 hrs                                                      | 1,647,832 hrs                     | 480,209 hrs                                                                                                   | 280,854 hrs                                                                                                                              | 2,124,022 hrs                                                                                                                                                                                                                                                                                   |
| Warranty                                  |                                                                                                                                                                      |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |
| Warranty Period                           | 5 years                                                                                                                                                              |                                                                    |                                   |                                                                                                               |                                                                                                                                          |                                                                                                                                                                                                                                                                                                 |

# CAN Interface Boards/Modules



| Product Series                         | CP-602U-I                                                                                                                                                                                                                                                                                           | CP-602E-I                                                                                                                                                                                                                                                                        | CB-602I                                                                                                                                                                                                                                                                    |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CAN Interface                          |                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| CAN Specification                      | CAN 2.0 A/B                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| Max. No. of Boards per PC              | 4                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| Electrical Isolation                   | 2 kV                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| Baudrate                               | 10/20/50/125/250/500/800/1000 kbps, user-defined                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| Connector                              | DB9 male                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                  | 20-pin box header                                                                                                                                                                                                                                                          |
| No. of Ports                           | 2                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| Serial Software Features               |                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| Windows Drivers                        | Windows 2000, Windows XP/2003/Vista/2008 (x86 and x64), Windows 7                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| Library                                | Visual Basic, C/C++                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| Physical Characteristics               |                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| Dimensions                             | 120 x 80 mm (4.72 x 3.15 in)                                                                                                                                                                                                                                                                        | 120 x 80 mm (4.72 x 3.15 in)                                                                                                                                                                                                                                                     | 90 x 96 mm ( 3.54 x 3.78 in)                                                                                                                                                                                                                                               |
| Environmental Limits                   |                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| Operating Temperature                  | CP-602U-I w/o cable:<br>0 to 55°C (32 to 131°F)<br>CP-602U-I-T w/o cable:<br>-40 to 85°C (-40 to 185°F)                                                                                                                                                                                             | Standard Models: 0 to 55°C (32 to 131°F)<br>Wide Temp. Models: -40 to 85°C (-40 to 185°F)                                                                                                                                                                                        |                                                                                                                                                                                                                                                                            |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| Standards and Certifications           |                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| EMC                                    | EN 55032/24                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| EMI                                    | CISPR 32, FCC Part 15B Class B                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| EMS                                    | IEC 61000-4-2 ESD: Contact: 4 kV;<br>Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz:<br>3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV;<br>Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz:<br>3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs | IEC 61000-4-2 ESD: Contact: 4 kV;<br>Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz:<br>3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz:<br>3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs | IEC 61000-4-2 ESD: Contact: 4 kV;<br>Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz:<br>3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV<br>IEC 61000-4-5 Surge: Power: 2 kV;<br>Signal: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz:<br>3 V/m; Signal: 3 V/m<br>IEC 61000-4-8 PFMF |
| Declaration                            |                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| Green Product                          | RoHS, CRoHS, WEEE                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| MTBF                                   |                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| Time                                   | 1,989,990 hrs                                                                                                                                                                                                                                                                                       | 4,645,502 hrs                                                                                                                                                                                                                                                                    | 248,563 hrs                                                                                                                                                                                                                                                                |
| Warranty                               |                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |
| Warranty Period                        | 5 years                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                            |





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## Advanced Controllers and I/Os

Moxa's advanced controllers and I/O products make it easier to realize complex IIoT applications such as energy management, factory machine management, transportation management, and remote asset management through expandable communication and high-performance data acquisition and control capabilities.



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## Rugged Controllers and I/Os

Rail, wind power, and offshore applications demand system reliability and stability, even in harsh environments. Our rugged controllers and I/O products are designed to perform in extreme conditions while providing versatile data acquisition and control capabilities.



# Controllers and I/Os

Moxa provides a wide range of controllers and I/O products for industrial automation applications. Our devices are built with push technology to facilitate faster I/O response times while still ensuring accurate data collection. Moxa's Click&Go Plus simplifies configuration of control logic rules and provides support for multiple OT/IT protocols, making it easier for you to realize your IIoT application. Our products have been successfully deployed in factories, energy and transportation applications, and city infrastructure.



Controllers and I/Os  
Product Pages



## Universal Controllers and I/Os

Our universal controllers and I/O products use Click&Go control logic, and includes our patented active monitoring technology and support for a versatile set of OT/IT protocols to help you easily configure, deploy, and realize IIoT applications such as energy monitoring, facility monitoring, and machine OEM applications.

# Advanced Controllers and I/Os



| Product Series                         | ioThinx 4533-LX                                                                                                                                                                                                                            | ioThinx 4533-LX-T          |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Computer                               |                                                                                                                                                                                                                                            |                            |
| CPU                                    | NXP i.MX7D 1 GHz                                                                                                                                                                                                                           |                            |
| OS                                     | Linux kernel 4.4 CIP, PREEMPT_RT, Debian 9                                                                                                                                                                                                 |                            |
| Clock                                  | Real-time clock with capacitor backup                                                                                                                                                                                                      |                            |
| DRAM                                   | 512 MB DDR3                                                                                                                                                                                                                                |                            |
| Storage Preinstalled                   | 8 GB eMMC (6 GB reserved for the user)                                                                                                                                                                                                     |                            |
| Storage Slot                           | microSD slot x 1                                                                                                                                                                                                                           |                            |
| Expansion Slots                        | Up to 64                                                                                                                                                                                                                                   |                            |
| Control Logic                          |                                                                                                                                                                                                                                            |                            |
| Language                               | C/C++, Python                                                                                                                                                                                                                              |                            |
| Ethernet Interface                     |                                                                                                                                                                                                                                            |                            |
| 10/100BaseT(X) Ports (RJ45 connector)  | 2, 2 MACs                                                                                                                                                                                                                                  |                            |
| Serial Interface                       |                                                                                                                                                                                                                                            |                            |
| Serial Standards                       | RS-232/422/485 (software selectable)                                                                                                                                                                                                       |                            |
| Environmental Limits                   |                                                                                                                                                                                                                                            |                            |
| Operating Temperature                  | -20 to 60°C (-4 to 140°F)                                                                                                                                                                                                                  | -40 to 75°C (-40 to 167°F) |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                 |                            |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)                                                                                                                                                                                                                  |                            |
| Altitude                               | Up to 4000 meters <sup>1</sup>                                                                                                                                                                                                             |                            |
| Standards and Certifications           |                                                                                                                                                                                                                                            |                            |
| Safety                                 | UL 61010-2-201                                                                                                                                                                                                                             |                            |
| EMC                                    | EN 55032/24                                                                                                                                                                                                                                |                            |
| EMI                                    | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                             |                            |
| EMS                                    | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 3 V<br>IEC 61000-4-8 PFMF |                            |
| Shock                                  | IEC 60068-2-27                                                                                                                                                                                                                             |                            |
| Vibration                              | IEC 60068-2-6                                                                                                                                                                                                                              |                            |
| Declaration                            |                                                                                                                                                                                                                                            |                            |
| Green Product                          | RoHS, CRoHS, WEEE                                                                                                                                                                                                                          |                            |

1. Please contact Moxa if you require products guaranteed to function properly at higher altitudes.

# Advanced Controllers and I/Os



| Product Series                         | ioThinx 4510                                                                                                                                                                                                                               |                            | ioThinx 4510-T |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------|
| Input/Output Interface                 |                                                                                                                                                                                                                                            |                            |                |
| Expansion Slots                        | Up to 32 <sup>1</sup>                                                                                                                                                                                                                      |                            |                |
| Ethernet Interface                     |                                                                                                                                                                                                                                            |                            |                |
| 10/100BaseT(X) Ports (RJ45 connector)  | 2, 1 MAC address (Ethernet bypass)                                                                                                                                                                                                         |                            |                |
| Ethernet Software Features             |                                                                                                                                                                                                                                            |                            |                |
| Industrial Protocols                   | Modbus TCP Server (slave), RESTful API, SNMPv1/v2c/v3, SNMPv1/v2c/v3 Trap, SNMPv2c/v3 Inform, MQTT                                                                                                                                         |                            |                |
| Serial Interface                       |                                                                                                                                                                                                                                            |                            |                |
| Serial Standards                       | RS-232/422/485                                                                                                                                                                                                                             |                            |                |
| No. of Ports                           | 1 x RS-232/422 or 2 x RS-485 (2-wire)                                                                                                                                                                                                      |                            |                |
| Serial Software Features               |                                                                                                                                                                                                                                            |                            |                |
| Industrial Protocols                   | Modbus RTU Master                                                                                                                                                                                                                          |                            |                |
| Environmental Limits                   |                                                                                                                                                                                                                                            |                            |                |
| Operating Temperature                  | -20 to 60°C (-4 to 140°F)                                                                                                                                                                                                                  | -40 to 75°C (-40 to 167°F) |                |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                 |                            |                |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)                                                                                                                                                                                                                  |                            |                |
| Altitude                               | Up to 4000 meters <sup>2</sup>                                                                                                                                                                                                             |                            |                |
| Standards and Certifications           |                                                                                                                                                                                                                                            |                            |                |
| Safety                                 | UL 61010-2-201                                                                                                                                                                                                                             |                            |                |
| EMC                                    | EN 55032/24                                                                                                                                                                                                                                |                            |                |
| EMI                                    | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                             |                            |                |
| EMS                                    | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 3 V<br>IEC 61000-4-8 PFMF |                            |                |
| Shock                                  | IEC 60068-2-27                                                                                                                                                                                                                             |                            |                |
| Vibration                              | IEC 60068-2-6                                                                                                                                                                                                                              |                            |                |
| Declaration                            |                                                                                                                                                                                                                                            |                            |                |
| Green Product                          | RoHS, CRoHS, WEEE                                                                                                                                                                                                                          |                            |                |

1. Compatible with the ioThinX 4500 Series (45MR) Modules only.
2. Please contact Moxa if you require products guaranteed to function properly at higher altitudes.

# Advanced Controllers and I/Os



|  | 45MR-1600 (-T)                                                                                                                                                                                                                             | 45MR-1601 (-T) | 45MR-2600 (-T) | 45MR-2601 (-T) | 45MR-2606 (-T)                        | 45MR-2404 (-T)            | 45MR-3800 (-T)                                         | 45MR-3810 (-T)               | 45MR-4420 (-T)                          | 45MR-6600 (-T) | 45MR-6810 (-T) | 45MR-7210 (-T) | 45MR-7820 (-T) |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|----------------|---------------------------------------|---------------------------|--------------------------------------------------------|------------------------------|-----------------------------------------|----------------|----------------|----------------|----------------|
| Input/Output Interface                                                            |                                                                                                                                                                                                                                            |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| Digital Input Channels                                                            | 16                                                                                                                                                                                                                                         | 16             | –              | –              | 8                                     | –                         | –                                                      | –                            | –                                       | –              | –              | –              | –              |
| Digital Output Channels                                                           | –                                                                                                                                                                                                                                          | –              | 16             | 16             | 8                                     | –                         | –                                                      | –                            | –                                       | –              | –              | –              | –              |
| Relay Channels                                                                    | –                                                                                                                                                                                                                                          | –              | –              | –              | –                                     | 4                         | –                                                      | –                            | –                                       | –              | –              | –              | –              |
| Analog Input Channels                                                             | –                                                                                                                                                                                                                                          | –              | –              | –              | –                                     | –                         | 8                                                      | 8                            | –                                       | –              | –              | –              | –              |
| Analog Output Channels                                                            | –                                                                                                                                                                                                                                          | –              | –              | –              | –                                     | –                         | –                                                      | –                            | 4                                       | –              | –              | –              | –              |
| RTD Channels                                                                      | –                                                                                                                                                                                                                                          | –              | –              | –              | –                                     | –                         | –                                                      | –                            | –                                       | 6              | –              | –              | –              |
| Thermocouple Channels                                                             | –                                                                                                                                                                                                                                          | –              | –              | –              | –                                     | –                         | –                                                      | –                            | –                                       | –              | 8              | –              | –              |
| Field Potential Output Channels                                                   | –                                                                                                                                                                                                                                          | –              | –              | –              | –                                     | –                         | –                                                      | –                            | –                                       | –              | –              | –              | 8              |
| System Power Input Channels                                                       | –                                                                                                                                                                                                                                          | –              | –              | –              | –                                     | –                         | –                                                      | –                            | –                                       | –              | –              | 1              | –              |
| Field Power Input Channels                                                        | –                                                                                                                                                                                                                                          | –              | –              | –              | –                                     | –                         | –                                                      | –                            | –                                       | –              | –              | 1              | –              |
| Digital Inputs                                                                    |                                                                                                                                                                                                                                            |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| Sensor Type                                                                       | Dry contact, wet contact (NPN or PNP)                                                                                                                                                                                                      |                | –              |                | Dry contact, wet contact (NPN or PNP) |                           | –                                                      |                              |                                         |                |                |                |                |
| Digital Outputs                                                                   |                                                                                                                                                                                                                                            |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| I/O Type                                                                          | –                                                                                                                                                                                                                                          | –              | Sink           | Source         | Source                                | –                         | –                                                      | –                            | –                                       | –              | –              | –              | –              |
| Relays                                                                            |                                                                                                                                                                                                                                            |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| Type                                                                              | –                                                                                                                                                                                                                                          | –              | –              | –              | –                                     | Form A (N.O.) power relay | –                                                      | –                            | –                                       | –              | –              | –              | –              |
| Analog Inputs                                                                     |                                                                                                                                                                                                                                            |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| Input Range                                                                       | –                                                                                                                                                                                                                                          | –              | –              | –              | –                                     | –                         | 0 to 20 mA, 4 to 20 mA, 4 to 20 mA (burnout detection) | 0 to 10 VDC or -10 to 10 VDC | –                                       | –              | –              | –              | –              |
| Analog Outputs                                                                    |                                                                                                                                                                                                                                            |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| Output Range                                                                      | –                                                                                                                                                                                                                                          | –              | –              | –              | –                                     | –                         | –                                                      | –                            | 0 to 10 VDC<br>0 to 20 mA<br>4 to 20 mA | –              | –              | –              | –              |
| System Power Parameters                                                           |                                                                                                                                                                                                                                            |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| Input Voltage                                                                     | –                                                                                                                                                                                                                                          | –              | –              | –              | –                                     | –                         | –                                                      | –                            | –                                       | –              | –              | 12 to 48 VDC   | –              |
| Field Power Parameters                                                            |                                                                                                                                                                                                                                            |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| Input Voltage                                                                     | –                                                                                                                                                                                                                                          | –              | –              | –              | –                                     | –                         | –                                                      | –                            | –                                       | –              | –              | 12/24 VDC      | –              |
| Output Voltage                                                                    | –                                                                                                                                                                                                                                          | –              | –              | –              | –                                     | –                         | –                                                      | –                            | –                                       | –              | –              | –              | 0, 12/24 VDC   |
| Environmental Limits                                                              |                                                                                                                                                                                                                                            |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| Operating Temperature                                                             | Standard Models: -20 to 60°C (-4 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| Storage Temperature (package included)                                            | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                 |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| Ambient Relative Humidity                                                         | 5 to 95% (non-condensing) <sup>1</sup>                                                                                                                                                                                                     |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| Altitude                                                                          | Up to 4000 meters <sup>2</sup>                                                                                                                                                                                                             |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| Standards and Certifications                                                      |                                                                                                                                                                                                                                            |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| Safety                                                                            | UL 61010-2-201                                                                                                                                                                                                                             |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| EMC                                                                               | EN 55032/24                                                                                                                                                                                                                                |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| EMI                                                                               | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                             |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| EMS                                                                               | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 3 V<br>IEC 61000-4-8 PFMF |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| Shock                                                                             | IEC 60068-2-27                                                                                                                                                                                                                             |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |
| Vibration                                                                         | IEC 60068-2-6                                                                                                                                                                                                                              |                |                |                |                                       |                           |                                                        |                              |                                         |                |                |                |                |

1. The relays of the 45MR-2404 Series may malfunction when operating in high condensation environments below 0°C.

2. Please contact Moxa if you require products guaranteed to function properly at higher altitudes.

# Rugged Controllers and I/Os



| Product Series                                            | ioPAC 8600                                                                                                                                                                                                                                   |
|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Computer</b>                                           |                                                                                                                                                                                                                                              |
| CPU                                                       | 32-bit Cortex-A8 1 GHz CPU                                                                                                                                                                                                                   |
| OS                                                        | Real-time Linux (PREEMPT_RT)                                                                                                                                                                                                                 |
| Clock                                                     | Real-time clock with capacitor backup                                                                                                                                                                                                        |
| <b>Memory</b>                                             |                                                                                                                                                                                                                                              |
| eMMC                                                      | 4 GB (1.7 GB reserved for the user)                                                                                                                                                                                                          |
| SDRAM                                                     | 512 MB DDR3L                                                                                                                                                                                                                                 |
| SPI-NVRAM                                                 | 128 KB                                                                                                                                                                                                                                       |
| microSD Slot                                              | Up to 32 GB (SD 2.0 compatible) <sup>1</sup>                                                                                                                                                                                                 |
| <b>Control Logic</b>                                      |                                                                                                                                                                                                                                              |
| Language                                                  | C/C++, IEC 61131-3                                                                                                                                                                                                                           |
| <b>Ethernet Interface</b>                                 |                                                                                                                                                                                                                                              |
| 10/100BaseT(X) Ports (M12 D-coded 4-pin female connector) | M12 version: 2, 1 MAC address (Ethernet bypass) or 2 MAC addresses, jumper selectable                                                                                                                                                        |
| 10/100BaseT(X) Ports (RJ45 connector)                     | RJ45 version: 2, 1 MAC address (Ethernet bypass) or 2 MAC addresses, jumper selectable                                                                                                                                                       |
| <b>Ethernet Software Features</b>                         |                                                                                                                                                                                                                                              |
| Industrial Protocols                                      | Modbus TCP Client (master), Modbus TCP Server (slave), Moxa AOPC (active tag), SNMPv1/v2c Trap, SNMPv1/v2c/v3                                                                                                                                |
| <b>Serial Interface</b>                                   |                                                                                                                                                                                                                                              |
| Serial Standards                                          | RS-232/422/485 <sup>2</sup>                                                                                                                                                                                                                  |
| <b>Serial Software Features</b>                           |                                                                                                                                                                                                                                              |
| Industrial Protocols                                      | Modbus RTU/ASCII                                                                                                                                                                                                                             |
| <b>Physical Characteristics</b>                           |                                                                                                                                                                                                                                              |
| Slots                                                     | ioPAC 8600-BM005: 5<br>ioPAC 8600-BM009: 9<br>ioPAC 8600-BM012: 12                                                                                                                                                                           |
| <b>Environmental Limits</b>                               |                                                                                                                                                                                                                                              |
| Operating Temperature                                     | -40 to 75°C (-40 to 167°F)                                                                                                                                                                                                                   |
| Storage Temperature (package included)                    | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                   |
| Ambient Relative Humidity                                 | 5 to 95% (non-condensing)                                                                                                                                                                                                                    |
| <b>Standards and Certifications</b>                       |                                                                                                                                                                                                                                              |
| EMC                                                       | EN 55032/24, EN 61000-6-2/-6-4                                                                                                                                                                                                               |
| EMI                                                       | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                               |
| EMS                                                       | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 5.1 GHz to 6 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 10 V<br>IEC 61000-4-8 PFMF |
| Railway                                                   | EN 50121-4, EN 50155 <sup>3</sup>                                                                                                                                                                                                            |
| Safety                                                    | UL 508                                                                                                                                                                                                                                       |
| Shock                                                     | IEC 60068-2-27                                                                                                                                                                                                                               |
| Vibration                                                 | IEC 60068-2-6                                                                                                                                                                                                                                |

1. For units operating in extreme temperatures, industrial-grade and wide-temperature range microSD cards are required.

2. Only applies to the 85M-5401 module.

3. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed description, please visit our website.

# Rugged Controllers and I/Os

## 86M Series I/O Modules



|  | Digital Input                  |                                       | Digital Output |                           | Relay                     | Analog Output                                          | Communication                                                                                                 |                                          |
|-----------------------------------------------------------------------------------|--------------------------------|---------------------------------------|----------------|---------------------------|---------------------------|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------|
|                                                                                   | 86M-1620D-T                    | 86M-1832D-T                           | 86M-2821D-T    | 86M-2830D-T               | 86M-2604D-T               | 86M-4420D-T                                            | 86M-5212U-T                                                                                                   | 86M-5250-T                               |
| Input/Output Interface                                                            |                                |                                       |                |                           |                           |                                                        |                                                                                                               |                                          |
| Analog Output Channels                                                            | –                              | –                                     | –              | –                         | –                         | 4                                                      | –                                                                                                             | –                                        |
| Digital Input Channels                                                            | 16                             | 8                                     | –              | –                         | –                         | –                                                      | –                                                                                                             | –                                        |
| Digital Output Channels                                                           | –                              | –                                     | 8              | 8                         | –                         | –                                                      | –                                                                                                             | –                                        |
| Relay Channels                                                                    | –                              | –                                     | –              | –                         | 6                         | –                                                      | –                                                                                                             | –                                        |
| 2-wire Ethernet Ports                                                             | –                              | –                                     | –              | –                         | –                         | –                                                      | 2                                                                                                             | –                                        |
| CAN Ports                                                                         | –                              | –                                     | –              | –                         | –                         | –                                                      | –                                                                                                             | 2                                        |
| Module Properties                                                                 |                                |                                       |                |                           |                           |                                                        |                                                                                                               |                                          |
| Input/Output Mode                                                                 | 24 to 110 VDC                  | 24 VDC ch-to-ch isolation             | 24 to 110 VDC  | 24 VDC ch-to-ch isolation | –                         | 0 to 10 VDC<br>0 to 20 mA<br>-10 to 10 V<br>4 to 20 mA | –                                                                                                             | –                                        |
| I/O Type                                                                          | Sink                           | Sink/Source                           | Source         | Sink                      | Form A (N.O.) power relay | –                                                      | –                                                                                                             | –                                        |
| Sensor Type                                                                       | Wet contact (PNP)              | Dry contact, wet contact (NPN or PNP) | –              | –                         | –                         | –                                                      | –                                                                                                             | –                                        |
| Connector                                                                         | Spring-type Euroblock terminal |                                       |                |                           |                           |                                                        | M12 D-coded 2-pin female connector                                                                            | DB9 male                                 |
| Ethernet/CAN Interface                                                            |                                |                                       |                |                           |                           |                                                        |                                                                                                               |                                          |
| Standards                                                                         | –                              | –                                     | –              | –                         | –                         | –                                                      | BroadR-Reach® for 10 Mbps and 100 Mbps<br>IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X) and 100BaseFX | CAN 2.0A, CAN 2.0B, CANopen DS301, V4.02 |

## 85M Series I/O Modules



|                               | Digital Input                         | Digital Output | Analog Input                                                   |                                                              |                                                                |                                                              | RTD                                                        | TC                                                           | Communication  |
|-------------------------------|---------------------------------------|----------------|----------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------|----------------|
|                               | 85M-1602-T                            | 85M-2600-T     | 85M-3800-T                                                     | 85M-3801-T                                                   | 85M-3810-T                                                     | 85M-3811-T                                                   | 85M-6600-T                                                 | 85M-6810-T                                                   | 85M-5401-T     |
| <b>Input/Output Interface</b> |                                       |                |                                                                |                                                              |                                                                |                                                              |                                                            |                                                              |                |
| Analog Input Channels         | –                                     | –              | 8                                                              | 8                                                            | 8                                                              | 8                                                            | –                                                          | –                                                            | –              |
| Digital Input Channels        | 16                                    | –              | –                                                              | –                                                            | –                                                              | –                                                            | –                                                          | –                                                            | –              |
| Digital Output Channels       | –                                     | 16             | –                                                              | –                                                            | –                                                              | –                                                            | –                                                          | –                                                            | –              |
| RTD Channels                  | –                                     | –              | –                                                              | –                                                            | –                                                              | –                                                            | 6                                                          | –                                                            | –              |
| Thermocouple Channels         | –                                     | –              | –                                                              | –                                                            | –                                                              | –                                                            | –                                                          | 8                                                            | –              |
| Serial Ports                  | –                                     | –              | –                                                              | –                                                            | –                                                              | –                                                            | –                                                          | –                                                            | 4              |
| <b>Module Properties</b>      |                                       |                |                                                                |                                                              |                                                                |                                                              |                                                            |                                                              |                |
| Input/Output Mode             | 24 VDC                                | 24 VDC         | 4 to 20 mA (with burnout detection)                            |                                                              | 0 to 10 V                                                      |                                                              | –                                                          | –                                                            | –              |
| I/O Type                      | Sink/Source                           | Sink           | –                                                              | –                                                            | –                                                              | –                                                            | –                                                          | –                                                            | –              |
| Sensor Type                   | Dry contact, wet contact (NPN or PNP) | –              | –                                                              | –                                                            | –                                                              | –                                                            | –                                                          | –                                                            | –              |
| Sampling Rate                 | –                                     | –              | All channels: 100 samples/sec<br>Per channel: 12.5 samples/sec | All channels: 40k samples/sec<br>Per channel: 5k samples/sec | All channels: 100 samples/sec<br>Per channel: 12.5 samples/sec | All channels: 40k samples/sec<br>Per channel: 5k samples/sec | All channels: 12 samples/sec<br>Per channel: 2 samples/sec | All channels: 12 samples/sec<br>Per channel: 1.5 samples/sec | –              |
| Serial Ports                  | –                                     | –              | –                                                              | –                                                            | –                                                              | –                                                            | –                                                          | –                                                            | RS-232/422/485 |
| Connector                     | Spring-type Euroblock terminal        |                |                                                                |                                                              |                                                                |                                                              |                                                            |                                                              | DB44 male      |

# Rugged Controllers and I/Os



| Product Series                          | ioLogik E1510-M12-T                                                                                                                                                                                                                         | ioLogik E1512-M12-T |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Input/Output Interface                  |                                                                                                                                                                                                                                             |                     |
| Analog Input Channels                   | –                                                                                                                                                                                                                                           | –                   |
| Digital Input Channels                  | 12                                                                                                                                                                                                                                          | 4                   |
| Configurable DIO Channels (by software) | –                                                                                                                                                                                                                                           | 4                   |
| RTD Channels                            | –                                                                                                                                                                                                                                           | –                   |
| Ethernet Interface                      |                                                                                                                                                                                                                                             |                     |
| 10/100BaseT(X) Ports                    | 1                                                                                                                                                                                                                                           |                     |
| Connector                               | M12 D-coded 4-pin female connector                                                                                                                                                                                                          |                     |
| Ethernet Software Features              |                                                                                                                                                                                                                                             |                     |
| Industrial Protocols                    | Modbus TCP Server (slave), Moxa AOPC (active tag), MXIO Library                                                                                                                                                                             |                     |
| Serial Software Features                |                                                                                                                                                                                                                                             |                     |
| Industrial Protocols                    | –                                                                                                                                                                                                                                           |                     |
| Environmental Limits                    |                                                                                                                                                                                                                                             |                     |
| Operating Temperature                   | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                  |                     |
| Storage Temperature (package included)  | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                  |                     |
| Ambient Relative Humidity               | 5 to 95% (non-condensing)                                                                                                                                                                                                                   |                     |
| Altitude                                | 2000 meters <sup>1</sup>                                                                                                                                                                                                                    |                     |
| Standards and Certifications            |                                                                                                                                                                                                                                             |                     |
| EMC                                     | EN 61000-6-2/-6-4                                                                                                                                                                                                                           |                     |
| EMI                                     | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                              |                     |
| EMS                                     | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV<br>IEC 61000-4-6 CS: 10 V<br>IEC 61000-4-8 PFMF |                     |
| Environmental Testing                   | –                                                                                                                                                                                                                                           |                     |
| Railway                                 | EN 50121-4, EN 50155 <sup>2</sup>                                                                                                                                                                                                           |                     |
| Safety                                  | UL 508                                                                                                                                                                                                                                      |                     |
| Shock                                   | IEC 60068-2-27                                                                                                                                                                                                                              |                     |
| Vibration                               | IEC 60068-2-6                                                                                                                                                                                                                               |                     |

1. Please contact Moxa if you require products guaranteed to function properly at higher altitudes.

2. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed description, please visit our website.



