



# INDUSTRIAL NETWORKING SOLUTIONS

*no problems, only solutions*

Switches | Secure Routers | Media Converters | Serial Device Servers | Modbus Gateways  
Protocol Gateways



Cables

Receptacles

Field Wireables

Accessories





# WHY MENCOM?

Competitive Pricing | Custom Solutions  
Industry Leading Technical Support

## ABOUT MENCOM

Since 1987, Mencom Corporation has provided high quality, cost effective, industrial electrical connector solutions. Our commitment to quality and customer service has made Mencom a preferred supplier for many global companies. Mencom provides expert engineering support and technically savvy customer service that is unmatched in the industry. For your next connector application, give us a call and let us show you the power of Mencom.

## no problems, only solutions

This isn't just our slogan. This is a proactive commitment to our valued customers.

Few things are worse than arriving on the jobsite with incorrect or insufficient materials. Our inside sales reps have the experience to help you select the most efficient and cost effective solutions available. They are trained to make sure you include all the correct components required to complete your project.

During regular business hours, you will always be greeted by a live person when contacting Mencom. We also staff our on-line chat function in order to assist you with any questions you might have while taking advantage of our inventory enabled website.

A team of Inside Sales Representatives and Account Specialists are on hand to help you meet your connector needs. Whether it is a quote on a special project, expediting an order, or helping to customize connectors for an application, Mencom is here to help you.

## FLEXIBLE CUSTOM SOLUTIONS

Mencom is fortunate to have a capable team of engineers with decades of experience. Combined with a progressive manufacturing facility, we are able to assist in the design and manufacturing of most any connectivity project. Our engineering team is available to work with your design and manufacturing groups to help solve your challenging connection issues. From small changes in catalog items, to custom terminations and assemblies.

- Custom Lengths for cables and receptacle leads
- Custom over-molding onto customer cables and sensors
- Plug & Play customization – to meet your spec
- Adding ring terminals, spade terminals, ferrules
- And more

These are just a few examples of the value added features Mencom can provide. We welcome the opportunity to see what solutions we can provide for your next project.





# Industrial Networking Solutions

*For Reliability, Harsh Environment, EMI/EMS, Security and Performance*

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# Industrial Networking Solutions

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Switches | Secure Routers | Media Converters | Serial Device Servers | Modbus Gateways



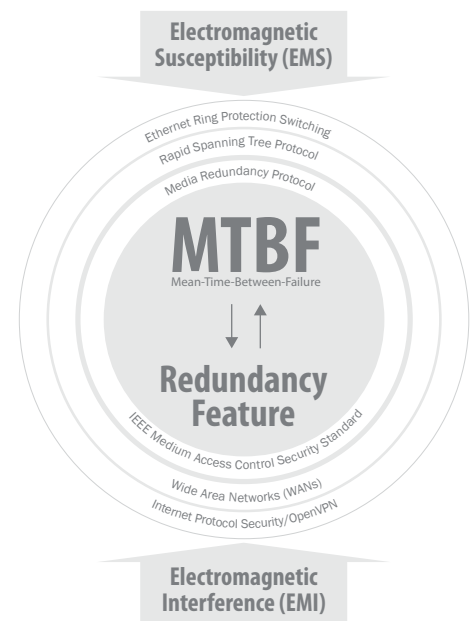
In the past two decades, Ethernet-based networks were adopted to become the backbone of industrial automation. The latest trend in industrial automation is the vision of “Industry 4.0” which is originated by the German government to create the “Smart Factory” based on the concept of computerized manufacturing. The smart factory requires the use of more than billion connected devices and this raises a lot of concern about the reliability and the security of network communications for all kinds of applications in the industry.

## Reliable Solutions for Harsh Environments

Unreliable networks almost always lead to delays in production. This is no longer acceptable in the Industry 4.0 era where competition in business is very intense. In order to minimize such unexpected downtime, Mencom’s Ethernet devices provide prolonged Mean-Time-Between-Failure (MTBF). In an event of link or device failure, Smart-Redundancy features will detect the failure, relay cause of the failure back to the control center, and automatically recover from such failure to provide continuous operation.

Mencom’s industrial Ethernet devices are designed with embedded isolation to withstand the harshest industrial-grade electromagnetic interference and susceptibility without suffering a fatal damage or generating noise. In addition, Ethernet Ring Protection Switching (ERPS), Rapid Spanning Tree Protocol (RSTP), or Media Redundancy Protocol (MRP) ring settings can resume the operation and network connectivity immediately if a network switch fails or a communication link is broken.

For security and encryption, Mencom’s Ethernet devices provide seamless and cost-effective encrypted links for local area networks (LANs) through MACsec (IEEE Medium Access Control Security Standard, IEEE 802.1AE) and for wide area networks (WANs) or Internet through IPsec (Internet Protocol Security) or OpenVPN.





# Industrial Networking Solutions

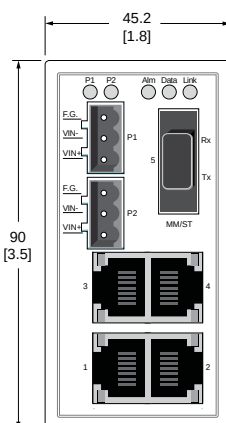
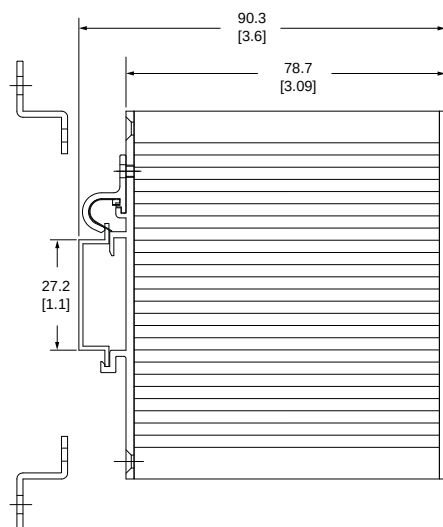
## Entry Level Switches



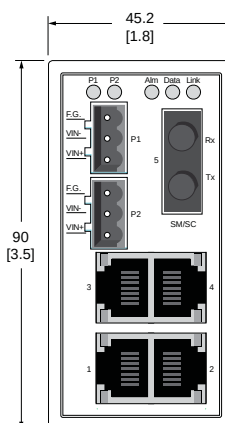
Unmanaged Entry-Level Switches | DIN-Rail/Wall Mount | Plastic Housing | IP30 Rating



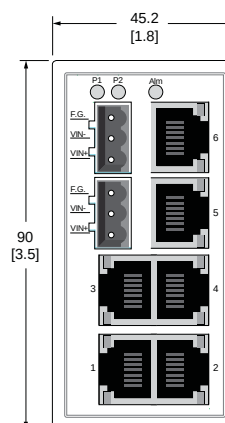
| Unmanaged Fast Ethernet Switches |                   |                            |                       |
|----------------------------------|-------------------|----------------------------|-----------------------|
| Part Number<br>[MFG #]           | 10/100 RJ45 Ports | Fiber Ports                | Features              |
| <b>E45UM-4-FM</b><br>[EH2005-FM] | 4                 | 1 Multi-Mode<br>Max 2 Km   | Redundant Power Input |
| <b>E45UM-4-FS</b><br>[EH2005-FS] | 4                 | 1 Single-Mode<br>Max 20 Km |                       |
| <b>E45UM-6</b><br>[EH2006]       | 6                 | N/A                        |                       |



**E45UM-4-FM**



**E45UM-4-FS**



**E45UM-6**

### Feature Highlights:

- 4 x 10/100BaseT(X) (RJ45)
- 1 x fiber port with ST (-Fm model) or SC (-Fs model)
- Broadcast storm protection
- Support IEEE 802.3/ 802.3u/ 802.3x
- 10/100M, Full/Half-Duplex, MDI/MDI-X auto-detection
- Redundant dual DC power inputs
- Operating temperature ranges from 0~60 °C
- Rugged high-strength plastic case
- DIN-Rail or wall mount support



# Industrial Networking Solutions

## Specifications & Approvals



Unmanaged Entry-Level Switches | DIN-Rail/Wall Mount | Plastic Housing | IP30 Rating

| Ethernet                  |                                                                                    |
|---------------------------|------------------------------------------------------------------------------------|
| Transmission Rate         | 10/100Mbps                                                                         |
| Total Port                | 5 / 6                                                                              |
| 10/100Mbps                | 5 / 6                                                                              |
| Connector                 | RJ-45 x 4+ Fm/Fs x 1 (E45UM-4-FM and E45UM-4-FS) / RJ-45 x 6 (E45UM-6)             |
| Auto MDI/MDI-X            | Yes                                                                                |
| Power Management          |                                                                                    |
| Input                     | DC 9 ~ 30V                                                                         |
| Connector                 | 3-pin 5.08mm pitch terminal block x 2                                              |
| Consumption               | 5.4Watts Max                                                                       |
| Environmental Limits      |                                                                                    |
| Operating Temperature     | 0°C ~ 60°C ( 32° ~ 140°F )                                                         |
| Storage Temperature       | -20° ~ 70°C ( -4°~ 185°F ), 5 ~ 95%RH                                              |
| Ambient Relative Humidity | 5 ~ 95%RH (non-condensing)                                                         |
| Regulatory Approvals      |                                                                                    |
| Safety                    | UL60950-1                                                                          |
| EMC                       | FCC Class A, CE Class A                                                            |
| EMS                       | ESD Level 2, RS Level 2, EFT Level 2, Surge Level 2, CS Level 2, PFMF Level1, DIP. |
| MTBF                      | 107296(EH2005-Fm/Fs) / 112092(EH2006)                                              |
| Warranty                  | 5 Years                                                                            |

## Industrial Networking Solutions

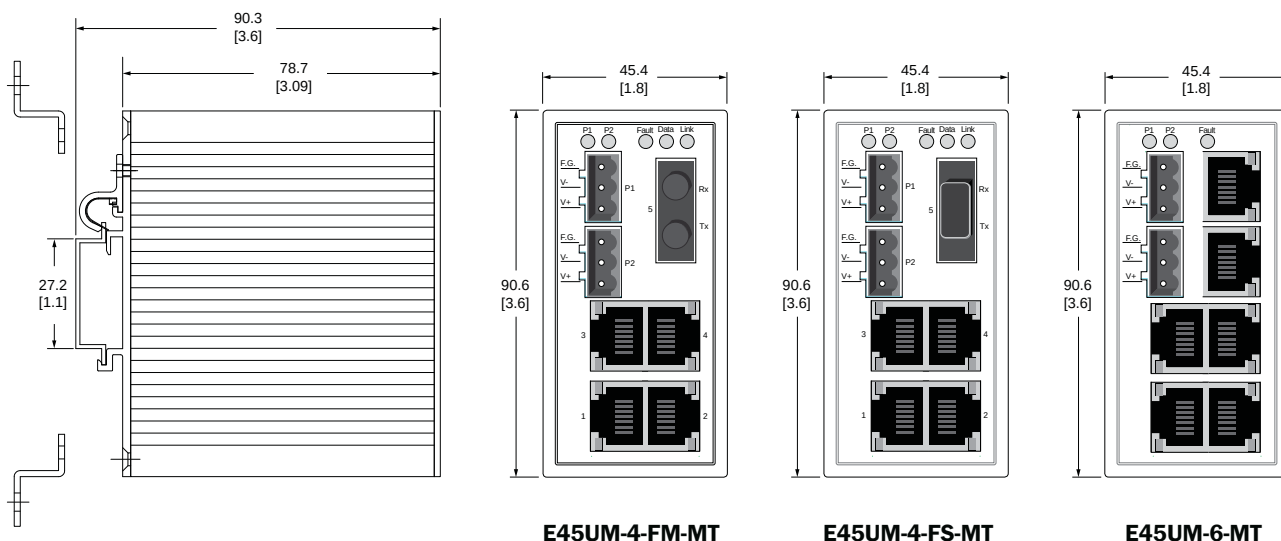
### ***Entry Level Switches***



Unmanaged Entry-Level Switches | DIN-Rail/Wall Mount | Aluminum Housing | IP30 Rating



| Unmanaged Fast Ethernet Switches |                   |                            |                       |
|----------------------------------|-------------------|----------------------------|-----------------------|
| Part Number<br>[MFG #]           | 10/100 RJ45 Ports | Fiber Ports                | Features              |
| E45UM-4-FM-MT<br>[EH2305-1FM]    | 4                 | 1 Multi-Mode<br>Max 2 Km   | Redundant Power Input |
| E45UM-4-FS-MT<br>[EH2305-1FS]    | 4                 | 1 Single-Mode<br>Max 20 Km |                       |
| E45UM-6-MT<br>[EH2306]           | 6                 | N/A                        |                       |



### Feature Highlights:

- 10/100BaseT(X) (RJ45), 100BaseFX (SC/ST connector)
- Broadcast storm protection
- Support IEEE 802.3/ 802.3u/ 802.3x
- 10/100M, Full/Half-Duplex, MDI/MDI-X auto-detection
- Local area transmit distance of 2 Km with Multi-mode Fiber connections
- Long-haul transmit distance of 15 Km with Single-mode Fiber connections





# Industrial Networking Solutions

## Specifications & Approvals



Unmanaged Entry-Level Switches | DIN-Rail/Wall Mount | Aluminum Housing | IP30 Rating

| Ethernet                  |                                |                                        | Regulatory Approvals |                                    |                                |                                                                                                    |
|---------------------------|--------------------------------|----------------------------------------|----------------------|------------------------------------|--------------------------------|----------------------------------------------------------------------------------------------------|
| Transmission Rate         |                                | 10/100Mbps                             |                      | Safety                             |                                | UL60950-1,CSA C22.2 No.60950-1-03                                                                  |
| Total Port                |                                | 5 / 6                                  |                      | FCC(EMI)                           |                                | FCC 47 CFR Part15, Subpart B, Class A<br>ICES-003, Class A<br>ANSI C63.4-2003                      |
| 10/100Mbps                |                                | 5 / 6                                  |                      |                                    |                                |                                                                                                    |
| Connector                 | E45UM-4-FM-MT<br>E45UM-4-FS-MT | RJ-45 x 4 + Fs/Fm x 1                  |                      | CE(EMI)                            | E45UM-4-FM-MT<br>E45UM-4-FS-MT | EN55032:2012+AC:2013, Class A<br>EN 61000-3-2:2014, Class A<br>EN 61000-3-3: 2013                  |
|                           | E45UM-6-MT                     | RJ-45 x 6                              |                      |                                    | E45UM-6-MT                     | EN 55022:1988+A1:2000+A2:2003, Class A<br>EN 61000-3-2:2000, Class A<br>EN 61000-3-3: 1995+A1:2001 |
| Auto MDI/MDI-X            |                                | Yes                                    |                      |                                    |                                |                                                                                                    |
| Power Management          |                                |                                        |                      |                                    |                                |                                                                                                    |
| Input                     |                                | DC 9 ~ 30V                             |                      |                                    |                                |                                                                                                    |
| Connector                 |                                | Dual 3 pin 5.08mm pitch Terminal block |                      |                                    |                                |                                                                                                    |
| Consumption               |                                | 5.4Watts Max                           |                      |                                    |                                |                                                                                                    |
| Environmental Limits      |                                |                                        |                      |                                    |                                |                                                                                                    |
| Operating Temperature     |                                | -10℃ ~ 70℃ ( 14°F ~ 158°F )            |                      |                                    |                                |                                                                                                    |
| Storage Temperature       |                                | -40℃ ~ 85℃ ( -40°F ~ 185°F )           |                      |                                    |                                |                                                                                                    |
| Ambient Relative Humidity |                                | 5%~95% non-condensing                  |                      |                                    |                                |                                                                                                    |
|                           |                                |                                        |                      | Shock                              |                                | IEC 60068-2-27                                                                                     |
|                           |                                |                                        |                      | Free Fall                          |                                | IEC 60068-2-32                                                                                     |
|                           |                                |                                        |                      | Vibration                          |                                | IEC 60068-2-6                                                                                      |
|                           |                                |                                        |                      | RoHS                               |                                | Lead(Pb) Free                                                                                      |
| MTBF                      |                                | E45UM-4-FM-MT<br>E45UM-4-FS-MT         |                      | 471160 hrs(25℃) / 53.79 years(25℃) |                                |                                                                                                    |
|                           |                                | E45UM-6-MT                             |                      | 455736 hrs(25℃) / 52.02 years(25℃) |                                |                                                                                                    |
| Warranty                  |                                |                                        |                      | 5 years                            |                                |                                                                                                    |