# Universal Controllers and I/Os



|                                         | ioLogik 2512 (-T)                                                                                                                                      | ioLogik 2512-HSPA (-T)                                                                          | ioLogik 2512-WL1 (-T)                | ioLogik 2542 (-T)                                                                           | ioLogik 2542-HSPA (-T)                                                                          | ioLogik 2542-WL1 (-T)                |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------|
| Control Logic                           |                                                                                                                                                        |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Language                                | Click&Go Plus                                                                                                                                          |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Input/Output Interface                  |                                                                                                                                                        |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Analog Input Channels                   | —                                                                                                                                                      | —                                                                                               | —                                    | 4                                                                                           | 4                                                                                               | 4                                    |
| Digital Input Channels                  | 8                                                                                                                                                      | 8                                                                                               | 8                                    | —                                                                                           | —                                                                                               | —                                    |
| Configurable DIO Channels (by software) | 8                                                                                                                                                      | 8                                                                                               | 8                                    | 12                                                                                          | 12                                                                                              | 12                                   |
| Ethernet Interface                      |                                                                                                                                                        |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| 10/100BaseT(X) Ports (RJ45 connector)   | 4, 1 MAC address (Ethernet bypass)                                                                                                                     |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Ethernet Software Features              |                                                                                                                                                        |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Industrial Protocols                    | CGI commands, Modbus TCP Client (master), Modbus TCP Server (slave), Moxa AOPC (active tag), MXIO Library, RESTful API, SNMPv1/v2c/v3, SNMPv1/v2c Trap |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Serial Interface                        |                                                                                                                                                        |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| No. of Ports                            | 2                                                                                                                                                      |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Serial Standards                        | RS-232/422/485                                                                                                                                         |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Serial Software Features                |                                                                                                                                                        |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Industrial Protocols                    | Modbus RTU Client (master)                                                                                                                             |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Cellular Interface                      |                                                                                                                                                        |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Band Options                            | —                                                                                                                                                      | UMTS/HSPA+ 800/850/900/1900/2100 MHz<br>Universal quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz | —                                    | —                                                                                           | UMTS/HSPA+ 800/850/900/1900/2100 MHz<br>Universal quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz | —                                    |
| WLAN Interface                          |                                                                                                                                                        |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| WLAN Standards                          | —                                                                                                                                                      | —                                                                                               | 802.11b/g, 802.11i wireless security | —                                                                                           | —                                                                                               | 802.11b/g, 802.11i wireless security |
| Environmental Limits                    |                                                                                                                                                        |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Operating Temperature                   | Standard Models: -10 to 60°C (14 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                            | Standard Models: -10 to 60°C (14 to 140°F)<br>Wide Temp. Models: -30 to 70°C (-22 to 158°F)     |                                      | Standard Models: -10 to 60°C (14 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F) | Standard Models: -10 to 60°C (14 to 140°F)<br>Wide Temp. Models: -30 to 70°C (-22 to 158°F)     |                                      |
| Storage Temperature (package included)  | -40 to 85°C (-40 to 185°F)                                                                                                                             |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Ambient Relative Humidity               | 5 to 95% (non-condensing)                                                                                                                              |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Altitude                                | 2000 meters <sup>1</sup>                                                                                                                               |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Standards and Certifications            |                                                                                                                                                        |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| EMC                                     | EN 61000-6-2/-6-4                                                                                                                                      |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| EMI                                     | CISPR 32, FCC Part 15B Class A                                                                                                                         |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| EMS                                     | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-6 CS: 3 V<br>IEC 61000-4-8                |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
|                                         | IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-5 Surge: Power: 1 kV                                                                          | IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-5 Surge: Power: 2 kV                    |                                      | IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-5 Surge: Power: 1 kV               | IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-5 Surge: Power: 2 kV                    |                                      |
| Vibration                               | IEC 60068-2-6                                                                                                                                          |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Shock                                   | IEC 60068-2-27                                                                                                                                         |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Freefall                                | IEC 60068-2-32                                                                                                                                         |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Hazardous Locations                     | ATEX, Class I Division 2                                                                                                                               |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Safety                                  | UL 508                                                                                                                                                 |                                                                                                 |                                      |                                                                                             |                                                                                                 |                                      |
| Radio                                   | —                                                                                                                                                      | EN 301 489-1/17                                                                                 | EN 301 489-1/17, NCC                 | —                                                                                           | EN 301 489-1/17                                                                                 | EN 301 489-1/17, NCC                 |
| Radio Frequency                         | —                                                                                                                                                      | EN 301 908, EN 301 489-24, EN 301 511                                                           | —                                    | —                                                                                           | EN 301 908, EN 301 489-24, EN 301 511                                                           | —                                    |
| WLAN Standards                          | —                                                                                                                                                      | —                                                                                               | EN 300328, EN 301893                 | —                                                                                           | —                                                                                               | EN 300328, EN 301893                 |

1. Please contact Moxa if you require products guaranteed to function properly at higher altitudes.

# Universal Controllers and I/Os



|                                         | ioLogik E2210 (-T)                                                                                                                                                                                                           | ioLogik E2212 (-T) | ioLogik E2214 (-T) | ioLogik E2240 (-T) | ioLogik E2242 (-T) | ioLogik E2260 (-T) | ioLogik E2262 (-T) |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Control Logic                           |                                                                                                                                                                                                                              |                    |                    |                    |                    |                    |                    |
| Language                                | Click&Go                                                                                                                                                                                                                     |                    |                    |                    |                    |                    |                    |
| Input/Output Interface                  |                                                                                                                                                                                                                              |                    |                    |                    |                    |                    |                    |
| Analog Input Channels                   | –                                                                                                                                                                                                                            | –                  | –                  | 8                  | 4                  | –                  | –                  |
| Analog Output Channels                  | –                                                                                                                                                                                                                            | –                  | –                  | 2                  | –                  | –                  | –                  |
| Configurable DIO Channels (by software) | –                                                                                                                                                                                                                            | 4                  | –                  | –                  | 12                 | –                  | –                  |
| Digital Input Channels                  | 12                                                                                                                                                                                                                           | 8                  | 6                  | –                  | –                  | –                  | –                  |
| Digital Output Channels                 | 8                                                                                                                                                                                                                            | 8                  | –                  | –                  | –                  | 4                  | 4                  |
| Relay Channels                          | –                                                                                                                                                                                                                            | –                  | 6                  | –                  | –                  | –                  | –                  |
| RTD Channels                            | –                                                                                                                                                                                                                            | –                  | –                  | –                  | –                  | 6                  | –                  |
| Thermocouple Channels                   | –                                                                                                                                                                                                                            | –                  | –                  | –                  | –                  | –                  | 8                  |
| Ethernet Interface                      |                                                                                                                                                                                                                              |                    |                    |                    |                    |                    |                    |
| 10/100BaseT(X) Ports (RJ45 connector)   | 1                                                                                                                                                                                                                            |                    |                    |                    |                    |                    |                    |
| Ethernet Software Features              |                                                                                                                                                                                                                              |                    |                    |                    |                    |                    |                    |
| Industrial Protocols                    | CGI commands, Modbus TCP Server (slave), Moxa AOPC (active tag), MXIO Library, SNMPv1 Trap, SNMPv1/v2c/v3                                                                                                                    |                    |                    |                    |                    |                    |                    |
| Serial Interface                        |                                                                                                                                                                                                                              |                    |                    |                    |                    |                    |                    |
| No. of Ports                            | 1                                                                                                                                                                                                                            |                    |                    |                    |                    |                    |                    |
| Serial Standards                        | RS-485                                                                                                                                                                                                                       |                    |                    |                    |                    |                    |                    |
| Environmental Limits                    |                                                                                                                                                                                                                              |                    |                    |                    |                    |                    |                    |
| Operating Temperature                   | Standard Models: -10 to 60°C (14 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                  |                    |                    |                    |                    |                    |                    |
| Storage Temperature (package included)  | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                   |                    |                    |                    |                    |                    |                    |
| Ambient Relative Humidity               | 5 to 95% (non-condensing)                                                                                                                                                                                                    |                    |                    |                    |                    |                    |                    |
| Altitude                                | 2000 meters <sup>1</sup>                                                                                                                                                                                                     |                    |                    |                    |                    |                    |                    |
| Standards and Certifications            |                                                                                                                                                                                                                              |                    |                    |                    |                    |                    |                    |
| Freefall                                | IEC 60068-2-32                                                                                                                                                                                                               |                    |                    |                    |                    |                    |                    |
| EMC                                     | EN 61000-6-2/-6-4                                                                                                                                                                                                            |                    |                    |                    |                    |                    |                    |
| Safety                                  | UL 508                                                                                                                                                                                                                       |                    |                    |                    |                    |                    |                    |
| EMI                                     | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                               |                    |                    |                    |                    |                    |                    |
| EMS                                     | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-5 Surge: Power: 1 kV<br>IEC 61000-4-6 CS: 10 V<br>IEC 61000-4-8 PFMF |                    |                    |                    |                    |                    |                    |
| Shock                                   | IEC 60068-2-27                                                                                                                                                                                                               |                    |                    |                    |                    |                    |                    |
| Vibration                               | IEC 60068-2-6                                                                                                                                                                                                                |                    |                    |                    |                    |                    |                    |
| Declaration                             |                                                                                                                                                                                                                              |                    |                    |                    |                    |                    |                    |
| Green Product                           | RoHS, CRoHS, WEEE                                                                                                                                                                                                            |                    |                    |                    |                    |                    |                    |

1. Please contact Moxa if you require products guaranteed to function properly at higher altitudes.

# Universal Controllers and I/Os



|                                        | ioLogik<br>E1210 (-T)                                                                                                                                                                                                                      | ioLogik<br>E1211 (-T) | ioLogik<br>E1212 (-T) | ioLogik<br>E1213 (-T) | ioLogik<br>E1214 (-T)    | ioLogik<br>E1240 (-T) | ioLogik<br>E1241 (-T) | ioLogik<br>E1242 (-T) | ioLogik<br>E1260 (-T) | ioLogik<br>E1262 (-T) |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Input/Output Interface                 |                                                                                                                                                                                                                                            |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| Analog Input Channels                  | —                                                                                                                                                                                                                                          | —                     | —                     | —                     | —                        | 8                     | —                     | 4                     | —                     | —                     |
| Analog Output Channels                 | —                                                                                                                                                                                                                                          | —                     | —                     | —                     | —                        | —                     | 4                     | —                     | —                     | —                     |
| Configurable DIO Channels (by jumper)  | —                                                                                                                                                                                                                                          | —                     | 8                     | 4                     | —                        | —                     | —                     | 4                     | —                     | —                     |
| Digital Input Channels                 | 16                                                                                                                                                                                                                                         | —                     | 8                     | 8                     | 6                        | —                     | —                     | 4                     | —                     | —                     |
| Digital Output Channels                | —                                                                                                                                                                                                                                          | 16                    | —                     | 4                     | —                        | —                     | —                     | —                     |                       |                       |
| Relay Channels                         | —                                                                                                                                                                                                                                          | —                     | —                     | —                     | 6                        | —                     | —                     | —                     | —                     | —                     |
| RTD Channels                           | —                                                                                                                                                                                                                                          | —                     | —                     | —                     | —                        | —                     | —                     | —                     | 6                     | —                     |
| Thermocouple Channels                  | —                                                                                                                                                                                                                                          | —                     | —                     | —                     | —                        | —                     | —                     | —                     | —                     | 8                     |
| Digital Outputs                        |                                                                                                                                                                                                                                            |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| I/O Type                               | —                                                                                                                                                                                                                                          | Sink                  | Sink                  | Source                | —                        | —                     | —                     | Sink                  | —                     | —                     |
| Ethernet Interface                     |                                                                                                                                                                                                                                            |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| 10/100BaseT(X) Ports (RJ45 connector)  | 2, 1 MAC address (Ethernet bypass)                                                                                                                                                                                                         |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| Ethernet Software Features             |                                                                                                                                                                                                                                            |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| Industrial Protocols                   | EtherNet/IP Adapter (slave), Modbus TCP Server (slave), Moxa AOPC (active tag), MXIO Library, RESTful API, SNMP v1/v2c, SNMP v1 Trap                                                                                                       |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| Environmental Limits                   |                                                                                                                                                                                                                                            |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| Operating Temperature                  | Standard Models: -10 to 60°C (14 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F)                                                                                                                                                |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                 |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)                                                                                                                                                                                                                  |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| Altitude                               | 4000 meters <sup>1</sup>                                                                                                                                                                                                                   |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| Standards and Certifications           |                                                                                                                                                                                                                                            |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| EMC                                    | EN 55032/24, EN 61000-6-2/-6-4                                                                                                                                                                                                             |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| EMI                                    | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                             |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| EMS                                    | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 10 V<br>IEC 61000-4-8 PFMF |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| Hazardous Locations                    | ATEX, Class I Division 2                                                                                                                                                                                                                   |                       |                       | —                     | ATEX, Class I Division 2 |                       |                       |                       |                       |                       |
| Safety                                 | UL 508                                                                                                                                                                                                                                     |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| Shock                                  | IEC 60068-2-27                                                                                                                                                                                                                             |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| Vibration                              | IEC 60068-2-6                                                                                                                                                                                                                              |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| Declaration                            |                                                                                                                                                                                                                                            |                       |                       |                       |                          |                       |                       |                       |                       |                       |
| Green Product                          | RoHS, CRoHS, WEEE                                                                                                                                                                                                                          |                       |                       |                       |                          |                       |                       |                       |                       |                       |

1. Please contact Moxa if you require products guaranteed to function properly at higher altitudes.

# Universal Controllers and I/Os



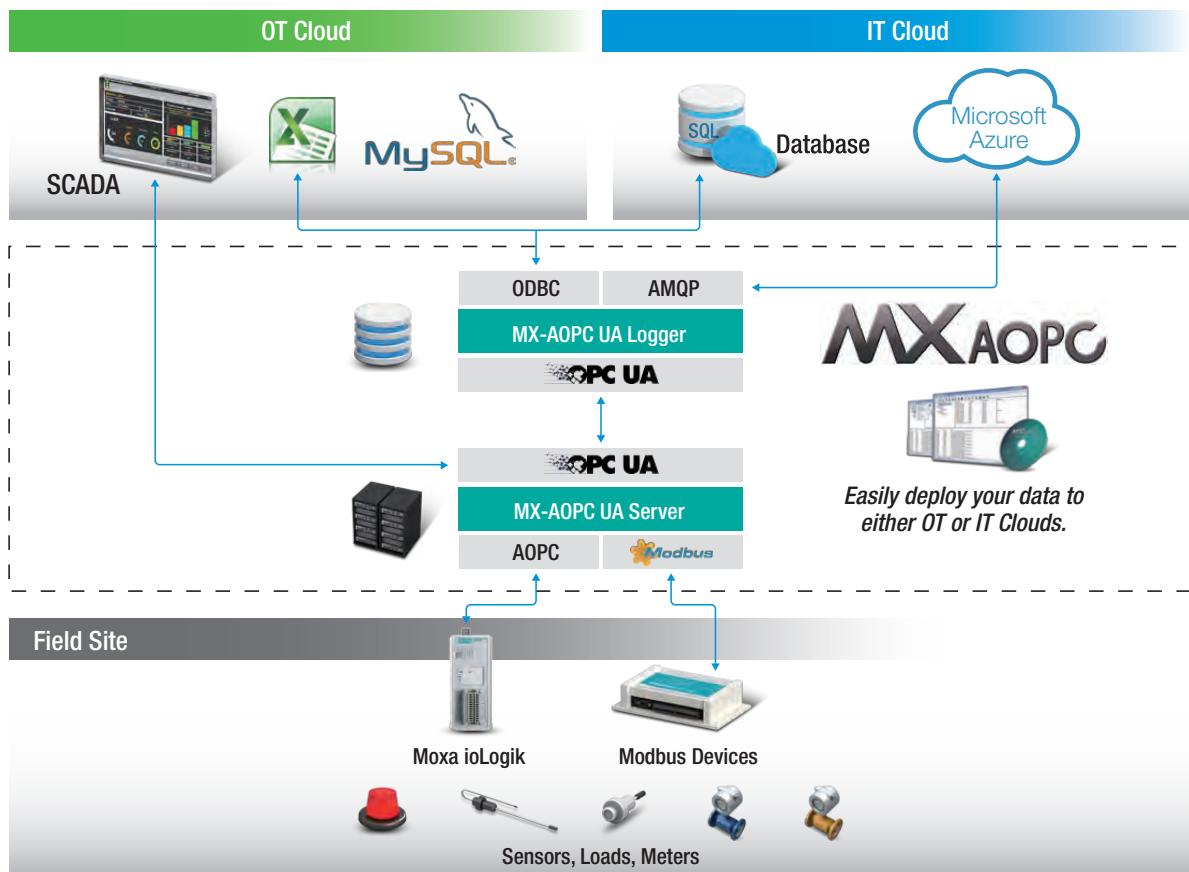
|                                         | ioLogik R1210 (-T)                                                                                                                                                                                             | ioLogik R1212 (-T) | ioLogik R1214 (-T) | ioLogik R1240 (-T) | ioLogik R1241 (-T) |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|
| Input/Output Interface                  |                                                                                                                                                                                                                |                    |                    |                    |                    |
| Analog Input Channels                   | –                                                                                                                                                                                                              | –                  | –                  | 8                  | –                  |
| Analog Output Channels                  | –                                                                                                                                                                                                              | –                  | –                  | –                  | 4                  |
| Configurable DIO Channels (by software) | –                                                                                                                                                                                                              | 8                  | –                  | –                  | –                  |
| Digital Input Channels                  | 16                                                                                                                                                                                                             | 8                  | 6                  | –                  | –                  |
| Relay Channels                          | –                                                                                                                                                                                                              | –                  | 6                  | –                  | –                  |
| Digital Outputs                         |                                                                                                                                                                                                                |                    |                    |                    |                    |
| I/O Type                                | –                                                                                                                                                                                                              | Sink               | –                  | –                  | –                  |
| Serial Interface                        |                                                                                                                                                                                                                |                    |                    |                    |                    |
| No. of Ports                            | 2                                                                                                                                                                                                              |                    |                    |                    |                    |
| Serial Standards                        | RS-485                                                                                                                                                                                                         |                    |                    |                    |                    |
| Serial Software Features                |                                                                                                                                                                                                                |                    |                    |                    |                    |
| Industrial Protocols                    | Modbus RTU Server (slave)                                                                                                                                                                                      |                    |                    |                    |                    |
| Environmental Limits                    |                                                                                                                                                                                                                |                    |                    |                    |                    |
| Operating Temperature                   | Standard Models: -10 to 75°C (14 to 167°F)<br>Wide Temp. Models: -40 to 85°C (-40 to 185°F)                                                                                                                    |                    |                    |                    |                    |
| Storage Temperature (package included)  | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                     |                    |                    |                    |                    |
| Ambient Relative Humidity               | 5 to 95% (non-condensing)                                                                                                                                                                                      |                    |                    |                    |                    |
| Altitude                                | 2000 meters <sup>1</sup>                                                                                                                                                                                       |                    |                    |                    |                    |
| Standards and Certifications            |                                                                                                                                                                                                                |                    |                    |                    |                    |
| Safety                                  | UL 508                                                                                                                                                                                                         |                    |                    |                    |                    |
| EMC                                     | EN 55032/24                                                                                                                                                                                                    |                    |                    |                    |                    |
| EMI                                     | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                 |                    |                    |                    |                    |
| EMS                                     | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 3 V<br>IEC 61000-4-8 PFMF |                    |                    |                    |                    |
| Shock                                   | IEC 60068-2-27                                                                                                                                                                                                 |                    |                    |                    |                    |
| Vibration                               | IEC 60068-2-6                                                                                                                                                                                                  |                    |                    |                    |                    |
| Declaration                             |                                                                                                                                                                                                                |                    |                    |                    |                    |
| Green Product                           | RoHS, CRoHS, WEEE                                                                                                                                                                                              |                    |                    |                    |                    |

1. Please contact Moxa if you require products guaranteed to function properly at higher altitudes.



## Create a Secure Data Connection Between OT and IT Systems

Traditionally, it has been difficult for OT and IT engineers to write agent programs to poll the thousands of registers used for shop-floor data. The difficulty stems from the fact that shop-floor data is handled using fieldbus protocols, but the data needs to be written to an IT database. The difficulties are compounded considerably when it comes time to scale up a facility, particularly since the additional load created can put a tremendous strain on systems that rely on legacy data acquisition methods. MX-AOPC UA Suite can be used to collect data from shop-floor registers via a Modbus protocol. The data can then be provided to an OPC UA client, such as a SCADA system, or MX-AOPC UA Logger can be used to write the data to an IT database, all without the need for additional programming effort. As an added benefit, MX-AOPC UA Suite provides security policy options for encryption and certificate exchange to ensure the security of data connections and transmissions.



# OPC UA Software

Moxa's OPC UA software works with our ioLogik remote I/O products to maximize the efficiency of data collection from remote devices. By leveraging the power of our patented active monitoring technology, the OPC UA software delivers faster response times and bandwidth savings.



OPC UA Software  
Product Pages

## Efficient Data Acquisition Through Push-type Transmission (report by interval or exception method)

Our patented MX-AOPC UA Server offers both polling and non-polling architectures alongside the standard OPC UA protocol, giving users the alternative of using push-based communication from Moxa's devices. With push technology, I/O status is updated to MX-AOPC UA Server only when there is an I/O status change, a pre-configured interval is reached, or when a request is issued by a user. This application of push technology cuts metadata overhead, resulting in faster I/O response times and more accurate data collection than traditional pull-based architectures.



## Automatic Data Supplement From SD Cards Following Network Failures

One of the benefits of using RTUs is that data can be collected over a network from a central site. In an ideal operation, following a network failure, RTUs should be able to transmit data logs that were collected while the network was offline. Moxa's MX-AOPC UA Logger makes this not only possible, but easy. MX-AOPC UA Logger provides a standard OPC interface that interacts with MX-AOPC UA Server for real-time data collection. After each network connection, MX-AOPC UA Logger will compare historical data stored on the SD cards located in individual devices with the real-time data it has already stored locally, and then supplement any missing data by requesting that the RTU retransmit the lost data.



### OPC UA Software supports the following devices:

| Product Series       | Page Number |
|----------------------|-------------|
| ioPAC 8600 Series    | 98          |
| ioLogik E1500 Series | 100         |
| ioLogik 2500 Series  | 101         |
| ioLogik E2200 Series | 102         |
| ioLogik E1200 Series | 103         |



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## Arm-based Computers

Our Arm-based computing family offers wireless-ready, compact, and fanless industrial computers built for space-critical automation applications. These computers are specially designed for long-term operation and come with both a 5-year hardware warranty and 10-year support for Moxa Industrial Linux, making them an ideal choice for remote-monitoring and data-acquisition applications.



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## x86 Computers

Our industrial-grade, fanless x86 computers have passed rigorous tests and strictly adhere to industrial standards to ensure they can provide long-lasting, reliable operation even in harsh environments, making them perfect for heavy industry, power substation and utilities, transportation, oil and gas, and maritime applications.



# Industrial Computing

Moxa offers an extensive range of industrial-grade, fanless computers and displays for tough environments. These products are built to operate reliably in extreme conditions, such as continuous exposure to high or low temperatures, humidity, vibration, and power surges. Our products have been successfully deployed in automation systems for heavy industries, substations, solar energy management, water/wastewater management, transportation, oil and gas, and marine vessels.



Industrial Computing  
Product Pages



## Panel Computers and Displays

Our industrial-grade panel computers and displays are built to withstand the elements, and feature a ruggedized design that makes them ideal for HMI applications in outdoor, hazardous, and maritime environments. Certifications include Class 1 Division 2, ATEX Zone 2, IECEx Zone 2, DNV GL, and CCS.

# Arm-based Computers



| Product Series               | UC-2101-LX                                              | UC-2102-LX                                | UC-2104-LX                               | UC-2111-LX                                               | UC-2112-LX<br>UC-2112-T-LX                                                              | UC-2114-T-LX                                                       | UC-2116-T-LX                  |
|------------------------------|---------------------------------------------------------|-------------------------------------------|------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------|-------------------------------|
| Computer                     |                                                         |                                           |                                          |                                                          |                                                                                         |                                                                    |                               |
| CPU                          | Armv7 Cortex-A8 (600 MHz)                               |                                           |                                          |                                                          | Armv7 Cortex-A8 (1 GHz)                                                                 |                                                                    |                               |
| DRAM                         | 256 MB DDR3                                             |                                           |                                          | 512 MB DDR3                                              |                                                                                         |                                                                    |                               |
| Storage Preinstalled         | 8 GB eMMC flash                                         |                                           |                                          |                                                          |                                                                                         |                                                                    |                               |
| Storage Slot                 | –                                                       |                                           |                                          | microSD x 1                                              |                                                                                         |                                                                    |                               |
| Computer Interface           |                                                         |                                           |                                          |                                                          |                                                                                         |                                                                    |                               |
| Ethernet Ports               | Auto-sensing 10/100 Mbps port (RJ45) x 1                | Auto-sensing 10/100 Mbps ports (RJ45) x 2 | Auto-sensing 10/100 Mbps port (RJ45) x 1 | Auto-sensing 10/100 Mbps ports (RJ45) x 2                | Auto-sensing 10/100 Mbps port (RJ45) x 1, Auto-sensing 10/100/1000 Mbps port (RJ45) x 1 |                                                                    |                               |
| Serial Ports                 | RS-232/422/485 port x 1, software-selectable (DB9 male) | –                                         |                                          | RS-232/422/485 ports x 2, software-selectable (DB9 male) |                                                                                         |                                                                    |                               |
| Expansion Slot               | –                                                       |                                           | miniPCle (for Wi-Fi/LTE)                 | –                                                        |                                                                                         |                                                                    |                               |
| CAN Interface                |                                                         |                                           |                                          |                                                          |                                                                                         |                                                                    |                               |
| No. of Ports                 | –                                                       |                                           |                                          |                                                          |                                                                                         | CAN ports x 2, CAN 2.0A and CAN 2.0B compliant                     |                               |
| GPS Interface                |                                                         |                                           |                                          |                                                          |                                                                                         |                                                                    |                               |
| Number of Channel            | –                                                       | –                                         | –                                        | –                                                        | –                                                                                       | –                                                                  | 72 channels                   |
| Receiver Type                | –                                                       | –                                         | –                                        | –                                                        | –                                                                                       | –                                                                  | GPS/QZSS L1 C/A, Glonass L10F |
| Navigator Update Rate        | –                                                       | –                                         | –                                        | –                                                        | –                                                                                       | –                                                                  | Up to 18 Hz                   |
| Position Accuracy            | –                                                       | –                                         | –                                        | –                                                        | –                                                                                       | –                                                                  | GPS: 2.5 m CEP                |
| Environmental Limits         |                                                         |                                           |                                          |                                                          |                                                                                         |                                                                    |                               |
| Operating Temperature        | -10 to 60°C (14 to 140°F)                               |                                           | -10 to 70°C (14 to 158°F)                | -10 to 60°C (14 to 140°F)                                | UC-2112-LX: -10 to 60°C (14 to 140°F)<br>UC-2112-T-LX: -40 to 75°C (-40 to 167°F)       | -40 to 75°C (-40 to 167°F)                                         |                               |
| Standards and Certifications |                                                         |                                           |                                          |                                                          |                                                                                         |                                                                    |                               |
| Hazardous Locations          | –                                                       | –                                         | –                                        | –                                                        | ATEX, Class I Division 2, IECEx                                                         |                                                                    |                               |
| Cellular Interface           |                                                         |                                           |                                          |                                                          |                                                                                         |                                                                    |                               |
| Standard                     | –                                                       | –                                         | –                                        | –                                                        | –                                                                                       | LTE Cat M1 and NB-IoT compliant                                    |                               |
| LTE Bands                    | –                                                       | –                                         | –                                        | –                                                        | –                                                                                       | 1*, 2, 3, 4, 5, 8, 12, 13, 18, 19, 20, 25, 26*, 28 (*roaming band) |                               |
| Carrier Approval             | –                                                       | –                                         | –                                        | –                                                        | –                                                                                       | Verizon, AT&T                                                      |                               |
| Power Parameters             |                                                         |                                           |                                          |                                                          |                                                                                         |                                                                    |                               |
| Input Voltage                | 9 to 48 VDC                                             |                                           |                                          |                                                          |                                                                                         |                                                                    |                               |
| Power Connector              | 3-pin terminal block                                    |                                           |                                          |                                                          |                                                                                         |                                                                    |                               |
| Power Consumption (max.)     | 4 W                                                     |                                           |                                          |                                                          |                                                                                         | 5.8 W                                                              |                               |

# Arm-based Computers



| Product Series               | UC-3101-T-LX                                                                                                                                                                                                                                                                                                                                                                                               | UC-3111-T-LX                                                      | UC-3121-T-LX                                                     | UC-5101-LX<br>UC-5101-T-LX                                                                                                                                                                                        | UC-5102-LX<br>UC-5102-T-LX      | UC-5111-LX<br>UC-5111-T-LX                        | UC-5112-LX<br>UC-5112-T-LX      |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------------------------------------|---------------------------------|
| Computer                     |                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                   |                                                                  |                                                                                                                                                                                                                   |                                 |                                                   |                                 |
| CPU                          | Armv7 Cortex-A8 1 GHz                                                                                                                                                                                                                                                                                                                                                                                      |                                                                   |                                                                  |                                                                                                                                                                                                                   |                                 |                                                   |                                 |
| DRAM                         | US models <sup>1</sup> : 1 GB DDR3<br>All other models: 512 MB DDR3                                                                                                                                                                                                                                                                                                                                        |                                                                   |                                                                  | 512 MB DDR3                                                                                                                                                                                                       |                                 |                                                   |                                 |
| Storage Preinstalled         | US models <sup>1</sup> : 8 GB eMMC flash<br>All other models: 4 GB eMMC flash                                                                                                                                                                                                                                                                                                                              |                                                                   |                                                                  | 8 GB eMMC flash                                                                                                                                                                                                   |                                 |                                                   |                                 |
| Storage Slot                 | –                                                                                                                                                                                                                                                                                                                                                                                                          | SD x 1                                                            | US models <sup>1</sup> :<br>SD x 1                               | SD x 1                                                                                                                                                                                                            |                                 |                                                   |                                 |
| Computer Interface           |                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                   |                                                                  |                                                                                                                                                                                                                   |                                 |                                                   |                                 |
| Ethernet Ports               | Auto-sensing 10/100 Mbps ports (RJ45) x 2                                                                                                                                                                                                                                                                                                                                                                  |                                                                   |                                                                  |                                                                                                                                                                                                                   |                                 |                                                   |                                 |
| Serial Ports                 | RS-232/422/485<br>port x 1,<br>software-selectable<br>(DB9 male)                                                                                                                                                                                                                                                                                                                                           | RS-232/422/485<br>ports x 2,<br>software-selectable<br>(DB9 male) | RS-232/422/485<br>port x 1,<br>software-selectable<br>(DB9 male) | RS-232/422/485 ports x 4, software selectable (RJ45)                                                                                                                                                              |                                 |                                                   |                                 |
| Digital Input                | –                                                                                                                                                                                                                                                                                                                                                                                                          | –                                                                 | –                                                                | DIs x 4                                                                                                                                                                                                           |                                 |                                                   |                                 |
| Digital Output               | –                                                                                                                                                                                                                                                                                                                                                                                                          | –                                                                 | –                                                                | DOs x 4                                                                                                                                                                                                           |                                 |                                                   |                                 |
| Expansion Slot               | –                                                                                                                                                                                                                                                                                                                                                                                                          | –                                                                 | –                                                                | –                                                                                                                                                                                                                 | miniPCIe x 1<br>(for Wi-Fi/LTE) | –                                                 | miniPCIe x 1<br>(for Wi-Fi/LTE) |
| USB 2.0                      | 1 (type-A connector)                                                                                                                                                                                                                                                                                                                                                                                       |                                                                   |                                                                  |                                                                                                                                                                                                                   |                                 |                                                   |                                 |
| CAN Interface                |                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                   |                                                                  |                                                                                                                                                                                                                   |                                 |                                                   |                                 |
| No. of Ports                 | –                                                                                                                                                                                                                                                                                                                                                                                                          | –                                                                 | CAN port x 1,<br>CAN 2.0A and<br>CAN 2.0B<br>compliant           | –                                                                                                                                                                                                                 | –                               | CAN ports x 2,<br>CAN 2.0A and CAN 2.0B compliant |                                 |
| Environmental Limits         |                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                   |                                                                  |                                                                                                                                                                                                                   |                                 |                                                   |                                 |
| Operating Temperature        | US models <sup>1</sup> : -40 to 70°C (-40 to 158°F)<br>All other models: -30 to 70°C (-22 to 158°F)                                                                                                                                                                                                                                                                                                        |                                                                   |                                                                  | Standard Models: -10 to 60°C (14 to 140°F)<br>Wide Temp. Models:<br>Product only: -40 to 85°C (-40 to 185°F)<br>With LTE accessory: -40 to 70°C (-40 to 158°F)<br>With Wi-Fi accessory: -10 to 70°C (14 to 158°F) |                                 |                                                   |                                 |
| Standards and Certifications |                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                   |                                                                  |                                                                                                                                                                                                                   |                                 |                                                   |                                 |
| Hazardous Locations          | ATEX, Class I Division 2, IECEx                                                                                                                                                                                                                                                                                                                                                                            |                                                                   |                                                                  | –                                                                                                                                                                                                                 | –                               | –                                                 | –                               |
| WLAN Interface               |                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                   |                                                                  |                                                                                                                                                                                                                   |                                 |                                                   |                                 |
| WLAN Standards               | US models <sup>1</sup> : Bluetooth 4.2 compliance<br>All other models: 802.11a/b/g/n                                                                                                                                                                                                                                                                                                                       |                                                                   |                                                                  | –                                                                                                                                                                                                                 |                                 |                                                   |                                 |
| Cellular Interface           |                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                   |                                                                  |                                                                                                                                                                                                                   |                                 |                                                   |                                 |
| Standard                     | LTE Cat 1                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                   |                                                                  | –                                                                                                                                                                                                                 | –                               | –                                                 | –                               |
| Carrier Approval             | US models <sup>1</sup> : Verizon, AT&T                                                                                                                                                                                                                                                                                                                                                                     |                                                                   |                                                                  | –                                                                                                                                                                                                                 | –                               | –                                                 | –                               |
| LTE Bands                    | US models <sup>1</sup> : Band 2 (1900 MHz) / Band 4 (1700 MHz) /<br>Band 5 (850 MHz) / Band 12 (700 MHz) / Band 13 (700 MHz)<br>/ Band 14 (700 MHz) / Band 66 (1700 MHz) /<br>Band 71 (600 MHz)<br>EU Model: Band 1 (2100 MHz) / Band 3 (1800 MHz) /<br>Band 8 (900 MHz) / Band 20 (800 MHz) / Band 28 (700 MHz)<br>AU/NZ Model: 3 (1800 MHz) / Band 5 (850 MHz) /<br>Band 8 (900 MHz) / Band 28 (700 MHz) |                                                                   |                                                                  | –                                                                                                                                                                                                                 | –                               | –                                                 | –                               |
| UMTS Bands                   | US models <sup>1</sup> : Band 2 (1900 MHz) / Band 4 (1700 MHz) /<br>Band 5 (850 MHz)<br>AU/NZ Models: Band 1 (2100 MHz) / Band 5 (850 MHz) /<br>Band 8 (900 MHz)                                                                                                                                                                                                                                           |                                                                   |                                                                  | –                                                                                                                                                                                                                 | –                               | –                                                 | –                               |
| GSM Bands                    | EU Models: 900 MHz / 1800 MHz                                                                                                                                                                                                                                                                                                                                                                              |                                                                   |                                                                  | –                                                                                                                                                                                                                 | –                               | –                                                 | –                               |
| Power Parameters             |                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                   |                                                                  |                                                                                                                                                                                                                   |                                 |                                                   |                                 |
| Input Voltage                | 9 to 36 VDC                                                                                                                                                                                                                                                                                                                                                                                                |                                                                   |                                                                  | 9 to 48 VDC                                                                                                                                                                                                       |                                 |                                                   |                                 |
| Power Connector              | 3-pin terminal block                                                                                                                                                                                                                                                                                                                                                                                       |                                                                   |                                                                  |                                                                                                                                                                                                                   |                                 |                                                   |                                 |
| Power Consumption (max.)     | 6 W                                                                                                                                                                                                                                                                                                                                                                                                        | 9 W                                                               |                                                                  | 6 W                                                                                                                                                                                                               |                                 |                                                   |                                 |

1. Available in Q2, 2020.

# Arm-based Computers



| Product Series               | UC-8112-LX                                                           | UC-8112A-ME-T-LX                                                                              | UC-8112A-ME-T-LX-US | UC-8112A-ME-T-LX-EU   | UC-8112A-ME-T-LX-AP   | UC-8210-T-LX<br>UC-8210-T-LX-S                           | UC-8220-T-LX                                | UC-8220-T-LX-US-S     | UC-8220-T-LX-EU-S              | UC-8220-T-LX-AP-S              |
|------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------|-----------------------|-----------------------|----------------------------------------------------------|---------------------------------------------|-----------------------|--------------------------------|--------------------------------|
| Computer                     |                                                                      |                                                                                               |                     |                       |                       |                                                          |                                             |                       |                                |                                |
| CPU                          | Armv7 Cortex-A8 (1 GHz)                                              |                                                                                               |                     |                       |                       | Armv7 Cortex-A7 (dual core, 1 GHz)                       |                                             |                       |                                |                                |
| DRAM                         | 512 MB DDR3                                                          | 1 GB DDR3                                                                                     |                     |                       |                       | 2 GB DDR3L                                               |                                             |                       |                                |                                |
| Storage Preinstalled         | 8 GB eMMC flash                                                      |                                                                                               |                     |                       |                       |                                                          |                                             |                       |                                |                                |
| Storage Slot                 | SD x 1                                                               |                                                                                               |                     |                       |                       | microSD x 1                                              |                                             |                       |                                |                                |
| Computer Interface           |                                                                      |                                                                                               |                     |                       |                       |                                                          |                                             |                       |                                |                                |
| Ethernet Ports               | Auto-sensing 10/100 Mbps ports (RJ45) x 2                            |                                                                                               |                     |                       |                       | Auto-sensing 10/100/1000 Mbps ports (RJ45) x 2           |                                             |                       |                                |                                |
| Serial Ports                 | RS-232/422/485 ports x 2, software-selectable (5-pin terminal block) |                                                                                               |                     |                       |                       | RS-232/422/485 ports x 2, software-selectable (DB9 male) |                                             |                       |                                |                                |
| Digital Input                | –                                                                    |                                                                                               |                     |                       |                       | DIs x 4                                                  |                                             |                       |                                |                                |
| Digital Output               | –                                                                    |                                                                                               |                     |                       |                       | DOs x 4                                                  |                                             |                       |                                |                                |
| Expansion Slot               | miniPCIe slot x 1 (for Wi-Fi/LTE)                                    | –                                                                                             |                     |                       |                       | miniPCIe slots x 2 (for Wi-Fi/LTE)                       | miniPCIe slots x 1 (for Wi-Fi)              |                       |                                |                                |
| GPS                          | –                                                                    | GPS x 1                                                                                       |                     |                       |                       | –                                                        | GPS x 1                                     |                       |                                |                                |
| USB 2.0                      | 1 (type-A connector)                                                 |                                                                                               |                     |                       |                       |                                                          |                                             |                       |                                |                                |
| TPM                          | –                                                                    |                                                                                               |                     |                       |                       | TPM v2.0 (-S model only)                                 | –                                           | TPM v2.0              |                                |                                |
| CAN Interface                |                                                                      |                                                                                               |                     |                       |                       |                                                          |                                             |                       |                                |                                |
| No. of Ports                 | –                                                                    |                                                                                               |                     |                       |                       | CAN 2.0 A/B x 1 (DB9 male)                               |                                             |                       |                                |                                |
| Environmental Limits         |                                                                      |                                                                                               |                     |                       |                       |                                                          |                                             |                       |                                |                                |
| Operating Temperature        | -10 to 60°C (14 to 140°F)                                            | Without LTE Module: -40 to 85°C (-40 to 185°F)<br>With LTE Module: -40 to 70°C (-40 to 158°F) |                     |                       |                       | -40 to 85°C (-40 to 185°F)                               | With LTE Module: -40 to 70°C (-40 to 158°F) |                       |                                |                                |
| Standards and Certifications |                                                                      |                                                                                               |                     |                       |                       |                                                          |                                             |                       |                                |                                |
| Hazardous Locations          | –                                                                    | ATEX, Class I Division 2, IECEx                                                               |                     |                       |                       |                                                          |                                             |                       |                                |                                |
| Cellular Interface           |                                                                      |                                                                                               |                     |                       |                       |                                                          |                                             |                       |                                |                                |
| Standard                     | –                                                                    | –                                                                                             | LTE Cat 4 compliant |                       |                       | –                                                        | –                                           | LTE Cat 4 compliant   |                                |                                |
| Carrier Approval             | –                                                                    | –                                                                                             | Verizon, AT&T       | –                     | –                     | –                                                        | –                                           | Verizon, AT&T         | –                              | –                              |
| LTE Bands                    | –                                                                    | –                                                                                             | 2, 4, 5, 13, 17     | 1, 3, 5, 7, 8, 20     | 1, 3, 5, 7, 8, 28     | –                                                        | –                                           | 2, 4, 5, 13, 17       | 1, 3, 5, 7, 8, 20              | 1, 3, 5, 7, 8, 28              |
| UMTS Bands                   | –                                                                    | –                                                                                             | 850/1900 MHz        | 850/900/1900/2100 MHz | 850/900/1900/2100 MHz | –                                                        | –                                           | 700/850/1700/1900 MHz | 800/850/900/1800/2100/2600 MHz | 700/850/900/1800/2100/2600 MHz |
| Power Parameters             |                                                                      |                                                                                               |                     |                       |                       |                                                          |                                             |                       |                                |                                |
| Input Voltage                | 12 to 24 VDC                                                         | 12 to 36 VDC                                                                                  |                     |                       |                       | 12 to 48 VDC                                             |                                             |                       |                                |                                |
| Power Connector              | 3-pin terminal block                                                 |                                                                                               |                     |                       |                       | 4-pin terminal block                                     |                                             |                       |                                |                                |
| Power Consumption            | 5.4 W                                                                | 6 W                                                                                           | 8 W                 |                       |                       | 12 W                                                     |                                             |                       |                                |                                |

# Arm-based Computers



| Product Series                | UC-8410A-LX<br>UC-8410A-T-LX                                                                            | UC-8540-LX<br>UC-8540-T-LX                                                                   | UC-8580-LX<br>UC-8580-T-LX                                        | UC-8580-Q-LX<br>UC-8580-T-Q-LX | DA-662A-8-LX<br>DA-662A-I-8-LX                                       | DA-662A-16-LX<br>DA-662A-I-16-LX                                      |
|-------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------|
| Computer                      |                                                                                                         |                                                                                              |                                                                   |                                |                                                                      |                                                                       |
| CPU                           | Armv7 Cortex-A7 (dual core, 1 GHz)                                                                      |                                                                                              |                                                                   |                                | MoxaMacro (500 MHz)                                                  |                                                                       |
| System Memory<br>Preinstalled | 1 GB DDR3L                                                                                              |                                                                                              |                                                                   |                                | 128 MB                                                               |                                                                       |
| Storage Preinstalled          | 8 GB eMMC flash                                                                                         |                                                                                              | 4 GB eMMC flash                                                   |                                | NOR flash, 32 MB                                                     |                                                                       |
| Storage Slot                  | mSATA slot x 1,<br>SD slot x 1                                                                          | mSATA slot x 1                                                                               |                                                                   |                                | CFast slot x1                                                        |                                                                       |
| Computer Interface            |                                                                                                         |                                                                                              |                                                                   |                                |                                                                      |                                                                       |
| Ethernet Ports                | Auto-sensing<br>10/100/1000 Mbps<br>ports (RJ45) x 3                                                    | Auto-sensing 10/100/1000 Mbps ports (M12 X-coded) x 2                                        |                                                                   |                                | Auto-sensing 10/100 Mbps ports (RJ45) x 4                            |                                                                       |
| Serial Ports                  | RS-232/422/485<br>ports x 8, software-<br>selectable (RJ45)                                             | RS-232/422/485<br>port x 1, software-<br>selectable<br>(DB9 male)                            | RS-232/422/485 ports x 2,<br>software-selectable (terminal block) |                                | RS-232/422/485<br>ports x 8, software-<br>selectable<br>(8-pin RJ45) | RS-232/422/485<br>ports x 16, software-<br>selectable<br>(8-pin RJ45) |
| Digital Input                 | DIs x 4                                                                                                 | —                                                                                            | DIs x 3                                                           |                                | —                                                                    |                                                                       |
| Digital Output                | DOs x 4                                                                                                 | —                                                                                            | DOs x 3                                                           |                                | —                                                                    |                                                                       |
| Power Ignition<br>Control     | —                                                                                                       | ✓                                                                                            | ✓                                                                 | ✓                              | —                                                                    |                                                                       |
| Expansion Slot                | miniPCle<br>(for Wi-Fi/LTE)                                                                             | miniPCle x 2<br>(for Wi-Fi/LTE)                                                              | miniPCle x 4 (for Wi-Fi/LTE)                                      |                                | —                                                                    |                                                                       |
| USB 2.0                       | 2 (type-A<br>connectors)                                                                                | —                                                                                            | —                                                                 | —                              | 2 (type-A connectors)                                                |                                                                       |
| USB 3.0                       | —                                                                                                       | 1 (type-A connector)                                                                         |                                                                   |                                | —                                                                    |                                                                       |
| GPS Interface                 |                                                                                                         |                                                                                              |                                                                   |                                |                                                                      |                                                                       |
| Heading Accuracy              | —                                                                                                       | 0.3 degrees                                                                                  |                                                                   |                                | —                                                                    |                                                                       |
| Industrial Protocols          | —                                                                                                       | NMEA 0183, version 4.0 (v2.3 or v4.1 configurable), UBX, RTCM                                |                                                                   |                                | —                                                                    |                                                                       |
| Receiver Types                | —                                                                                                       | 72-channel u-blox M8 engine                                                                  |                                                                   |                                | —                                                                    |                                                                       |
| Time Pulse                    | —                                                                                                       | 0.25 Hz to 10 MHz                                                                            |                                                                   |                                | —                                                                    |                                                                       |
| Velocity Accuracy             | —                                                                                                       | 0.05 ms                                                                                      |                                                                   |                                | —                                                                    |                                                                       |
| Environmental Limits          |                                                                                                         |                                                                                              |                                                                   |                                |                                                                      |                                                                       |
| Operating<br>Temperature      | Standard Models:<br>-10 to 60°C<br>(14 to 140°F)<br>Wide Temp. Models:<br>-40 to 75°C<br>(-40 to 167°F) | Standard Models: -25 to 55°C (-13 to 131°F)<br>Wide Temp. Models: -40 to 70°C (-40 to 158°F) |                                                                   |                                | -10 to 60°C (14 to 140°F)                                            |                                                                       |
| Standards and Certifications  |                                                                                                         |                                                                                              |                                                                   |                                |                                                                      |                                                                       |
| Railway                       | —                                                                                                       | EN 50121-4, EN 50155 <sup>1</sup>                                                            |                                                                   |                                | —                                                                    |                                                                       |
| Railway Fire<br>Protection    | —                                                                                                       | EN 45545-2                                                                                   |                                                                   |                                | —                                                                    |                                                                       |
| Power Parameters              |                                                                                                         |                                                                                              |                                                                   |                                |                                                                      |                                                                       |
| Input Voltage                 | 12 to 48 VDC                                                                                            | 24 to 110 VDC                                                                                |                                                                   |                                | 100 to 240 VAC                                                       |                                                                       |
| Power Connector               | 3-pin terminal block<br>(for DC models)                                                                 | M12 A-coded 4-pin (male)                                                                     |                                                                   |                                | AC power connector                                                   |                                                                       |
| Power Consumption<br>(max.)   | 19 W                                                                                                    | 40 W                                                                                         |                                                                   |                                | 20 W                                                                 |                                                                       |

1. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed description, please visit our website.

# x86 Computers



| Product Series               | DA-681A                                                                                                                 | DA-682A-DPP                                                                                                                          | DA-681C                                                                                                                                        | DA-682C                                                                                                                                                                                                                         | DA-720                                                                                                     |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| Computer                     |                                                                                                                         |                                                                                                                                      |                                                                                                                                                |                                                                                                                                                                                                                                 |                                                                                                            |
| CPU                          | Intel® Celeron® 1047UE                                                                                                  | <ul style="list-style-type: none"><li>Intel® Celeron® 1047UE</li><li>Intel® Core™ i3-3217UE</li><li>Intel® Core™ i7-3517UE</li></ul> | <ul style="list-style-type: none"><li>Intel® Celeron® 3965U, 2C/2T, 2.2 GHz</li><li>Intel® Core™ i3-7100U, 2C/4T, 2.4 GHz</li></ul>            | <ul style="list-style-type: none"><li>Intel® Core™ i7-7600U, 2C/4T, 2.8 GHz</li><li>Intel® Core™ i5-7300U, 2C/4T, 2.6 GHz</li><li>Intel® Core™ i3-7100U, 2C/4T, 2.4 GHz</li><li>Intel® Celeron® 3965U, 2C/2T, 2.2 GHz</li></ul> | <ul style="list-style-type: none"><li>Intel® Core™ i5-6300U</li><li>Intel® Core™ i7-6600U</li></ul>        |
| System Memory Slot           | SODIMM DDR3/DDR3L slot x 1 (max. 16 GB)                                                                                 |                                                                                                                                      | SODIMM DDR4 slots x 2 (max. 32 GB)                                                                                                             |                                                                                                                                                                                                                                 |                                                                                                            |
| Supported OS                 | <ul style="list-style-type: none"><li>Linux Debian 8</li><li>Windows Embedded Standard 7 (WS7E) 32-bit/64-bit</li></ul> | <ul style="list-style-type: none"><li>Linux Debian 7</li><li>Windows Embedded Standard 7 (WS7E) 32-bit/64-bit</li></ul>              | <ul style="list-style-type: none"><li>Windows 10 Embedded IoT Ent 2019 LTSC 64-bit</li><li>Linux Debian 9</li></ul> Note: OS available by CTOS |                                                                                                                                                                                                                                 | <ul style="list-style-type: none"><li>Linux Debian 8</li><li>Windows 10 IoT Enterprise 2016 LTSP</li></ul> |
| Storage Slot                 | 2.5-inch HDD/SSD slot x 1<br>mSATA x 1                                                                                  | 2.5-inch HDD/SSD slots x 2<br>CompactFlash slot x 1                                                                                  | 2.5-inch HDD/SSD slots x 1                                                                                                                     | 2.5-inch HDD/SSD slots x 2                                                                                                                                                                                                      | 2.5-inch HDD/SSD slot x 1<br>mSATA slot x 1                                                                |
| Computer Interface           |                                                                                                                         |                                                                                                                                      |                                                                                                                                                |                                                                                                                                                                                                                                 |                                                                                                            |
| Ethernet Ports               | Auto-sensing 10/100/1000 Mbps ports (RJ45) x 6                                                                          |                                                                                                                                      |                                                                                                                                                |                                                                                                                                                                                                                                 | Auto-sensing 10/100/1000 Mbps ports (RJ45) x 14                                                            |
| Serial Ports                 | RS-232/422/485 ports x 2, software-selectable (DB9 male)<br>RS-485 ports x 10, software-selectable (terminal block)     | –                                                                                                                                    | RS-232/422/485 ports x 2, software-selectable (DB9 male) and RS-485 ports x 10 (terminal block)                                                | RS-232/422/485 ports x 2, software-selectable (terminal block)                                                                                                                                                                  |                                                                                                            |
| USB 2.0                      | USB 2.0 hosts x 4, type-A connectors                                                                                    |                                                                                                                                      | USB 2.0 hosts x 2, type-A connectors                                                                                                           |                                                                                                                                                                                                                                 |                                                                                                            |
| USB 3.0                      | –                                                                                                                       |                                                                                                                                      | USB 3.0 hosts x 3, type-A connectors                                                                                                           |                                                                                                                                                                                                                                 | USB 3.0 hosts x 2, type-A connectors                                                                       |
| Expansion Slots              | –                                                                                                                       | Proprietary <sup>1</sup> PCI slots x 2                                                                                               | –                                                                                                                                              | Proprietary <sup>1</sup> PCI slots x 2                                                                                                                                                                                          | Proprietary <sup>1</sup> PCIe slots x 3                                                                    |
| Video Output                 | VGA x 1                                                                                                                 |                                                                                                                                      | HDMI x 2                                                                                                                                       |                                                                                                                                                                                                                                 | DVI-D x 1<br>VGA x 1                                                                                       |
| Power Parameters             |                                                                                                                         |                                                                                                                                      |                                                                                                                                                |                                                                                                                                                                                                                                 |                                                                                                            |
| Input Voltage                | 100 to 240 VDC, 100 to 240 VAC                                                                                          |                                                                                                                                      |                                                                                                                                                |                                                                                                                                                                                                                                 | 100 to 240 VAC, 110 to 240 VDC                                                                             |
| Physical Characteristics     |                                                                                                                         |                                                                                                                                      |                                                                                                                                                |                                                                                                                                                                                                                                 |                                                                                                            |
| Dimensions (without ears)    | 440 x 315 x 45 mm (17.32 x 12.40 x 1.77 in)                                                                             | 440 x 315 x 90 mm (17.32 x 12.40 x 3.54 in)                                                                                          | 483 x 316 x 44 mm (19 x 12.44 x 1.73 in)                                                                                                       | 483 x 282 x 88 mm (19.32 x 11.08 x 3.46 in)                                                                                                                                                                                     | 440 x 301 x 90 mm (17.32 x 12.20 x 3.54 in)                                                                |
| Installation                 | 19-inch rack mounting                                                                                                   |                                                                                                                                      |                                                                                                                                                |                                                                                                                                                                                                                                 |                                                                                                            |
| Environmental Limits         |                                                                                                                         |                                                                                                                                      |                                                                                                                                                |                                                                                                                                                                                                                                 |                                                                                                            |
| Operating Temperature        | Standard Models: -25 to 55°C (-13 to 131°F)<br>Wide Temp. Models: -40 to 70°C (-40 to 158°F)                            | -25 to 60°C (-13 to 140°F)                                                                                                           | -40 to 70°C (-40 to 158°F)                                                                                                                     |                                                                                                                                                                                                                                 | -25 to 55°C (-13 to 131°F)                                                                                 |
| Standards and Certifications |                                                                                                                         |                                                                                                                                      |                                                                                                                                                |                                                                                                                                                                                                                                 |                                                                                                            |
| Power Substation             | IEC 61850-3, IEC 60255                                                                                                  |                                                                                                                                      |                                                                                                                                                |                                                                                                                                                                                                                                 |                                                                                                            |

1. Nonstandard PCIe slot.

# x86 Computers



| Product Series                      | DA-820C                                                                                                                                                                                                           | MC-1100                                                                                                                                                          | MC-1200                                                                                                                                                                             | V2201                                                                                                                                           | V2406C                                                                                                                                                                                                                                                                                       |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Computer</b>                     |                                                                                                                                                                                                                   |                                                                                                                                                                  |                                                                                                                                                                                     |                                                                                                                                                 |                                                                                                                                                                                                                                                                                              |
| CPU                                 | <ul style="list-style-type: none"> <li>Intel® Core™ i3-7102E v6</li> <li>Intel® Core™ i5-7442EQ</li> <li>Intel® Core™ i7-7820EQ v6</li> <li>Intel® Xeon® E3-1505L v6</li> <li>Intel® Xeon® E3-1505M v6</li> </ul> | <ul style="list-style-type: none"> <li>Intel Atom® E3826</li> <li>Intel Atom® E3845</li> </ul>                                                                   | <ul style="list-style-type: none"> <li>Intel® Celeron® 3965U, 2C/2T, 2.2 GHz</li> <li>Intel® Core™ i5-7300U, 2C/4T, 2.6GHz</li> <li>Intel® Core™ i7-7600U, 2C/4T, 2.8GHz</li> </ul> | <ul style="list-style-type: none"> <li>Intel Atom® E3815</li> <li>Intel Atom® E3826</li> <li>Intel Atom® E3845</li> </ul>                       | <ul style="list-style-type: none"> <li>Intel® Celeron® 3965U processor (2M Cache, 2.2 GHz)</li> <li>Intel® Core™ i3-7100U processor (3M Cache, 2.4 GHz)</li> <li>Intel® Core™ i5-7300U processor (3M Cache, 2.6 GHz)</li> <li>Intel® Core™ i7-7600U processor (4M Cache, 2.8 GHz)</li> </ul> |
| System Memory Slot                  | SODIMM DDR4 slots x 2 (max. 64 GB)                                                                                                                                                                                | SODIMM DDR3/DDR3L slot x 1 (max. 8 GB)                                                                                                                           | SODIMM DDR4 slots x 2 (max. 32 GB)                                                                                                                                                  | SODIMM DDR3/DDR3L slot x 1 (max. 8 GB)                                                                                                          | SODIMM DDR4 slots x 2 (max. 32 GB)                                                                                                                                                                                                                                                           |
| Supported OS                        | <ul style="list-style-type: none"> <li>Linux Debian 9</li> <li>Windows 10 Embedded IoT Ent 2019 LTSC 64-bit</li> </ul>                                                                                            | <ul style="list-style-type: none"> <li>Linux Debian 8</li> <li>Windows Embedded Standard 7 (WS7E) 64-bit</li> <li>Windows 10 IoT Enterprise 2016 LTSC</li> </ul> | <ul style="list-style-type: none"> <li>Linux Debian 9</li> <li>Windows 10 Enterprise 2019 LTSC 64-bit</li> </ul> Note: OS available by CTOS                                         | <ul style="list-style-type: none"> <li>Windows Embedded Standard 7 (WS7E) 32-bit/64-bit</li> <li>Windows 10 IoT Enterprise 2016 LTSC</li> </ul> | <ul style="list-style-type: none"> <li>Linux Debian 9</li> <li>Windows 10 Embedded IoT Ent 2019 LTSC 64-bit</li> </ul>                                                                                                                                                                       |
| Storage Slot                        | 2.5-inch HDD/SSD slots x 4<br>mSATA x 1                                                                                                                                                                           | All Models: CFast x 1<br>MC-1111/1121 Series: SD x 1                                                                                                             | SATA 3.0 x 1<br>mSATA slots x 1                                                                                                                                                     | mSATA x 1<br>SD x 1                                                                                                                             | 2.5-inch HDD/SSD slots x 2<br>mSATA slot x 1                                                                                                                                                                                                                                                 |
| <b>Computer Interface</b>           |                                                                                                                                                                                                                   |                                                                                                                                                                  |                                                                                                                                                                                     |                                                                                                                                                 |                                                                                                                                                                                                                                                                                              |
| Ethernet Ports                      | Auto-sensing 10/100/1000 Mbps ports (RJ45) x 4                                                                                                                                                                    | MC-1111/1112 Series: Auto-sensing 10/100/1000 Mbps ports (RJ45) x 2<br>MC-1121/1122 Series: Auto-sensing 10/100/1000 Mbps ports (RJ45) x 4                       | Auto-sensing 10/100/1000 Mbps ports (RJ45) x 2                                                                                                                                      | Auto-sensing 10/100/1000 Mbps ports (RJ45) x 2                                                                                                  | Auto-sensing 10/100/1000 Mbps ports (M12 X-coded) x 2                                                                                                                                                                                                                                        |
| Serial Ports                        | RS-232/422/485 ports x 2, software-selectable (DB9 male)                                                                                                                                                          | MC-1121/1112 Series: RS-232/422/485 ports x 2, software-selectable (DB9 male)<br>MC-1122 Series: RS-232/422/485 ports x 4, software-selectable (DB9 male)        | RS-232/422/485 ports x 2, software-selectable (terminal block)                                                                                                                      | RS-232/422/485 ports x 2, software-selectable (DB9 male)                                                                                        | RS-232/422/485 ports x 4, software-selectable (DB9 male)                                                                                                                                                                                                                                     |
| USB 2.0                             | USB 2.0 hosts x 3, type-A connectors                                                                                                                                                                              | USB 2.0 hosts x 2, type-A connectors                                                                                                                             | —                                                                                                                                                                                   | USB 2.0 hosts x 2, type-A connectors                                                                                                            | —                                                                                                                                                                                                                                                                                            |
| USB 3.0                             | USB 3.0 hosts x 3, type-A connectors                                                                                                                                                                              | —                                                                                                                                                                | USB 3.0 hosts x 3, type-A connectors                                                                                                                                                | USB 3.0 hosts x 1, type-A connector                                                                                                             | USB 3.0 hosts x 4, type-A connectors                                                                                                                                                                                                                                                         |
| Digital Input                       | DIs x 6                                                                                                                                                                                                           | MC-1121/1122 Series: DIs x 4                                                                                                                                     | —                                                                                                                                                                                   | DIs x 4                                                                                                                                         | DIs x 6                                                                                                                                                                                                                                                                                      |
| Digital Output                      | DOs x 2                                                                                                                                                                                                           | MC-1121/1122 Series: DOs x 4                                                                                                                                     | —                                                                                                                                                                                   | DOs x 4                                                                                                                                         | DOs x 2                                                                                                                                                                                                                                                                                      |
| Expansion Slots                     | PCIe x1 slots x 2<br>PCIe x4 slot x 1<br>PCIe x16 slot x 1<br>PCI slot x 1                                                                                                                                        | Full-size miniPCIe slot x 1 (PCIe and USB signals) with single-SIM support                                                                                       | miniPCIe x 3 (mSATA x 1, wireless module x 2)                                                                                                                                       | Full-size miniPCIe slots x 2 (PCIe and USB signals x 1, USB x 1) with single-SIM support                                                        | miniPCIe x 2 (wireless module)                                                                                                                                                                                                                                                               |
| TPM                                 | TPM v2.0                                                                                                                                                                                                          | MC-1122-E4-TPM-T: TPM v1.2                                                                                                                                       | TPM v2.0                                                                                                                                                                            | —                                                                                                                                               | —                                                                                                                                                                                                                                                                                            |
| Video Output                        | HDMI x 2<br>VGA x 1                                                                                                                                                                                               | All models: VGA x 1<br>MC-1111/1121 Series: VGA x 1, DisplayPort x 1                                                                                             | HDMI x 1                                                                                                                                                                            | HDMI x 1                                                                                                                                        | VGA x 1, HDMI x 1                                                                                                                                                                                                                                                                            |
| <b>Power Parameters</b>             |                                                                                                                                                                                                                   |                                                                                                                                                                  |                                                                                                                                                                                     |                                                                                                                                                 |                                                                                                                                                                                                                                                                                              |
| Input Voltage                       | 100 to 240 VDC, 100 to 240 VAC                                                                                                                                                                                    | 12 to 36 VDC                                                                                                                                                     | 9 to 36 VDC                                                                                                                                                                         | 9 to 36 VDC                                                                                                                                     | 24 to 110 VDC                                                                                                                                                                                                                                                                                |
| <b>Physical Characteristics</b>     |                                                                                                                                                                                                                   |                                                                                                                                                                  |                                                                                                                                                                                     |                                                                                                                                                 |                                                                                                                                                                                                                                                                                              |
| Dimensions                          | 281.4 x 440 x 132.8 mm (11.08 x 17.32 x 5.23 in)                                                                                                                                                                  | MC-1111/1112 Series: 132 x 122 x 68 mm (5.2 x 4.81 x 2.68 in)<br>MC-1121/1122 Series: 132 x 122 x 87 mm (5.2 x 4.81 x 3.43 in)                                   | 134 x 60.4 x 120 mm (5.28 x 2.38 x 4.72 in)                                                                                                                                         | 150 x 48.8 x 120.2 mm (5.91 x 1.92 x 4.73 in)                                                                                                   | 250 x 75 x 150 mm (9.84 x 2.95 x 5.91 in)                                                                                                                                                                                                                                                    |
| Installation                        | 19-inch rack mounting                                                                                                                                                                                             | DIN-rail mounting, wall mounting (with optional kit)                                                                                                             | DIN-rail mounting, wall mounting (with optional kit)                                                                                                                                | DIN-rail mounting, wall mounting (with optional kit)                                                                                            | Wall mounting (standard)                                                                                                                                                                                                                                                                     |
| <b>Environmental Limits</b>         |                                                                                                                                                                                                                   |                                                                                                                                                                  |                                                                                                                                                                                     |                                                                                                                                                 |                                                                                                                                                                                                                                                                                              |
| Operating Temperature               | Standard Models: -25 to 55°C (-13 to 131°F)<br>Wide Temp. Models: -40 to 70°C (-40 to 158°F)                                                                                                                      | -40 to 70°C (-40 to 158°F)                                                                                                                                       | -40 to 70°C (-40 to 158°F)<br>(-40 to 60°C CPU Full speed)                                                                                                                          | E1/E2 Models: -40 to 85°C (-40 to 185°F)<br>E4 Models: -40 to 70°C (-40 to 158°F)                                                               | -40 to 70°C (-40 to 158°F)                                                                                                                                                                                                                                                                   |
| <b>Standards and Certifications</b> |                                                                                                                                                                                                                   |                                                                                                                                                                  |                                                                                                                                                                                     |                                                                                                                                                 |                                                                                                                                                                                                                                                                                              |
| Hazardous Locations                 | —                                                                                                                                                                                                                 | ATEX Zone 2, Class I Division 2, IECEx Zone 2                                                                                                                    | —                                                                                                                                                                                   | —                                                                                                                                               | —                                                                                                                                                                                                                                                                                            |
| Maritime                            | —                                                                                                                                                                                                                 | DNV GL, IEC 60945                                                                                                                                                | —                                                                                                                                                                                   | —                                                                                                                                               | —                                                                                                                                                                                                                                                                                            |