# Industrial Networking Solutions

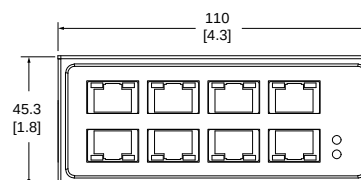
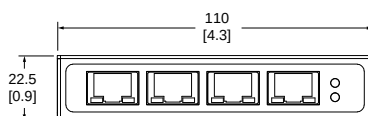
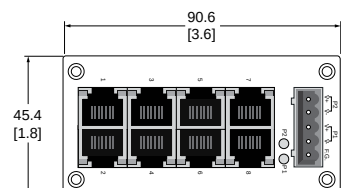
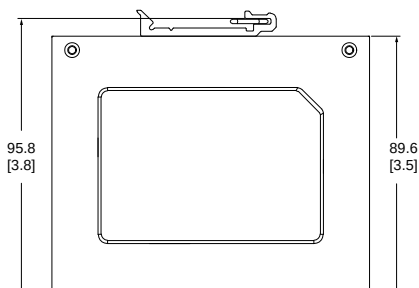
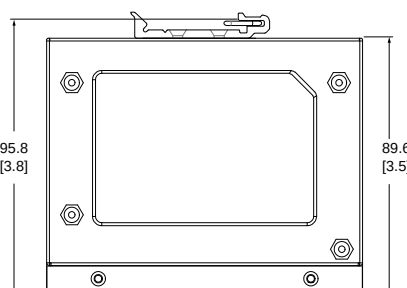
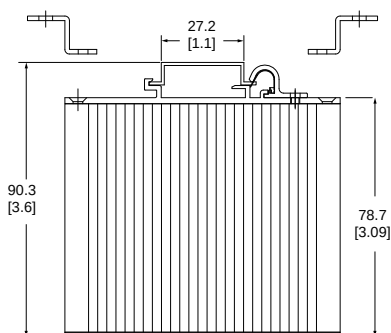
## Entry Level Switches



Unmanaged Entry-Level Switches | DIN-Rail/Wall Mount | Aluminum Housing | IP30 Rating



| Unmanaged Fast Ethernet Switches |                   |                                                                                              |
|----------------------------------|-------------------|----------------------------------------------------------------------------------------------|
| Part Number<br>[MFG #]           | 10/100 RJ45 Ports | Features                                                                                     |
| <b>E45UM-8-MT</b><br>[EH2308]    | 8                 | Redundant Power Input                                                                        |
| <b>E45PNUM-4</b><br>[EH2304-PR]  | 4                 | Redundant Power Input<br>Profinet & Ethernet/IP Packet Prioritization<br>Profinet Connectors |
| <b>E45PNUM-8</b><br>[EH2308-PR]  | 8                 | Redundant Power Input<br>Profinet & Ethernet/IP Packet Prioritization<br>Profinet Connectors |



**E45UM-8-MT**

**E45PNUM-4**

**E45PNUM-8**

### Feature Highlights:

- 10/100BaseT(X) (RJ45)
- Broadcast storm protection
- Support IEEE 802.3/ 802.3u/ 802.3x
- 10/100M, Full/Half-Duplex, MDI/MDI-X auto-detection



# Industrial Networking Solutions

## Specifications & Approvals



Unmanaged Entry-Level Switches | DIN-Rail/Wall Mount | Aluminum Housing | IP30 Rating

| Technology                  |            |                                                                                             |
|-----------------------------|------------|---------------------------------------------------------------------------------------------|
| Standards                   |            | IEEE802.3, 802.3u, 802.3x                                                                   |
| Processing Type             |            | Store and Forward                                                                           |
| Flow Control                |            | IEEE802.3x flow control, backpressure flow control                                          |
| Interface                   |            |                                                                                             |
| RJ-45 Ports                 |            | 10/100BaseT(X) auto negotiation speed, Full/Half-duplex mode, and auto MDI/MDI-X connection |
| LED Indicators              |            | Power, 10/100M                                                                              |
| Power Management            |            |                                                                                             |
| Input                       |            | 9~48 VDC, Dual inputs                                                                       |
| Consumption                 | E45UM-8-MT | 4.0 Watts Max                                                                               |
|                             | E45PNUM-4  | 4.0 Watts Max                                                                               |
|                             | E45PNUM-8  | 6.4 Watts Max                                                                               |
| Reverse Polarity Protection |            | Present                                                                                     |
| Environmental Limits        |            |                                                                                             |
| Operating Temperature       |            | -10°C ~ 70°C ( 14°F ~ 158°F )                                                               |
| Storage Temperature         |            | -40°C ~ 85°C ( -40°F ~ 185°F )                                                              |
| Ambient Relative Humidity   |            | 5%~95% non-condensing                                                                       |

| Regulatory Approvals |                        |                                                                                                                                                                                                                                 |
|----------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety               |                        | UL60950-1 2nd Ed. / CSA C22.2 No.60950-1-07 2nd Ed.                                                                                                                                                                             |
| FCC(EMI)             |                        | FCC 47 CFR Part15, Subpart B, Class A                                                                                                                                                                                           |
| CE(EMI)              | E45UM-8-MT             | European Standard EN 55022:2006/ A1:2007 Class A<br>EN 61000-3-2:2006<br>EN 61000-3-3: 1995/A1:2001/A2 :2005                                                                                                                    |
|                      | E45PNUM-4<br>E45PNUM-8 | European Standard EN 55022:2010                                                                                                                                                                                                 |
| CE(EMS)              | E45UM-8-MT             | EN 55024:1998/A1:2001/A2:2003 (IEC 61000-4-2:1995/A2:2000)<br>IEC 61000-4-3:2002<br>IEC 61000-4-4:2004<br>IEC 61000-4-5:1995/A1:2000<br>IEC 61000-4-6:1996/A1:2000<br>IEC 61000-4-8:1993/A1:2000<br>IEC 61000-4-11:1994/A1:2000 |
|                      | E45PNUM-4<br>E45PNUM-8 | EN 55024: 2010<br>IEC 61000-4-2: 2008<br>IEC 61000-4-3: 2010<br>IEC 61000-4-4: 2012<br>IEC 61000-4-5: 2005<br>IEC 61000-4-6: 2008<br>IEC 61000-4-8: 2009<br>IEC 61000-4-11: 2004                                                |
| Shock                |                        | IEC 60068-2-27                                                                                                                                                                                                                  |
| Drop                 |                        | ISTA Test Procedure 2A                                                                                                                                                                                                          |
| Vibration            |                        | IEC 60068-2-64                                                                                                                                                                                                                  |
| RoHS                 |                        | Lead(Pb) Free                                                                                                                                                                                                                   |
| MTBF                 | E45UM-8-MT             | 568862 hrs(25°C) / 64.94 years(25°C)                                                                                                                                                                                            |
|                      | E45PNUM-4              | EH2304-PR 673300 hrs/ 76.86 years                                                                                                                                                                                               |
|                      | E45PNUM-8              | EH2308-PR 515600 hrs/ 58.86 years                                                                                                                                                                                               |
| Warranty             |                        | 5 years                                                                                                                                                                                                                         |





# Industrial Networking Solutions

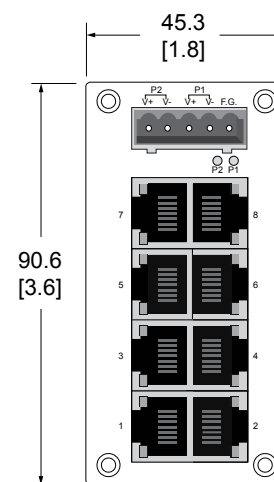
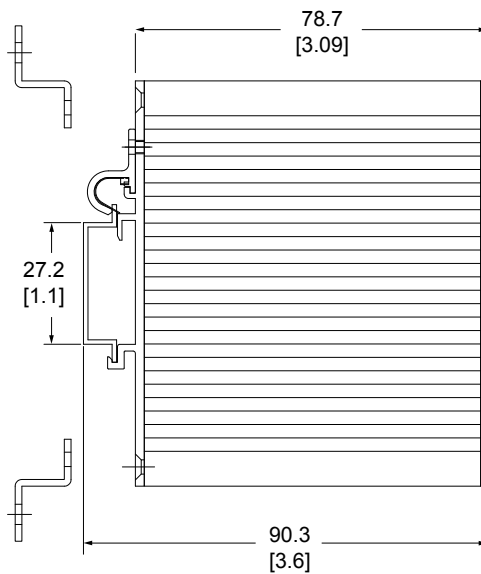
## Entry Level Switches



Unmanaged Gigabit Switch | DIN-Rail/Wall Mount | Plastic Housing | IP30 Rating



| Unmanaged Gigabit Ethernet Switches |                           |                                                                                              |
|-------------------------------------|---------------------------|----------------------------------------------------------------------------------------------|
| Part Number<br>[MFG #]              | 10/100/1000<br>RJ45 Ports | Features                                                                                     |
| <b>E45UM-8M</b><br>[EHG2308]        | 8                         | Redundant Power Input<br>Profinet & Ethernet/IP Packet Prioritization<br>Profinet Connectors |



### Feature Highlights:

- 10/100/1000 BaseT(X) (RJ45)
- Broadcast storm protection
- Support IEEE 802.3/ 802.3u/ 802.3x
- 10/100/1000M, Full/Half-Duplex, MDI/MDI-X auto-detection



# Industrial Networking Solutions

## Specifications & Approvals



Unmanaged Gigabit Switch | DIN-Rail/Wall Mount | Plastic Housing | IP30 Rating

| Technology                  |                                                                                                         |
|-----------------------------|---------------------------------------------------------------------------------------------------------|
| Standards                   | IEEE802.3, 802.3u, 802.3ab, 802.3x                                                                      |
| Processing Type             | Store and Forward                                                                                       |
| Flow Control                | IEEE802.3x full duplex,<br>Back pressure flow control                                                   |
| Jumbo Frame Size            | Up to 9216 byte                                                                                         |
| Interface                   |                                                                                                         |
| RJ-45 Ports                 | 10/100/1000BaseT(X) auto negotiation speed<br>10/100/1000M Full/Half-Duplex<br>MDI/MDI-X auto-detection |
| LED Indicators              | Power, LAN(10/100/1000M)                                                                                |
| Power Management            |                                                                                                         |
| Input                       | 9-48 VDC(0.45A max), Dual inputs                                                                        |
| Consumption                 | 4.05 Watts Max                                                                                          |
| Connector                   | Removable 5-pin Terminal Block for power input                                                          |
| Reverse Polarity Protection | Present                                                                                                 |
| Environmental Limits        |                                                                                                         |
| Operating Temperature       | -10°C ~ 70°C ( 14°F ~ 158°F )                                                                           |
| Storage Temperature         | -40°C ~ 85°C ( -40°F ~ 185°F )                                                                          |
| Ambient Relative Humidity   | 5%~95% non-condensing                                                                                   |

| Regulatory Approvals |                                                                                                                                                                                 |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety               | UL60950-1 2nd Ed. /CSA C22.2 No.60950-1-07 2nd Ed.                                                                                                                              |
| FCC(EMI)             | FCC Part 15, Subpart B, Class A                                                                                                                                                 |
| CE(EMI)              | European Standard EN55032:2012+AC:2013 Class A.<br>EN61000-3-2:2014, EN 61000-3-3:2013                                                                                          |
| CE(EMS)              | EN55024:2010(IEC 61000-4-2:2008)<br>IEC61000-4-3:2006/A1:2007/A2:2010, IEC 61000-4-4:2012<br>IEC 61000-4-5:2014, IEC 61000-4-6:2013<br>IEC 61000-4-8 :2009, IEC 61000-4-11:2004 |
| Shock                | IEC 60068-2-27                                                                                                                                                                  |
| Drop                 | IEC 60068-2-32(ISTA Test Procedure 2A)                                                                                                                                          |
| Vibration            | IEC 60068-2-64                                                                                                                                                                  |
| RoHS                 | Lead(Pb) Free                                                                                                                                                                   |
| MTBF                 | 472359.98 hrs(25°C) / 53.92 years(25°C)                                                                                                                                         |
| Warranty             | 5 years                                                                                                                                                                         |



# Industrial Networking Solutions

## Entry Level Switches

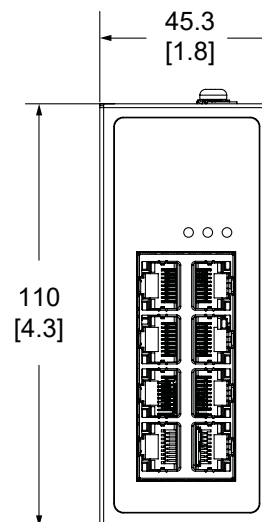
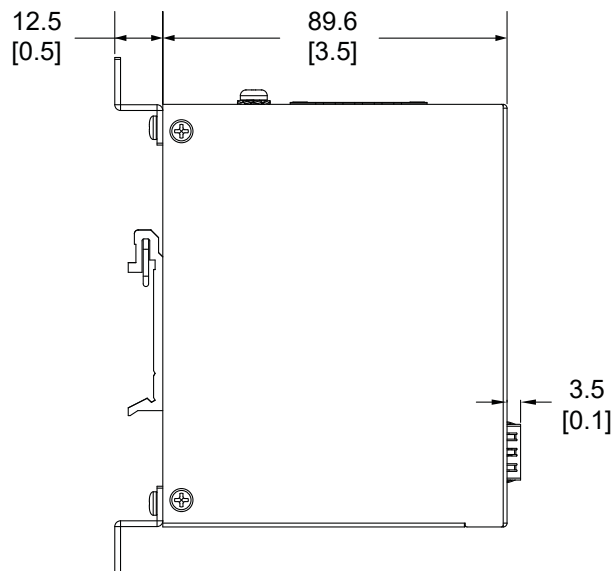


Light-Managed Gigabit Switches | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

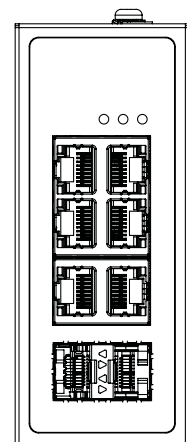


| 8-Port Industrial Smart Secure Lite-Managed Gigabit Switches |                        |                |                                              |
|--------------------------------------------------------------|------------------------|----------------|----------------------------------------------|
| Part Number                                                  | 10/100/1000 RJ45 Ports | 1000 SFP Slots | Features                                     |
| EHG2408                                                      | 8*                     | N/A            | Profinet & Ethernet/IP Packet Prioritization |
| EHG2408-2SFP                                                 | 6                      | 2              |                                              |

\* The 2 uplink ports out of the 8 ports available is MACsec capable.



EHG2408



EHG2408-2SFP

### Feature Highlights:

- 6 X 10/100/1000 BASE-T(X) RJ45 ports
- 2 x 10/100/1000 BASE-T(X) RJ45 ports or 2 x 100/1000 BASE-X SFP slots with MACsec encryption support
- 99% of throughput guaranteed no additional latency
- Ideal for a plug-and-play local area network protection
- Embedded MACsec Key Agreement offers high-protection with no configuration
- IP30 aluminum housing, DIN-Rail or Wall mount
- Prioritizes Profinet Packets according to 802.1q
- Operational between -20°C~70°C



# Industrial Networking Solutions

## Specifications & Approvals



Light-Managed Gigabit Switches | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Switch Properties          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Processing Scheme          | Store-and-forward                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                  |
| MAC Address Table          | 8K                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |
| Packet Buffer Size         | 2 Mbit                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |
| Jumbo Frame                | 10 kByte                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |
| Ethernet                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |
| Standards                  | IEEE 802.3 for 10 BaseT<br>IEEE 802.3u for 100 Base T(X)<br>IEEE 802.3u for 100 Base F(X)<br>IEEE 802.3ab for 1000 Base T(X)<br>IEEE 802.3ab for 1000 Base T<br>IEEE 802.3z for 1000 Base-X<br>IEEE 802.3x for Flow Control,<br>back pressure flow control<br>IEEE 802.3az for Energy Efficient Ethernet<br>IEEE 802.1q for VLAN tagging<br>(Prioritization of Profinet Packets)<br>IEEE 802.1p for CoS (Prioritization of Profinet Packets)<br>IEEE 802.1ae for MACsec |                  |
| Flow Control               | Back pressure and<br>pause frame-based flow control schemes                                                                                                                                                                                                                                                                                                                                                                                                             |                  |
| Transmission Rate          | RJ45                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 10/100/1000 Mbps |
|                            | SFP                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 100/1000 Mbps    |
| Auto MDI/MDI-X             | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |
| Power Management           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |
| Input Voltage              | 9~48 VDC, dual power input                                                                                                                                                                                                                                                                                                                                                                                                                                              |                  |
| Input Current (System)     | 0.64 A Max                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                  |
| Power Consumption (System) | 5.8 W Max                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |
| Power input                | 5-pin Terminal block                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                  |
| LED                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |
| Indication                 | P1, P2, Fault                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |

| Technology                |                                                                                   |                                                              |                                                                                            |                  |
|---------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------|
| Operating Temperature     | -20°C~70°C (-4°F~158°F)                                                           |                                                              |                                                                                            |                  |
| Storage Temperature       | -40°C~85°C (-40°F~185°F)                                                          |                                                              |                                                                                            |                  |
| Ambient Relative Humidity | 5%~95%, 55°C (Non-condensing)                                                     |                                                              |                                                                                            |                  |
| Regulatory Approvals      |                                                                                   |                                                              |                                                                                            |                  |
| Safety                    | EN60950-1:2006, UL/IEC(CB) 60950-1:2006                                           |                                                              |                                                                                            |                  |
| EMC                       | FCC Part 15, Subpart B, Class A<br>EN 55032, EN 55024, EN 61000-6-2, EN 61000-6-4 |                                                              |                                                                                            |                  |
| EMS Test                  | Item                                                                              |                                                              | Value                                                                                      | Level            |
| IEC 61000-4-2             | ESD                                                                               | Contact Discharge<br>Air Discharge                           | ±8KV<br>±15KV                                                                              | 4<br>4           |
| IEC 61000-4-3             | RS                                                                                | 80-1000MHz<br>1.4-2.0GHz<br>2.0-2.7GHz                       | 10(V/m)<br>3(V/m)<br>10(V/m)                                                               | 3                |
| IEC 61000-4-4             | EFT                                                                               | AC Power Port<br>DC Power Port<br>Signal Port                | ±2.0 KV<br>±2.0 KV<br>±1.0 KV                                                              | 3<br>3<br>3      |
| IEC 61000-4-5             | Surge                                                                             | DC Power Port<br>DC Power Port<br>Signal Port<br>Signal Port | Line-to-Line ±1.0KV<br>Line-to-Earth ±2.0KV<br>Line-to-Line ±1.0KV<br>Line-to-Earth ±2.0KV | 3<br>3<br>3<br>3 |
| IEC 61000-4-6             | CS                                                                                | Conducted (Enclosure)                                        | 10 Vrms                                                                                    | 3                |
| IEC 61000-4-8             | PFMF                                                                              | Enclosure                                                    | 10A/m                                                                                      | 3                |
| IEC 61000-4-11            | DIP                                                                               | AC Power Port                                                | -                                                                                          | -                |
| Shock                     | MIL-STD-810F Method 516.5                                                         |                                                              |                                                                                            |                  |
| Drop                      | MIL-STD-810F Method 516.5                                                         |                                                              |                                                                                            |                  |
| Vibration                 | MIL-STD-810F Method 514.5 C-1 & C-2                                               |                                                              |                                                                                            |                  |
| RoHS                      | Yes                                                                               |                                                              |                                                                                            |                  |
| Warranty                  | 5 years                                                                           |                                                              |                                                                                            |                  |





# Industrial Networking Solutions

## Entry Level Switches



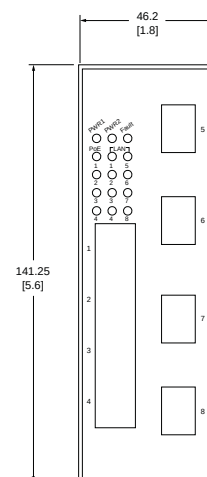
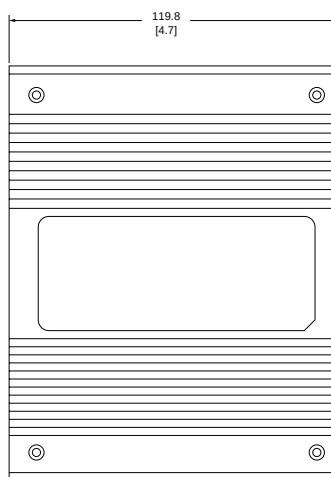
Unmanaged Gigabit PoE Switches | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



| Unmanaged Gigabit Switches with PoE       |                           |                |               |                       |
|-------------------------------------------|---------------------------|----------------|---------------|-----------------------|
| Part Number<br>[MFG #]                    | 10/100/1000<br>RJ45 Ports | 1000 SFP Slots | Max PoE Ports | Features              |
| E45UM-8M-4POE<br>[EHG6308-4POE]           | 8                         | N/A            | 4             | Redundant Power Input |
| E45UM-8M-4POE-4SFP<br>[EHG6308-4POE-4SFP] | 4                         | 4              | 4             |                       |

### Feature Highlights:

- 8-Port 10/100/1000Mbps Gigabit Ethernet ports
- Supports P.S.E. based on IEEE802.3af/IEEE 802.3at
- Supports PoE Power up to 30 Watts for each PoE port
- Supports auto-negotiation and auto-MDI/MDI-X
- Supports store and forward transmission
- Supports flow control
- IP-30 metal case
- DIN-Rail and wall mounting (Optional)





# Industrial Networking Solutions

## Specifications & Approvals



Unmanaged Gigabit PoE Switches | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Technology                  |                                                                                                                                                                                                             |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards                   | IEEE 802.3 for 10BaseT,<br>IEEE 802.3u for 100BaseT(X)<br>IEEE 802.3ab for 1000BaseT(X),<br>IEEE 802.3at/af for Power over Ethernet Technology<br>IEEE 802.3x for Flow Control<br>IEEE 802.3z for 1000BaseX |
| MAC Address Table           | 8K                                                                                                                                                                                                          |
| Switching Latency           | 2.3us                                                                                                                                                                                                       |
| Processing Type             | Store and Forward                                                                                                                                                                                           |
| Flow Control                | IEEE802.3x full duplex,<br>Back pressure flow control                                                                                                                                                       |
| Interface                   |                                                                                                                                                                                                             |
| RJ-45 Ports                 | 10/100/1000baseT(X),<br>Auto MDI/MDI-X(Support Mode A)                                                                                                                                                      |
| Fiber Ports                 | 1000Base SFP slot                                                                                                                                                                                           |
| LED Indicators              | LAN (Steady green-Link up/<br>Blinking-data transmitting & receiving),<br>PoE(Yellow), PWR1(Green), PWR2(Green), Fault(Red)                                                                                 |
| Power Management            |                                                                                                                                                                                                             |
| Dual Input                  | 48 ~ 57 VDC (IEEE802.3af :48VDC input /<br>IEEE802.3at :50~57VDC input)                                                                                                                                     |
| Dual Input Current          | Max. 3.1 A @ 55VDC<br>(supports up to 4 ports at 30 W per PoE port)                                                                                                                                         |
| Overload Current Protection | Present                                                                                                                                                                                                     |
| Consumption                 | 148.5W (with PoE full function)                                                                                                                                                                             |
| Connection                  | Lockable 7-pin terminal blocks for power input                                                                                                                                                              |
| Reverse Polarity Protection | Present                                                                                                                                                                                                     |
| Environmental Limits        |                                                                                                                                                                                                             |
| Operating Temperature       | -10°C ~ 70°C ( 14°F ~ 158°F )                                                                                                                                                                               |
| Storage Temperature         | -40°C ~ 85°C ( -40°F ~ 185°F )                                                                                                                                                                              |
| Ambient Relative Humidity   | 5%~95% (non-condensing)                                                                                                                                                                                     |

| Regulatory Approvals |                                                                                                                                                                                                |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety               | UL 60950-1                                                                                                                                                                                     |
| FCC(EMI)             | FCC Part 15 class A, CISPR(EN55032) class A                                                                                                                                                    |
| CE(EMS)              | EN61000-4-2 (ESD), level 3<br>EN61000-4-3 (RS), level 3<br>EN61000-4-4 (EFT),level 3<br>EN61000-4-5 (Surge), level 3<br>EN61000-4-6 (CS), level 2<br>EN61000-4-8 (PFMF)<br>EN61000-4-11 (Dips) |
| Shock                | MIL-STD-810F Method 516.5                                                                                                                                                                      |
| Drop                 | MIL-STD-810F Method 516.5                                                                                                                                                                      |
| Vibration            | MIL-STD-810F Method 514.5 C-1 & C-2                                                                                                                                                            |
| RoHS                 | Lead(Pb) Free                                                                                                                                                                                  |
| Warranty             | 5 years                                                                                                                                                                                        |



# Industrial Networking Solutions

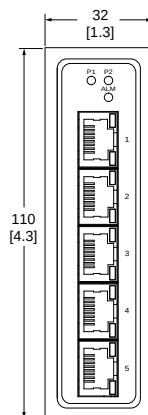
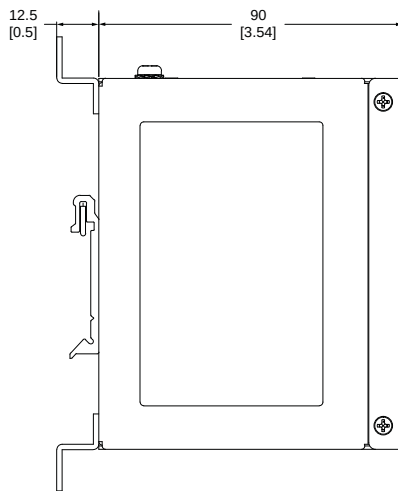
Harsh Environments Switches



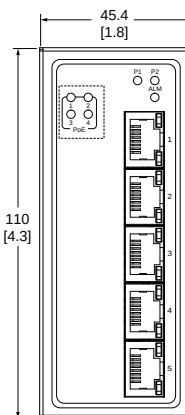
Unmanaged Harsh Environments Switches | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



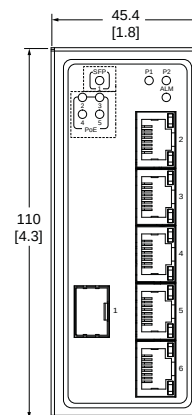
| Unmanaged Gigabit Switches                   |                           |                   |                  |                     |                                                                                                                                                  |
|----------------------------------------------|---------------------------|-------------------|------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Part Number<br>[MFG #]                       | 10/100/1000<br>RJ45 Ports | 1000 SFP<br>Slots | Max PoE<br>Ports | Housing<br>Material | Features                                                                                                                                         |
| E45UM-5M-EX<br>[EHG7305]                     | 5                         | N/A               | N/A              | SECC                | Atex Zone 2 Certified<br>Industrial EMC Protection<br>MIL-STD Ruggedized<br>Redundant Power Input<br>Relay Output<br>Railway Certified (EN50155) |
| E45UM-6M-1SFP-EX<br>[EHG7306-1SFP]           | 5                         | 1                 | N/A              | Aluminum            |                                                                                                                                                  |
| E45UM-7M-2SFP-EX<br>[EHG7307-2SFP]           | 5                         | 2                 | N/A              |                     |                                                                                                                                                  |
| Unmanaged Gigabit Switches with PoE          |                           |                   |                  |                     |                                                                                                                                                  |
| E45UM-5M-4POE-EX<br>[EHG7305-4POE]           | 5                         | N/A               | 4                | Aluminum            | Atex Zone 2 Certified<br>Industrial EMC Protection<br>MIL-STD Ruggedized<br>Redundant Power Input<br>Relay Output<br>Railway Certified (EN50155) |
| E45UM-6M-4POE-1SFP-EX<br>[EHG7306-4POE-1SFP] | 5                         | 1                 | 4                |                     |                                                                                                                                                  |
| E45UM-7M-4POE-2SFP-EX<br>[EHG7307-4POE-2SFP] | 5                         | 2                 | 4                |                     |                                                                                                                                                  |



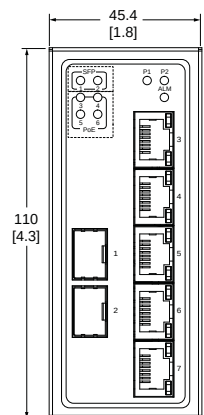
E45UM-5M-EX



E45UM-5M-4POE-EX



E45UM-6M-1SFP-EX  
E45UM-6M-4POE-1SFP-EX



E45UM-7M-2SFP-EX  
E45UM-7M-4POE-2SFP-EX

## Feature Highlights:

- Up to 5 10/100/1000 BASE-T(X) ports and 2 1000 BASE-X SFP ports
- Up to 4 802.3af or 802.3at compliant PoE ports
- Support 10K Jumbo frames
- Supports 802.3az Energy Efficient Ethernet for power savings
- Works from -40°C~70°C
- Failed power input alarm contact
- Certified by UL 61010-2-201 and UL C1D2/ATEX Zone 2