# x86 Computers



| Product Series               | MC-7200-MP-T                                                                                                                          | MC-7200-DC-CP-T                                                                                                                              | MC-7410                                                                                                    | MC-7420                                                                                                            |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Computer                     |                                                                                                                                       |                                                                                                                                              |                                                                                                            |                                                                                                                    |
| CPU                          | <ul style="list-style-type: none"><li>Intel® Celeron® 1047UE</li><li>Intel® Core™ i3-3120ME</li><li>Intel® Core™ i7-3555LE</li></ul>  | <ul style="list-style-type: none"><li>Intel® Celeron® 1047UE</li><li>Intel® Core™ i3-3120ME</li><li>Intel® Core™ i7-3555LE</li></ul>         | <ul style="list-style-type: none"><li>Intel® Celeron® G3902E</li><li>Intel® Core™ i5-6442EQ</li></ul>      |                                                                                                                    |
| System Memory Slot           | SODIMM DDR3/DDR3L slots x 2 (max. 16 GB)                                                                                              |                                                                                                                                              | SODIMM DDR4 slots x 2 (max. 32 GB)                                                                         |                                                                                                                    |
| Supported OS                 | <ul style="list-style-type: none"><li>Windows Embedded Standard 7 (WS7P) 64-bit</li><li>Windows 10 IoT Enterprise 2016 LTSB</li></ul> | <ul style="list-style-type: none"><li>Windows Embedded Standard 7 (WS7E) 32-bit/64-bit</li><li>Windows 10 IoT Enterprise 2016 LTSB</li></ul> | <ul style="list-style-type: none"><li>Linux Debian 9</li><li>Windows 10 IoT Enterprise 2016 LTSB</li></ul> |                                                                                                                    |
| Storage Slot                 | 2.5-inch HDD/SSD slots x 2                                                                                                            | 2.5-inch HDD/SSD slots x 2                                                                                                                   | 2.5-inch HDD/SSD slots x 2 (for removable storage tray)                                                    |                                                                                                                    |
| Computer Interface           |                                                                                                                                       |                                                                                                                                              |                                                                                                            |                                                                                                                    |
| Ethernet Ports               | Auto-sensing 10/100/1000 Mbps ports (RJ45) x 4                                                                                        |                                                                                                                                              | Auto-sensing 10/100/1000 Mbps ports (RJ45) x 5                                                             |                                                                                                                    |
| Serial Ports                 | RS-232 ports x 2 (DB9 male)<br>RS-232/422/485 ports x 2, software-selectable (DB9 male)                                               |                                                                                                                                              | RS-232 ports x 2 (DB9 male)<br>RS-232/422/485 ports x 2, software-selectable (DB9 male)                    | RS-232 ports x 2 (DB9 male)<br>RS-232/422/485 ports x 2, software-selectable (DB9 male)<br>NMEA 0183 terminals x 4 |
| USB 2.0                      | USB 2.0 hosts x 6, type-A connectors                                                                                                  |                                                                                                                                              | USB 2.0 hosts x 5, type-A connectors                                                                       |                                                                                                                    |
| USB 3.0                      | USB 3.0 hosts x 2, type-A connectors                                                                                                  | —                                                                                                                                            | USB 3.0 hosts x 4, type-A connectors                                                                       |                                                                                                                    |
| Digital Input                | DIs x 8                                                                                                                               | —                                                                                                                                            | —                                                                                                          | DIs x 4                                                                                                            |
| Digital Output               | DOs x 8                                                                                                                               | —                                                                                                                                            | —                                                                                                          | DOs x 4                                                                                                            |
| Expansion Slots              | PCIe x16 slot x 1<br>PCI slots x 2                                                                                                    | —                                                                                                                                            | Full-size miniPCIe slot x 1 (PCIe and USB signals)                                                         |                                                                                                                    |
| TPM                          | —                                                                                                                                     | —                                                                                                                                            | —                                                                                                          | —                                                                                                                  |
| Video Output                 | DVI-D x 2<br>VGA x 1                                                                                                                  |                                                                                                                                              | DisplayPort x 1<br>DVI-I x 1<br>DVI-D x 1                                                                  |                                                                                                                    |
| Power Parameters             |                                                                                                                                       |                                                                                                                                              |                                                                                                            |                                                                                                                    |
| Input Voltage                | DC: 24 VDC<br>AC: 100 to 240 VAC                                                                                                      | 24 VDC                                                                                                                                       | DC: 24 VDC<br>AC: 100 to 240 VAC                                                                           |                                                                                                                    |
| Physical Characteristics     |                                                                                                                                       |                                                                                                                                              |                                                                                                            |                                                                                                                    |
| Dimensions                   | 300 x 340 x 160 mm<br>(11.81 x 13.39 x 6.3 in)                                                                                        | 250 x 250 x 70 mm<br>(9.84 x 9.84 x 2.76 in)                                                                                                 | 240 x 209 x 125 mm<br>(9.45 x 8.23 x 4.92 in)                                                              | 240 x 209 x 160 mm<br>(9.45 x 8.23 x 6.3 in)                                                                       |
| Dimensions (with ears)       | 320 x 340 x 160 mm<br>(12.6 x 13.39 x 6.3 in)                                                                                         | 287 x 250 x 70 mm<br>(11.3 x 9.84 x 2.76 in)                                                                                                 | —                                                                                                          | —                                                                                                                  |
| Installation                 | Wall mounting                                                                                                                         |                                                                                                                                              |                                                                                                            |                                                                                                                    |
| Environmental Limits         |                                                                                                                                       |                                                                                                                                              |                                                                                                            |                                                                                                                    |
| Operating Temperature        | -40 to 70°C (-40 to 158°F)                                                                                                            |                                                                                                                                              | -25 to 55°C (-13 to 131°F)                                                                                 |                                                                                                                    |
| Standards and Certifications |                                                                                                                                       |                                                                                                                                              |                                                                                                            |                                                                                                                    |
| Hazardous Locations          | —                                                                                                                                     | —                                                                                                                                            | —                                                                                                          | —                                                                                                                  |
| Maritime                     | CCS, DNV GL, IEC 60945                                                                                                                | CCS, DNV GL, IEC 60945                                                                                                                       | DNV GL, IEC 60945                                                                                          |                                                                                                                    |

# Panel Computers and Displays



| Product Series                            | MD-215                                                                                      | MD-219                                         | MD-224                                         | MD-226                                          |
|-------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------|-------------------------------------------------|
| Display                                   |                                                                                             |                                                |                                                |                                                 |
| Aspect Ratio                              | 4:3                                                                                         | 5:4                                            | 16:9                                           | 16:10                                           |
| Panel Size                                | 15-inch (viewable image)                                                                    | 19-inch (viewable image)                       | 24-inch (viewable image)                       | 26-inch (viewable image)                        |
| Pixels                                    | 1024 x 768                                                                                  | 1280 x 1024                                    | 1920 x 1080                                    | 1920 x 1200                                     |
| Viewing Angles                            | 160° (left and right);<br>140° (top and bottom)                                             | 178° (left and right); 178° (top and bottom)   |                                                | 176° (left and right);<br>176° (top and bottom) |
| Light Intensity (brightness)              | 1000 nits                                                                                   | 300 or 1000 nits                               |                                                | 300 nits                                        |
| Computer Interface                        |                                                                                             |                                                |                                                |                                                 |
| Serial Ports                              | RS-232 port (DB9 male) x 1<br>RS-232/422/485 port x 1, software-selectable (terminal block) |                                                |                                                |                                                 |
| Video Input                               | DVI-D x 1, 29-pin (female)<br>VGA x 1, 15-pin, D-sub (female)                               |                                                |                                                |                                                 |
| Touch Function                            |                                                                                             |                                                |                                                |                                                 |
| Touch Type                                | Capacitive (optional)                                                                       |                                                |                                                | —                                               |
| Touch Support Points                      | 4 points                                                                                    |                                                |                                                | —                                               |
| Power Parameters                          |                                                                                             |                                                |                                                |                                                 |
| Input Voltage                             | 100 to 240 VAC,<br>12/24 VDC                                                                | 100 to 240 VAC,<br>24 VDC                      |                                                |                                                 |
| Physical Characteristics                  |                                                                                             |                                                |                                                |                                                 |
| IP Rating                                 | IP66 (front)<br>IP20 (rear)                                                                 | IP54 (front)<br>IP20 (rear)                    |                                                |                                                 |
| Dimensions                                | 365 x 315 x 77.2 mm<br>(14.02 x 12.04 x 3.04 in)                                            | 429 x 387 x 75 mm<br>(16.89 x 15.24 x 2.95 in) | 595 x 393 x 75 mm<br>(23.43 x 15.47 x 2.95 in) | 621 x 444 x 90 mm<br>(24.45 x 17.48 x 3.57 in)  |
| Weight                                    | 6,100 g (13.45 lb)                                                                          | 7,800 g (17.20 lb)                             | 9,570 g (21.10 lb)                             | 12,650 g (27.89 lb)                             |
| Environmental Limits                      |                                                                                             |                                                |                                                |                                                 |
| Operating Temperature                     | -40 to 70°C (-40 to 158°F)                                                                  | -15 to 55°C (5 to 131°F)                       |                                                |                                                 |
| Storage Temperature<br>(package included) | -40 to 70°C (-40 to 158°F)                                                                  | -20 to 60°C (-4 to 140°F)                      |                                                |                                                 |
| Ambient Relative Humidity                 | 5 to 95% (non-condensing)                                                                   |                                                |                                                |                                                 |
| Standards and Certifications              |                                                                                             |                                                |                                                |                                                 |
| Hazardous Locations                       | —                                                                                           | Class I Division 2                             |                                                | —                                               |
| Maritime                                  | DNV GL, IEC 60945                                                                           | ABS, CCS, DNV GL, IEC 60945                    |                                                |                                                 |
| Warranty                                  |                                                                                             |                                                |                                                |                                                 |
| Warranty Period                           | LCD: 1 year<br>System: 3 years                                                              |                                                |                                                |                                                 |

# Panel Computers and Displays



| Product Series                         | MPC-2070                                                                                                                                                                                                                                     | MPC-2120                                                                                    | MPC-2101                                                                                                                                                                                                                                                      | MPC-2121                                        |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Computer                               |                                                                                                                                                                                                                                              |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| CPU                                    | Intel Atom® E3826                                                                                                                                                                                                                            | <ul style="list-style-type: none"><li>Intel Atom® E3826</li><li>Intel Atom® E3845</li></ul> | Intel Atom® E3845                                                                                                                                                                                                                                             |                                                 |
| Graphics Controller                    | Intel® HD Graphics                                                                                                                                                                                                                           |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| System Memory Preinstalled             | 4 (8 GB max.) GB DDR3L                                                                                                                                                                                                                       |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| Preinstalled OS                        | Optional support                                                                                                                                                                                                                             |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| Supported OS                           | <ul style="list-style-type: none"><li>Windows 7 Professional for Embedded Systems</li><li>Windows Embedded Standard 7 (64-bit)</li><li>Windows 10 Professional (64-bit)</li><li>Windows 10 IoT Enterprise 2016 LTSC Entry (64-bit)</li></ul> |                                                                                             | <ul style="list-style-type: none"><li>Windows 7 Professional for Embedded Systems</li><li>Windows Embedded Standard 7 (64-bit)</li><li>Windows 10 Professional (64-bit)</li><li>Windows 10 IoT Enterprise 2016 LTSC Entry (64-bit)</li><li>Debian 9</li></ul> |                                                 |
| Storage Slot                           | CFast x 1, SD x 1                                                                                                                                                                                                                            |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| Computer Interface                     |                                                                                                                                                                                                                                              |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| Ethernet Ports                         | RJ45 x 2                                                                                                                                                                                                                                     |                                                                                             | M12 x 2                                                                                                                                                                                                                                                       |                                                 |
| Serial Ports                           | RS-232/422/485 (DB9) x 2                                                                                                                                                                                                                     |                                                                                             | RS-232/422/485 (M12) x 1                                                                                                                                                                                                                                      |                                                 |
| USB 2.0                                | USB 2.0 x 2                                                                                                                                                                                                                                  |                                                                                             | USB 2.0 (M12) x 1                                                                                                                                                                                                                                             |                                                 |
| Digital Input                          | DIs (TB) x 4                                                                                                                                                                                                                                 |                                                                                             | DIs (M12) x 4                                                                                                                                                                                                                                                 |                                                 |
| Digital output                         | DOs (TB) x 4                                                                                                                                                                                                                                 |                                                                                             | DOs (M12) x 2                                                                                                                                                                                                                                                 |                                                 |
| Display                                |                                                                                                                                                                                                                                              |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| Aspect Ratio                           | 16:9                                                                                                                                                                                                                                         | 4:3                                                                                         |                                                                                                                                                                                                                                                               |                                                 |
| Light Intensity (brightness)           | 350 or 1000 nits                                                                                                                                                                                                                             | 500 or 1000 nits                                                                            |                                                                                                                                                                                                                                                               |                                                 |
| Panel Size                             | 7 inches                                                                                                                                                                                                                                     | 12 inches                                                                                   | 10 inches                                                                                                                                                                                                                                                     | 12 inches                                       |
| Pixels                                 | 800 x 480                                                                                                                                                                                                                                    | 1024 x 768                                                                                  |                                                                                                                                                                                                                                                               |                                                 |
| Viewing Angles                         | 160° (left and right);<br>160° (top and bottom)                                                                                                                                                                                              | 160° (left and right);<br>140° (top and bottom)                                             | 176° (left and right);<br>176° (top and bottom)                                                                                                                                                                                                               | 160° (left and right);<br>140° (top and bottom) |
| Touch Function                         |                                                                                                                                                                                                                                              |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| Touch Type                             | Capacitive                                                                                                                                                                                                                                   |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| Glove Support                          | ✓                                                                                                                                                                                                                                            |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| Power Parameters                       |                                                                                                                                                                                                                                              |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| Input Voltage                          | 12/24 VDC                                                                                                                                                                                                                                    |                                                                                             | 24 to 110 VDC                                                                                                                                                                                                                                                 |                                                 |
| Physical Characteristics               |                                                                                                                                                                                                                                              |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| IP Rating                              | IP66 (front)<br>IP20 (rear)                                                                                                                                                                                                                  |                                                                                             | IP66                                                                                                                                                                                                                                                          |                                                 |
| Dimensions                             | 200 x 140 x 45 mm<br>(7.9 x 5.5 x 1.8 in)                                                                                                                                                                                                    | 306 x 245 x 64 mm<br>(12 x 9.6 x 2.5 in)                                                    | 256.9 x 214.4 x 58.9 mm<br>(10.11 x 8.44 x 2.32 in)                                                                                                                                                                                                           | 297 x 248 x 59 mm<br>(11.69 x 9.76 x 2.32 in)   |
| Weight                                 | 1,400 g (3.09 lb)                                                                                                                                                                                                                            | 2,640 g (5.82 lb)                                                                           | 2,080 g (4.59 lb)                                                                                                                                                                                                                                             | 2,850 g (6.28 lb)                               |
| Environmental Limits                   |                                                                                                                                                                                                                                              |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| Operating Temperature                  | -40 to 70°C (-40 to 158°F)                                                                                                                                                                                                                   |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| Storage Temperature (package included) | -40 to 70°C (-40 to 158°F)                                                                                                                                                                                                                   |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)                                                                                                                                                                                                                    |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| Standards and Certifications           |                                                                                                                                                                                                                                              |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| Hazardous Locations                    | ATEX, Class I Division 2, IECEx                                                                                                                                                                                                              |                                                                                             | —                                                                                                                                                                                                                                                             |                                                 |
| Maritime                               | DNV GL                                                                                                                                                                                                                                       |                                                                                             | —                                                                                                                                                                                                                                                             |                                                 |
| Railway                                | —                                                                                                                                                                                                                                            |                                                                                             | EN 50155:2017                                                                                                                                                                                                                                                 |                                                 |
| Warranty                               |                                                                                                                                                                                                                                              |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |
| Warranty Period                        | LCD: 1 year<br>System: 3 years                                                                                                                                                                                                               |                                                                                             |                                                                                                                                                                                                                                                               |                                                 |

# Panel Computers and Displays



| Product Series                         | MPC-2150                                                                                                                                                                                                                               | MPC-2190                                      | MPC-2240                                    | MPC-2260                                     | EXPC-1519                                     |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------|----------------------------------------------|-----------------------------------------------|
| Computer                               |                                                                                                                                                                                                                                        |                                               |                                             |                                              |                                               |
| CPU                                    | Intel® Core™ i7-3517UE/Intel® Celeron® 1047UE                                                                                                                                                                                          |                                               |                                             |                                              | Intel® Core™ i7-3555LE/Intel® Celeron® 1047UE |
| System Memory                          | 4 GB preinstalled (max. 16 GB)                                                                                                                                                                                                         |                                               |                                             |                                              | 4 GB DDR3/DDR3L (max. 16 GB)                  |
| Preinstalled OS                        | Optional support                                                                                                                                                                                                                       |                                               |                                             |                                              |                                               |
| Supported OS                           | <ul style="list-style-type: none"><li>Windows 7 Professional for Embedded Systems</li><li>Windows Embedded Standard 7 (64-bit)</li><li>Windows 10 Professional (64-bit)</li><li>Windows 10 Embedded IoT Enterprise 2016 LTSP</li></ul> |                                               |                                             |                                              |                                               |
| Storage Slot                           | 2.5-inch HDD/SSD slot x 1, CFast x 1                                                                                                                                                                                                   | 2.5-inch HDD/SSD slot x 1                     | 2.5-inch HDD/SSD slots x 2                  |                                              | 2.5-inch HDD/SSD slot x 1, CFast x 1          |
| Computer Interface                     |                                                                                                                                                                                                                                        |                                               |                                             |                                              |                                               |
| Ethernet Ports                         | RJ45 x 2                                                                                                                                                                                                                               |                                               |                                             |                                              | RJ45 x 2, Fiber ST x 2                        |
| Serial Ports                           | RS-232/422/485 (DB9) x 2                                                                                                                                                                                                               |                                               |                                             |                                              | RS-232/422/485 x 2                            |
| USB 2.0                                | USB 2.0 x 4                                                                                                                                                                                                                            |                                               |                                             |                                              | USB 2.0, up to 4                              |
| Audio Input/Output                     | Line in x 1, Line out x 1                                                                                                                                                                                                              |                                               |                                             |                                              | –                                             |
| PS/2                                   | Keyboard PS/2 x 1, mouse PS/2 x 1                                                                                                                                                                                                      |                                               |                                             |                                              | –                                             |
| Video Output                           | DVI-D x 1, VGA x 1                                                                                                                                                                                                                     |                                               |                                             |                                              | VGA x 1                                       |
| Display                                |                                                                                                                                                                                                                                        |                                               |                                             |                                              |                                               |
| Aspect Ratio                           | 4:3                                                                                                                                                                                                                                    | 5:4                                           | 16:9                                        | 16:10                                        | 5:4                                           |
| Light Intensity (brightness)           | 1000 nits                                                                                                                                                                                                                              | 300 nits                                      |                                             |                                              | 1000 nits                                     |
| Panel Size                             | 15 inches                                                                                                                                                                                                                              | 19 inches                                     | 24 inches                                   | 26 inches                                    | 19 inches                                     |
| Pixels                                 | 1024 x 768                                                                                                                                                                                                                             | 1280 x 1024                                   | 1920 x 1080                                 | 1920 x 1200                                  | 1280 x 1024                                   |
| Viewing Angles                         | 160° (left and right); 140° (top and bottom)                                                                                                                                                                                           | 178° (left and right); 178° (top and bottom)  |                                             | 176° (left and right); 176° (top and bottom) | 170° (left and right); 160° (top and bottom)  |
| Touch Function                         |                                                                                                                                                                                                                                        |                                               |                                             |                                              |                                               |
| Touch Type                             | Capacitive (optional)                                                                                                                                                                                                                  |                                               |                                             | –                                            | Capacitive                                    |
| Glove Support                          | ✓                                                                                                                                                                                                                                      | –                                             | –                                           | –                                            | ✓                                             |
| Touch Support Points                   | 4 points                                                                                                                                                                                                                               |                                               |                                             | –                                            | 4 points                                      |
| Power Parameters                       |                                                                                                                                                                                                                                        |                                               |                                             |                                              |                                               |
| Input Voltage                          | 100 to 240 VAC, 12/24 VDC                                                                                                                                                                                                              | 100 to 240 VAC, 24 VDC                        |                                             |                                              |                                               |
| Physical Characteristics               |                                                                                                                                                                                                                                        |                                               |                                             |                                              |                                               |
| IP Rating                              | IP66 (front)<br>IP20 (rear)                                                                                                                                                                                                            | IP54 (front)<br>IP20 (rear)                   |                                             |                                              | IP66                                          |
| Dimensions                             | 356 x 315 x 77.2 mm (14.02 x 12.40 x 3.04 in)                                                                                                                                                                                          | 429 x 387 x 74.5 mm (16.89 x 15.24 x 2.93 in) | 595 x 393 x 75 mm (23.44 x 15.48 x 2.95 in) | 621 x 444 x 90 mm (24.45 x 17.48 x 3.57 in)  | 483 x 408 x 99.5 mm (19.02 x 16.06 x 3.92 in) |
| Weight                                 | 6,800 g (14.99 lb)                                                                                                                                                                                                                     | 8,658 g (19.09 lb)                            | 12,400 g (27.34 lb)                         | 16,600 g (36.60 lb)                          | 12,700 g (28.00 lb)                           |
| Environmental Limits                   |                                                                                                                                                                                                                                        |                                               |                                             |                                              |                                               |
| Operating Temperature                  | -40 to 70°C (-40 to 158°F)                                                                                                                                                                                                             | -15 to 55°C (5 to 131°F)                      |                                             |                                              | -40 to 70°C (-40 to 158°F)                    |
| Storage Temperature (package included) | -40 to 70°C (-40 to 158°F)                                                                                                                                                                                                             | -20 to 60°C (-4 to 140°F)                     |                                             |                                              | -40 to 70°C (-40 to 158°F)                    |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)                                                                                                                                                                                                              |                                               |                                             |                                              |                                               |
| Standards and Certifications           |                                                                                                                                                                                                                                        |                                               |                                             |                                              |                                               |
| Hazardous Locations                    | ATEX Zone, Class I Division 2, IECEx Zone 2                                                                                                                                                                                            | –                                             |                                             |                                              | ATEX Zone 2, Class I Division 2, IECEx Zone 2 |
| Maritime                               | DNV GL                                                                                                                                                                                                                                 | ABS, CCS, DNV GL                              |                                             |                                              | –                                             |
| Warranty                               |                                                                                                                                                                                                                                        |                                               |                                             |                                              |                                               |
| Warranty Period                        | LCD: 1 year<br>System: 3 years                                                                                                                                                                                                         |                                               |                                             |                                              |                                               |

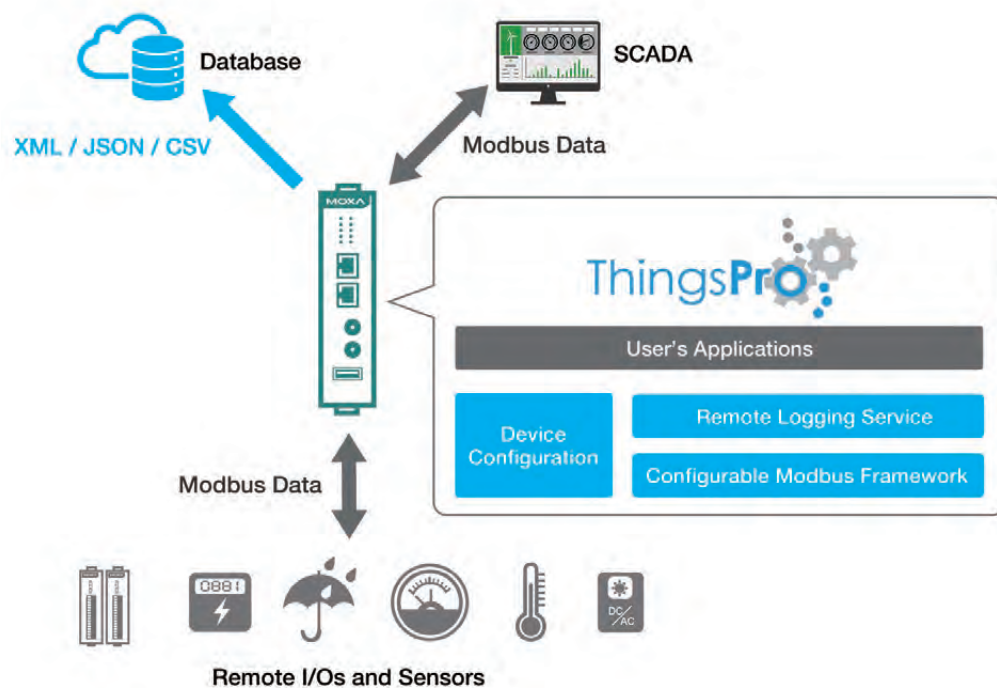


## ThingsPro® Gateway

### ◆ A Ready-to-run Data Acquisition Tool to Speed Up Your IIoT Development

For users who develop their own data acquisition and asset management software programs, ThingsPro Gateway provides the ability to transfer field data directly to remote databases without any additional programming on the gateway. This way, users can focus on developing applications without having to worry about how to get and transfer their data to back-end databases or cloud platforms such as Alibaba Cloud, Azure IoT Hub, AWS IoT, or Sparkplug via MQTT over TLS.

### ◆ System Architecture



# System Software

To accelerate project development and speed up your time to market, Moxa provides programmers with a variety of user-friendly software tools, making it easy to develop customized data acquisition and wireless/cellular communication applications.



System Software  
Product Pages

## ◆ Key Features

- **Ready-to-run Fieldbus-to-tag Framework**

Easy-to-use UI for data acquisition via Modbus RTU or Modbus TCP Master

- **Network and System Configuration**

Web UI to configure LTE, Wi-Fi, DHCP, DNS, OpenVPN, SSH, port forwarding, GPS, and system date/time settings, and Ethernet and Serial ports

- **MQTT Communication Protocol**

Supports generic MQTT communication and MQTT-based services: Alibaba Cloud, AWS IoT, Microsoft Azure IoT Hub, and Sparkplug

- **Enhanced Cloud Connectivity**

Store and Forward to prevent data loss and Tag Selector to send only selected tags to the cloud, in order to save Internet transmission fees, are some of the capabilities that can be enabled in Alibaba Cloud, AWS IoT, Microsoft Azure IoT Hub, or Sparkplug.

## ◆ Eligible Devices

ThingsPro Gateway v2.6<sup>1</sup> supports the following devices by default:

| Series               | Model Name                                                    | Product Version | Firmware Version | Page Number |
|----------------------|---------------------------------------------------------------|-----------------|------------------|-------------|
| MC-1100 Series       | MC-1121-E2-T, MC-1121-E4-T                                    | 1.0.2           | 2.0              | 114         |
| UC-2100 Series       | UC-2101-LX, UC-2102-LX, UC-2104-LX                            | 1.0.0           | 1.4              | 109         |
|                      | UC-2111-LX, UC-2112-LX, UC-2112-T-LX                          | 1.0.0           | 1.4              | 109         |
| UC-2100-W Series     | UC-2114-T-LX, UC-2116-T-LX                                    | 1.0.0           | 1.5              | 109         |
| UC-3100 Series       | UC-3101-T-US-LX, UC-3101-T-EU-LX, UC-3101-T-AU-LX             | 1.0.0           | 1.1              | 110         |
|                      | UC-3111-T-US-LX, UC-3111-T-EU-LX, UC-3111-T-AU-LX             | 1.0.0           | 1.1              | 110         |
|                      | UC-3121-T-US-LX, UC-3121-T-EU-LX, UC-3121-T-AU-LX             | 1.0.0           | 1.1              | 110         |
| UC-5100 Series       | UC-5101-LX, UC-5101-T-LX, UC-5102-LX, UC-5102-T-LX            | 1.0.0           | 1.2              | 110         |
|                      | UC-5111-LX, UC-5111-T-LX, UC-5112-LX, UC-5112-T-LX            | 1.0.0           | 1.2              | 110         |
| UC-8100 Series       | UC-8112-LX, UC-8112-ME-T-LX                                   | 3.0.0           | 3.0              | 111         |
|                      | UC-8112-ME-T-LX1                                              | 4.0.0           | 3.0              | 111         |
| UC-8100A-ME-T Series | UC-8112A-ME-T-LX                                              | 1.0.0           | 1.3              | 111         |
|                      | UC-8112A-ME-T-LX-US, UC-8112A-ME-T-LX-EU, UC-8112A-ME-T-LX-AP | 1.0.0           | 1.3              | 111         |
| UC-8200 Series       | UC-8210-T-LX, UC-8210-T-LX-S                                  | 1.0.0           | 1.1              | 111         |
|                      | UC-8220-T-LX                                                  | 1.0.0           | 1.1              | 111         |
|                      | UC-8220-T-LX-US-S, UC-8220-T-LX-EU-S, UC-8220-T-LX-AP-S       | 1.0.0           | 1.1              | 111         |

1. Available in Q3, 2020.





## Wireless Antennas and Cables

Moxa offers a wide variety of cellular and WLAN antennas and cables that are easy to install and simplify the process of establishing wireless networks.