# Industrial Networking Solutions

## Specifications & Approvals



Unmanaged Harsh Environments Switches | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Switch Properties         |                                                                                                                                                                                                                                                                                                                                   |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Processing Scheme         | Store-and-Forward                                                                                                                                                                                                                                                                                                                 |
| MAC Address Table         | 8096                                                                                                                                                                                                                                                                                                                              |
| Jumbo Frame               | 10K Bytes                                                                                                                                                                                                                                                                                                                         |
| Packet Buffer             | 1 Mbits                                                                                                                                                                                                                                                                                                                           |
| Ethernet                  |                                                                                                                                                                                                                                                                                                                                   |
| Compliance                | IEEE802.3 for 10BASE-T<br>IEEE802.3u for 100BASE-T(X) and 100BASE-FX<br>IEEE 802.3ab for 1000BASE-T<br>IEEE 802.3z for 1000BASE-X<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1p for Class of Service<br>IEEE 802.3x Flow Control<br>IEEE 802.3af / 802.3at for Power-over-Ethernet<br>IEEE 802.3az for Energy Efficient Ethernet |
| Flow Control              | Back pressure and<br>pause frame-based flow control schemes                                                                                                                                                                                                                                                                       |
| LLDP                      | Forwarding                                                                                                                                                                                                                                                                                                                        |
| Transmission Rate         | 10/100/1000 Mbps<br>(the second SFP port is 1000 Mbps only)                                                                                                                                                                                                                                                                       |
| Auto MDI/MDI-X            | Yes                                                                                                                                                                                                                                                                                                                               |
| Environmental Limits      |                                                                                                                                                                                                                                                                                                                                   |
| Operating Temperature     | -40°C ~ 70°C ( -40°F ~ 158°F )                                                                                                                                                                                                                                                                                                    |
| Storage Temperature       | -40°C ~ 85°C ( -40°F ~ 185°F )                                                                                                                                                                                                                                                                                                    |
| Ambient Relative Humidity | 5%~95%, 55°C (non-condensing)                                                                                                                                                                                                                                                                                                     |

| Regulatory Approvals |                                                      |                   |                     |       |
|----------------------|------------------------------------------------------|-------------------|---------------------|-------|
| Safety               | UL 61010-2-201, UL C1D2/ATEX Zone 2                  |                   |                     |       |
| EMC                  | EN 55032<br>EN 61000-6-4<br>EN 55024<br>EN 61000-6-2 |                   |                     |       |
| EMS Test             | Item                                                 |                   | Value               | Level |
| IEC 61000-4-2        | ESD                                                  | Contact Discharge | ±8KV                | 4     |
|                      |                                                      | Air Discharge     | ±15KV               | 4     |
| IEC 61000-4-3        | RS                                                   | 80-1000MHz        | 10(V/m)             | 3     |
|                      |                                                      | 1.4-2.0GHz        | 3 (V/m)             |       |
| IEC 61000-4-4        | EFT                                                  | AC Power Port     | ±2.0KV              | 3     |
|                      |                                                      | DC Power Port     | ±2.0KV              | 3     |
| IEC 61000-4-5        | Surge                                                | Signal Port       | ±2.0KV              | 4     |
|                      |                                                      | AC Power Port     | Line-to Line±1.0KV  | 3     |
| IEC 61000-4-6        | CS                                                   | AC Power Port     | Line-to Earth±2.0KV | 3     |
|                      |                                                      | DC Power Port     | Line-to Line±1.0KV  | 3     |
| IEC 61000-4-8        | PFMF                                                 | DC Power Port     | Line-to Earth±2.0KV | 3     |
|                      |                                                      | Signal Port       | Line-to Earth±2.0KV | 3     |
| IEC 61000-4-6        | CS                                                   | Conducted         | 10 Vrms             | 3     |
| IEC 61000-4-8        | PFMF                                                 | Enclosure         | 10 V/m              | 3     |
| IEC 61000-4-11       | DIP                                                  | AC Power Port     | -                   | -     |
| Shock                | MIL-STD-810F Method 516.5                            |                   |                     |       |
| Drop                 | MIL-STD-810F Method 516.5                            |                   |                     |       |
| Vibration            | MIL-STD-810F Method 514.5 C-1 & C-2                  |                   |                     |       |
| RoHS                 | Yes                                                  |                   |                     |       |
| Warranty             | 5 years                                              |                   |                     |       |

| Power Management                  |                |                  |                  |                       |                  |                       |
|-----------------------------------|----------------|------------------|------------------|-----------------------|------------------|-----------------------|
| Part Number                       | E45UM-5M-EX    | E45UM-5M-4POE-EX | E45UM-6M-1SFP-EX | E45UM-6M-4POE-1SFP-EX | E45UM-7M-2SFP-EX | E45UM-7M-4POE-2SFP-EX |
| Input Voltage                     | 12-52 VDC*     |                  |                  |                       |                  |                       |
| Input Current (System)            | 0.5A @ 12 V    |                  | 0.6A @ 12V       |                       |                  |                       |
| Max. Power Consumption (System)   | 6 W            |                  | 7.2 W            |                       |                  |                       |
| Input Current (with PoE)          | -              | 2.6A @ 51 V      | -                | 2.6A @ 51 V           | -                | 2.6A @ 51 V           |
| Max. Power Consumption (with PoE) | -              | 130 W            | -                | 130 W                 | -                | 130 W                 |
| Relay Output                      | 24 V / 0.5A    |                  |                  |                       |                  |                       |
| Connector                         | Terminal Block |                  |                  |                       |                  |                       |

\* 802.3af PoE output starts from 43 VDC input and 802.3at output starts from 51 VDC input.



# Industrial Networking Solutions

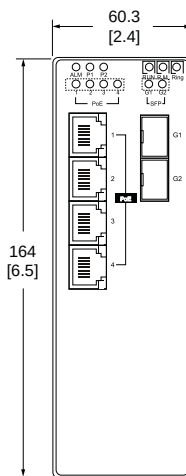
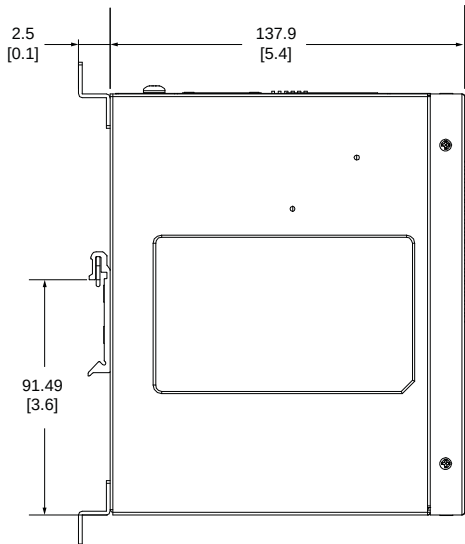
Harsh Environments Switches



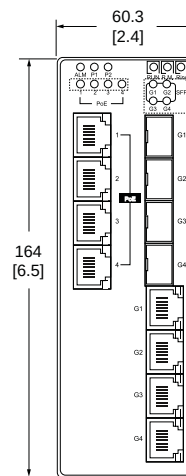
Layer-2 Managed DIN-Rail Switches | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



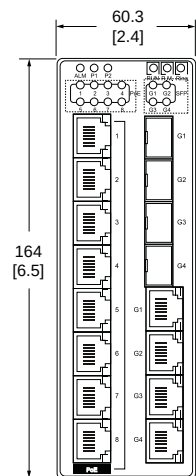
| Industrial Managed Fast-Ethernet Switches          |                      |                           |                          |                  |                                                                                                                                                                                                           |
|----------------------------------------------------|----------------------|---------------------------|--------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Part Number<br>[MFG #]                             | 10/100<br>RJ45 Ports | 10/100/1000<br>RJ45 Ports | 10/100/1000<br>SFP Slots | Max PoE<br>Ports | Features                                                                                                                                                                                                  |
| E45PNMS-6-2SFP<br>[EH7506-2SFP]                    | 4                    | N/A                       | 2                        | N/A              | Industrial EMC Protection<br>Profinet & Ethernet/IP Ready<br>Profinet CC-B v2.33 Certified<br>IEEE1588 Precision Timing<br>Redundant Ring<br>Redundant Power Input<br>Relay Output<br>NEMA TS-2 Certified |
| E45PNMS-8-4M-4SFP<br>[EH7508-4G-4SFP]              | 4                    | (4)                       | (4)                      | N/A              |                                                                                                                                                                                                           |
| E45PNMS-12-4M-4SFP<br>[EH7512-4G-4SFP]             | 8                    | (4)                       | (4)                      | N/A              |                                                                                                                                                                                                           |
| Industrial Managed Fast-Ethernet Switches with PoE |                      |                           |                          |                  |                                                                                                                                                                                                           |
| E45PNMS-6-4POE-2SFP<br>[EH7506-4POE-2SFP]          | 4                    | N/A                       | 2                        | 4                | Industrial EMC Protection<br>Profinet & Ethernet/IP Ready<br>Profinet CC-B v2.33 Certified<br>IEEE1588 Precision Timing<br>Redundant Ring<br>Redundant Power Input<br>Relay Output<br>NEMA TS-2 Certified |
| E45PNMS-8-4POE-4M-4SFP<br>[EH7508-4G-4POE-4SFP]    | 4                    | (4)                       | (4)                      | 4                |                                                                                                                                                                                                           |
| E45PNMS-12-4POE-4M-4SFP<br>[EH7512-4G-4POE-4SFP]   | 8                    | (4)                       | (4)                      | 4                |                                                                                                                                                                                                           |
| E45PNMS-12-8POE-4M-4SFP<br>[EH7512-4G-8POE-4SFP]   | 8                    | (4)                       | (4)                      | 8                |                                                                                                                                                                                                           |



**E45PNMS-6-\*\***



**E45PNMS-8-\*\***



**E45PNMS-12-\*\***

## Feature Highlights:

- Up to 8 10/100 BASE-T(X) ports and 4 10/100/1000 BASE-T(X) Combo ports
- Up to 8 802.3af or 802.3at compliant PoE ports
- ERPS Ring (recovery time < 20ms @ 40 switches), STP/RSTP for network redundancy
- Remote management over Web browser, Telnet console, serial console, and Windows Utility





# Industrial Networking Solutions

## Specifications & Approvals



Layer-2 Managed DIN-Rail Switches | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Switch Properties              |                                                                                                                                                                                        |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Priority Queues                | 8                                                                                                                                                                                      |
| Max. Number of Available VLANs | 256                                                                                                                                                                                    |
| VLAN ID Range                  | VID 1 to 4094                                                                                                                                                                          |
| Static IGMP Groups             | 256                                                                                                                                                                                    |
| Dynamic IGMP Groups            | 256                                                                                                                                                                                    |
| MAC Table Size                 | 16K                                                                                                                                                                                    |
| Packet Buffer Size             | 12 Mbit                                                                                                                                                                                |
| Interface                      |                                                                                                                                                                                        |
| RJ45 Ports                     | 10/100/1000BASE-T(X) or 10/100 BASE-T(X) auto negotiation speed                                                                                                                        |
| Fiber Ports                    | 100BASE-FX / 1000BASE-X SFP slot                                                                                                                                                       |
| LED Indicators                 | PWR1, PWR2, Alarm, Run, Ring, Ring Master, RJ-45 Link/Speed, SFP Link, PoE                                                                                                             |
| Console                        | RS232 (RJ45 connector)                                                                                                                                                                 |
| Relay Output                   | 2 relay outputs with current carrying capacity of 2A @30VDC                                                                                                                            |
| DIP Switches                   | Ring Control                                                                                                                                                                           |
| Button                         | Reset Button                                                                                                                                                                           |
| Power Management               |                                                                                                                                                                                        |
| Input Voltage                  | 9-48 VDC or 18~30VAC for Non-PoE models<br>45-57 VDC for 802.3af mode<br>51-57 VDC for 802.3at mode                                                                                    |
| Input Current                  | Max. 1.5A @ 18VAC<br>Max. 2.0A @ 9VDC (without PD)<br>Max. 3.2A @ 45VDC (Support up to 8 ports at 15.4W per PoE port)<br>Max. 5.5A @ 51VDC (Support up to 8 ports at 30W per PoE port) |
| Connector                      | Removable 5-pin Terminal Block for power input                                                                                                                                         |
| Reverse Polarity Protection    | Present (DC only)                                                                                                                                                                      |
| Environmental Limits           |                                                                                                                                                                                        |
| Operating Temperature          | -20°C~70°C (-4°F~158°F)                                                                                                                                                                |
| Storage Temperature            | -40°C~85°C (-40°F~185°F)                                                                                                                                                               |
| Ambient Relative Humidity      | 5%~95% non-condensing                                                                                                                                                                  |

| Technology           |                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                 |                                                                                                                    |                       |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------|
| Standards            | IEEE802.3af / 802.3at for Power-over-Ethernet<br>IEEE802.3 for 10BASE-T<br>IEEE802.3u for 100BASE-T(X) and 100BASE-FX<br>IEEE802.3ab for 1000BASE-T(X)<br>IEEE802.3z for 1000BASE-X<br>IEEE802.3x for Flow Control<br>IEEE802.1D-2004 for Spanning Tree Protocol<br>IEEE802.1w for Rapid STP<br>IEEE802.1Q for VLAN Tagging<br>IEEE802.1p for Class of Service<br>IEEE8021X for Authentication<br>IEEE802.3ad for Port Trunk with LACP |                                                                                 |                                                                                                                    |                       |
| Protocols            | IGMPv1/v2, GVRP, SNMPv1/v2c/v3, ICMP, ARP, Telnet, DHCP Client, TFTP, SNMP, SMTP, RMON, HTTP, Syslog, PROFINET, Modbus/TCP/ Ethernet/IP, LLDP,IEEE 1588 PTP V2, IPv4, NTP Client, EAP, RADIUS                                                                                                                                                                                                                                          |                                                                                 |                                                                                                                    |                       |
| MIB                  | 802.1x MIB II, IF-MIB, SNMPv2 MIB, BRIDGE-MIB, RMON MIB Group 1,2,3,9                                                                                                                                                                                                                                                                                                                                                                  |                                                                                 |                                                                                                                    |                       |
| Flow Control         | IEEE802.3x for Flow Control, back pressure flow control                                                                                                                                                                                                                                                                                                                                                                                |                                                                                 |                                                                                                                    |                       |
| Regulatory Approvals |                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                 |                                                                                                                    |                       |
| Safety               | UL60950-1 2nd Ed. /CSA C22.2 No.60950-1-07 2nd Ed. / EN60950-1 / CB                                                                                                                                                                                                                                                                                                                                                                    |                                                                                 |                                                                                                                    |                       |
| EMC                  | FCC Part 15, Subpart B, Class A / EN 61000-6-4:2007+A1:2011 / EN 61000-6-2:2005                                                                                                                                                                                                                                                                                                                                                        |                                                                                 |                                                                                                                    |                       |
| EMS Test             | Item                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                 | Value                                                                                                              | Level                 |
| IEC 61000-4-2        | ESD                                                                                                                                                                                                                                                                                                                                                                                                                                    | Contact Discharge<br>Air Discharge                                              | ±6KV<br>±8KV                                                                                                       | 3<br>3                |
| IEC 61000-4-3        | RS                                                                                                                                                                                                                                                                                                                                                                                                                                     | Radiated<br>(Enclosure)                                                         | 10 (V/m)                                                                                                           | 3                     |
| IEC 61000-4-4        | EFT                                                                                                                                                                                                                                                                                                                                                                                                                                    | AC Power Port<br>DC Power Port<br>Signal Port                                   | ±2.0 KV<br>±2.0 KV<br>±1.0 KV                                                                                      | 3<br>3<br>3           |
| IEC 61000-4-5        | Surge                                                                                                                                                                                                                                                                                                                                                                                                                                  | AC Power Port<br>AC Power Port<br>DC Power Port<br>DC Power Port<br>Signal Port | Line-to-Line ±1.0KV<br>Line-to-Earth ±2.0KV<br>Line-to-Line ±1.0KV<br>Line-to-Earth ±2.0KV<br>Line-to-Earth ±1.0KV | 3<br>3<br>3<br>3<br>3 |
| IEC 61000-4-6        | CS                                                                                                                                                                                                                                                                                                                                                                                                                                     | Conducted<br>(Enclosure)                                                        | 10 Vrms                                                                                                            | 3                     |
| IEC 61000-4-8        | PFMF                                                                                                                                                                                                                                                                                                                                                                                                                                   | Enclosure                                                                       | 30(A/m)                                                                                                            | 4                     |
| IEC 61000-4-11       | DIP                                                                                                                                                                                                                                                                                                                                                                                                                                    | AC Power Port                                                                   | -                                                                                                                  | -                     |
| Shock                | IEC 60068-2-27                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                 |                                                                                                                    |                       |
| Drop                 | IEC 60068-2-32                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                 |                                                                                                                    |                       |
| Vibration            | IEC 60068-2-64                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                 |                                                                                                                    |                       |
| RoHS                 | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                 |                                                                                                                    |                       |
| MTBF                 | 11 Years                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                 |                                                                                                                    |                       |
| Warranty             | 5 years                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                 |                                                                                                                    |                       |