## Backup Configurators

These automatic backup configurators are designed to perform configuration backup and restoration for Moxa's managed Ethernet switches and wireless AP/Bridge/Client devices.



## Fiber Optic Adapters and Bypass Units

Our fiber optic adapters are optional accessories that provide more fiber optic connection options for Moxa's industrial Ethernet switches. In addition, Moxa's fiber bypass units add bypass relay functionality to any network node.



## PoE Injectors and Splitters

Moxa's PoE injectors combine power and data over a single Ethernet cable and provide non-PoE power source equipment (PSE) the ability to supply power to powered devices (PD). In addition, Moxa PoE splitters give non-PoE powered devices (PD) the ability to pair PoE Power Sourcing Equipment (PSE).



# Accessories

Moxa provides a wide range of accessories that include wireless antennas, backup configurators, fiber optic adapters and fiber bypass units, PoE injectors and splitters, power supplies and adapters, SFP modules, and mounting kits. All of these accessories play an important role to complement Moxa's industrial solutions and help guarantee reliable performance.



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## Power Supplies and Adapters

In order to ensure that space and power source input/output requirements for industrial control systems are met, Moxa offers a wide variety of power supplies and adapters.



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## SFP Modules

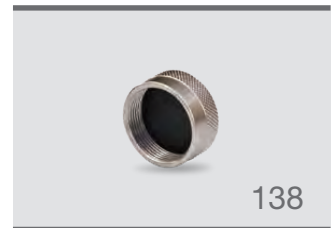
These small form-factor pluggable transceiver (SFP) Ethernet fiber modules support Fast Ethernet, Gigabit Ethernet, or 10 Gigabit Ethernet. They are designed to facilitate coverage across a wide range of communication distances.



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## Mounting Kits

Moxa's versatile mounting kits include options for desktop, wall, DIN-rail, VESA, and rack mounting, and have been designed to simplify installation of products in a variety of industrial environments and ensure that they can be installed in most locations.



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## Caps, Cables, and Connectors

Our caps and connectors include a selection of pin and code types with high IP ratings to ensure suitability for industrial environments. Our cables come in a variety of lengths with multiple pin options to ensure compatibility for a wide range of applications.



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## Other Accessories

These accessories include surge arresters, HDD/SSD kits, data line surge protectors, Wi-Fi modules, and adapters.

# Wireless Antennas and Cables

## Cellular Antennas



| Product Series                  | ANT-CQB-AHSM-00-3m         | ANT-CQB-AHSM-03-3m         | ANT-CQB-AHSM-05-3m         | ANT-CQB-ASM-01             | ANT-LTE-ANF-04                                     |
|---------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------------------------------|
| <b>Antenna Characteristics</b>  |                            |                            |                            |                            |                                                    |
| Frequency                       | 850/900/1800/1900 MHz      | 850/900/1800/1900 MHz      | 850/900/1800/1900 MHz      | 850/900/1800/1900 MHz      | 700/800/900/1700/1800/1900/2100/2600 MHz           |
| Antenna Type                    | Omni-directional           | Omni-directional           | Omni-directional           | Omni-directional           | Omni-directional                                   |
| Typical Antenna Gain            | 0 dBi                      | 3 dBi                      | 5 dBi                      | 1 dBi (max.)               | 3 dBi @ 698 to 969 MHz<br>4 dBi @ 1710 to 2700 MHz |
| Connector                       | SMA (male)                 | SMA (male)                 | SMA (male)                 | SMA (male)                 | N-type (female)                                    |
| Impedance                       | 50 ohms                    | 50 ohms                    | 50 ohms                    | 50 ohms                    | 50 ohms                                            |
| Polarization                    | Linear, Vertical           | Linear                     | Linear, Vertical           | Linear                     | Vertical                                           |
| HPBW/Horizontal                 | 360°                       | 360°                       | 360°                       | 360°                       | 360°                                               |
| HPBW/Vertical                   | —                          | —                          | —                          | —                          | —                                                  |
| V.S.W.R.                        | < 2                        | < 2                        | < 2                        | < 3.5                      | < 2.5                                              |
| <b>Physical Characteristics</b> |                            |                            |                            |                            |                                                    |
| Weight                          | 58 g (0.13 lb)             | 60 g (0.13 lb)             | 62 g (0.14 lb)             | 10 g (0.02 lb)             | 360 g (0.79 lb)                                    |
| Length (including base)         | 85 mm (3.35 in)            | 250 mm (9.84 in)           | 370 mm (14.57 in)          | 83 mm (3.27 in)            | 124 mm (4.88 in)                                   |
| Installation                    | Magnetic mount             | Magnetic mount             | Magnetic mount             | Straight mount             | L bracket                                          |
| Cable Length                    | 3 m (9.8 ft)               | 3 m (9.8 ft)               | 3 m (9.8 ft)               | —                          | —                                                  |
| <b>Environmental Limits</b>     |                            |                            |                            |                            |                                                    |
| Operating Temperature           | -30 to 75°C (-22 to 167°F) | -30 to 75°C (-22 to 167°F) | -30 to 75°C (-22 to 167°F) | -30 to 75°C (-22 to 167°F) | -30 to 70°C (-22 to 158°F)                         |



| Product Series                  | ANT-LTE-ASM-02             | ANT-LTEUS-ASM-01                                                                                           | ANT-WCDMA-AHSM-04-2.5m     | ANT-WCDMA-ANF-00           | ANT-WCDMA-ASM-1.5          |
|---------------------------------|----------------------------|------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------|----------------------------|
| <b>Antenna Characteristics</b>  |                            |                                                                                                            |                            |                            |                            |
| Frequency                       | 800/900/1800/2100/2600 MHz | 700/850/900/1700/1900/2600 MHz                                                                             | 850/900/1800/1900/2100 MHz | 850/900/1800/1900/2100 MHz | 850/900/1800/1900/2100 MHz |
| Antenna Type                    | Omni-directional           | Omni-directional                                                                                           | Omni-directional           | Omni-directional           | Omni-directional           |
| Typical Antenna Gain            | 2 dBi                      | 1 dBi @ 698 to 960 MHz<br>2 dBi @ 1710 to 1990 MHz<br>2 dBi @ 2300 to 2400 MHz<br>2 dBi @ 2500 to 2700 MHz | 4 dBi                      | 0 dBi                      | 1.5 dBi                    |
| Connector                       | SMA (male)                 | SMA (male)                                                                                                 | SMA (male)                 | N-type (female)            | SMA (male)                 |
| Impedance                       | 50 ohms                    | 50 ohms                                                                                                    | 50 ohms                    | 50 ohms                    | 50 ohms                    |
| Polarization                    | Linear, Vertical           | Linear, Vertical                                                                                           | Linear, Vertical           | Vertical                   | Linear, Vertical           |
| HPBW/Horizontal                 | 360°                       | 360°                                                                                                       | 360°                       | 360°                       | 360°                       |
| HPBW/Vertical                   | —                          | —                                                                                                          | —                          | 40°                        | —                          |
| V.S.W.R.                        | < 3                        | < 3                                                                                                        | < 2                        | 1:1.5 (max.)               | < 2                        |
| <b>Physical Characteristics</b> |                            |                                                                                                            |                            |                            |                            |
| Weight                          | 26 g (0.06 lb)             | 26 g (0.06 lb)                                                                                             | 60 g (0.13 lb)             | 430 g (0.95 lb)            | 10 g (0.02 lb)             |
| Length (including base)         | 161 mm (6.34 in)           | 205 mm (8.07 in)                                                                                           | 110 mm (4.33 in)           | 420 mm (16.54 in)          | 104 mm (4.09 in)           |
| Installation                    | Straight mount             | Straight mount                                                                                             | Straight mount             | Pole mount                 | Straight mount             |
| Cable Length                    | —                          | —                                                                                                          | 2.5 m                      | —                          | —                          |
| <b>Environmental Limits</b>     |                            |                                                                                                            |                            |                            |                            |
| Operating Temperature           | -20 to 65°C (-4 to 149°F)  | -30 to 75°C (-22 to 167°F)                                                                                 | -30 to 75°C (-22 to 167°F) | -40 to 80°C (-40 to 176°F) | -30 to 75°C (-22 to 167°F) |



| Product Series                  | ANT-LTE-OSM-03-3m BK                                                                | ANT-LTE-ASM-04 BK                                                                                                | ANT-LTE-ASM-05 BK                                                                                              | ANT-LTE-OSM-06-3m BK MIMO                                                                                                                                        |
|---------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Antenna Characteristics</b>  |                                                                                     |                                                                                                                  |                                                                                                                |                                                                                                                                                                  |
| Frequency                       | 704 to 960 MHz/1710 to 2690 MHz                                                     | 704 to 960/1710 to 2690 MHz                                                                                      | 704 to 960/1710 to 2690 MHz                                                                                    | 704 to 960/1710 to 2690 MHz                                                                                                                                      |
| Antenna Type                    | Dipole                                                                              | Omni-directional                                                                                                 | Omni-directional                                                                                               | —                                                                                                                                                                |
| Typical Antenna Gain            | 1.9 dBi @ 704 to 787 MHz<br>3.2 dBi @ 824 to 960 MHz<br>-1.6 dBi @ 1710 to 2690 MHz | 3.9 dBi @ 704 to 787 MHz<br>3.7 dBi @ 824 to 960 MHz<br>4.6 dBi @ 1710 to 1990 MHz<br>2.7 dBi @ 2110 to 2690 MHz | 5.5 dBi @ 704 to 787 MHz<br>2 dBi @ 824 to 960 MHz<br>2.9 dBi @ 1710 to 1990 MHz<br>5.2 dBi @ 2110 to 2690 MHz | 6.1 dBi @ 704 to 960 MHz<br>5.4 dBi @ 1710 to 2690 MHz, with a 3 m RG-58 cable<br>4.9 dBi @ 704 to 960 MHz<br>4.4 dBi @ 1710 to 2690 MHz, with a 3 m RG-58 cable |
| Connector                       | SMA (male)                                                                          | SMA (male)                                                                                                       | SMA (male)                                                                                                     | SMA (male)                                                                                                                                                       |
| Impedance                       | 50 ohms                                                                             | 50 ohms                                                                                                          | 50 ohms                                                                                                        | 50 ohms                                                                                                                                                          |
| Polarization                    | Linear, Vertical                                                                    | Linear, Vertical                                                                                                 | Linear, Vertical                                                                                               | Linear, Vertical                                                                                                                                                 |
| HPBW/Horizontal                 | 360°                                                                                | 360°                                                                                                             | 360°                                                                                                           | 360°                                                                                                                                                             |
| HPBW/Vertical                   | —                                                                                   | —                                                                                                                | —                                                                                                              | —                                                                                                                                                                |
| V.S.W.R.                        | < 2                                                                                 | < 2                                                                                                              | < 3.7 @ 704 to 824 MHz<br>5.7 @ 960 MHz<br>< 2.6 @ 1710 to 2690 MHz                                            | < 2.4                                                                                                                                                            |
| <b>Physical Characteristics</b> |                                                                                     |                                                                                                                  |                                                                                                                |                                                                                                                                                                  |
| Length including base           | 65 Ø x 15.8 H mm                                                                    | 9.4 Ø x 27 W x 87.5/105 H mm                                                                                     | 9.4 Ø x 182 L x 30 W x 16.3 H mm                                                                               | 85 Ø x 41.5 H mm                                                                                                                                                 |
| Installation                    | Straight mount                                                                      | Straight mount                                                                                                   | Straight mount                                                                                                 | Straight mount                                                                                                                                                   |
| Cable Length                    | 3 m (9.8 ft)                                                                        | —                                                                                                                | —                                                                                                              | 3 m (9.8 ft)                                                                                                                                                     |
| <b>Environmental Limits</b>     |                                                                                     |                                                                                                                  |                                                                                                                |                                                                                                                                                                  |
| Operating Temperature           | -40 to 85°C (-40 to 185°F)                                                          | -40 to 85°C (-40 to 185°F)                                                                                       | -40 to 85°C (-40 to 185°F)                                                                                     | -40 to 85°C (-40 to 185°F)                                                                                                                                       |

## WLAN Antennas



| Product Series                  | ANT-WDB-ANF-0407                 | ANT-WDB-ANF-0609                 | ANT-WDB-ANM-0306             | ANT-WDB-ANM-0407           | ANT-WDB-ANM-0502           | ANT-WDB-ANM-0609           | ANT-WDB-ARM-02             | ANT-WDB-ARM-0202             | ANT-WDB-PNF-1518                           |
|---------------------------------|----------------------------------|----------------------------------|------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|------------------------------|--------------------------------------------|
| <b>Antenna Characteristics</b>  |                                  |                                  |                              |                            |                            |                            |                            |                              |                                            |
| Frequency                       | 2.4 to 2.5 GHz or 5.1 to 5.9 GHz | 2.4 to 2.5 GHz or 5.1 to 5.9 GHz | 2.4 to 2.5, 4.9 to 5.825 GHz | 2.4 to 2.5, 5.1 to 5.9 GHz | 2.4 to 2.5, 5.1 to 5.9 GHz | 2.4 to 2.5, 5.1 to 5.9 GHz | 2.4 to 2.5, 5.2 to 5.8 GHz | 2.4 to 2.5, 4.9 to 5.825 GHz | 2.4 to 2.5, 5.1 to 5.9 GHz                 |
| Antenna Type                    | Omni-directional                 | Omni-directional                 | Omni-directional             | Omni-directional           | Omni-directional           | Omni-directional           | Omni-directional           | Omni-directional             | Directional, Panel                         |
| Typical Antenna Gain            | 4/7 dBi                          | 6/9 dBi                          | 3.5/6 dBi                    | 4/7 dBi                    | 5/2 dBi                    | 6/9 dBi                    | 2/2 dBi                    | 2/2 dBi                      | 15/18 dBi                                  |
| Connector                       | N-type (female)                  | N-type (female)                  | N-type (male)                | N-type (male)              | N-type (male)              | N-type (male)              | RF-SMA (male)              | RF-SMA (male)                | N-type (female)                            |
| Impedance                       | 50 ohms                          | 50 ohms                          | 50 ohms                      | 50 ohms                    | 50 ohms                    | 50 ohms                    | 50 ohms                    | 50 ohms                      | 50 ohms                                    |
| Polarization                    | Linear                           | Linear                           | Linear                       | Linear                     | Linear                     | Linear                     | Vertical                   | Linear                       | Linear                                     |
| HPBW/Horizontal                 | 360°                             | 360°                             | 360°                         | 360°                       | 360°                       | 360°                       | 360°                       | 360°                         | 10/50°                                     |
| HPBW/Vertical                   | 80°                              | 8/10°                            | —                            | 8/10°                      | 65°                        | 8/10°                      | 80°                        | —                            | 10/30°                                     |
| V.S.W.R. (max.)                 | 1:1.5                            | 1:1.5                            | 2:1                          | 1:1.5                      | 2:1                        | 1:1.5                      | 2:1                        | 2:1                          | 1:1.5                                      |
| Power Handling (max.)           | 10 W                             | 10 W                             | 1 W                          | 10 W                       | 2 W                        | 10 W                       | —                          | 1 W                          | 20 W                                       |
| <b>Physical Characteristics</b> |                                  |                                  |                              |                            |                            |                            |                            |                              |                                            |
| Weight                          | 297 g (0.65 lb)                  | 286 g (0.63 lb)                  | 68.9 g (0.15 lb)             | 115 g (0.25 lb)            | 72 g (0.16 lb)             | 238 g (0.52 lb)            | 10 g (0.02 lb)             | 9.65 g (0.02 lb)             | 1,020 g (2.25 lb)                          |
| Length (including RF cable)     | 238 mm (9.37 in)                 | 660 mm (25.98 in)                | 215 mm (8.46 in)             | 220 mm (8.66 in)           | 220 mm (8.66 in)           | 632 mm (24.88 in)          | 108 mm (4.25 in)           | 136 mm (5.35 in)             | 270 x 205 x 15 mm (10.62 x 8.07 x 0.59 in) |
| IP Rating                       | IP65                             | IP65                             | IP67                         | IP67                       | IP67                       | IP65                       | —                          | —                            | IP65                                       |
| Installation                    | Pole mount                       | Pole mount                       | Straight mount               | Straight mount             | Straight mount             | Straight mount             | Straight mount             | Straight mount               | Pole mount                                 |
| <b>Environmental Limits</b>     |                                  |                                  |                              |                            |                            |                            |                            |                              |                                            |
| Operating Temperature           | -40 to 80°C (-40 to 176°F)       | -40 to 80°C (-40 to 176°F)       | -40 to 75°C (-40 to 167°F)   | -40 to 80°C (-40 to 176°F) | -40 to 80°C (-40 to 176°F) | -40 to 80°C (-40 to 176°F) | -40 to 80°C (-40 to 176°F) | -40 to 75°C (-40 to 167°F)   | -40 to 80°C (-40 to 176°F)                 |



| Product Series                  | ANT-WSB5-ANF-12            | ANT-WSB5-PNF-18                            | ANT-WSB-AHRM-05-1.5m             | ANT-WSB-ANF-09             | ANT-WSB-PNF-12                          | ANT-WSB-PNF-18                             | MAT-WDB-CARM-2-0205        | MAT-WDB-DARM-2-0203-1m      | MAT-WDB-PANF-2-0708                       |
|---------------------------------|----------------------------|--------------------------------------------|----------------------------------|----------------------------|-----------------------------------------|--------------------------------------------|----------------------------|-----------------------------|-------------------------------------------|
| <b>Antenna Characteristics</b>  |                            |                                            |                                  |                            |                                         |                                            |                            |                             |                                           |
| Frequency                       | 5.1 to 5.9 GHz             | 5.1 to 5.9 GHz                             | 2.4 to 2.5 GHz                   | 2.4 to 2.5 GHz             | 2.4 to 2.5 GHz                          | 2.4 to 2.5 GHz                             | 2.4 to 2.5, 4.9 to 5.9 GHz | 2.4 to 2.5, 4.9 to 5.85 GHz | 2.4 to 2.5, 4.9 to 5.9 GHz                |
| Antenna Type                    | Omni-directional           | Directional, Panel                         | Omni-directional, Rubber antenna | Omni-directional           | Directional, Panel                      | Directional, Panel                         | MIMO 2x2, Omni-directional | MIMO 2x2, Omni-directional  | MIMO 2x2, Omni-directional                |
| Typical Antenna Gain            | 12 dBi                     | 18 dBi                                     | 5 dBi                            | 9 dBi                      | 12 dBi                                  | 18 dBi                                     | 2/5 dBi                    | 2/3 dBi                     | 7/8 dBi                                   |
| Connector                       | N-type (female)            | N-type (female)                            | RP-SMA (male)                    | N-type (female)            | N-type (female)                         | N-type (female)                            | RP-SMA (male)              | RP-SMA (male)               | N-type (female)                           |
| Impedance                       | 50 ohms                    | 50 ohms                                    | 50 ohms                          | 50 ohms                    | 50 ohms                                 | 50 ohms                                    | 50 ohms                    | 50 ohms                     | 50 ohms                                   |
| Polarization                    | Linear                     | Linear                                     | Linear                           | Linear                     | Linear                                  | Linear                                     | Linear                     | Linear, Vertical            | Vertical                                  |
| HPBW/Horizontal                 | 360°                       | 10°                                        | 360°                             | 360°                       | 50°                                     | 30°                                        | 360°                       | 360/114°                    | 90°                                       |
| HPBW/Vertical                   | 6°                         | 10°                                        | 80°                              | 10°                        | 30°                                     | 20°                                        | —                          | 75/54°                      | 50°                                       |
| V.S.W.R. (max.)                 | 1:1.3                      | 1:1.5                                      | 2:1                              | 1:1.3                      | 1:1.5                                   | 1:1.5                                      | 2:1                        | 2:1                         | 2:1                                       |
| Power Handling (max.)           | 10 W                       | 10 W                                       | —                                | 15 W                       | 10 W                                    | 15 W                                       | 10 W                       | 2 W                         | 2 W                                       |
| <b>Physical Characteristics</b> |                            |                                            |                                  |                            |                                         |                                            |                            |                             |                                           |
| Weight                          | 430 g (0.95 lb)            | 310 g (0.68 lb)                            | 300 g (0.66 lb)                  | 430 g (0.95 lb)            | 560 g (1.23 lb)                         | 310 g (0.68 lb)                            | 115 g (0.25 lb)            | 156 g (0.34 lb)             | 935 g (2.06 lb)                           |
| Length including RF cable       | 420 mm (16.53 in)          | 270 x 205 x 15 mm (10.63 x 8.07 x 0.59 in) | 236 mm (9.29 in)                 | 420 mm (16.54 in)          | 214 x 94 x 30 mm (8.43 x 3.7 x 1.18 in) | 270 x 205 x 15 mm (10.63 x 8.07 x 0.59 in) | 37 mm (1.46 in)            | 194.3 mm (7.65 in)          | 206 x 177 x 45 mm (8.11 x 6.97 x 1.77 in) |
| IP Rating                       | IP65                       | IP65                                       | —                                | IP65                       | IP65                                    | IP65                                       | —                          | IP55                        | —                                         |
| Installation                    | Pole mount                 | Pole mount                                 | Magnetic mount                   | Pole mount                 | Pole mount                              | Pole mount                                 | Ceiling mount              | Desktop Mount               | Pole mount                                |
| Cable Length                    | —                          | —                                          | 1.5 m (4.9 ft)                   | —                          | —                                       | —                                          | 25 cm (9.8 in)             | 1 m (3.3 ft)                | —                                         |
| <b>Environmental Limits</b>     |                            |                                            |                                  |                            |                                         |                                            |                            |                             |                                           |
| Operating Temperature           | -40 to 80°C (-40 to 176°F) | -40 to 80°C (-40 to 176°F)                 | -40 to 80°C (-40 to 176°F)       | -40 to 80°C (-40 to 176°F) | -40 to 80°C (-40 to 176°F)              | -40 to 80°C (-40 to 176°F)                 | -40 to 75°C (-40 to 167°F) | -40 to 75°C (-40 to 167°F)  | -40 to 75°C (-40 to 167°F)                |

## Wireless Antennas Cables



| Product Series         | Cables                            |                                   |                                   |                                   |                                   |                                   |
|------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
|                        | CRF-N0429N- 3M                    | A-CRF-NMNM- LL4-300               | A-CRF-NMNM- LL4-600               | A-CRF-NMNM- LL4-900               | A-CRF-RMNM-L1-300                 | A-CRF-RMNM-L1-600                 |
| Cable Type             | CFD400                            | LMR-400 Lite                      | LMR-400 Lite                      | LMR-400 Lite                      | LMR-195 Lite                      | LMR-195 Lite                      |
| Connector Type         | N-type (male) to N-type (male)    | N-type (male) to N-type (male)    | N-type (male) to N-type (male)    | N-type (male) to N-type (male)    | N-type (male) to RP SMA (male)    | N-type (male) to RP SMA (male)    |
| Cable Length           | 3 m (9.8 ft)                      | 3 m (9.8 ft)                      | 6 m (19.6 ft)                     | 9 m (29.5 ft)                     | 3 m (9.8 ft)                      | 6 m (19.6 ft)                     |
| Attenuation (dB/100 m) | 22.2 @ 2.5 GHz,<br>35.5 @ 5.8 GHz | 22.2 @ 2.5 GHz,<br>35.5 @ 5.8 GHz | 22.2 @ 2.5 GHz,<br>35.5 @ 5.8 GHz | 22.2 @ 2.5 GHz,<br>35.5 @ 5.8 GHz | 62.4 @ 2.5 GHz,<br>98.1 @ 5.8 GHz | 62.4 @ 2.5 GHz,<br>98.1 @ 5.8 GHz |



| Product Series         | Cables                            |                                                |                                   |                                 |                                 |
|------------------------|-----------------------------------|------------------------------------------------|-----------------------------------|---------------------------------|---------------------------------|
|                        | A-CRF-RMNM-L1-900                 | A-CRF-RFRM-J1-60                               | CRF-SMA(M)/N(M)-300               | A-CRF-RFRM-R4-150               | A-CRF-SMSF-R3-100               |
| Cable Type             | LMR-195 Lite                      | JSF-141                                        | CFD200                            | RG-174                          | RG-174                          |
| Connector Type         | N-type (male) to RP SMA (male)    | RP-SMA (male) to RP-SMA (female)               | SMA (male) to N-type (male)       | SMA jack / SMA plug             | SMA jack / SMA plug             |
| Cable Length           | 9 m (29.5 ft)                     | 60 cm (23.62 in)                               | 3 m (9.8 ft)                      | 1.5 m (4.9 ft)                  | 1 m (3.3 ft)                    |
| Attenuation (dB/100 m) | 62.4 @ 2.5 GHz,<br>98.1 @ 5.8 GHz | Below 1.0 dB @ 2.4 GHz<br>Below 1.5 dB @ 5 GHz | 55.4 @ 2.5 GHz,<br>86.5 @ 5.8 GHz | 153.8 @ 2 GHz,<br>273.1 @ 5 GHz | 153.8 @ 2 GHz,<br>273.1 @ 5 GHz |

## Terminating Resistors



| Product Series | Terminating Resistors                        |                                              |
|----------------|----------------------------------------------|----------------------------------------------|
|                | A-TRM-50-NM                                  | A-TRM-50-RM                                  |
| Description    | Termination resistor, 50 ohms, N-type (male) | Termination resistor, 50 ohms, RP-SMA (male) |

## Surge Arresters



| Product Series | Surge Arresters                  |                                    |
|----------------|----------------------------------|------------------------------------|
|                | A-SA-NMNF-01                     | A-SA-NFNF-01                       |
| Frequency      | 0 to 6 GHz                       | 0 to 6 GHz                         |
| Connector Type | N-type (female) to N-type (male) | N-type (female) to N-type (female) |

## Adapters



| Product Series | Adapters                           |                                                   |
|----------------|------------------------------------|---------------------------------------------------|
|                | A-ADP-RJ458P-DB9F-ABC01            | A-ADP-QMAM-RF                                     |
| Description    | RJ45-to-DB9 adaptor for the ABC-01 | QMA (male) to RP-SMA (female) adaptor for antenna |

## Backup Configurators



| Model Name       | ABC-01                                                                                                                                                              | ABC-02-USB                                                                                                                                        | ABC-01-M12                                                              | ABC-01-P-M12-CT-T                                                       | ABC-02-P-USB-M12-CT-T              |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------|
| Connector        | RS-232 (RJ45)                                                                                                                                                       | USB 2.0 Type A (male)                                                                                                                             | Serial interface, M12 A-code (female)                                   | Serial interface, M12 A-code (female)                                   | USB Type, M12 A-code (male)        |
| Storage          | 64 KB                                                                                                                                                               | 1 GB                                                                                                                                              | 64 KB                                                                   | 64 KB                                                                   | 128 MB                             |
| Supported Models | EDS-400A/500A Series<br>EDS-P500A Series<br>EDS-G509 Series<br>EDS-600/700/800 Series<br>PT-G7509 Series<br>PT-7528 Series<br>PT-7710 Series<br>PT-7728/7828 Series | EDS-500E Series<br>EDS-G500E Series<br>SDS-3000 Series<br>EDS-P506E Series<br>IKS Series<br>ICS Series<br>PT-G503 Series<br>PT-G7728/G7828 Series | TN-5500A Series<br>TN-4500A Series<br>TN-5800A Series<br>TN-5900 Series | TN-5500A Series<br>TN-4500A Series<br>TN-5800A Series<br>TN-5900 Series | TN-G4516 Series<br>TN-G6512 Series |

## Fiber Optic Adapters and Fiber Bypass Units

### Fiber Optic Adapters



| Model Name | ADP-SCm-STf-S      | ADP-SCm-STf-M      |
|------------|--------------------|--------------------|
| Fiber Type | Single-mode        | Multi-mode         |
| Interface  | SC male, ST female | SC male, ST female |

### Optical Fiber Bypass Units



| Model Name                             | OBU-102-SC                           | OBU-102-ST | OBU-102-LC |
|----------------------------------------|--------------------------------------|------------|------------|
| Description                            | 2-channel optical fiber bypass units |            |            |
| Single-mode Fiber SC Female Connectors | 4                                    | —          | —          |
| Single-mode Fiber ST Female Connectors | —                                    | 4          | —          |
| Single-mode Fiber LC Female Connectors | —                                    | —          | 4          |

## PoE Injectors and Splitters



| Model                                         | INJ-24                        | INJ-24A                       | SPL-24           |
|-----------------------------------------------|-------------------------------|-------------------------------|------------------|
| 10/100/1000BaseT(X) Ports, RJ45 Connector     | 1                             | 1                             | —                |
| 10/100/1000BaseT(X) PoE Ports, RJ45 Connector | 1                             | 1                             | —                |
| 10/100BaseT(X) Ports, RJ45 Connector          | —                             | —                             | 1                |
| 10/100BaseT(X) PoE Ports (PD), RJ45 Connector | —                             | —                             | 1                |
| Input Power                                   | 24/48 VDC                     | 24/48 VDC                     | PoE 802.3af      |
| Output Power                                  | 30 W for each PoE port (max.) | 60 W for each PoE port (max.) | 12.95 W @ 24 VDC |