# Industrial Networking Solutions

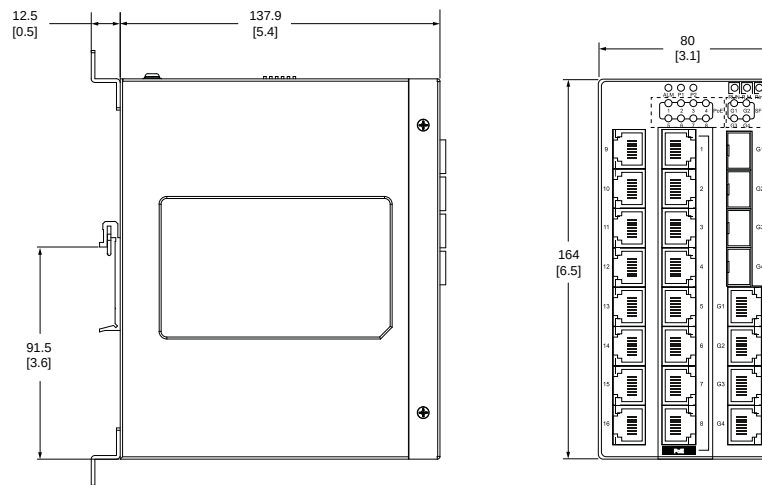
*Harsh Environments Switches*



Layer-2 Managed DIN-Rail Switches | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



| Industrial Managed Fast-Ethernet Switches          |                      |                           |                          |                  |                                                                                                                                                                                    |
|----------------------------------------------------|----------------------|---------------------------|--------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Part Number<br>[MFG #]                             | 10/100<br>RJ45 Ports | 10/100/1000<br>RJ45 Ports | 10/100/1000<br>SFP Slots | Max PoE<br>Ports | Features                                                                                                                                                                           |
| E45PNMS-20-4M-4SFP<br>[EH7520-4G-4SFP]             | 16                   | (4)                       | (4)                      | N/A              | Industrial EMC Protection<br>Profinet & Ethernet/IP Ready<br>IEEE1588 Precision Timing<br>Redundant Ring<br>Redundant Power Input<br>Relay Output<br>Profinet CC-B v2.33 Certified |
| Industrial Managed Fast-Ethernet Switches with PoE |                      |                           |                          |                  |                                                                                                                                                                                    |
| E45PNMS-20-4POE-4M-4SFP<br>[EH7520-4G-4POE-4SFP]   | 16                   | (4)                       | (4)                      | 4                | Industrial EMC Protection<br>Profinet & Ethernet/IP Ready<br>IEEE1588 Precision Timing<br>Redundant Ring<br>Redundant Power Input<br>Relay Output<br>Profinet CC-B v2.33 Certified |
| E45PNMS-20-8POE-4M-4SFP<br>[EH7520-4G-8POE-4SFP]   | 16                   | (4)                       | (4)                      | 8                |                                                                                                                                                                                    |



## Feature Highlights:

- Up to 16 10/100 BASE-T(X) ports and 4 10/100/1000 BASE-T(X) Combo ports
- Up to 8 802.3af or 802.3at complaint PoE ports
- ERPS Ring (recovery time < 20ms @ 40 switches), STP/RSTP for network redundancy
- Remote management over Web browser, Telnet console, serial console, and Windows Utility
- PROFINET v2 Class B compatible & Ethernet/IP Ready
- Provide Generic Station Description file (GSD v2.1) for integration with SIMATIC Step 7
- Support for PROFINET I/O parameters, I/O cyclic data, DCP, DHCP and PROFINET Real-Time



# Industrial Networking Solutions

## Specifications & Approvals



Layer-2 Managed DIN-Rail Switches | DIN-Rail Mount | Metal Housing | IP30 Rating

| Switch Properties              |                                                                                                                                                                                              |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Priority Queues                | 8                                                                                                                                                                                            |
| Max. Number of Available VLANs | 256                                                                                                                                                                                          |
| VLAN ID Range                  | VID 1 to 4094                                                                                                                                                                                |
| Static IGMP Groups             | 256                                                                                                                                                                                          |
| Dynamic IGMP Groups            | 256                                                                                                                                                                                          |
| MAC Table Size                 | 16K                                                                                                                                                                                          |
| Packet Buffer Size             | 12 Mbit                                                                                                                                                                                      |
| Interface                      |                                                                                                                                                                                              |
| RJ45 Ports                     | 10/100/1000BASE-T(X) or 10/100 BASE-T(X) auto negotiation speed                                                                                                                              |
| Fiber Ports                    | 100BASE-FX / 1000BASE-X SFP slot                                                                                                                                                             |
| LED Indicators                 | PWR1, PWR2, Alarm, Run, Ring, Ring Master, RJ-45 Link/Speed, SFP Link, PoE                                                                                                                   |
| Console                        | RS232 (RJ45 connector)                                                                                                                                                                       |
| Relay Output                   | 2 relay outputs with current carrying capacity of 2A @30VDC                                                                                                                                  |
| DIP Switches                   | Ring Control                                                                                                                                                                                 |
| Button                         | Reset Button                                                                                                                                                                                 |
| Power Management               |                                                                                                                                                                                              |
| Input Voltage                  | 9-48 VDC or 18~30VAC for Non-PoE models<br>45-57 VDC for 802.3af mode<br>51-57 VDC for 802.3at mode                                                                                          |
| Input Current                  | Max. 1.5A @ 18VAC<br>Max. 2.0A @ 9VDC (without PD)<br>Max. 3.2A @ 45VDC<br>(Support up to 8 ports at 15.4W per PoE port)<br>Max. 5.5A @ 51VDC<br>(Support up to 8 ports at 30W per PoE port) |
| Connector                      | Removable 5-pin Terminal Block for power input                                                                                                                                               |
| Reverse Polarity Protection    | Present (DC only)                                                                                                                                                                            |
| Environmental Limits           |                                                                                                                                                                                              |
| Operating Temperature          | -20°C~70°C (-4°F~158°F)                                                                                                                                                                      |
| Storage Temperature            | -40°C~85°C (-40°F~185°F)                                                                                                                                                                     |
| Ambient Relative Humidity      | 5%~95% non-condensing                                                                                                                                                                        |

| Technology           |                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                               |                               |             |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------|-------------|
| Standards            | IEEE802.3af / 802.3at for Power-over-Ethernet<br>IEEE802.3 for 10BASE-T<br>IEEE802.3u for 100BASE-T(X) and 100BASE-FX<br>IEEE802.3ab for 1000BASE-T(X)<br>IEEE802.3z for 1000BASE-X<br>IEEE802.3x for Flow Control<br>IEEE802.1D-2004 for Spanning Tree Protocol<br>IEEE802.1w for Rapid STP<br>IEEE802.1Q for VLAN Tagging<br>IEEE802.1p for Class of Service<br>IEEE8021X for Authentication<br>IEEE802.3ad for Port Trunk with LACP |                                               |                               |             |
| Protocols            | IGMPv1/v2, GVRP, SNMPv1/v2c/v3, ICMP, ARP, Telnet, DHCP Client, TFTP, SNMP, SMTP, RMON, HTTP, Syslog, PROFINET, Modbus/TCP, LLDP,IEEE 1588 PTP V2, IPv4, NTP Client, EAP, RADIUS                                                                                                                                                                                                                                                       |                                               |                               |             |
| MIB                  | 802.1x MIB II, IF-MIB, SNMPv2 MIB, BRIDGE-MIB, RMON MIB Group 1,2,3,9                                                                                                                                                                                                                                                                                                                                                                  |                                               |                               |             |
| Flow Control         | IEEE802.3x for Flow Control, back pressure flow control                                                                                                                                                                                                                                                                                                                                                                                |                                               |                               |             |
| Regulatory Approvals |                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                               |                               |             |
| Safety               | UL60950-1 2nd Ed. /CSA C22.2 No.60950-1-07 2nd Ed. / EN60950-1 / CB                                                                                                                                                                                                                                                                                                                                                                    |                                               |                               |             |
| EMC                  | FCC Part 15, Subpart B, Class A / EN 61000-6-4:2007+A1:2011 / EN 61000-6-2:2005                                                                                                                                                                                                                                                                                                                                                        |                                               |                               |             |
| EMS Test             | Item                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                               | Value                         | Level       |
| IEC 61000-4-2        | ESD                                                                                                                                                                                                                                                                                                                                                                                                                                    | Contact Discharge<br>Air Discharge            | ±6KV<br>±8KV                  | 3<br>3      |
| IEC 61000-4-3        | RS                                                                                                                                                                                                                                                                                                                                                                                                                                     | Radiated<br>(Enclosure)                       | 10 (V/m)                      | 3           |
| IEC 61000-4-4        | EFT                                                                                                                                                                                                                                                                                                                                                                                                                                    | AC Power Port<br>DC Power Port<br>Signal Port | ±2.0 KV<br>±2.0 KV<br>±1.0 KV | 3<br>3<br>3 |
| IEC 61000-4-5        | Surge                                                                                                                                                                                                                                                                                                                                                                                                                                  | AC Power Port                                 | Line-to-Line ±1.0KV           | 3           |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                        | AC Power Port                                 | Line-to-Earth ±2.0KV          | 3           |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                        | DC Power Port                                 | Line-to-Line ±1.0KV           | 3           |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                        | DC Power Port                                 | Line-to-Earth ±2.0KV          | 3           |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                        | Signal Port                                   | Line-to-Earth ±1.0KV          | 3           |
| IEC 61000-4-6        | CS                                                                                                                                                                                                                                                                                                                                                                                                                                     | Conducted<br>(Enclosure)                      | 10 Vrms                       | 3           |
| IEC 61000-4-8        | PFMF                                                                                                                                                                                                                                                                                                                                                                                                                                   | Enclosure                                     | 30(A/m)                       | 4           |
| IEC 61000-4-11       | DIP                                                                                                                                                                                                                                                                                                                                                                                                                                    | AC Power Port                                 | -                             | -           |
| Shock                | IEC 60068-2-27                                                                                                                                                                                                                                                                                                                                                                                                                         |                                               |                               |             |
| Drop                 | IEC 60068-2-32                                                                                                                                                                                                                                                                                                                                                                                                                         |                                               |                               |             |
| Vibration            | IEC 60068-2-64                                                                                                                                                                                                                                                                                                                                                                                                                         |                                               |                               |             |
| RoHS                 | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                               |                               |             |
| MTBF                 | 11 Years                                                                                                                                                                                                                                                                                                                                                                                                                               |                                               |                               |             |
| Warranty             | 5 years                                                                                                                                                                                                                                                                                                                                                                                                                                |                                               |                               |             |



# Industrial Networking Solutions

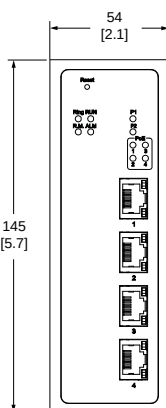
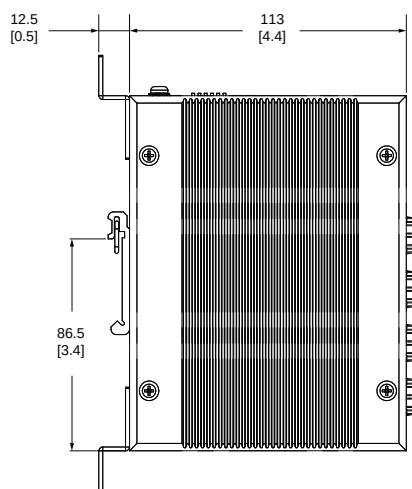
Harsh Environments Switches



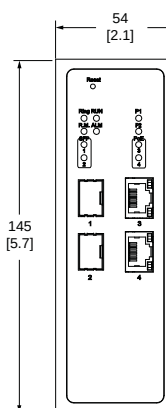
Layer-2 Managed DIN-Rail Switches | DIN-Rail/Wall Mount | Aluminum Housing | IP30 Rating



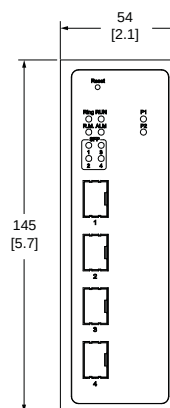
| Industrial Managed Gigabit Switches          |                           |                   |                  |                                                                                                                                                                                                                                          |
|----------------------------------------------|---------------------------|-------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Part Number<br>[MFG #]                       | 10/100/1000<br>RJ45 Ports | 1000<br>SFP Slots | Max PoE<br>Ports | Features                                                                                                                                                                                                                                 |
| E45PNMS-4M<br>[EHG7504]                      | 4                         | N/A               | N/A              | Industrial EMC Protection<br>Profinet & Ethernet/IP Ready<br>Profinet CC-B v2.33 Certified<br>IEEE1588 Precision Timing<br>Redundant Ring<br>Redundant Power Input<br>Relay Output<br>Railway Certified (EN50155)<br>NEMA TS-2 Certified |
| E45PNMS-4M-2M-2SFP<br>[EHG7504-2SFP]         | 2                         | 2                 | N/A              |                                                                                                                                                                                                                                          |
| E45PNMS-4M-4SFP<br>[EHG7504-4SFP]            | N/A                       | 4                 | N/A              |                                                                                                                                                                                                                                          |
| Industrial Managed Gigabit Switches with PoE |                           |                   |                  |                                                                                                                                                                                                                                          |
| E45PNMS-4M-4POE<br>[EHG7504-4POE]            | 4                         | N/A               | 4                | Industrial EMC Protection<br>Profinet & Ethernet/IP Ready<br>Profinet CC-B v2.33 Certified<br>IEEE1588 Precision Timing<br>Redundant Ring<br>Redundant Power Input<br>Relay Output<br>Railway Certified (EN50155)<br>NEMA TS-2 Certified |
| E45PNMS-4M-2POE-2SFP<br>[EHG7504-2POE-2SFP]  | 2                         | 2                 | 2                |                                                                                                                                                                                                                                          |