# Power Supplies and Adapters

## 24/48 VDC DIN-rail Power Supplies



| Model Name                                      |                                                                                 | 24 VDC DIN-rail Power Supplies                                                     |                                                               |                                                      |                                  | 48 VDC DIN-rail Power Supplies                  |                                                        |                                                          |
|-------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------------------------------------------|----------------------------------|-------------------------------------------------|--------------------------------------------------------|----------------------------------------------------------|
|                                                 |                                                                                 | HDR-60-24                                                                          | NDR-120-24                                                    | MDR-40-24                                            |                                  | MDR-60-24                                       | NDR-120-48                                             | NDR-240-48                                               |
| Physical Characteristics and Temperature Limits |                                                                                 |                                                                                    |                                                               |                                                      |                                  |                                                 |                                                        |                                                          |
| Dimensions                                      | 52.5 x 90 x 54.5 mm (2.07 x 3.54 x 2.15 in)                                     | 123.75 x 125.20 x 40 mm (4.87 x 4.93 x 1.57 in)                                    | 40 x 90 x 100 mm (1.57 x 3.54 x 3.94 inches)                  |                                                      |                                  | 123.75 x 125.20 x 40 mm (4.87 x 4.93 x 1.57 in) | 127.81 x 123.75 x 63 mm (5.03 x 4.87 x 2.48 in)        |                                                          |
| Weight                                          | 230 g (0.5 lb)                                                                  | 500 g (1.10 lb)                                                                    | 260 g (0.57 lb)                                               | 280 g (0.62 lb)                                      |                                  | 500 g (1.10 lb)                                 | 900 g (1.98 lb)                                        |                                                          |
| Operating Temperature                           | -30 to 70°C (-22 to 158°F)                                                      | -20 to 70°C (-4 to 158°F)                                                          |                                                               |                                                      |                                  | -20 to 70°C (-4 to 158°F)                       |                                                        |                                                          |
| Operating Temperature at Full Load (max.)       | 45°C (113°F)                                                                    | 45°C (113°F)                                                                       | 60°C (140°F)                                                  | 55°C (131°F)                                         |                                  | 45°C (113°F)                                    | 50°C (122°F)                                           |                                                          |
| Relative Humidity                               | 20 to 90% (non-condensing)                                                      | 20 to 95% (non-condensing)                                                         | 20 to 90% (non-condensing)                                    |                                                      |                                  | 20 to 95% (non-condensing)                      |                                                        |                                                          |
| Power Requirements                              |                                                                                 |                                                                                    |                                                               |                                                      |                                  |                                                 |                                                        |                                                          |
| Output                                          | Wattage                                                                         | 60 W                                                                               | 120 W                                                         | 40 W                                                 | 60 W                             |                                                 | 120 W                                                  | 240 W                                                    |
|                                                 | Voltage                                                                         | 24 VDC                                                                             |                                                               |                                                      |                                  | 48 VDC                                          |                                                        |                                                          |
|                                                 | Current Range                                                                   | 0 to 2.5 A                                                                         | 0 to 5 A                                                      | 0 to 1.7 A                                           | 0 to 2.5 A                       |                                                 | 0 to 2.5 A                                             | 0 to 5 A                                                 |
|                                                 | Ripple & Noise                                                                  | 150 mVp-p                                                                          | 120 mVp-p                                                     | 150 mVp-p                                            |                                  |                                                 | 150 mVp-p                                              | 150 mVp-p                                                |
|                                                 | Voltage Adjustment Range                                                        | 21.6 to 29 V                                                                       | 24 to 28 V                                                    | 24 to 30 V                                           |                                  |                                                 | 48 to 55 V                                             | 48 to 55 V                                               |
|                                                 | Setup/Rise Time at Full Load                                                    | 500 ms, 50 ms at 230 VAC<br>500 ms, 50 ms at 115 VAC                               | 1200 ms, 60 ms at 230 VAC<br>2500 ms, 60 ms at 115 VAC        | 500 ms, 30 ms at 230 VAC<br>500 ms, 30 ms at 115 VAC |                                  |                                                 | 1200 ms, 60 ms at 230 VAC<br>2500 ms, 60 ms at 115 VAC | 1500 ms, 100 ms at 230 VAC<br>3000 ms, 100 ms at 115 VAC |
|                                                 | Typical Hold-up Time at Full Load                                               | 30 ms at 230 VAC, 12 ms at 115 VAC                                                 | 16 ms at 230 VAC, 10 ms at 115 VAC                            | 50 ms at 230 VAC, 20 ms at 115 VAC                   |                                  |                                                 | 16 ms at 230 VAC, 10 ms at 115 VAC                     | 28 ms at 230 VAC, 22 ms at 115 VAC                       |
| Input                                           | Voltage Range                                                                   | 85 to 264 VAC (47 to 63 Hz), 120 to 370 VDC                                        | 90 to 264 VAC (47 to 63 Hz), 120 to 370 VDC                   | 85 to 264 VAC (47 to 63 Hz), 120 to 370 VDC          |                                  |                                                 | 90 to 264 VAC (47 to 63 Hz), 120 to 370 VDC            | 90 to 264 VAC (47 to 63 Hz), 120 to 370 VDC              |
|                                                 | Typical Efficiency                                                              | 90%                                                                                | 88%                                                           | 88%                                                  |                                  |                                                 | 89%                                                    | 90%                                                      |
|                                                 | Typical Current                                                                 | 1.2 A at 115 VAC, 0.8 A at 230 VAC                                                 | 2.25 A at 115 VAC, 1.3 A at 230 VAC                           | 1.1 A at 115 VAC, 0.7 A at 230 VAC                   | 1.8 A at 115 VAC, 1 A at 230 VAC |                                                 | 2.25 A at 115 VAC, 1.3 A at 230 VAC                    | 2.5 A at 115 VAC, 1.3 A at 230 VAC                       |
|                                                 | Inrush Current (cold start)                                                     | 30 A at 115 VAC, 60 A at 230 VAC                                                   | 20 A at 115 VAC, 35 A at 230 VAC                              | 30 A at 115 VAC, 60 A at 230 VAC                     | 30 A at 115 VAC, 60 A at 230 VAC |                                                 | 20 A at 115 VAC, 35 A at 230 VAC                       | 20 A at 115 VAC, 35 A at 230 VAC                         |
| Overload Protection                             | Rated Output Power                                                              | 105% to 160%                                                                       |                                                               | 105% to 150%                                         |                                  |                                                 | 105% to 160%                                           |                                                          |
|                                                 | Protection Type                                                                 | Constant current limiting, recovers automatically after fault condition is removed |                                                               |                                                      |                                  |                                                 |                                                        |                                                          |
| Over-voltage Protection                         | Over-voltage Range                                                              | 30 to 36 V                                                                         | 29 to 33 V                                                    | 31.2 to 36 V                                         |                                  |                                                 | 56 to 65 V                                             | 56 to 65 V                                               |
|                                                 | Protection Type                                                                 | Shut down operating voltage, must power on to recover                              |                                                               |                                                      |                                  |                                                 |                                                        |                                                          |
| Reliability                                     |                                                                                 |                                                                                    |                                                               |                                                      |                                  |                                                 |                                                        |                                                          |
| Safety Standards                                | UL 508, EN 62368-1, UL 62368-1, IEC 62368-1                                     | UL 508, EN 62368-1, IEC 62368-1                                                    | EN 60950-1                                                    |                                                      |                                  | UL 508, EN 62368-1, IEC 62368-1                 |                                                        |                                                          |
| EMC Standards                                   | EN 55032/24, EN 61000-3-2 Class A, EN 61000-3-3                                 |                                                                                    | EN 50082-2, EN 55022 Class B, EN 61000-3-2 Class A, ENV 50204 |                                                      |                                  | EN 55032/24, EN 61000-3-2 Class A, EN 61000-3-3 |                                                        |                                                          |
| Warranty                                        | 3 years (see <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a> ) |                                                                                    |                                                               |                                                      |                                  |                                                 |                                                        |                                                          |

## AC Power Supplies

*Locking barrel plugs, 12 VDC 0.5 A, 100-240 VAC (switch mode)*



| Model Name                      | PWR-12050-WPUSJP-S1                                                                                             | PWR-12050-WPEU-S1                              | PWR-12050-WPUK-S1                              | PWR-12050-WPAU-S1                              | PWR-12050-WPCN-S1                              |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|
| <b>Input Rating</b>             |                                                                                                                 |                                                |                                                |                                                |                                                |
| Input Power                     | 100 to 240 VAC,<br>50 to 60 Hz                                                                                  | 100 to 240 VAC,<br>50 to 60 Hz                 | 100 to 240 VAC,<br>50 to 60 Hz                 | 100 to 240 VAC,<br>50 to 60 Hz                 | 100 to 240 VAC,<br>50 to 60 Hz                 |
| <b>Input Plug</b>               |                                                                                                                 |                                                |                                                |                                                |                                                |
| Plug Type                       | US/JP                                                                                                           | EU                                             | UK                                             | AU                                             | CN                                             |
| <b>Output Rating</b>            |                                                                                                                 |                                                |                                                |                                                |                                                |
| Output Power                    | 0.5 A @ 12 VDC                                                                                                  | 0.5 A @ 12 VDC                                 | 0.5 A @ 12 VDC                                 | 0.5 A @ 12 VDC                                 | 0.5 A @ 12 VDC                                 |
| <b>Output Plug</b>              |                                                                                                                 |                                                |                                                |                                                |                                                |
| Connector Type                  | S-Type 5.5/2.1/7.5                                                                                              | S-Type 5.5/2.1/7.5                             | S-Type 5.5/2.1/7.5                             | S-Type 5.5/2.1/7.5                             | S-Type 5.5/2.1/7.5                             |
| Outer Diameter                  | 5.5±0.1 mm<br>(0.22±0.004 in)                                                                                   | 5.5±0.1 mm<br>(0.22±0.004 in)                  | 5.5±0.1 mm<br>(0.22±0.004 in)                  | 5.5±0.1 mm<br>(0.22±0.004 in)                  | 5.5±0.1 mm<br>(0.22±0.004 in)                  |
| Inner Diameter                  | 2.1±0.1 mm<br>(0.08±0.004 in)                                                                                   | 2.1±0.1 mm<br>(0.08±0.004 in)                  | 2.1±0.1 mm<br>(0.08±0.004 in)                  | 2.1±0.1 mm<br>(0.08±0.004 in)                  | 2.1±0.1 mm<br>(0.08±0.004 in)                  |
| <b>Physical Characteristics</b> |                                                                                                                 |                                                |                                                |                                                |                                                |
| Dimensions                      | 64 x 40.5 x 47.5 mm<br>(2.52 x 1.59 x 1.87 in)                                                                  | 64 x 40.5 x 68.7 mm<br>(2.52 x 1.59 x 2.71 in) | 64 x 40.5 x 56.2 mm<br>(2.52 x 1.59 x 2.21 in) | 64 x 40.5 x 58.5 mm<br>(2.52 x 1.59 x 2.30 in) | 64 x 40.5 x 46.5 mm<br>(2.52 x 1.59 x 1.83 in) |
| Packaged Dimensions             | 83 x 50 x 70 mm<br>(3.27 x 1.97 x 2.76 in)                                                                      | 83 x 50 x 70 mm<br>(3.27 x 1.97 x 2.76 in)     | 83 x 50 x 70 mm<br>(3.27 x 1.97 x 2.76 in)     | 83 x 50 x 70 mm<br>(3.27 x 1.97 x 2.76 in)     | 83 x 50 x 70 mm<br>(3.27 x 1.97 x 2.76 in)     |
| Weight                          | 70 g (0.15 lb)                                                                                                  | 70 g (0.15 lb)                                 | 70 g (0.15 lb)                                 | 70 g (0.15 lb)                                 | 70 g (0.15 lb)                                 |
| Cord Length                     | 1530±100 mm<br>(60.24±3.94 in)                                                                                  | 1530±100 mm<br>(60.24±3.94 in)                 | 1530±100 mm<br>(60.24±3.94 in)                 | 1530±100 mm<br>(60.24±3.94 in)                 | 1530±100 mm<br>(60.24±3.94 in)                 |
| <b>Environmental Limits</b>     |                                                                                                                 |                                                |                                                |                                                |                                                |
| Operating Temperature           | 0 to 40°C (32 to 104°F)                                                                                         | 0 to 40°C (32 to 104°F)                        | 0 to 40°C (32 to 104°F)                        | 0 to 40°C (32 to 104°F)                        | 0 to 40°C (32 to 104°F)                        |
| Storage Temperature             | -10 to 70°C (14 to 158°F)                                                                                       | -10 to 70°C (14 to 158°F)                      | -10 to 70°C (14 to 158°F)                      | -10 to 70°C (14 to 158°F)                      | -10 to 70°C (14 to 158°F)                      |
| <b>Regulatory Approvals</b>     |                                                                                                                 |                                                |                                                |                                                |                                                |
| Safety                          | CE/FCC/UL/GS/PSE/RCM/<br>CCC                                                                                    | CE/FCC/UL/GS/PSE/RCM/<br>CCC                   | CE/FCC/UL/GS/PSE/RCM/<br>CCC                   | CE/FCC/UL/GS/PSE/RCM/<br>CCC                   | CE/FCC/UL/GS/PSE/RCM/<br>CCC                   |
| <b>Compatibility</b>            |                                                                                                                 |                                                |                                                |                                                |                                                |
| Related Products                | NPort 5110A, NPort 5130A, NPort 5150A, NPort 5210A, NPort 5230A, NPort 5250A, NPort W2150A/W2250A, NPort P5110A |                                                |                                                |                                                |                                                |

## DC Power Cord

*Locking barrel plug to bare wires*



| Model Name          | Cable Length              |
|---------------------|---------------------------|
| CBL-PJ21NOPEN-BK-30 | 300±20 mm (11.81±0.79 in) |



## AC Power Supplies

*Locking barrel plugs, 12 VDC, 3 A, 100 to 240 VAC (switch mode)*



| Model Name                      | PWR-12300-WPUSJP-S1                            | PWR-12300-WPEU-S1                              | PWR-12300-WPUK-S1                            | PWR-12300-WPAU-S1                              | PWR-12300-WPCN-S1                              |
|---------------------------------|------------------------------------------------|------------------------------------------------|----------------------------------------------|------------------------------------------------|------------------------------------------------|
| <b>Input Rating</b>             |                                                |                                                |                                              |                                                |                                                |
| Input Power                     | 100 to 240 VAC,<br>50 to 60 Hz                 | 100 to 240 VAC,<br>50 to 60 Hz                 | 100 to 240 VAC,<br>50 to 60 Hz               | 100 to 240 VAC,<br>50 to 60 Hz                 | 100 to 240 VAC,<br>50 to 60 Hz                 |
| <b>Input Plug</b>               |                                                |                                                |                                              |                                                |                                                |
| Plug Type                       | US/JP                                          | EU                                             | UK                                           | AU                                             | CN                                             |
| <b>Output Rating</b>            |                                                |                                                |                                              |                                                |                                                |
| Output Power                    | 3 A @ 12 VDC                                   | 3 A @ 12 VDC                                   | 3 A @ 12 VDC                                 | 3 A @ 12 VDC                                   | 3 A @ 12 VDC                                   |
| <b>Output Plug</b>              |                                                |                                                |                                              |                                                |                                                |
| Connector Type                  | S-Type 5.5/2.1/7.5                             | S-Type 5.5/2.1/7.5                             | S-Type 5.5/2.1/7.5                           | S-Type 5.5/2.1/7.5                             | S-Type 5.5/2.1/7.5                             |
| Outer Diameter                  | 5.5±0.1 mm<br>(0.22±0.004 in)                  | 5.5±0.1 mm<br>(0.22±0.004 in)                  | 5.5±0.1 mm<br>(0.22±0.004 in)                | 5.5±0.1 mm<br>(0.22±0.004 in)                  | 5.5±0.1 mm<br>(0.22±0.004 in)                  |
| Inner Diameter                  | 2.1±0.1 mm<br>(0.08±0.004 in)                  | 2.1±0.1 mm<br>(0.08±0.004 in)                  | 2.1±0.1 mm<br>(0.08±0.004 in)                | 2.1±0.1 mm<br>(0.08±0.004 in)                  | 2.1±0.1 mm<br>(0.08±0.004 in)                  |
| <b>Physical Characteristics</b> |                                                |                                                |                                              |                                                |                                                |
| Dimensions                      | 74 x 43.5 x 52.3 mm<br>(2.91 x 1.71 x 2.06 in) | 74 x 43.5 x 73.5 mm<br>(2.91 x 1.71 x 2.89 in) | 74 x 43.5 x 61 mm<br>(2.91 x 1.71 x 2.40 in) | 74 x 43.5 x 63.3 mm<br>(2.91 x 1.71 x 2.49 in) | 74 x 43.5 x 51.3 mm<br>(2.91 x 1.71 x 2.02 in) |
| Packaged Dimensions             | 100 x 60 x 90 mm<br>(3.94 x 2.36 x 3.54 in)    | 100 x 60 x 90 mm<br>(3.94 x 2.36 x 3.54 in)    | 100 x 60 x 90 mm<br>(3.94 x 2.36 x 3.54 in)  | 100 x 60 x 90 mm<br>(3.94 x 2.36 x 3.54 in)    | 100 x 60 x 90 mm<br>(3.94 x 2.36 x 3.54 in)    |
| Weight                          | 163 g (0.36 lb)                                | 163 g (0.36 lb)                                | 163 g (0.36 lb)                              | 163 g (0.36 lb)                                | 163 g (0.36 lb)                                |
| Cord Length                     | 1530±200 mm<br>(60.24±7.87 in)                 | 1530±200 mm<br>(60.24±7.87 in)                 | 1530±200 mm<br>(60.24±7.87 in)               | 1530±200 mm<br>(60.24±7.87 in)                 | 1530±200 mm<br>(60.24±7.87 in)                 |
| <b>Environmental Limits</b>     |                                                |                                                |                                              |                                                |                                                |
| Operating Temperature           | 0 to 40°C (32 to 104°F)                        | 0 to 40°C (32 to 104°F)                        | 0 to 40°C (32 to 104°F)                      | 0 to 40°C (32 to 104°F)                        | 0 to 40°C (32 to 104°F)                        |
| Storage Temperature             | -20 to 70°C (-4 to 158°F)                      | -20 to 70°C (-4 to 158°F)                      | -20 to 70°C (-4 to 158°F)                    | -20 to 70°C (-4 to 158°F)                      | -20 to 70°C (-4 to 158°F)                      |
| <b>Regulatory Approvals</b>     |                                                |                                                |                                              |                                                |                                                |
| Safety                          | FCC/CE/UL/GS/CCC/RCM/<br>PSE                   | FCC/CE/UL/GS/CCC/RCM/<br>PSE                   | FCC/CE/UL/GS/CCC/RCM/<br>PSE                 | FCC/CE/UL/GS/CCC/RCM/<br>PSE                   | FCC/CE/UL/GS/CCC/RCM/<br>PSE                   |
| <b>Compatibility</b>            |                                                |                                                |                                              |                                                |                                                |
| Related Products                | UPort 204, UPort 207, UPort 404, UPort 407     |                                                |                                              |                                                |                                                |

## DC Power Cord

*Locking barrel plug to bare wires*



| Model Name          | Cable Length              |
|---------------------|---------------------------|
| CBL-PJ21NOPEN-BK-30 | 300±20 mm (11.81±0.79 in) |

## AC Power Supplies

*Non-locking barrel plugs, 12 VDC, 0.5 A, 100 to 240 VAC (switch mode)*



| Model Name                      | PWR-12050-WPUSJP-S2                                                                                                                                        | PWR-12050-WPEU-S2                              | PWR-12050-WPUK-S2                              | PWR-12050-WPAU-S2                              | PWR-12050-WPCN-S2                              |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|
| <b>Input Rating</b>             |                                                                                                                                                            |                                                |                                                |                                                |                                                |
| Input Power                     | 100 to 240 VAC,<br>50 to 60 Hz                                                                                                                             | 100 to 240 VAC,<br>50 to 60 Hz                 | 100 to 240 VAC,<br>50 to 60 Hz                 | 100 to 240 VAC,<br>50 to 60 Hz                 | 100 to 240 VAC,<br>50 to 60 Hz                 |
| <b>Input Plug</b>               |                                                                                                                                                            |                                                |                                                |                                                |                                                |
| Plug Type                       | US/JP                                                                                                                                                      | EU                                             | UK                                             | AU                                             | CN                                             |
| <b>Output Rating</b>            |                                                                                                                                                            |                                                |                                                |                                                |                                                |
| Output Power                    | 0.5 A @ 12 VDC                                                                                                                                             | 0.5 A @ 12 VDC                                 | 0.5 A @ 12 VDC                                 | 0.5 A @ 12 VDC                                 | 0.5 A @ 12 VDC                                 |
| <b>Output Plug</b>              |                                                                                                                                                            |                                                |                                                |                                                |                                                |
| Connector Type                  | L-Type 5.5/2.1/9.0                                                                                                                                         | L-Type 5.5/2.1/9.0                             | L-Type 5.5/2.1/9.0                             | L-Type 5.5/2.1/9.0                             | L-Type 5.5/2.1/9.0                             |
| Outer Diameter                  | 5.5±0.1 mm<br>(0.22±0.004 in)                                                                                                                              | 5.5±0.1 mm<br>(0.22±0.004 in)                  | 5.5±0.1 mm<br>(0.22±0.004 in)                  | 5.5±0.1 mm<br>(0.22±0.004 in)                  | 5.5±0.1 mm<br>(0.22±0.004 in)                  |
| Inner Diameter                  | 2.1±0.1 mm<br>(0.08±0.004 in)                                                                                                                              | 2.1±0.1 mm<br>(0.08±0.004 in)                  | 2.1±0.1 mm<br>(0.08±0.004 in)                  | 2.1±0.1 mm<br>(0.08±0.004 in)                  | 2.1±0.1 mm<br>(0.08±0.004 in)                  |
| <b>Physical Characteristics</b> |                                                                                                                                                            |                                                |                                                |                                                |                                                |
| Dimensions                      | 64 x 40.5 x 30 mm<br>(2.52 x 1.59 x 1.18 in)                                                                                                               | 64 x 40.5 x 68.7 mm<br>(2.52 x 1.59 x 2.71 in) | 64 x 40.5 x 56.2 mm<br>(2.52 x 1.59 x 2.21 in) | 64 x 40.5 x 58.5 mm<br>(2.52 x 1.59 x 2.30 in) | 64 x 40.5 x 46.5 mm<br>(2.52 x 1.59 x 1.83 in) |
| Packaged Dimensions             | 83 x 50 x 70 mm<br>(3.27 x 1.97 x 2.76 in)                                                                                                                 | 83 x 50 x 70 mm<br>(3.27 x 1.97 x 2.76 in)     | 83 x 50 x 70 mm<br>(3.27 x 1.97 x 2.76 in)     | 83 x 50 x 70 mm<br>(3.27 x 1.97 x 2.76 in)     | 83 x 50 x 70 mm<br>(3.27 x 1.97 x 2.76 in)     |
| Weight                          | 70 g (0.15 lb)                                                                                                                                             | 70 g (0.15 lb)                                 | 70 g (0.15 lb)                                 | 70 g (0.15 lb)                                 | 70 g (0.15 lb)                                 |
| Cord Length                     | 1830±100 mm<br>(72.05±3.94 in)                                                                                                                             | 1830±100 mm<br>(72.05±3.94 in)                 | 1830±100 mm<br>(72.05±3.94 in)                 | 1830±100 mm<br>(72.05±3.94 in)                 | 1830±100 mm<br>(72.05±3.94 in)                 |
| <b>Environmental Limits</b>     |                                                                                                                                                            |                                                |                                                |                                                |                                                |
| Operating Temperature           | 0 to 40°C (32 to 104°F)                                                                                                                                    | 0 to 40°C (32 to 104°F)                        | 0 to 40°C (32 to 104°F)                        | 0 to 40°C (32 to 104°F)                        | 0 to 40°C (32 to 104°F)                        |
| Storage Temperature             | -10 to 70°C (14 to 158°F)                                                                                                                                  | -10 to 70°C (14 to 158°F)                      | -10 to 70°C (14 to 158°F)                      | -10 to 70°C (14 to 158°F)                      | -10 to 70°C (14 to 158°F)                      |
| <b>Regulatory Approvals</b>     |                                                                                                                                                            |                                                |                                                |                                                |                                                |
| Safety                          | CE/FCC/UL/RMC/PSE/<br>CCC                                                                                                                                  | CE/FCC/UL/RMC/PSE/<br>CCC                      | CE/FCC/UL/RMC/PSE/<br>CCC                      | CE/FCC/UL/RMC/PSE/<br>CCC                      | CE/FCC/UL/RMC/PSE/<br>CCC                      |
| <b>Compatibility</b>            |                                                                                                                                                            |                                                |                                                |                                                |                                                |
| Related Products                | NPort 5110, NPort 5130, NPort 5150, NPort 5210, NPort 5230, NPort 5232, NPort 5232I, MGate MB3180, MGate MB3280, DE-211, DE-311, A52, A53, MiiNePort E1-ST |                                                |                                                |                                                |                                                |

## DC Power Cord

*Non-locking barrel plug to bare wires*



| Model Name  | Cable Length             |
|-------------|--------------------------|
| CBL-PJTB-10 | 100±20 mm (3.94±0.79 in) |

## AC Power Supplies

*Non-locking barrel plugs, 12 VDC, 1.25/1.5 A, 100 to 240 VAC*



| Model Name                      | PWR-12125-USJP-S1                                                          | PWR-12150-EU-S2                              | PWR-12150-UK-S2                             | PWR-12150-AU-S2                             | PWR-12150-CN-S1                             |
|---------------------------------|----------------------------------------------------------------------------|----------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
| <b>Input Rating</b>             |                                                                            |                                              |                                             |                                             |                                             |
| Input Power                     | 100 to 240 VAC,<br>50 to 60 Hz                                             | 100 to 240 VAC,<br>50 to 60 Hz               | 100 to 240 VAC,<br>50 to 60 Hz              | 100 to 240 VAC,<br>50 to 60 Hz              | 100 to 240 VAC,<br>50 to 60 Hz              |
| <b>Input Plug</b>               |                                                                            |                                              |                                             |                                             |                                             |
| Plug Type                       | US/JP                                                                      | EU                                           | UK                                          | AU                                          | CN                                          |
| <b>Output Rating</b>            |                                                                            |                                              |                                             |                                             |                                             |
| Output Power                    | 1.25 A @ 12 VDC                                                            | 1.5 A @ 12 VDC                               | 1.5 A @ 12 VDC                              | 1.5 A @ 12 VDC                              | 1.5 A @ 12 VDC                              |
| <b>Output Plug</b>              |                                                                            |                                              |                                             |                                             |                                             |
| Connector Type                  | L-Type 5.5/2.1/9.5                                                         | L-Type 5.5/2.1/9.0                           | S-Type 5.5/2.1/9.0                          | L-Type 5.5/2.1/9.0                          | L-Type 5.5/2.1/9.0                          |
| Outer Diameter                  | 5.5±0.1 mm<br>(0.22±0.004 in)                                              | 5.5±0.1 mm<br>(0.22±0.004 in)                | 5.5±0.1 mm<br>(0.22±0.004 in)               | 5.5±0.1 mm<br>(0.22±0.004 in)               | 5.5±0.1 mm<br>(0.22±0.004 in)               |
| Inner Diameter                  | 2.1±0.1 mm<br>(0.08±0.004 in)                                              | 2.1±0.1 mm<br>(0.08±0.004 in)                | 2.1±0.1 mm<br>(0.08±0.004 in)               | 2.1±0.1 mm<br>(0.08±0.004 in)               | 2.1±0.1 mm<br>(0.08±0.004 in)               |
| <b>Physical Characteristics</b> |                                                                            |                                              |                                             |                                             |                                             |
| Dimensions                      | 74 x 43.5 x 52.5 mm<br>(2.91 x 1.71 x 2.07 in)                             | 70 x 45 x 66.5 mm<br>(2.76 x 1.77 x 2.62 in) | 70 x 48 x 60 mm<br>(2.76 x 1.89 x 2.36 in)  | 70 x 55 x 56 mm<br>(2.76 x 2.17 x 2.21 in)  | 70 x 45 x 54 mm<br>(2.76 x 1.77 x 2.13 in)  |
| Packaged Dimensions             | 100 x 60 x 90 mm<br>(3.94 x 2.36 x 3.54 in)                                | 100 x 60 x 90 mm<br>(3.94 x 2.36 x 3.54 in)  | 100 x 60 x 90 mm<br>(3.94 x 2.36 x 3.54 in) | 100 x 60 x 90 mm<br>(3.94 x 2.36 x 3.54 in) | 100 x 60 x 90 mm<br>(3.94 x 2.36 x 3.54 in) |
| Weight                          | 108 g (0.24 lb)                                                            | 200 g (0.44 lb)                              | 200 g (0.44 lb)                             | 200 g (0.44 lb)                             | 200 g (0.44 lb)                             |
| Cord Length                     | 1530±100 mm<br>(60.24±3.84 in)                                             | 1800±200 mm<br>(70.87±7.87 in)               | 1800±200 mm<br>(70.87±7.87 in)              | 1800±200 mm<br>(70.87±7.87 in)              | 1800±200 mm<br>(70.87±7.87 in)              |
| <b>Environmental Limits</b>     |                                                                            |                                              |                                             |                                             |                                             |
| Operating Temperature           | 0 to 40°C (32 to 104°F)                                                    | 0 to 40°C (32 to 104°F)                      | 0 to 40°C (32 to 104°F)                     | 0 to 40°C (32 to 104°F)                     | 0 to 40°C (32 to 104°F)                     |
| Storage Temperature             | -20 to 70°C (-4 to 158°F)                                                  | -20 to 70°C (-4 to 158°F)                    | -20 to 70°C (-4 to 158°F)                   | -20 to 70°C (-4 to 158°F)                   | -20 to 70°C (-4 to 158°F)                   |
| <b>Regulatory Approvals</b>     |                                                                            |                                              |                                             |                                             |                                             |
| Safety                          | CE/FCC/UL/RMC/PSE/GS                                                       | CE/GS                                        | CE                                          | RMC                                         | CCC                                         |
| <b>Compatibility</b>            |                                                                            |                                              |                                             |                                             |                                             |
| Related Products                | NPort 5410, NPort 5430, NPort 5430I, NPort 5450, NPort 5450I, MGate MB3480 |                                              |                                             |                                             |                                             |

## DC Power Cord

*Non-locking barrel plug to bare wires*



| Model Name  | Cable Length             |
|-------------|--------------------------|
| CBL-PJTB-10 | 100±20 mm (3.94±0.79 in) |

## AC Power Supplies

### Desktop-type power adapters



| Model Name               | PWR-12200-DT-S1                                                                                                                                        | PWR-12125-DT-S2                                                                                                                              | PWR-24270-DT-S1                                                       |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Input Rating             |                                                                                                                                                        |                                                                                                                                              |                                                                       |
| Input Power              | 100 to 240 VAC, 50 to 60 Hz                                                                                                                            | 100 to 240 VAC, 50 to 60 Hz                                                                                                                  | 100 to 240 VAC, 50 to 60 Hz                                           |
| Input Plug               |                                                                                                                                                        |                                                                                                                                              |                                                                       |
| Plug Type                | Desktop                                                                                                                                                | Desktop                                                                                                                                      | Desktop                                                               |
| Output Rating            |                                                                                                                                                        |                                                                                                                                              |                                                                       |
| Output Power             | 2 A @ 12 VDC                                                                                                                                           | 1.25 A @ 12 VDC                                                                                                                              | 2.7 A @ 24 VDC                                                        |
| Output Plug              |                                                                                                                                                        |                                                                                                                                              |                                                                       |
| Connector Type           | S-Type 5.5/2.1/7.5                                                                                                                                     | S-Type 5.5/2.1/7.5                                                                                                                           | S-Type 5.5/2.1/7.5                                                    |
| Outer Diameter           | 5.5±0.1 mm (0.22±0.004 in)                                                                                                                             | 5.5±0.1 mm (0.22±0.004 in)                                                                                                                   | 5.5±0.1 mm (0.22±0.004 in)                                            |
| Inner Diameter           | 2.1±0.1 mm (0.08±0.004 in)                                                                                                                             | 2.1±0.1 mm (0.08±0.004 in)                                                                                                                   | 2.1±0.1 mm (0.08±0.004 in)                                            |
| Physical Characteristics |                                                                                                                                                        |                                                                                                                                              |                                                                       |
| Dimensions               | 110.8 x 51.8 x 32 mm (4.36 x 2.04 x 1.26 in)                                                                                                           | 75 x 47.5 x 27.3 mm (2.95 x 1.87 x 1.07 in)                                                                                                  | 121 x 52 x 33 mm (4.76 x 2.05 x 1.30 in)                              |
| Packaged Dimensions      | 135 x 75 x 35 mm (5.31 x 2.95 x 1.38 in)                                                                                                               | 100 x 70 x 51.5 mm (3.94 x 2.76 x 2.03 in)                                                                                                   | 160 x 60 x 60 mm (6.30 x 2.36 x 2.36 in)                              |
| Weight                   | 200 g (0.44 lb)                                                                                                                                        | 200 g (0.44 lb)                                                                                                                              | 200 g (0.44 lb)                                                       |
| Cord Length              | 1800±200 mm (70.87±7.87 in)                                                                                                                            | 1530±100 mm (60.24±3.94 in)                                                                                                                  | 1530±100 mm (60.13±3.94 in)                                           |
| Environmental Limits     |                                                                                                                                                        |                                                                                                                                              |                                                                       |
| Operating Temperature    | 0 to 40°C (32 to 104°F)                                                                                                                                | 0 to 40°C (32 to 104°F)                                                                                                                      | 0 to 40°C (32 to 104°F)                                               |
| Storage Temperature      | -20 to 70°C (-4 to 158°F)                                                                                                                              | -10 to 70°C (14 to 158°F)                                                                                                                    | -10 to 70°C (14 to 158°F)                                             |
| Regulatory Approvals     |                                                                                                                                                        |                                                                                                                                              |                                                                       |
| Safety                   | Efficiency Level 5: CE/FCC/UL/PSE/RCM/CCC<br>Efficiency Level 6: CE/FCC/UL/PSE                                                                         | CE/FCC/UL/PSE/GS                                                                                                                             | CE/FCC/UL/PSE/GS                                                      |
| Compatibility            |                                                                                                                                                        |                                                                                                                                              |                                                                       |
| Related Products         | NPort 5610-8-DT, NPort 5610-8-DT-J,<br>NPort 5650-8-DT, NPort 5650-8-DT-J,<br>NPort 5650I-8-DT, NPort 5610-8-DTL,<br>NPort 5650-8-DTL, NPort 5650I-DTL | NPort 6150, NPort 6250-M-SC, NPort 6250, NPort<br>6250-S-SC, NPort 6450, UPort 1250I, UPort 1450,<br>UPort 1450I, UPort 1610-8, UPort 1650-8 | MC-1100, V2201, UC-2100, UC-3100,<br>UC-5100, UC-8100, IA-240, IA-260 |

Note: The PWR-12200-DT-S1 and PWR-12125-DT-S2 do not come with a power cord.



| Model Name       | PWC-C13US-3B-183                                                     | PWC-C-13EU-3B-183<br>(CEE 7/7 to IEC C13) | PWC-C13UK-3B-183              | PWC-C13JP-3B-183              | PWC-C13AU-3B-183              | PWC-C13CN-3B-183              |
|------------------|----------------------------------------------------------------------|-------------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Region           | US                                                                   | EU                                        | UK                            | JP                            | AU                            | CN                            |
| Voltage          | 125 V                                                                | 250 V                                     | 250 V                         | 125 V                         | 250 V                         | 250 V                         |
| Thickness        | 6.3±0.2 mm<br>(0.25±0.01 in)                                         | 6.7±0.2 mm<br>(0.26±0.01 in)              | 6.7±0.2 mm<br>(0.26±0.01 in)  | 7.0±0.2 mm<br>(0.28±0.01 in)  | 6.7±0.2 mm<br>(0.26±0.01 in)  | 6.7±0.2 mm<br>(0.26±0.01 in)  |
| Current (max.)   | 10 A                                                                 | 10 A                                      | 10 A                          | 7 A                           | 10 A                          | 10 A                          |
| Length           | 1830±30 mm<br>(72.05±1.18 in)                                        | 1830±30 mm<br>(72.05±1.18 in)             | 1830±30 mm<br>(72.05±1.18 in) | 1830±30 mm<br>(72.05±1.18 in) | 1830±30 mm<br>(72.05±1.18 in) | 1830±30 mm<br>(72.05±1.18 in) |
| Related Products | CN2500 Series, NPort 6600 Series, NPort 5600 Series, PWR-12200-DT-S1 |                                           |                               |                               |                               |                               |



| Model Name       | PWC-C7US-2B-183                 | PWC-C7EU-2B-183                 | PWC-C7UK-2B-183                 | PWC-C7JP-2B-183                 | PWC-C7AU-2B-183                 | PWC-C7CN-2B-183                 |
|------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Region           | US                              | EU                              | UK                              | JP                              | AU                              | CN                              |
| Length           | 1830±200 mm,<br>(72.05±7.87 in) | 1830±200 mm,<br>(72.05±7.87 in) | 1830±200 mm,<br>(72.05±7.87 in) | 1830±200 mm,<br>(72.05±7.87 in) | 1830±200 mm,<br>(72.05±7.87 in) | 1830±200 mm,<br>(72.05±7.87 in) |
| Related Products | PWR-12125-DT-S2                 | PWR-12125-DT-S2                 | PWR-12125-DT-S2                 | PWR-12125-DT-S2                 | PWR-12125-DT-S2                 | PWR-12125-DT-S2                 |

## Wide Temperature AC Power Supplies

*Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC (switch mode)*



| Model Name               | PWR-12150-USJP-SA-T                                                                                                                                                                                                                        | PWR-12150-EU-SA-T                            | PWR-12150-UK-SA-T                            | PWR-12150-AU-SA-T                              | PWR-12150-CN-SA-T                          |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|----------------------------------------------|------------------------------------------------|--------------------------------------------|
| Input Rating             |                                                                                                                                                                                                                                            |                                              |                                              |                                                |                                            |
| Input Power              | 100 to 240 VAC,<br>50 to 60 Hz                                                                                                                                                                                                             | 100 to 240 VAC,<br>50 to 60 Hz               | 100 to 240 VAC,<br>50 to 60 Hz               | 100 to 240 VAC,<br>50 to 60 Hz                 | 100 to 240 VAC,<br>50 to 60 Hz             |
| Input Plug               |                                                                                                                                                                                                                                            |                                              |                                              |                                                |                                            |
| Plug Type                | US/JP                                                                                                                                                                                                                                      | EU                                           | UK                                           | AU                                             | CN                                         |
| Output Rating            |                                                                                                                                                                                                                                            |                                              |                                              |                                                |                                            |
| Output Power             | 1.5 A @ 12 VDC                                                                                                                                                                                                                             | 1.5 A @ 12 VDC                               | 1.5 A @ 12 VDC                               | 1.5 A @ 12 VDC                                 | 1.5 A @ 12 VDC                             |
| Protection Requirements  |                                                                                                                                                                                                                                            |                                              |                                              |                                                |                                            |
| Protection               | Over-current protection, over-voltage protection                                                                                                                                                                                           |                                              |                                              |                                                |                                            |
| Output Plug              |                                                                                                                                                                                                                                            |                                              |                                              |                                                |                                            |
| Connector Type           | L-Type 5.5/2.1/7.5                                                                                                                                                                                                                         | L-Type 5.5/2.1/7.5                           | L-Type 5.5/2.1/7.5                           | L-Type 5.5/2.1/7.5                             | L-Type 5.5/2.1/7.5                         |
| Outer Diameter           | 5.5±0.1 mm<br>(0.22±0.004 in)                                                                                                                                                                                                              | 5.5±0.1 mm<br>(0.22±0.004 in)                | 5.5±0.1 mm<br>(0.22±0.004 in)                | 5.5±0.1 mm<br>(0.22±0.004 in)                  | 5.5±0.1 mm<br>(0.22±0.004 in)              |
| Inner Diameter           | 2.1±0.1 mm<br>(0.08±0.004 in)                                                                                                                                                                                                              | 2.1±0.1 mm<br>(0.08±0.004 in)                | 2.1±0.1 mm<br>(0.08±0.004 in)                | 2.1±0.1 mm<br>(0.08±0.004 in)                  | 2.1±0.1 mm<br>(0.08±0.004 in)              |
| Physical Characteristics |                                                                                                                                                                                                                                            |                                              |                                              |                                                |                                            |
| Dimensions               | 32 x 70.3 x 88 mm<br>(1.26 x 2.77 x 3.46 in)                                                                                                                                                                                               | 32 x 85.3 x 88 mm<br>(1.26 x 3.36 x 3.46 in) | 50 x 91 x 82.5 mm<br>(1.97 x 3.58 x 3.25 in) | 41 x 73.9 x 89.5 mm<br>(1.61 x 2.91 x 3.52 in) | 32 x 60 x 88 mm<br>(1.26 x 2.36 x 3.46 in) |
| Weight                   | 200 g (0.44 lb)                                                                                                                                                                                                                            | 200 g (0.44 lb)                              | 200 g (0.44 lb)                              | 200 g (0.44 lb)                                | 200 g (0.44 lb)                            |
| Cord Length              | 1500±200 mm<br>(59.06±7.87 in)                                                                                                                                                                                                             | 1500±200 mm<br>(59.06±7.87 in)               | 1500±200 mm<br>(59.06±7.87 in)               | 1500±200 mm<br>(59.06±7.87 in)                 | 1500±200 mm<br>(59.06±7.87 in)             |
| Environmental Limits     |                                                                                                                                                                                                                                            |                                              |                                              |                                                |                                            |
| Operating Temperature    | -40 to 75°C<br>(-40 to 167°F)                                                                                                                                                                                                              | -40 to 75°C<br>(-40 to 167°F)                | -40 to 75°C<br>(-40 to 167°F)                | -40 to 75°C<br>(-40 to 167°F)                  | -40 to 75°C<br>(-40 to 167°F)              |
| Regulatory Approvals     |                                                                                                                                                                                                                                            |                                              |                                              |                                                |                                            |
| Safety                   | FCC/UL/PSE                                                                                                                                                                                                                                 | TUV/CE/GS                                    | CE                                           | RCM                                            | CCC                                        |
| Compatibility            |                                                                                                                                                                                                                                            |                                              |                                              |                                                |                                            |
| Related Products         | NPort 5110-T, NPort 5450-T, NPort 5450I-T, NPort 5110A-T, NPort 5610-8-DTL-T, NPort 5650-8-DTL-T, NPort 5650I-8-DTL-T, NPort 5130A-T, NPort 5150A-T, NPort 5210A-T, NPort 5230A-T, NPort 5250A-T, NPort 6100-T, NPort 6200-T, NPort 6400-T |                                              |                                              |                                                |                                            |

# SFP Modules

## SFP-1G Series Modules



| Model            |                         | Gigabit Ethernet SFP |       |              |      |              |
|------------------|-------------------------|----------------------|-------|--------------|------|--------------|
|                  |                         | SFP-SX               |       | SFP-LSX      |      | SFP-LX       |
| Transceiver Type |                         | Multi-mode           |       | Multi-mode   |      | Single-mode  |
| Fiber Cable Type |                         | OM1                  | OM2   | OM2          | OM1  | G.652        |
| Typical Distance |                         | 300 m                | 550 m | 1 km         | 2 km | 10 km        |
| Wavelength       | Typical (nm)            | 850                  |       | 1310         |      | 1310         |
|                  | TX Range (nm)           | 830 to 860           |       | 1270 to 1355 |      | 1280 to 1355 |
|                  | RX Range (nm)           | 770 to 860           |       | 1260 to 1610 |      | 1260 to 1610 |
| Optical Power    | TX Range (dBm)          | -4 to -9.5           |       | -1 to -9     |      | -3 to -9     |
|                  | RX Range (dBm)          | 0 to -18             |       | -1 to -19    |      | -3 to -21    |
|                  | Link Budget (dB)        | 8.5                  |       | 10           |      | 12           |
|                  | Dispersion Penalty (dB) | 4.3                  | 3.6   | 5            | 5    | 1            |



| Model            |                         | Gigabit Ethernet SFP |              |              |              |              |
|------------------|-------------------------|----------------------|--------------|--------------|--------------|--------------|
|                  |                         | SFP-LH               | SFP-LHX      | SFP-ZX       | SFP-EZX      | SFP-EZX-120  |
| Transceiver Type |                         | Single-mode          | Single-mode  | Single-mode  | Single-mode  | Single-mode  |
| Fiber Cable Type |                         | G.652                | G.652        | G.652        | G.652        | G.652        |
| Typical Distance |                         | 30 km                | 40 km        | 80 km        | 110 km       | 120 km       |
| Wavelength       | Typical (nm)            | 1310                 | 1310         | 1550         | 1550         | 1550         |
|                  | TX Range (nm)           | 1280 to 1355         | 1280 to 1340 | 1530 to 1570 | 1530 to 1570 | 1530 to 1570 |
|                  | RX Range (nm)           | 1260 to 1610         | 1260 to 1610 | 1260 to 1610 | 1260 to 1610 | 1100 to 1600 |
| Optical Power    | TX Range (dBm)          | -3 to -8             | +3 to -4     | +5 to 0      | +5 to 0      | +3 to -2     |
|                  | RX Range (dBm)          | -3 to -23            | -1 to -24    | -1 to -24    | -9 to -30    | -8 to -33    |
|                  | Link Budget (dB)        | 15                   | 20           | 24           | 30           | 31           |
|                  | Dispersion Penalty (dB) | 1                    | 1            | 1            | 1            | 2            |

## SFP-FE Series Modules



| Model            |                         | Fast Ethernet SFP |                     |              |              |
|------------------|-------------------------|-------------------|---------------------|--------------|--------------|
|                  |                         | SFP-M             |                     | SFP-S        | SFP-L        |
| Transceiver Type |                         | Multi-mode        |                     | Single-mode  |              |
| Fiber Cable Type |                         | OM1/OM2           | 62.5/125, 50/125 μm | G.652        | G.652        |
| Typical Distance |                         |                   | 800 MHz x km        |              |              |
| Typical Distance |                         | 2 km              | 4 km                | 40 km        | 80 km        |
| Wavelength       | Typical (nm)            | 1310              |                     | 1310         | 1550         |
|                  | TX Range (nm)           | 1280 to 1340      |                     | 1280 to 1340 | 1530 to 1570 |
|                  | RX Range (nm)           | 1100 to 1650      |                     | 1100 to 1600 | 1100 to 1600 |
| Optical Power    | TX Range (dBm)          | -8 to -18         |                     | 0 to -5      | 0 to -5      |
|                  | RX Range (dBm)          | -3 to -32         |                     | -3 to -34    | -3 to -34    |
|                  | Link Budget (dB)        | 14                |                     | 29           | 29           |
|                  | Dispersion Penalty (dB) | 2                 | 3                   | 1            | 1            |

## SFP-1G WDM-type Series Modules



| Model            |                         | WDM Gigabit Ethernet SFP |                     |                     |                     |                     |                     |
|------------------|-------------------------|--------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                  |                         | SFP-10A                  | SFP-10B             | SFP-20A             | SFP-20B             | SFP-40A             | SFP-40B             |
| Transceiver Type |                         | Single-mode              |                     | Single-mode         |                     | Single-mode         |                     |
| Fiber Cable Type |                         | G.652                    |                     | G.652               |                     | G.652               |                     |
| Typical Distance |                         | 10 km                    |                     | 20 km               |                     | 40 km               |                     |
| Wavelength       | Typical (nm)            | TX 1310,<br>RX 1550      | TX 1550,<br>RX 1310 | TX 1310,<br>RX 1550 | TX 1550,<br>RX 1310 | TX 1310,<br>RX 1550 | TX 1550,<br>RX 1310 |
|                  | TX Range (nm)           | 1270 to<br>1355          | 1530 to<br>1570     | 1270 to<br>1355     | 1530 to<br>1570     | 1290 to<br>1330     | 1530 to<br>1570     |
|                  | RX Range (nm)           | 1480 to<br>1580          | 1260 to<br>1360     | 1480 to<br>1580     | 1260 to<br>1360     | 1480 to<br>1580     | 1260 to<br>1360     |
| Optical Power    | TX Range (dBm)          | -3 to -9                 |                     | -2 to -8            |                     | +2 to -3            |                     |
|                  | RX Range (dBm)          | -3 to -21                |                     | -2 to -23           |                     | -1 to -23           |                     |
|                  | Link Budget (dB)        | 12                       |                     | 15                  |                     | 20                  |                     |
|                  | Dispersion Penalty (dB) | 2                        |                     | 3                   |                     | 1                   |                     |

## SFP-1G Copper Module



| Model Name      | SFP-1GTXRJ45-T |
|-----------------|----------------|
| 1000BaseT Ports | 1              |
| Connector       | RJ45           |

## SFP-10G Series Modules



| Model            |                         | 10G Ethernet SFP |        |              |
|------------------|-------------------------|------------------|--------|--------------|
|                  |                         | SFP-SR           | SFP-LR | SFP-ER       |
| Transceiver Type |                         | Multi-mode       |        | Single-mode  |
| Fiber Cable Type |                         | OM1              | OM3    | G.652        |
| Typical Distance |                         | 33 m             | 300 m  | 40 km        |
| Wavelength       | Typical (nm)            | 850              |        | 1310         |
|                  | TX Range (nm)           | 840 to 860       |        | 1260 to 1355 |
|                  | RX Range (nm)           | 840 to 860       |        | 1260 to 1600 |
| Optical Power    | TX Range (dBm)          | -1 to -5         |        | -8.2 to +0.5 |
|                  | Rx (dBm) (max.)         | +0.5             |        | +0.5         |
|                  | Link Budget (dB)        | 8.3              |        | 7.4          |
|                  | Dispersion Penalty (dB) | 3.9              |        | 3.2          |



# Mounting Kits

## Wall-mounting Kits



| Model Name       | Wall-mounting Kits                                                        |                                                 |                                                                   |                                              |                                                                                       |                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                   |                                                      |                                             |
|------------------|---------------------------------------------------------------------------|-------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|---------------------------------------------|
|                  | WK-30                                                                     | WK-32                                           | WK-35-01                                                          | WK-35-02                                     | WK-44-01                                                                              | WK-45-01                                                                                                                                                       | WK-46                                                                                                                                                                                                                                                                                                                                                                             | WK-51-01                                             | WK-55                                       |
| Dimensions       | 40 x 30 x 1 mm<br>(1.57 x 1.18 x 0.04 in)                                 | 30.3 x 140 x 12.3 mm<br>(1.19 x 5.51 x 0.48 in) | 35 x 44 x 2.5 mm<br>(1.38 x 1.73 x 0.10 in)                       | 35 x 24 x 1.2 mm<br>(1.38 x 0.94 x 0.05 in)  | 44 x 57.5 x 1.6 mm<br>(1.73 x 2.26 x 0.06 in)                                         | 45 x 57 x 2.5 mm<br>(1.77 x 2.24 x 0.10 in)                                                                                                                    | 51.6 x 66.8 x 1 mm<br>(2.03 x 2.63 x 0.04 in)                                                                                                                                                                                                                                                                                                                                     | 51.6 x 67 x 2 mm<br>(2.03 x 2.63 x 0.07 in)          | 55 x 34 x 2.5 mm<br>(2.16 x 1.34 x 0.10 in) |
| Related Products | EDS-205A Series, EDS-G205 Series, EDS-G205A-4PoE Series, ICF-1170I Series | EDS-828 Series, EDS-728 Series                  | NPort 6450, UPort 1410, UPort 1450, UPort 1450I, AWK-1137C Series | NPort 6150/6250 Series, UPort 404, UPort 407 | NPort 6600-8 Series, NPort 6600-16 Series, NPort 6600-32 Series, UPort 1600-16 Series | NPort 5600-8 Series, NPort 5600-16 Series, NPort 5650-8-HV-T, NPort 5650-16-HV-T, CN2600-8 Series, CN2600-16 Series, CN2600-8-2AC Series, CN2600-16-2AC Series | EDS-208A Series, EDS-300 Series, EDS-400A Series, EDS-500A Series, EDS-G308 Series, EDS-G509 Series, EDS-P206A-4PoE Series, EDS-P308 Series, EDS-P510 Series, OBU-102 Series, IMC-101G/101 Series, PT-500 Series, VPort 354 Series, VPort 364A Series, VPort 461A Series, NPort S8455I-MM-SC, NPort S8455I-MM-SC-T, NPort S8455I-SS-SC, NPort S8455I-SS-SC-T, NPort S8458-4S-SC-T | AWK-4131A Series, AWK-3131A Series, AWK-1131A Series | AWK-4131A Series                            |



| Model Name       | UC-3100 Wall-Mounting Kit                  | WK-60-01                               | V2400 Isolated Wall-Mounting Kit                          | MC-1100 Wallmount Kit                     |
|------------------|--------------------------------------------|----------------------------------------|-----------------------------------------------------------|-------------------------------------------|
| Dimensions       | 17.5 x 22 x 2.5 mm (0.69 x 0.87 x 0.98 in) | 60 x 70 x 2 mm (2.36 x 2.76 x 0.08 in) | 150 x 39.5 x 13.2 mm (5.91 x 1.56 x 0.52 in)              | 120 x 45.8 x 5 mm (4.72 x 1.80 x 0.20 in) |
| Related Products | UC-3100 Series                             | EDS-528E Series                        | V2403 Series, V2406A Series, V2416A Series, V2426A Series | MC-1100 Series                            |

## DIN-rail / Pole-mounting Kits



| Model Name       | DIN-rail Mounting Kits                                                                                                                                               |                                               |                                               |                                    |                                                                                                                                                                                                                                                                                                |                                              |                                              |                                             | Pole-mounting Kit |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|----------------------------------------------|---------------------------------------------|-------------------|
|                  | DK-DC50131                                                                                                                                                           | DK-TN-5308                                    | DK-M12-305                                    | DK-25-01                           | DK-35A                                                                                                                                                                                                                                                                                         | UC-3100 DIN-Rail Kit                         | DK-DC50131-01                                | MC-1100 DIN-Rail Kit                        | PK-DC2D0F         |
| Dimensions       | 50 x 131 x 1 mm<br>(1.97 x 5.16 x 0.04 in)                                                                                                                           | 66 x 174 x 12.8 mm<br>(2.60 x 6.85 x 0.50 in) | 60 x 125 x 12.8 mm<br>(2.36 x 4.92 x 0.50 in) | 25 x 48.3 mm<br>(0.98 x 1.90 in)   | 42.5 x 10 x 19.34 mm<br>(1.67 x 0.39 x 0.76 in)                                                                                                                                                                                                                                                | 19.37 x 89 x 10 mm<br>(0.76 x 3.5 x 0.39 in) | 120 x 50 x 9.8 mm<br>(4.72 x 1.97 x 0.39 in) | 90 x 45 x 9.8 mm<br>(3.54 x 1.77 x 0.39 in) | —                 |
| Related Products | TN-5500A Series, TN-5800A Series, TN-5900 Series, TN-4500A Series, ioPAC 5500 Series, ioPAC 8000 Series, ioLogik E1500 Series, MxNVR-MO4 Series, NPort S9450I Series | TN-5308 Series                                | TN-5305 Series                                | UPort 404 Series, UPort 407 Series | MGate™ 3x80 Series, NPort Express DE-211, NPort Express DE-311, NPort 5100 Series, NPort 5100A Series, NPort 5200 Series, NPort 5200A Series, NPort 5400 Series, NPort 6150/6250/6450, NPort W2x50A, UPort 1150I, UPort 404/407, UPort 1250I/1250I, TCF-142 Series, TCC-100/100I, TCC-120/120I | UC-3100 Series                               | V2403, V2406A, V2416A, V2426A                | MC-1100                                     | AWK-4131A Series  |

## Desktop-mounting Kits



| Model Name       | MPC-MD-2-19-DMTK<br>w/ hinge            | MPC-MD-2-19-DMTK<br>w/o hinge                      | MPC-MD-2-24-26-DMTK<br>w/ hinge            | MPC-MD-2-24-26-DMTK<br>w/o hinge                      |
|------------------|-----------------------------------------|----------------------------------------------------|--------------------------------------------|-------------------------------------------------------|
| Description      | Desktop-mounting kit for 19-inch panels | Desktop-mounting kit for 19-inch panels (no hinge) | Desktop-mounting kit for 24/26-inch panels | Desktop-mounting kit for 24/26-inch panels (no hinge) |
| Related Products | MPC-2190, MD-219                        | MPC-2190, MD-219                                   | MPC-2240, MD-224,<br>MPC-2260, MD-226      | MPC-2240, MD-224,<br>MPC-2260, MD-226                 |

## VESA-mounting Kits



| Model Name       | MPC-MD-2-15-VESAMTK                                                                      | MPC-MD-2-19-VESAMTK                                                                        | MPC-MD-2-24-VESAMTK                                                                        | MPC-MD-2-26-VESAMTK                                                                        |
|------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Description      | VESA kit for 15-inch panels<br>(can be used with 100 x 100 mm or 75 x 75 mm VESA mounts) | VESA kit for 19-inch panels<br>(can be used with 100 x 100 mm or 280 x 150 mm VESA mounts) | VESA kit for 24-inch panels<br>(can be used with 200 x 100 mm or 280 x 150 mm VESA mounts) | VESA kit for 26-inch panels<br>(can be used with 200 x 100 mm or 280 x 150 mm VESA mounts) |
| Related Products | MPC-2150, MD-215                                                                         | MPC-2190, MD-219                                                                           | MPC-2240, MD-224                                                                           | MPC-2260, MD-226                                                                           |

## Clamps and Gaskets



| Model Name       | MPC-MD-2-15-<br>PMTK        | MPC-MD-2-19-<br>PMTK                     | MPC-MD-2-19-<br>RMTK             | MPC-MD-2-24-<br>PMTK                     | MPC-MD-2-24-<br>RMTK             |
|------------------|-----------------------------|------------------------------------------|----------------------------------|------------------------------------------|----------------------------------|
| Description      | 8 clamps for 15-inch panels | 10 clamps for 19-inch panel-mounting kit | Rubber gasket for 19-inch panels | 14 clamps for 24-inch panel-mounting kit | Rubber gasket for 24-inch panels |
| Related Products | MPC-2150, MD-215            | MPC-2190, MD-219                         | MPC-2190, MD-219                 | MPC-2240, MD-224                         | MPC-2240, MD-224                 |

# Caps, Cables, and Connectors

## Caps



| Model Name  | A-CAP-M12M-M                            | A-CAP-M12F-M                              | A-CAP-M12F-M-PP                                     | A-CAP-N-M                           | A-CAP-M30M-MIP67                 | A-CAP-WPRJ45-MC                         |
|-------------|-----------------------------------------|-------------------------------------------|-----------------------------------------------------|-------------------------------------|----------------------------------|-----------------------------------------|
| Description | Metal cap to cover M12 (male) connector | Metal cap to cover M12 (female) connector | Metal cap to cover M12 (female) push-pull connector | Metal cap to cover N-type connector | Metal cap to cover M30 connector | Metal cap with chain for RJ45 connector |