**E45PNMS-4M**  
**E45PNMS-4M-4POE**



**E45PNMS-4M-2M-2SFP**  
**E45PNMS-4M-2POE-2SFP**



**E45PNMS-4M-4SFP**

## Feature Highlights:

- Up to 8 10/100/1000 BASE-T(X) RJ45 ports or 1000 BASE-X SFP slots.
- Up to 8 802.3af/ 802.3at Power over Ethernet ports, with maximum 30W
- PoE power per port and maximum 240 W device power budget
- Powerful Switching Platform, supporting Redundancy advanced
- Protocols, such as ERPS, RSTP, STP, MRP (Client) and compatible rings
- Profinet Conformance Class B compatible & Ethernet/IP Ready
- IEEE 1588v2 Precision Time Protocol Hw-Based Transparent clock
- Works from -20°C~70°C



# Industrial Networking Solutions

## Specifications & Approvals



Layer-2 Managed DIN-Rail Switches | DIN-Rail/Wall Mount | Aluminum Housing | IP30 Rating

| Switch Properties   |               |
|---------------------|---------------|
| Priority Queues     | 8             |
| VLAN Table          | 4096          |
| MAC-Based VLAN      | 512           |
| VLAN ID Range       | VID 1 to 4094 |
| Trunk Group         | 4             |
| Static IGMP Groups  | 128           |
| Dynamic IGMP Groups | 256           |
| MAC Table Size      | 16K           |
| Packet Buffer Size  | 1.5 MB        |
| Jumbo Frame         | 9216 Byte     |

| Power Management            |                                                                                                                                                                             |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Voltage               | 9-57 VDC for Non-PoE models<br>45-57 VDC for 802.3af mode<br>51-57 VDC for 802.3at mode                                                                                     |
| Input Current (System)      | Max. 1.4A @ 9VDC (without PoE)<br>Max. 2.9A @ 45VDC<br>(Support up to 8 ports at 15.4W per PoE port)<br>Max. 5.0A @ 51VDC<br>(Support up to 8 ports at 30W per PoE port)    |
| Power Consumption (System)  | Max 12.6 W @9 VDC (without PoE)<br>Max 130.5 W @45VDC<br>(802.3af, with 15.4W PoE per port for 8 ports)<br>Max 255 W @51VDC<br>(802.3at, with 30W PoE per port for 8 ports) |
| Connector                   | 5-Pin 5.08mm Lockable Terminal Block                                                                                                                                        |
| Reverse Polarity Protection | Present (DC only)                                                                                                                                                           |

| Interfaces         |                                                                               |
|--------------------|-------------------------------------------------------------------------------|
| RJ45 Ports         | Up to 8 10/100/1000BASE-T(X)<br>auto negotiation speed                        |
| Fiber Optics Ports | Up to 4 1000BASE-X SFP slot                                                   |
| LED Indicators     | PWR1, PWR2, Alarm, Run, Ring, Ring Master,<br>RJ-45 Link/Speed, SFP Link, PoE |
| Console            | RS232 (RJ45 connector)                                                        |
| Relay Output       | 2 relay outputs with current carrying capacity of<br>1A @ 24 VDC              |
| DIP Switches       | Ring Control and Profinet Setting                                             |
| Button             | Reset Button                                                                  |

| Environmental Limits      |                               |
|---------------------------|-------------------------------|
| Operating Temperature     | -20°C~70°C (-4°F~158°F)       |
| Storage Temperature       | -40°C~85°C (-40°F~185°F)      |
| Ambient Relative Humidity | 5%~95%, 55°C (Non-condensing) |

| Ethernet            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards           | IEEE 802.3af / 802.3at for Power-over-Ethernet<br>IEEE 802.3 for 10BASE-T<br>IEEE 802.3u for 100BASE-T(X)<br>IEEE 802.3ab for 1000BASE-T<br>IEEE 802.3z for 1000BASE-X<br>IEEE 802.3x for Flow Control<br>IEEE 802.1d-2004 for Spanning Tree Protocol<br>IEEE 802.1w for Rapid Spanning Tree Protocol<br>IEEE 802.1s for Multiple Spanning Tree Protocol<br>IEEE 802.1q/p for VLAN Tagging and Class of Service<br>IEEE 8021x for Authentication<br>IEEE 802.3ad for Port Trunk with LACP<br>IEEE 802.3az for Energy Efficient Ethernet |
| Protocols           | IPv4, IPv6, IGMPv1/v2/v3, GARP, GMRP, GVRP, SNMPv1/<br>v2c/v3, SNMP Inform, ICMP, Telnet, SSH, DHCP Server/<br>Relay/Client, DHCP Option 66/67/82, BootP, RARP, TFTP,<br>NTP Server/Client, Sntp, SMTP, SMTP (Gmail), RMON,<br>HTTP, HTTPS, Syslog, MRP (Client), LLDP, IEEE 1588<br>PTP V1/V2, IEEE 1588 Hardware Transparent Clock,<br>802.1x, EAP, RADIUS, TACACS+, Mirror port, QoS, ACL,<br>Serial Console, U-Ring, STP, RSTP, MSTP, Redundancy<br>Compatible Ring                                                                 |
| Automation Profiles | Profinet, Ethernet/IP, Modbus/TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| SNMP MIB            | MIB II, IF-MIB, SNMPv2 MIB, BRIDGE-MIB, RMON MIB<br>Group 1,2,3,9, RFC 1157, RFC 1213, RFC 1215, RFC 1493,<br>RFC 1643, RFC 1757, RFC 2011, RFC 2012, RFC 2013,<br>RFC 2233, RFC 2571, RFC 2742, RFC 2819, RFC 2863,<br>RFC 3411, RFC 3412, RFC 3413, RFC 3414, RFC 3415                                                                                                                                                                                                                                                                |

| Regulatory Approvals |                                                                                                            |                   |                     |   |
|----------------------|------------------------------------------------------------------------------------------------------------|-------------------|---------------------|---|
| Safety               | UL 60950-1 2nd Ed. / CSA C22.2 No.60950-1-07 2nd Ed. / EN 60950-1 / CB                                     |                   |                     |   |
| EMC                  | FCC Part 15, Subpart B, Class A EN 55032, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-4 |                   |                     |   |
| EMS Test             | Item                                                                                                       | Value             | Level               |   |
| IEC 61000-4-2        | ESD                                                                                                        | Contact Discharge | ±6KV                | 3 |
|                      |                                                                                                            | Air Discharge     | ±8KV                | 3 |
| IEC 61000-4-3        | RS                                                                                                         | 80-1000MHz        | 10(V/m)             | 3 |
|                      |                                                                                                            | 1.4-2.0GHz        | 3(V/m)              | 3 |
|                      |                                                                                                            | 2.0-2.7GHz        | 10(V/m)             | 3 |
| IEC 61000-4-4        | EFT                                                                                                        | AC Power Port     | ±2.0 KV             | 3 |
|                      |                                                                                                            | DC Power Port     | ±2.0 KV             | 3 |
|                      |                                                                                                            | Signal Port       | ±1.0 KV             | 3 |
| IEC 61000-4-5        | Surge                                                                                                      | DC Power Port     | Line-to Line±1.0kV  | 3 |
|                      |                                                                                                            | DC Power Port     | Line-to Earth±2.0kV | 3 |
|                      |                                                                                                            | Signal Port       | Line-to Earth±2.0kV | 3 |
| IEC 61000-4-6        | CS                                                                                                         | 0.15-80MHz        | 10 Vrms             | 3 |
| IEC 61000-4-8        | PFMF                                                                                                       | Enclosure         | 30 V/m              | 4 |
| IEC 61000-4-11       | DIP                                                                                                        | AC Power Port     | -                   | A |
| Shock                | MIL-STD-810G Method 516.5                                                                                  |                   |                     |   |
| Drop                 | MIL-STD-810F Method 516.5                                                                                  |                   |                     |   |
| Vibration            | MIL-STD-810F Method 514.5 C-1 & C-2                                                                        |                   |                     |   |
| RoHS II              | Yes                                                                                                        |                   |                     |   |
| MTBF                 | 20 Years                                                                                                   |                   |                     |   |





# Industrial Networking Solutions

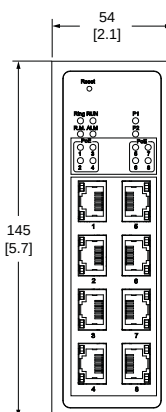
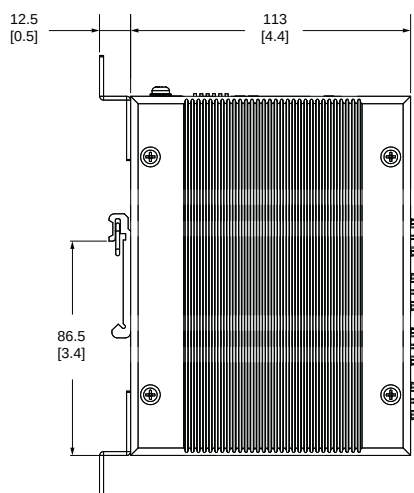
Harsh Environments Switches



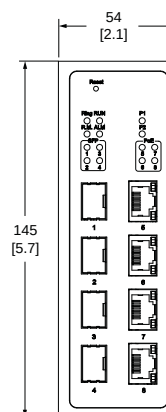
Layer-2 Managed DIN-Rail Switches | DIN-Rail/Wall Mount | Aluminum Housing | IP30 Rating



| Industrial Managed Gigabit Switches          |                           |                   |                  |                                                                                                                                                                                                                                          |
|----------------------------------------------|---------------------------|-------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Part Number<br>[MFG #]                       | 10/100/1000<br>RJ45 Ports | 1000<br>SFP Slots | Max PoE<br>Ports | Features                                                                                                                                                                                                                                 |
| E45PNMS-8M<br>[EHG7508]                      | 8                         | N/A               | N/A              | Industrial EMC Protection<br>Profinet & Ethernet/IP Ready<br>Profinet CC-B v2.33 Certified<br>IEEE1588 Precision Timing<br>Redundant Ring<br>Redundant Power Input<br>Relay Output<br>Railway Certified (EN50155)<br>NEMA TS-2 Certified |
| E45PNMS-8M-4M-4SFP<br>[EHG7508-4SFP]         | 4                         | 4                 | N/A              |                                                                                                                                                                                                                                          |
| Industrial Managed Gigabit Switches with PoE |                           |                   |                  |                                                                                                                                                                                                                                          |
| E45PNMS-8M-4POE-4SFP<br>[EHG7508-4POE-4SFP]  | 4                         | 4                 | 4                | Industrial EMC Protection<br>Profinet & Ethernet/IP Ready<br>IEEE1588 Precision Timing<br>Redundant Ring<br>Redundant Power Input<br>Relay Output<br>Railway Certified (EN50155)<br>NEMA TS-2 Certified                                  |
| E45PNMS-8M-8POE<br>[EHG7508-8POE]            | 8                         | N/A               | 8                |                                                                                                                                                                                                                                          |



**E45PNMS-8M**  
**E45PNMS-8M-8POE**



**E45PNMS-8M-4M-4SFP**  
**E45PNMS-8M-4POE-4SFP**

## Feature Highlights:

- Up to 8 10/100/1000 BASE-T(X) RJ45 ports or 1000 BASE-X SFP slots
- Up to 8 802.3af/ 802.3at Power over Ethernet ports, with maximum 30W
- PoE power per port and maximum 240 W device power budget
- Powerful Switching Platform, supporting Redundancy advanced
- Protocols, such as ERPS, RSTP, STP, MRP (Client) and compatible rings
- Profinet Conformance Class B compatible & Ethernet/IP Ready
- IEEE 1588v2 Precision Time Protocol Hw-Based Transparent clock
- Works from -20°C~70°C



# Industrial Networking Solutions

## Specifications & Approvals



Layer-2 Managed DIN-Rail Switches | DIN-Rail/Wall Mount | Aluminum Housing | IP30 Rating

| Switch Properties   |               |
|---------------------|---------------|
| Priority Queues     | 8             |
| VLAN Table          | 4096          |
| MAC-Based VLAN      | 512           |
| VLAN ID Range       | VID 1 to 4094 |
| Trunk Group         | 4             |
| Static IGMP Groups  | 128           |
| Dynamic IGMP Groups | 256           |
| MAC Table Size      | 16K           |
| Packet Buffer Size  | 1.5 MB        |
| Jumbo Frame         | 9216 Byte     |

| Power Management            |                                                                                                                                                                             |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Voltage               | 9-57 VDC for Non-PoE models<br>45-57 VDC for 802.3af mode<br>51-57 VDC for 802.3at mode                                                                                     |
| Input Current (System)      | Max. 1.4A @ 9VDC (without PoE)<br>Max. 2.9A @ 45VDC<br>(Support up to 8 ports at 15.4W per PoE port)<br>Max. 5.0A @ 51VDC<br>(Support up to 8 ports at 30W per PoE port)    |
| Power Consumption (System)  | Max 12.6 W @9 VDC (without PoE)<br>Max 130.5 W @45VDC<br>(802.3af, with 15.4W PoE per port for 8 ports)<br>Max 255 W @51VDC<br>(802.3at, with 30W PoE per port for 8 ports) |
| Connector                   | 5-Pin 5.08mm Lockable Terminal Block                                                                                                                                        |
| Reverse Polarity Protection | Present (DC only)                                                                                                                                                           |

| Interfaces         |                                                                               |
|--------------------|-------------------------------------------------------------------------------|
| RJ45 Ports         | Up to 8 10/100/1000BASE-T(X)<br>auto negotiation speed                        |
| Fiber Optics Ports | Up to 4 1000BASE-X SFP slot                                                   |
| LED Indicators     | PWR1, PWR2, Alarm, Run, Ring, Ring Master,<br>RJ-45 Link/Speed, SFP Link, PoE |
| Console            | RS232 (RJ45 connector)                                                        |
| Relay Output       | 2 relay outputs with current carrying capacity of<br>1A @ 24 VDC              |
| DIP Switches       | Ring Control and Profinet Setting                                             |
| Button             | Reset Button                                                                  |

| Environmental Limits      |                               |
|---------------------------|-------------------------------|
| Operating Temperature     | -20°C~70°C (-4°F~158°F)       |
| Storage Temperature       | -40°C~85°C (-40°F~185°F)      |
| Ambient Relative Humidity | 5%~95%, 55°C (Non-condensing) |

| Ethernet            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards           | IEEE 802.3af / 802.3at for Power-over-Ethernet<br>IEEE 802.3 for 10BASE-T<br>IEEE 802.3u for 100BASE-T(X)<br>IEEE 802.3ab for 1000BASE-T<br>IEEE 802.3z for 1000BASE-X<br>IEEE 802.3x for Flow Control<br>IEEE 802.1d-2004 for Spanning Tree Protocol<br>IEEE 802.1w for Rapid Spanning Tree Protocol<br>IEEE 802.1s for Multiple Spanning Tree Protocol<br>IEEE 802.1q/p for VLAN Tagging and Class of Service<br>IEEE 8021x for Authentication<br>IEEE 802.3ad for Port Trunk with LACP<br>IEEE 802.3az for Energy Efficient Ethernet |
| Protocols           | IPv4, IPv6, IGMPv1/v2/v3, GARP, GMRP, GVRP, SNMPv1/<br>v2c/v3, SNMP Inform, ICMP, Telnet, SSH, DHCP Server/<br>Relay/Client, DHCP Option 66/67/82, BootP, RARP, TFTP,<br>NTP Server/Client, SNTP, SMTP, SMTP (Gmail), RMON,<br>HTTP, HTTPS, Syslog, MRP (Client), LLDP, IEEE 1588<br>PTP V1/V2, IEEE 1588 Hardware Transparent Clock,<br>802.1x, EAP, RADIUS, TACACS+, Mirror port, QoS, ACL,<br>Serial Console, U-Ring, STP, RSTP, MSTP, Redundancy<br>Compatible Ring                                                                 |
| Automation Profiles | Profinet, Ethernet/IP, Modbus/TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| SNMP MIB            | MIB II, IF-MIB, SNMPv2 MIB, BRIDGE-MIB, RMON MIB<br>Group 1,2,3,9, RFC 1157, RFC 1213, RFC 1215, RFC 1493,<br>RFC 1643, RFC 1757, RFC 2011, RFC 2012, RFC 2013,<br>RFC 2233, RFC 2571, RFC 2742, RFC 2819, RFC 2863,<br>RFC 3411, RFC 3412, RFC 3413, RFC 3414, RFC 3415                                                                                                                                                                                                                                                                |

| Regulatory Approvals |                                                                                                            |                   |                     |       |
|----------------------|------------------------------------------------------------------------------------------------------------|-------------------|---------------------|-------|
| Safety               | UL 60950-1 2nd Ed. / CSA C22.2 No.60950-1-07 2nd Ed. / EN 60950-1 / CB                                     |                   |                     |       |
| EMC                  | FCC Part 15, Subpart B, Class A EN 55032, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-4 |                   |                     |       |
| EMS Test             | Item                                                                                                       |                   | Value               | Level |
| IEC 61000-4-2        | ESD                                                                                                        | Contact Discharge | ±6KV                | 3     |
|                      |                                                                                                            | Air Discharge     | ±8KV                | 3     |
| IEC 61000-4-3        | RS                                                                                                         | 80-1000MHz        | 10(V/m)             | 3     |
|                      |                                                                                                            | 1.4-2.0GHz        | 3(V/m)              | 3     |
|                      |                                                                                                            | 2.0-2.7GHz        | 10(V/m)             | 3     |
| IEC 61000-4-4        | EFT                                                                                                        | AC Power Port     | ±2.0 KV             | 3     |
|                      |                                                                                                            | DC Power Port     | ±2.0 KV             | 3     |
|                      |                                                                                                            | Signal Port       | ±1.0 KV             | 3     |
| IEC 61000-4-5        | Surge                                                                                                      | DC Power Port     | Line-to Line±1.0kV  | 3     |
|                      |                                                                                                            | DC Power Port     | Line-to Earth±2.0kV | 3     |
|                      |                                                                                                            | Signal Port       | Line-to Earth±2.0kV | 3     |
| IEC 61000-4-6        | CS                                                                                                         | 0.15-80MHz        | 10 Vrms             | 3     |
| IEC 61000-4-8        | PFMF                                                                                                       | Enclosure         | 30 V/m              | 4     |
| IEC 61000-4-11       | DIP                                                                                                        | AC Power Port     | -                   | A     |
| Shock                | MIL-STD-810G Method 516.5                                                                                  |                   |                     |       |
| Drop                 | MIL-STD-810F Method 516.5                                                                                  |                   |                     |       |
| Vibration            | MIL-STD-810F Method 514.5 C-1 & C-2                                                                        |                   |                     |       |
| RoHS II              | Yes                                                                                                        |                   |                     |       |
| MTBF                 | 20 Years                                                                                                   |                   |                     |       |



# Industrial Networking Solutions

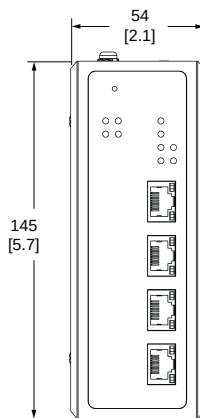
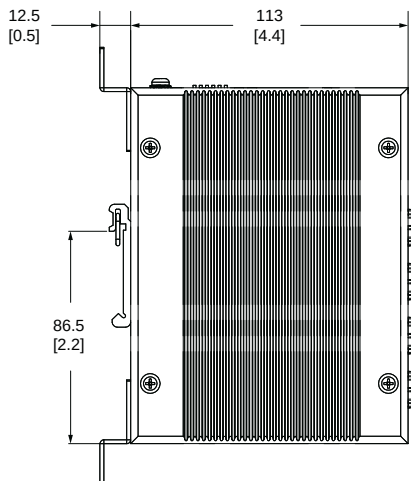
Harsh Environments Switches



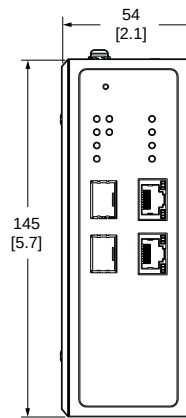
Layer-3 Managed DIN-Rail Switches | DIN-Rail/Wall Mount | Aluminum Housing | IP30 Rating



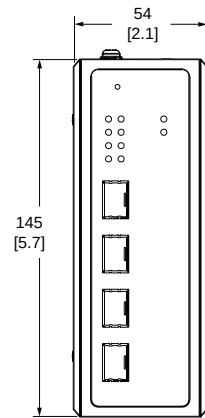
| 4-Port Industrial Layer-3 Managed Gigabit Switches          |                           |                   |                  |                                                                                                                                                                                                                              |
|-------------------------------------------------------------|---------------------------|-------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Part Number<br>[MFG #]                                      | 10/100/1000<br>RJ45 Ports | 1000<br>SFP Slots | Max PoE<br>Ports | Features                                                                                                                                                                                                                     |
| E45PNMS-4M-L3<br>[EHG7604]                                  | 4                         | N/A               | N/A              | Industrial EMC Protection<br>Profinet & Ethernet/IP Ready<br>IEEE1588 Precision Timing<br>Redundant Ring<br>Layer-3 Switching<br>Redundant Power Input<br>Relay Output<br>Railway Certified (EN50155)<br>NEMA TS-2 Certified |
| E45PNMS-4M-2M-2SFP-L3<br>[EHG7604-2SFP]                     | 2                         | 2                 | N/A              |                                                                                                                                                                                                                              |
| E45PNMS-4M-4SFP-L3<br>[EHG7604-4SFP]                        | N/A                       | 4                 | N/A              |                                                                                                                                                                                                                              |
| 4-Port Industrial Layer-3 Managed Gigabit Switches with PoE |                           |                   |                  |                                                                                                                                                                                                                              |
| E45PNMS-4M-4POE-L3<br>[EHG7604-4POE]                        | 4                         | N/A               | 4                | Industrial EMC Protection<br>Profinet & Ethernet/IP Ready<br>IEEE1588 Precision Timing<br>Redundant Ring<br>Layer-3 Switching<br>Redundant Power Input<br>Relay Output<br>Railway Certified (EN50155)<br>NEMA TS-2 Certified |
| E45PNMS-4M-2POE-2SFP-L3<br>[EHG7604-2POE-2SFP]              | 2                         | 2                 | 2                |                                                                                                                                                                                                                              |



**E45PNMS-4M-L3**  
**E45PNMS-4M-4POE-L3**



**E45PNMS-4M-2M-2SFP-L3**  
**E45PNMS-4M-2POE-2SFP-L3**



**E45PNMS-4M-4SFP-L3**

## Feature Highlights:

- Up to 8 10/100/1000 BASE-T(X) RJ45 ports or 1000 BASE-X SFP slots.
- Up to 8 802.3af/ 802.3at Power over Ethernet ports, with maximum 30W
- PoE power per port and maximum 240 W device power budget
- Powerful Industrial Layer-3 Switch Platform, supporting redundancy
- Protocols, such as ERPS, RSTP, STP, MRP (Client) and compatible rings
- Profinet Conformance Class B compatible & Ethernet/IP Ready
- IEEE 1588v2 Precision Time Protocol Hw-Based Transparent clock
- Works from -20 °C~70 °C



# Industrial Networking Solutions

## Specifications & Approvals



Layer-3 Managed DIN-Rail Switches | DIN-Rail/Wall Mount | Aluminum Housing | IP30 Rating

| Switch Properties           |                                                                                                                                                                             |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Priority Queues             | 8                                                                                                                                                                           |
| VLAN Table                  | 4096                                                                                                                                                                        |
| MAC-Based VLAN              | 512                                                                                                                                                                         |
| VLAN ID Range               | VID 1 to 4094                                                                                                                                                               |
| Trunk Group                 | 4                                                                                                                                                                           |
| Static IGMP Groups          | 128                                                                                                                                                                         |
| Dynamic IGMP Groups         | 256                                                                                                                                                                         |
| MAC Table Size              | 16K                                                                                                                                                                         |
| Packet Buffer Size          | 1.5 MB                                                                                                                                                                      |
| Jumbo Frame                 | 9216 Byte                                                                                                                                                                   |
| Power Management            |                                                                                                                                                                             |
| Input Voltage               | 9-57 VDC for Non-PoE models<br>45-57 VDC for 802.3af mode<br>51-57 VDC for 802.3at mode                                                                                     |
| Input Current (System)      | Max. 1.4A @ 9VDC (without PoE)<br>Max. 2.9A @ 45VDC<br>(Support up to 8 ports at 15.4W per PoE port)<br>Max. 5.0A @ 51VDC<br>(Support up to 8 ports at 30W per PoE port)    |
| Power Consumption (System)  | Max 12.6 W @9 VDC (without PoE)<br>Max 130.5 W @45VDC<br>(802.3af, with 15.4W PoE per port for 8 ports)<br>Max 255 W @51VDC<br>(802.3at, with 30W PoE per port for 8 ports) |
| Connector                   | 5-Pin 5.08mm Lockable Terminal Block                                                                                                                                        |
| Reverse Polarity Protection | Yes                                                                                                                                                                         |
| Interfaces                  |                                                                                                                                                                             |
| RJ45 Ports                  | Up to 8 10/100/1000BASE-T(X)<br>auto negotiation speed                                                                                                                      |
| Fiber Optics Ports          | Up to 4 1000BASE-X SFP slot                                                                                                                                                 |
| LED Indicators              | PWR1, PWR2, Alarm, Run, Ring, Ring Master,<br>RJ-45 Link/Speed, SFP Link, PoE                                                                                               |
| Console                     | RS232 (RJ45 connector)                                                                                                                                                      |
| Relay Output                | 2 relay outputs with current carrying capacity of<br>1A @ 24 VDC                                                                                                            |
| DIP Switches                | Ring Control and Profinet Setting                                                                                                                                           |
| Button                      | Reset Button                                                                                                                                                                |
| Environmental Limits        |                                                                                                                                                                             |
| Operating Temperature       | -20°C~70°C (-4°F~158°F)                                                                                                                                                     |
| Storage Temperature         | -40°C~85°C (-40°F~185°F)                                                                                                                                                    |
| Ambient Relative Humidity   | 5%~95%, 55°C (Non-condensing)                                                                                                                                               |

| Ethernet             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |                     |       |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|-------|
| Standards            | IEEE 802.3af / 802.3at for Power-over-Ethernet<br>IEEE 802.3 for 10BASE-T<br>IEEE 802.3u for 100BASE-T(X)<br>IEEE 802.3ab for 1000BASE-T<br>IEEE 802.3z for 1000BASE-X<br>IEEE 802.3x for Flow Control<br>IEEE 802.1d-2004 for Spanning Tree Protocol<br>IEEE 802.1w for Rapid Spanning Tree Protocol<br>IEEE 802.1s for Multiple Spanning Tree Protocol<br>IEEE 802.1q for VLAN Tagging<br>IEEE 802.1p for Class of Service<br>IEEE 8021x for Authentication<br>IEEE 802.3ad for Port Trunk with LACP<br>IEEE 802.3az for Energy Efficient Ethernet |                   |                     |       |
| Protocols            | IPv4, IPv6, IGMPv1/v2/v3, GARP,GMRP, GVRP, SNMPv1/v2c/v3, SNMP Inform, ICMP, Telnet, SSH, DHCP Server/Relay/Client, DHCP Option 66/67/82, BootP, RARP, TFTP, NTP Server/Client, SNTP, SMTP, SMTP (Gmail), RMON, HTTP, HTTPS, Syslog, MRP (Client), LLDP, IEEE 1588 PTP V1/V2, IEEE 1588 Hardware Transparent Clock, 802.1x, EAP, RADIUS, TACACS+, Mirror port, QoS, ACL, Serial Console, U-Ring, STP, RSTP, MSTP, Redundancy Compatible Ring                                                                                                         |                   |                     |       |
| Layer-3 Protocols    | IPv4 Unicast static routing, IPv6 Unicast static routing, IP MAC Binding, RIP v1/v2, OSPF, DVMRP, PIM-DM, PIM-SM, PIM-SSM, multi-IP interface                                                                                                                                                                                                                                                                                                                                                                                                        |                   |                     |       |
| Automation Profiles  | Profinet, Ethernet/IP, Modbus/TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |                     |       |
| SNMP MIB             | MIB II, IF-MIB, SNMPv2 MIB, BRIDGE-MIB, RMON MIB Group 1,2,3,9, RFC 1157, RFC 1213, RFC 1215, RFC 1493, RFC 1643, RFC 1757, RFC 2011, RFC 2012, RFC 2013, RFC 2233, RFC 2571, RFC 2742, RFC 2819, RFC 2863, RFC 3411, RFC 3412, RFC 3413, RFC 3414, RFC 3415, RFC 2674                                                                                                                                                                                                                                                                               |                   |                     |       |
| Regulatory Approvals |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |                     |       |
| Safety               | UL 60950-1 2nd Ed. /CSA C22.2 No.60950-1-07 2nd Ed. / EN 60950-1 / CB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |                     |       |
| EMC                  | FCC Part 15, Subpart B, Class A EN 55032, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-4                                                                                                                                                                                                                                                                                                                                                                                                                                           |                   |                     |       |
| EMS Test             | Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   | Value               | Level |
| IEC 61000-4-2        | ESD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Contact Discharge | ±6KV                | 3     |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Air Discharge     | ±8KV                | 3     |
| IEC 61000-4-3        | RS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 80-1000MHz        | 10(V/m)             | 3     |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1.4-2.0GHz        | 3(V/m)              | 3     |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2.0-2.7GHz        | 10(V/m)             | 3     |
| IEC 61000-4-4        | EFT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | AC Power Port     | ±2.0 KV             | 3     |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DC Power Port     | ±2.0 KV             | 3     |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Signal Port       | ±1.0 KV             | 3     |
| IEC 61000-4-5        | Surge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DC Power Port     | Line-to Line±1.0kV  | 3     |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DC Power Port     | Line-to Earth±2.0kV | 3     |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Signal Port       | Line-to Earth±2.0kV | 3     |
| IEC 61000-4-6        | CS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.15-80MHz        | 10 Vrms             | 3     |
| IEC 61000-4-8        | PFMF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Enclosure         | 30 V/m              | 4     |
| IEC 61000-4-11       | DIP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | AC Power Port     | -                   | A     |
| Shock                | MIL-STD-810G Method 516.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                     |       |
| Drop                 | MIL-STD-810F Method 516.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                     |       |
| Vibration            | MIL-STD-810F Method 514.5 C-1 & C-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                   |                     |       |
| RoHS II              | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                   |                     |       |
| MTBF                 | 20 Years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                     |       |