## Cables and Connectors



| Model Name   | CBL-M12(FF6P)/Open-100 IP67                                              | CBL-M12D(MM4P)/RJ45-100 IP67                                                        | CBL-M23(FF6P)/OPEN-BK-100 IP67                                   | CBL-M12DFF4PRJ45-BK-10-IP67                                                           | CBL-M12MM8PRJ45-BK-100-IP67                                                         | CBL-M12DMM4PM12DMM4P-BK-100-IP67                                            | CBL-M12XMM8PRJ45-Y-200-IP67                                                                   | CBL-M12XMM8P-Y-100-IP67                                                                      |
|--------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Description  | A-coded M12-to-5-pin power cable with 5-pin (female) M12 connector, IP67 | D-coded M12-to-RJ45 Cat-5C UTP Ethernet cable with 4-pin (male) M12 connector, IP67 | M23-to-6-pin power cable with 6-pin (female) M23 connector, IP67 | M12-to-RJ45 Cat-5E UTP Ethernet cable with 4-pin (female) D-coded M12 connector, IP67 | M12-to-RJ45 Cat-5E UTP Ethernet cable with 8-pin (male) A-coded M12 connector, IP67 | M12-to-M12 Cat-5E STP Ethernet cable with 4-pin D-coded M12 connector, IP67 | M12-to-RJ45 Cat-5 UTP Ethernet cable with 8-pin (male) X-coded crimp type M12 connector, IP67 | M12-to-M12 Cat-5 UTP Ethernet cable with 8-pin (male) X-coded crimp type M12 connector, IP67 |
| Cable Length | 1 m (3.3 ft)                                                             | 1 m (3.3 ft)                                                                        | 1 m (3.3 ft)                                                     | 10 cm (3.93 in)                                                                       | 1 m (3.3 ft)                                                                        | 1 m (3.3 ft)                                                                | 2 m (6.6 ft)                                                                                  | 1 m (3.3 ft)                                                                                 |



| Model Name   | CBL-M12XMM8P-Y-300-IP67                                                                      | CBL-M12XMM8PRJ45-BK-100-IP67                                                                | CBL-M12XMM8PRJ45-BK-200-IP67                                                                | CBL-M12FF4POpen-150 IP67                                         | CBL-M12FF4POpen-300 IP67                                         | CBL-RJ45F9-150                    | CBL-RJ45M9-150                  | CBL-F9DPF1x4-BK-100                     |
|--------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|-----------------------------------|---------------------------------|-----------------------------------------|
| Description  | M12-to-M12 Cat-5 UTP Ethernet cable with 8-pin (male) X-coded crimp type M12 connector, IP67 | X-coded M12-to-RJ45 Cat-5E UTP Gigabit Ethernet cable with 8-pin (male) M12 connector, IP67 | X-coded M12-to-RJ45 Cat-5E UTP Gigabit Ethernet cable with 8-pin (male) M12 connector, IP67 | M12-open power cable with 4-pin A-coded (female) connector, IP67 | M12-open power cable with 4-pin A-coded (female) connector, IP67 | RJ45-to-DB9 (female) serial cable | RJ45-to-DB9 (male) serial cable | Console cable with 4-pin connector, 1 m |
| Cable Length | 3 m (9.8 ft)                                                                                 | 1 m (3.3 ft)                                                                                | 2 m (6.6 ft)                                                                                | 1.5 m (4.9 ft)                                                   | 3 m (9.8 ft)                                                     | 1.5 m (4.9 ft)                    | 1.5 m (4.9 ft)                  | 1 m (3.3 ft)                            |



| Model Name  | Field-installation Connectors   |                                 |                                                                        |                                                                      |                                                                        |                                                     |                                                    |                                                         |
|-------------|---------------------------------|---------------------------------|------------------------------------------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------|---------------------------------------------------------|
|             | A-PLG-WPM30IP67-01              | A-PLG-WPRJ                      | M12A-5P-IP68                                                           | M12A-8PMM-IP68                                                       | M12A-8PFF-IP68                                                         | A-PLG-WPM23-01-IP67                                 | M12D-4P-IP68                                       | M12D-4PMM-IP67                                          |
| Description | Field-installation for M30 plug | Field-installation RJ-type plug | Field-installation A-coded M12 screw-in 5-pin (female) connector, IP68 | Field-installation A-coded M12 screw-in 8-pin (male) connector, IP68 | Field-installation A-coded M12 screw-in 8-pin (female) connector, IP68 | M23 cable crimp type 6-pin (female) connector, IP67 | M12 D-coded screw-in sensor (male) connector, IP68 | M12 D-coded, QUICKON type, 4-pin (male) connector, IP67 |



| Model Name  | Field-installation Connectors                                                     |                                                                                                      |                                                                  |                                                  |                                                |                                                                |                                                |
|-------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------|----------------------------------------------------------------|------------------------------------------------|
|             | M12X-8PMM-IP67-HTG                                                                | M12X-8PMM-IP67                                                                                       | M12A-5PMM-IP68                                                   | M12A-4PFF-IP67                                   | M12A-4PMM-IP67                                 | M12A-5PMM-IP68                                                 | M12X-8PMM-IP65                                 |
| Description | X-coded screw-in Gigabit Ethernet connector with M12 8-pin (male) connector, IP67 | Field-installation X-coded screw-in Gigabit Ethernet connector with M12 8-pin (male) connector, IP67 | D-coded screw-in USB connector, M12 5-pin (male) connector, IP68 | M12 cable A-coded 4-pin (female) connector, IP67 | M12 cable A-coded 4-pin (male) connector, IP67 | M12 D-coded circular threaded USB 5-pin (male) connector, IP68 | M12 cable X-coded 8-pin (male) connector, IP65 |

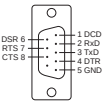
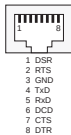
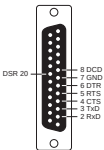
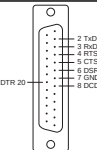
# Serial Connection Options

## Serial board connection box/cable usage chart

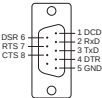
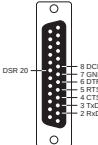
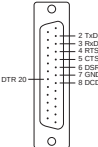
| Serial Board<br>Model Name | Connection Boxes |           |           |          |              |            | Connection Cables         |                          |                          |                         |                  |                 |                |                      |                 |                 |                |                |                 |                |
|----------------------------|------------------|-----------|-----------|----------|--------------|------------|---------------------------|--------------------------|--------------------------|-------------------------|------------------|-----------------|----------------|----------------------|-----------------|-----------------|----------------|----------------|-----------------|----------------|
|                            | 8-port           |           |           |          |              |            | 8-port                    |                          |                          |                         |                  |                 | 4-port         |                      |                 |                 | 2-port         |                |                 |                |
|                            | OPT8-M9          | OPT8-RJ45 | OPT8A/B/S | OPT8-M9+ | OPT8A+/B+/S+ | OPT8-RJ45+ | CBL-M68M25x8-100 (OPT8C+) | CBL-M68M9x8-100 (OPT8D+) | CBL-M62M25x8-100 (OPT8C) | CBL-M62M9x8-100 (OPT8D) | CBL-M78M25x8-100 | CBL-M78M9x8-100 | CBL-M44M9x4-50 | CBL-M44M9x4-50 (POS) | CBL-M44M25x4-50 | CBL-F40M25x4-50 | CBL-F40M9x4-50 | CBL-M25M9x2-50 | CBL-F20M25x2-50 | CBL-F20M9x2-50 |
| CP-118U/138U Series        | ✓                | ✓         | ✓         | -        | -            | -          | -                         | -                        | ✓                        | ✓                       | -                | -               | -              | -                    | -               | -               | -              | -              | -               | -              |
| CP-118U-I/138U-I Series    | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | ✓                | ✓               | -              | -                    | -               | -               | -              | -              | -               | -              |
| CP-168U Series             | ✓                | ✓         | ✓         | -        | -            | -          | -                         | -                        | ✓                        | ✓                       | -                | -               | -              | -                    | -               | -               | -              | -              | -               | -              |
| CP-104UL Series            | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | ✓              | -                    | ✓               | -               | -              | -              | -               | -              |
| CP-104JU Series            | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | -                    | -               | -               | -              | -              | -               | -              |
| CP-134U Series             | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | ✓              | -                    | ✓               | -               | -              | -              | -               | -              |
| CP-114UL Series            | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | ✓              | -                    | ✓               | -               | -              | -              | -               | -              |
| CP-104EL-A Series          | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | ✓              | -                    | ✓               | -               | -              | -              | -               | -              |
| CP-114EL Series            | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | ✓              | -                    | ✓               | -               | -              | -              | -               | -              |
| CP-112UL Series            | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | -                    | -               | -               | -              | ✓              | -               | -              |
| CP-132UL Series            | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | -                    | -               | -               | -              | ✓              | -               | -              |
| CP-102U Series             | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | -                    | -               | -               | -              | ✓              | -               | -              |
| CP-102UL Series            | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | -                    | -               | -               | -              | ✓              | -               | -              |
| CP-102E Series             | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | -                    | -               | -               | -              | ✓              | -               | -              |
| CP-102EL Series            | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | -                    | -               | -               | -              | ✓              | -               | -              |
| CP-132EL Series            | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | -                    | -               | -               | -              | ✓              | -               | -              |
| CP-116E-A                  | -                | -         | -         | ✓        | ✓            | ✓          | ✓                         | ✓                        | -                        | -                       | -                | -               | -              | -                    | -               | -               | -              | -              | -               | -              |
| CP-118E-A-I Series         | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | ✓                | ✓               | -              | -                    | -               | -               | -              | -              | -               | -              |
| CP-138E-A-I Series         | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | ✓                | ✓               | -              | -                    | -               | -               | -              | -              | -               | -              |
| CP-118EL-A                 | -                | -         | -         | ✓        | ✓            | ✓          | ✓                         | ✓                        | -                        | -                       | -                | -               | -              | -                    | -               | -               | -              | -              | -               | -              |
| CP-134EL-A-I Series        | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | ✓              | -                    | ✓               | -               | -              | -              | -               | -              |
| CP-168EL-A                 | -                | -         | -         | ✓        | ✓            | ✓          | ✓                         | ✓                        | -                        | -                       | -                | -               | -              | -                    | -               | -               | -              | -              | -               | -              |
| POS-104UL Series           | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | ✓                    | -               | -               | -              | -              | -               | -              |
| CA-108 Series              | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | -                    | -               | ✓               | ✓              | -              | -               | -              |
| CB-108 Series              | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | -                    | -               | ✓               | ✓              | -              | -               | -              |
| CA-114 Series              | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | -                    | -               | ✓               | ✓              | -              | -               | -              |
| CB-114 Series              | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | -                    | -               | ✓               | ✓              | -              | -               | -              |
| CA-134I Series             | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | -                    | -               | ✓               | ✓              | -              | -               | -              |
| CB-134I Series             | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | -                    | -               | ✓               | ✓              | -              | -               | -              |
| CA-104 Series              | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | -                    | -               | ✓               | ✓              | -              | -               | -              |
| CA-132/132I Series         | -                | -         | -         | -        | -            | -          | -                         | -                        | -                        | -                       | -                | -               | -              | -                    | -               | -               | -              | ✓              | ✓               | ✓              |

## 8-port RS-232 Connection Boxes



| Model Name            | OPT8-M9                                                                                | OPT8-RJ45                                                                         | OPT8A/S                                                                              | OPT8B                                                                               |
|-----------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Pin Assignment        |       |  |    |  |
| Board-side Connector  | DB62 (male) x 1                                                                        |                                                                                   |                                                                                      |                                                                                     |
| Device-side Connector | DB9 (male) x 8                                                                         | 8-pin RJ45 x 8                                                                    | DB25 (female) x 8                                                                    | DB25 (male) x 8                                                                     |
| LEDs                  | TxD, RxD indicators for each device-side port                                          | —                                                                                 | TxD, RxD indicators for each device-side port                                        |                                                                                     |
| Baudrate              | —                                                                                      | —                                                                                 | 50 bps to 921.6 kbps                                                                 |                                                                                     |
| Dimensions            | 90 x 111 x 27.5 mm<br>(3.54 x 4.37 x 1.08 in)                                          | 152.8 x 32.8 x 32 mm<br>(6.02 x 1.29 x 1.26 in)                                   | 247 x 108 x 35 mm (9.72 x 4.25 x 1.38 in)                                            |                                                                                     |
| Protection            | —                                                                                      | —                                                                                 | 25 kV ESD, 2 kV EFT surge protection (OPT8S only)                                    | —                                                                                   |
| Connection Cable      | DB62 (male) to DB62 (female) 1.5 m connection cable for connecting to the serial board | —                                                                                 | DB62 (male) to DB62 (male) 1.5 m connection cable for connecting to the serial board |                                                                                     |
| Related Products      | See the Serial Connection Options Chart for details.                                   |                                                                                   |                                                                                      |                                                                                     |



| Model Name            | OPT8-M9+                                                                            | OPT8-RJ45+                                                                          | OPT8A+/S+                                                                            | OPT8B+                                                                                |
|-----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Pin Assignment        |  |  |  |  |
| Board-side Connector  | VHDCI 68 x 1                                                                        |                                                                                     |                                                                                      |                                                                                       |
| Device-side Connector | DB9 (male) x 8                                                                      | 8-pin RJ45 x 8                                                                      | DB25 (female) x 8                                                                    | DB25 (male) x 8                                                                       |
| LEDs                  | TxD, RxD indicators for each device-side port                                       | —                                                                                   | TxD, RxD indicators for each device-side port                                        |                                                                                       |
| Baudrate              | —                                                                                   | —                                                                                   | 50 bps to 921.6 kbps                                                                 |                                                                                       |
| Dimensions            | 90 x 111 x 27.5 mm<br>(3.54 x 4.37 x 1.08 in)                                       | 152.8 x 32.8 x 32 mm<br>(6.02 x 1.29 x 1.26 in)                                     | 247 x 108 x 35 mm (9.72 x 4.25 x 1.38 in)                                            |                                                                                       |
| Protection            | —                                                                                   | —                                                                                   | 25 kV ESD, 2 kV EFT surge protection<br>(OPT8S only)                                 | —                                                                                     |
| Connection Cable      | VHDCI 68 to DB62 (female) 1.5 m connection cable for connecting to the serial board | —                                                                                   | VHDCI 68 to DB62 (female) 1.5 m connection cable for connecting to the serial board  |                                                                                       |
| Related Products      | See the Serial Connection Options Chart for details.                                |                                                                                     |                                                                                      |                                                                                       |

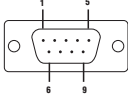
## 8-port RS-232 Connection Cables



| Model Name            | CBL-M62M25x8-100 (OPT8C)                             | CBL-M62M9x8-100 (OPT8D) | CBL-M68M25x8-100 (OPT8C+) | CBL-M68M9x8-100 (OPT8D+) | CBL-M78M25x8-100 | CBL-M78M9x8-100 |
|-----------------------|------------------------------------------------------|-------------------------|---------------------------|--------------------------|------------------|-----------------|
| Board-side Connector  | DB62 (male) x 1                                      |                         | VHDCI 68 x 1              |                          | DB78 (male) x 1  |                 |
| Device-side Connector | DB25 (male) x 8                                      | DB9 (male) x 8          | DB25 (male) x 8           | DB9 (male) x 8           | DB25 (male) x 8  | DB9 (male) x 8  |
| Cable Length          | 1 m (3.3 ft)                                         |                         |                           |                          |                  |                 |
| Related Products      | See the Serial Connection Options Chart for details. |                         |                           |                          |                  |                 |

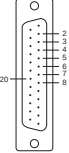
## 2-port Connection Cables



| Model Name       | CBL-M25M9x2-50                                                                    |                                                                                                                                                                                                                                                                                                             |        |        |   |     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
|------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|
| Pin Assignment   |  | <table><tr><th>PIN</th><th>RS-232</th></tr><tr><td>1</td><td>DCD</td></tr><tr><td>2</td><td>RxD</td></tr><tr><td>3</td><td>TxD</td></tr><tr><td>4</td><td>DTR</td></tr><tr><td>5</td><td>GND</td></tr><tr><td>6</td><td>DSR</td></tr><tr><td>7</td><td>RTS</td></tr><tr><td>8</td><td>CTS</td></tr></table> | PIN    | RS-232 | 1 | DCD | 2 | RxD | 3 | TxD | 4 | DTR | 5 | GND | 6 | DSR | 7 | RTS | 8 | CTS |
|                  |                                                                                   | PIN                                                                                                                                                                                                                                                                                                         | RS-232 |        |   |     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
|                  |                                                                                   | 1                                                                                                                                                                                                                                                                                                           | DCD    |        |   |     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
|                  |                                                                                   | 2                                                                                                                                                                                                                                                                                                           | RxD    |        |   |     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
|                  |                                                                                   | 3                                                                                                                                                                                                                                                                                                           | TxD    |        |   |     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
|                  |                                                                                   | 4                                                                                                                                                                                                                                                                                                           | DTR    |        |   |     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
|                  |                                                                                   | 5                                                                                                                                                                                                                                                                                                           | GND    |        |   |     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
|                  |                                                                                   | 6                                                                                                                                                                                                                                                                                                           | DSR    |        |   |     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
|                  |                                                                                   | 7                                                                                                                                                                                                                                                                                                           | RTS    |        |   |     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
| 8                | CTS                                                                               |                                                                                                                                                                                                                                                                                                             |        |        |   |     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
| Description      | DB25 (male) to DB9 (male) x 2                                                     |                                                                                                                                                                                                                                                                                                             |        |        |   |     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
| Cable Length     | 50 cm (19.69 in)                                                                  |                                                                                                                                                                                                                                                                                                             |        |        |   |     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
| Related Products | See the Serial Connection Options Chart for details.                              |                                                                                                                                                                                                                                                                                                             |        |        |   |     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |

## 4-port Connection Cables



| Model Name       | CBL-M44M9x4-50                                                                      |     |        |         |           | CBL-M44M25x4-50                |                                                                                     |     |        |         |           |           |
|------------------|-------------------------------------------------------------------------------------|-----|--------|---------|-----------|--------------------------------|-------------------------------------------------------------------------------------|-----|--------|---------|-----------|-----------|
| Pin Assignment   |  | PIN | RS-232 | RS-422  | RS-485-4w | RS-485-2w                      |  | PIN | RS-232 | RS-422  | RS-485-4w | RS-485-2w |
|                  |                                                                                     | 1   | DCD    | TxD-(A) | TxD-(A)   | —                              |                                                                                     | 2   | TxD    | RxD+(B) | RxD+(B)   | Data+(B)  |
|                  |                                                                                     | 2   | RxD    | TxD+(B) | TxD+(B)   | —                              |                                                                                     | 3   | RxD    | TxD+(B) | TxD+(B)   | —         |
|                  |                                                                                     | 3   | TxD    | RxD+(B) | RxD+(B)   | Data+(B)                       |                                                                                     | 4   | RTS    | —       | —         | —         |
|                  |                                                                                     | 4   | DTR    | RxD-(A) | RxD-(A)   | Data-(A)                       |                                                                                     | 5   | CTS    | —       | —         | —         |
|                  |                                                                                     | 5   | GND    | GND     | GND       | GND                            |                                                                                     | 6   | DSR    | —       | —         | —         |
|                  |                                                                                     | 6   | DSR    | —       | —         | —                              |                                                                                     | 7   | GND    | GND     | GND       | GND       |
|                  |                                                                                     | 7   | RTS    | —       | —         | —                              |                                                                                     | 8   | DCD    | TxD-(A) | TxD-(A)   | —         |
|                  |                                                                                     | 8   | CTS    | —       | —         | —                              |                                                                                     | 20  | DTR    | RxD-(A) | RxD-(A)   | Data-(A)  |
|                  |                                                                                     | 9   | —      | —       | —         | —                              |                                                                                     | 22  | —      | —       | —         | —         |
| Description      | DB44 (male) to DB9 (male) x 4                                                       |     |        |         |           | DB44 (male) to DB25 (male) x 4 |                                                                                     |     |        |         |           |           |
| Cable Length     | 50 cm (19.69 in)                                                                    |     |        |         |           |                                |                                                                                     |     |        |         |           |           |
| Related Products | See the Serial Connection Options Chart for details.                                |     |        |         |           |                                |                                                                                     |     |        |         |           |           |

## 8-pin RJ45 to DB9/DB25 Connection Cables



| Model Name            | CBL-RJ45F25-150                                                      | CBL-RJ45F9-150   | CBL-RJ45M25-150 | CBL-RJ45M9-150 | CBL-RJ45SF25-150  | CBL-RJ45SF9-150  | CBL-RJ45SM25-150 | CBL-RJ45SM9-150 |
|-----------------------|----------------------------------------------------------------------|------------------|-----------------|----------------|-------------------|------------------|------------------|-----------------|
| Pin Assignment        |                                                                      |                  |                 |                |                   |                  |                  |                 |
| Cable Type            | —                                                                    | —                | —               | —              | Shielded          |                  |                  |                 |
| Board-side Connector  | 8-pin RJ45 x 1                                                       |                  |                 |                |                   |                  |                  |                 |
| Device-side Connector | DB25 (female) x 1                                                    | DB9 (female) x 1 | DB25 (male) x 1 | DB9 (male) x 1 | DB25 (female) x 1 | DB9 (female) x 1 | DB25 (male) x 1  | DB9 (male) x 1  |
| Cable Length          | 1.5 m (4.9 ft)                                                       |                  |                 |                |                   |                  |                  |                 |
| Related Products      | CP-104JU, OPT8-RJ45, NPort 5210, NPort 5600, NPort 6600, CN2510/2600 |                  |                 |                |                   |                  |                  |                 |

## 10-pin RJ45 to DB9/DB25 Connection Cables



| Model Name            | CN20030                    | CN20040         | CN20060        | CN20070          |
|-----------------------|----------------------------|-----------------|----------------|------------------|
| Pin Assignment        |                            |                 |                |                  |
| Board-side Connector  | 10-pin RJ45 x 1            |                 |                |                  |
| Device-side Connector | DB25 (female) x 1          | DB25 (male) x 1 | DB9 (male) x 1 | DB9 (female) x 1 |
| Cable Length          | 1.5 m (4.9 ft)             |                 |                |                  |
| Related Products      | C320Turbo Series, A52, A53 |                 |                |                  |

## Wiring Kits



| Model Name            | TB-M9                                     | TB-F9                                 | TB-M25                                    | TB-F25                                 |
|-----------------------|-------------------------------------------|---------------------------------------|-------------------------------------------|----------------------------------------|
| Type                  | DB9 (male) DIN-rail wiring terminal       | DB9 (female) DIN-rail wiring terminal | DM25 (male) DIN-rail wiring terminal      | DB25 (female) DIN-rail wiring terminal |
| Connector             | DB9 (male)                                | DB9 (female)                          | DB25 (male)                               | DB25 (female)                          |
| Rating                | 300 V, 20 A (IEC250V 10A)                 |                                       |                                           |                                        |
| Operating Temperature | -40 to 105°C (-40 to 221°F)               |                                       |                                           |                                        |
| Suitable Wiring       | 24-12 AWG (IEC 0.5-2.5 mm2)               |                                       |                                           |                                        |
| Dimensions            | 77.5 x 45 x 51 mm (3.05 x 1.77 x 2.01 in) |                                       | 77.5 x 90 x 51 mm (3.05 x 3.54 x 2.01 in) |                                        |



| Model Name            | Mini DB9F-to-TB                                                                                                                                                                                    | ADP-RJ458P-DB9M            | ADP-RJ458P-DB9F              | A-ADP-RJ458P-DB9F-ABC01      |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------------|------------------------------|---|---|---|---|---|---|---|---|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pin Assignment        | <table><tr><th>DB9-F</th><th>TB</th></tr><tr><td>1</td><td>2</td></tr><tr><td>2</td><td>1</td></tr><tr><td>3</td><td>3</td></tr><tr><td>4</td><td>4</td></tr><tr><td>5</td><td>5</td></tr></table> | DB9-F                      | TB                           | 1                            | 2 | 2 | 1 | 3 | 3 | 4 | 4 | 5 | 5 | <table><tr><th>DB9-M</th><th>RJ45</th></tr><tr><td>1</td><td>6</td></tr><tr><td>2</td><td>5</td></tr><tr><td>3</td><td>4</td></tr><tr><td>4</td><td>8</td></tr><tr><td>5</td><td>3</td></tr><tr><td>6</td><td>1</td></tr><tr><td>7</td><td>2</td></tr><tr><td>8</td><td>7</td></tr></table> | DB9-M | RJ45 | 1 | 6 | 2 | 5 | 3 | 4 | 4 | 8 | 5 | 3 | 6 | 1 | 7 | 2 | 8 | 7 | <table><tr><th>DB9-F</th><th>RJ45</th></tr><tr><td>1</td><td>6</td></tr><tr><td>2</td><td>4</td></tr><tr><td>3</td><td>5</td></tr><tr><td>4</td><td>1</td></tr><tr><td>5</td><td>3</td></tr><tr><td>6</td><td>8</td></tr><tr><td>7</td><td>7</td></tr><tr><td>8</td><td>2</td></tr></table> | DB9-F | RJ45 | 1 | 6 | 2 | 4 | 3 | 5 | 4 | 1 | 5 | 3 | 6 | 8 | 7 | 7 | 8 | 2 | <table><tr><th>DB9</th><th>RJ45</th></tr><tr><td>1</td><td>6</td></tr><tr><td>2</td><td>5</td></tr><tr><td>3</td><td>4</td></tr><tr><td>4</td><td>8</td></tr><tr><td>5</td><td>7</td></tr><tr><td>6</td><td>1</td></tr><tr><td>7</td><td>2</td></tr><tr><td>8</td><td>7</td></tr></table> | DB9 | RJ45 | 1 | 6 | 2 | 5 | 3 | 4 | 4 | 8 | 5 | 7 | 6 | 1 | 7 | 2 | 8 | 7 |
|                       | DB9-F                                                                                                                                                                                              | TB                         |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                       | 1                                                                                                                                                                                                  | 2                          |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                       | 2                                                                                                                                                                                                  | 1                          |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                       | 3                                                                                                                                                                                                  | 3                          |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                       | 4                                                                                                                                                                                                  | 4                          |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                       | 5                                                                                                                                                                                                  | 5                          |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                       | DB9-M                                                                                                                                                                                              | RJ45                       |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                       | 1                                                                                                                                                                                                  | 6                          |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 2                     | 5                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 3                     | 4                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 4                     | 8                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 5                     | 3                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 6                     | 1                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 7                     | 2                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 8                     | 7                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| DB9-F                 | RJ45                                                                                                                                                                                               |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1                     | 6                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 2                     | 4                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 3                     | 5                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 4                     | 1                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 5                     | 3                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 6                     | 8                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 7                     | 7                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 8                     | 2                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| DB9                   | RJ45                                                                                                                                                                                               |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1                     | 6                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 2                     | 5                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 3                     | 4                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 4                     | 8                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 5                     | 7                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 6                     | 1                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 7                     | 2                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 8                     | 7                                                                                                                                                                                                  |                            |                              |                              |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Description           | DB9 (female) to terminal block adapter for RS-422/485 applications                                                                                                                                 | RJ45-to-DB9 (male) adapter | RJ45-to-DB9 (female) adapter | RJ45-to-DB9 (female) adapter |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Operating Temperature | 0 to 70°C (32 to 158°F)                                                                                                                                                                            | -15 to 70°C (5 to 158°F)   | -15 to 70°C (5 to 158°F)     | 0 to 70°C (32 to 158°F)      |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                             |       |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                           |     |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |



## Other Accessories

| Model Name                                                 | Description                                                                                                                                        |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT-GPS-OSM-05-3M                                          | 1572 MHz, active GPS antenna, 26 dBi, for GPS applications, 3 m                                                                                    |
| DA-681A HDD Kit                                            | HDD/SSD installation package, supports a single HDD/SSD                                                                                            |
| DA-682A HDD Kit                                            | DA-682A HDD kit                                                                                                                                    |
| DA-720 HDD Kit                                             | DA-720 HDD/SSD kit                                                                                                                                 |
| DE-2-SATA                                                  | 2 x 2.5" SATA III SSD/HDD socket module                                                                                                            |
| FK-75125-02                                                | Storage bracket, 4 large silver screws, 4 soft washers, 4 small bronze screws, 1 SATA power cable, 4 golden spacers (only for the V2406 and V2426) |
| HDD kit with lock                                          | HDD/SSD kit (lock included)                                                                                                                        |
| HDD/SSD kit with heat dissipation vent (lock not included) | HDD/SSD kit with heat dissipation vent (lock not included)                                                                                         |
| HDD/SSD kit with heat dissipation vent and lock            | HDD/SSD kit with heat dissipation vent (lock included)                                                                                             |
| ISD-1110-T/1130-T Series                                   | Data line surge protectors (up to 4 kV)                                                                                                            |
| ISD-1210-T/1230-T Series                                   | Data line surge protectors (up to 20 kV)                                                                                                           |
| USB Dongle Kit                                             | Internal USB dongle kit installation package                                                                                                       |
| V2616A HDD Kit                                             | V2616A internal storage kit                                                                                                                        |
| Wi-Fi-BGN                                                  | Wi-Fi module, 2 SMA connectors with cable                                                                                                          |
| Wi-Fi-BGN(252NI)                                           | Wi-Fi module, 2 antennas with cable and connector, 2 black screws, 2 lock washers, 2 nuts, 1 thermal pad                                           |

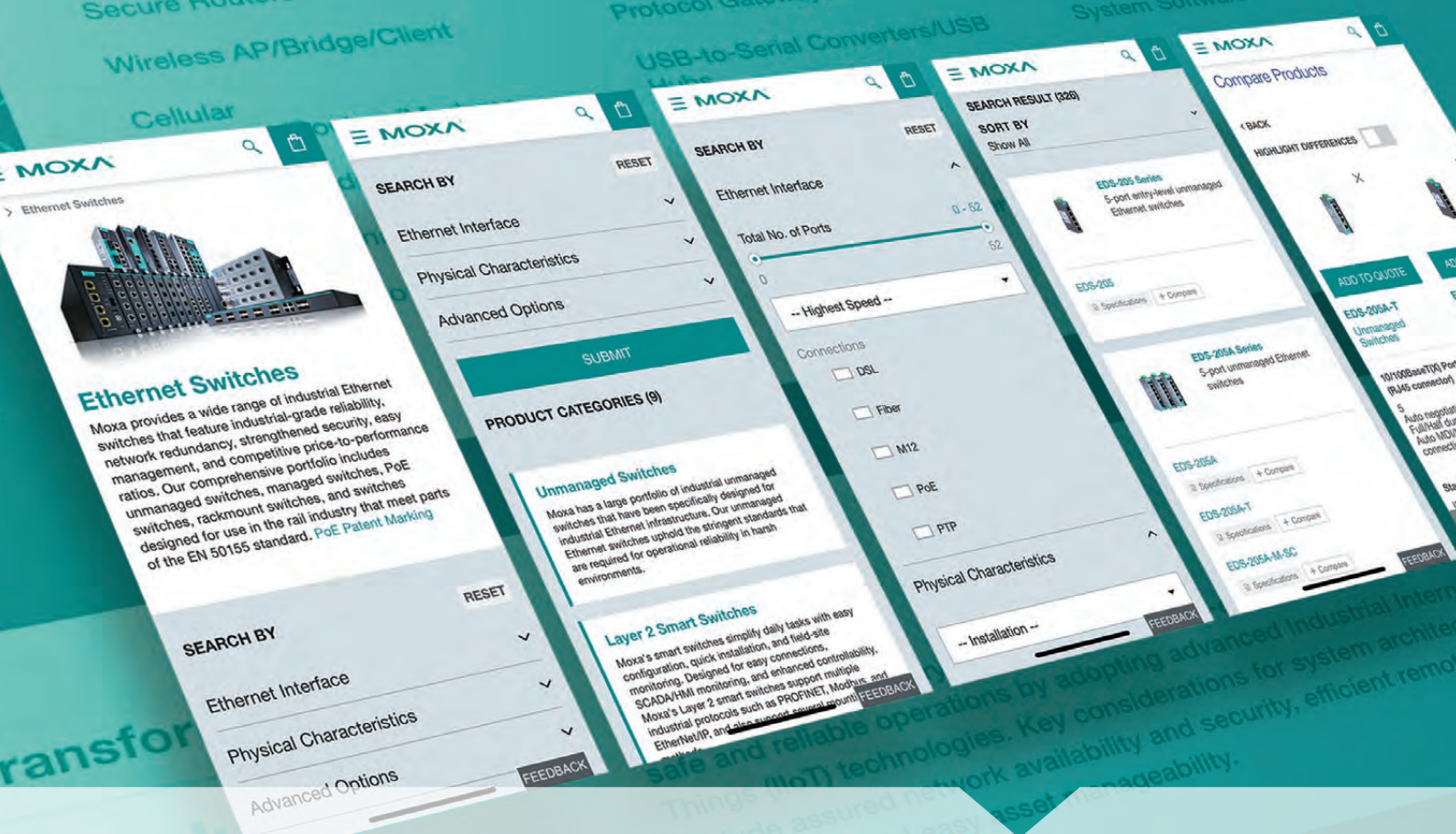


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