# Industrial Networking Solutions

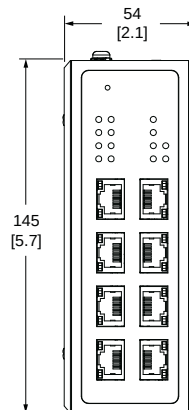
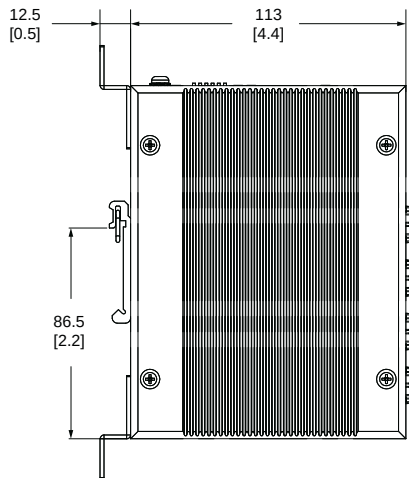
Harsh Environments Switches



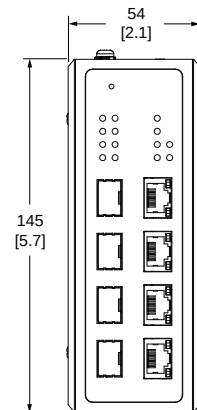
Layer-3 Managed DIN-Rail Switches | DIN-Rail/Wall Mount | Aluminum Housing | IP30 Rating



| 8-Port Industrial Layer-3 Managed Gigabit Switches          |                           |                   |                  |                                                                                                                                                                                                                              |
|-------------------------------------------------------------|---------------------------|-------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Part Number<br>[MFG #]                                      | 10/100/1000<br>RJ45 Ports | 1000<br>SFP Slots | Max PoE<br>Ports | Features                                                                                                                                                                                                                     |
| E45PNMS-8M-L3<br>[EHG7608]                                  | 8                         | N/A               | N/A              | Industrial EMC Protection<br>Profinet & Ethernet/IP Ready<br>IEEE1588 Precision Timing<br>Redundant Ring<br>Layer-3 Switching<br>Redundant Power Input<br>Relay Output<br>Railway Certified (EN50155)<br>NEMA TS-2 Certified |
| E45PNMS-8M-4M-4SFP-L3<br>[EHG7608-4SFP]                     | 4                         | 4                 | N/A              |                                                                                                                                                                                                                              |
| 8-Port Industrial Layer-3 Managed Gigabit Switches with PoE |                           |                   |                  |                                                                                                                                                                                                                              |
| E45PNMS-8M-8POE-L3<br>[EHG7608-8POE]                        | 8                         | N/A               | 8                | Industrial EMC Protection<br>Profinet & Ethernet/IP Ready<br>IEEE1588 Precision Timing<br>Redundant Ring<br>Layer-3 Switching<br>Redundant Power Input<br>Relay Output<br>Railway Certified (EN50155)<br>NEMA TS-2 Certified |
| E45PNMS-8M-4POE-4SFP-L3<br>[EHG7608-4POE-4SFP]              | 4                         | N/A               | 4                |                                                                                                                                                                                                                              |



**E45PNMS-8M-L3**  
**E45PNMS-4M-4POE-L3**



**E45PNMS-8M-4M-4SFP-L3**  
**E45PNMS-8M-4POE-4SFP-L3**

## Feature Highlights:

- Up to 8 10/100/1000 BASE-T(X) RJ45 ports or 1000 BASE-X SFP slots.
- Up to 8 802.3af/ 802.3at Power over Ethernet ports, with maximum 30W
- PoE power per port and maximum 240 W device power budget
- Powerful Industrial Layer-3 Switch Platform, supporting redundancy
- Protocols, such as ERPS, RSTP, STP, MRP (Client) and compatible rings
- Profinet Conformance Class B compatible & Ethernet/IP Ready
- IEEE 1588v2 Precision Time Protocol Hw-Based Transparent clock
- Works from -20°C~70°C



# Industrial Networking Solutions

## Specifications & Approvals



Layer-3 Managed DIN-Rail Switches | DIN-Rail/Wall Mount | Aluminum Housing | IP30 Rating

| Switch Properties           |                                                                                                                                                                             |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Priority Queues             | 8                                                                                                                                                                           |
| VLAN Table                  | 4096                                                                                                                                                                        |
| MAC-Based VLAN              | 512                                                                                                                                                                         |
| VLAN ID Range               | VID 1 to 4094                                                                                                                                                               |
| Trunk Group                 | 4                                                                                                                                                                           |
| Static IGMP Groups          | 128                                                                                                                                                                         |
| Dynamic IGMP Groups         | 256                                                                                                                                                                         |
| MAC Table Size              | 16K                                                                                                                                                                         |
| Packet Buffer Size          | 1.5 MB                                                                                                                                                                      |
| Jumbo Frame                 | 9216 Byte                                                                                                                                                                   |
| Power Management            |                                                                                                                                                                             |
| Input Voltage               | 9-57 VDC for Non-PoE models<br>45-57 VDC for 802.3af mode<br>51-57 VDC for 802.3at mode                                                                                     |
| Input Current (System)      | Max. 1.4A @ 9VDC (without PoE)<br>Max. 2.9A @ 45VDC<br>(Support up to 8 ports at 15.4W per PoE port)<br>Max. 5.0A @ 51VDC<br>(Support up to 8 ports at 30W per PoE port)    |
| Power Consumption (System)  | Max 12.6 W @9 VDC (without PoE)<br>Max 130.5 W @45VDC<br>(802.3af, with 15.4W PoE per port for 8 ports)<br>Max 255 W @51VDC<br>(802.3at, with 30W PoE per port for 8 ports) |
| Connector                   | 5-Pin 5.08mm Lockable Terminal Block                                                                                                                                        |
| Reverse Polarity Protection | Yes                                                                                                                                                                         |
| Interfaces                  |                                                                                                                                                                             |
| RJ45 Ports                  | Up to 8 10/100/1000BASE-T(X)<br>auto negotiation speed                                                                                                                      |
| Fiber Optics Ports          | Up to 4 1000BASE-X SFP slot                                                                                                                                                 |
| LED Indicators              | PWR1, PWR2, Alarm, Run, Ring, Ring Master,<br>RJ-45 Link/Speed, SFP Link, PoE                                                                                               |
| Console                     | RS232 (RJ45 connector)                                                                                                                                                      |
| Relay Output                | 2 relay outputs with current carrying capacity of<br>1A @ 24 VDC                                                                                                            |
| DIP Switches                | Ring Control and Profinet Setting                                                                                                                                           |
| Button                      | Reset Button                                                                                                                                                                |
| Environmental Limits        |                                                                                                                                                                             |
| Operating Temperature       | -20°C~70°C (-4°F~158°F)                                                                                                                                                     |
| Storage Temperature         | -40°C~85°C (-40°F~185°F)                                                                                                                                                    |
| Ambient Relative Humidity   | 5%~95%, 55°C (Non-condensing)                                                                                                                                               |

| Ethernet             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |                     |       |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|-------|
| Standards            | IEEE 802.3af / 802.3at for Power-over-Ethernet<br>IEEE 802.3 for 10BASE-T<br>IEEE 802.3u for 100BASE-T(X)<br>IEEE 802.3ab for 1000BASE-T<br>IEEE 802.3z for 1000BASE-X<br>IEEE 802.3x for Flow Control<br>IEEE 802.1d-2004 for Spanning Tree Protocol<br>IEEE 802.1w for Rapid Spanning Tree Protocol<br>IEEE 802.1s for Multiple Spanning Tree Protocol<br>IEEE 802.1q for VLAN Tagging<br>IEEE 802.1p for Class of Service<br>IEEE 8021x for Authentication<br>IEEE 802.3ad for Port Trunk with LACP<br>IEEE 802.3az for Energy Efficient Ethernet |                   |                     |       |
| Protocols            | IPv4, IPv6, IGMPv1/v2/v3, GARP,GMRP, GVRP, SNMPv1/v2c/v3, SNMP Inform, ICMP, Telnet, SSH, DHCP Server/Relay/Client, DHCP Option 66/67/82, BootP, RARP, TFTP, NTP Server/Client, SNTP, SMTP, SMTP (Gmail), RMON, HTTP, HTTPS, Syslog, MRP (Client), LLDP, IEEE 1588 PTP V1/V2, IEEE 1588 Hardware Transparent Clock, 802.1x, EAP, RADIUS, TACACS+, Mirror port, QoS, ACL, Serial Console, U-Ring, STP, RSTP, MSTP, Redundancy Compatible Ring                                                                                                         |                   |                     |       |
| Layer-3 Protocols    | IPv4 Unicast static routing, IPv6 Unicast static routing, IP MAC Binding, RIP v1/v2, OSPF, DVMRP, PIM-DM, PIM-SM, PIM-SSM, multi-IP interface                                                                                                                                                                                                                                                                                                                                                                                                        |                   |                     |       |
| Automation Profiles  | Profinet, Ethernet/IP, Modbus/TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |                     |       |
| SNMP MIB             | MIB II, IF-MIB, SNMPv2 MIB, BRIDGE-MIB, RMON MIB Group 1,2,3,9, RFC 1157, RFC 1213, RFC 1215, RFC 1493, RFC 1643, RFC 1757, RFC 2011, RFC 2012, RFC 2013, RFC 2233, RFC 2571, RFC 2742, RFC 2819, RFC 2863, RFC 3411, RFC 3412, RFC 3413, RFC 3414, RFC 3415, RFC 2674                                                                                                                                                                                                                                                                               |                   |                     |       |
| Regulatory Approvals |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |                     |       |
| Safety               | UL 60950-1 2nd Ed. /CSA C22.2 No.60950-1-07 2nd Ed. / EN 60950-1 / CB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |                     |       |
| EMC                  | FCC Part 15, Subpart B, Class A EN 55032, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-4                                                                                                                                                                                                                                                                                                                                                                                                                                           |                   |                     |       |
| EMS Test             | Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   | Value               | Level |
| IEC 61000-4-2        | ESD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Contact Discharge | ±6KV                | 3     |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Air Discharge     | ±8KV                | 3     |
| IEC 61000-4-3        | RS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 80-1000MHz        | 10(V/m)             | 3     |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1.4-2.0GHz        | 3(V/m)              | 3     |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2.0-2.7GHz        | 10(V/m)             | 3     |
| IEC 61000-4-4        | EFT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | AC Power Port     | ±2.0 KV             | 3     |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DC Power Port     | ±2.0 KV             | 3     |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Signal Port       | ±1.0 KV             | 3     |
| IEC 61000-4-5        | Surge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DC Power Port     | Line-to Line±1.0kV  | 3     |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DC Power Port     | Line-to Earth±2.0kV | 3     |
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Signal Port       | Line-to Earth±2.0kV | 3     |
| IEC 61000-4-6        | CS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.15-80MHz        | 10 Vrms             | 3     |
| IEC 61000-4-8        | PFMF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Enclosure         | 30 V/m              | 4     |
| IEC 61000-4-11       | DIP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | AC Power Port     | -                   | A     |
| Shock                | MIL-STD-810G Method 516.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                     |       |
| Drop                 | MIL-STD-810F Method 516.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                     |       |
| Vibration            | MIL-STD-810F Method 514.5 C-1 & C-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                   |                     |       |
| RoHS II              | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                   |                     |       |
| MTBF                 | 20 Years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                     |       |





# Industrial Networking Solutions

*Harsh Environments Switches*

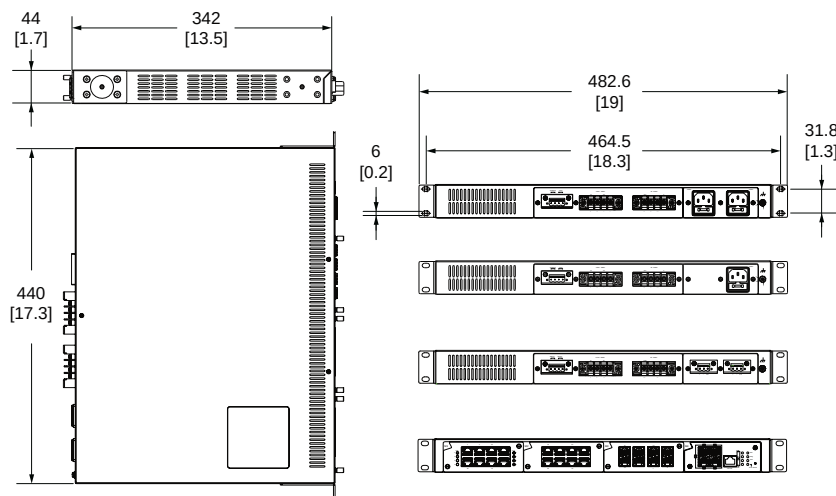


Switch Core Platforms | Layer 2 | 1U Rack Mount | Metal Housing | IP30 Rating



| Industrial Layer-2 Rack-Mount Managed Modular Gigabit Ethernet PoE Switches |              |               |                                                                        |                                                                                                                                                                                              |
|-----------------------------------------------------------------------------|--------------|---------------|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Part Number                                                                 | Module Slots | Uplink Ports  | Power Supply                                                           | Features                                                                                                                                                                                     |
| RHG7528-CPU-4GSFP                                                           | 3            | 4 x 1 Gb SFP  | Single 110~220 VAC + Dual 48~57 VDC for PoE                            | Industrial EMC Protection<br>Profinet & Ethernet/IP Ready<br>IEEE1588 Precision Timing<br>Redundant Ring<br>Advanced Security<br>MIL-STD Ruggedized<br>Redundant Power Input<br>Relay Output |
| RHG7528-CPU-4GSFP-R                                                         | 3            | 4 x 1 Gb SFP  | Dual 110~220 VAC + Dual 48~57 VDC for PoE                              |                                                                                                                                                                                              |
| RHG7528-CPU-4GSFP-MR                                                        | 3            | 4 x 1 Gb SFP  | Single 110~220 VAC + Single 48~57 VDC (CPU) and Dual 48~57 VDC for PoE |                                                                                                                                                                                              |
| RHG7528-CPU-4GSFP-DC                                                        | 3            | 4 x 1 Gb SFP  | Dual 24~48 VDC + Dual 48~57 VDC for PoE                                |                                                                                                                                                                                              |
| RHG7528-CPU-410GSFP                                                         | 3            | 4 x 10 Gb SFP | Single 110~220 VAC + Dual 48~57 VDC for PoE                            |                                                                                                                                                                                              |
| RHG7528-CPU-410GSFP-R                                                       | 3            | 4 x 10 Gb SFP | Dual 110~220 VAC + Dual 48~57 VDC for PoE                              |                                                                                                                                                                                              |
| RHG7528-CPU-410GSFP-MR                                                      | 3            | 4 x 10 Gb SFP | Single 110~220 VAC + Single 48~57 VDC (CPU) and Dual 48~57 VDC for PoE |                                                                                                                                                                                              |
| RHG7528-CPU-410GSFP-DC                                                      | 3            | 4 x 10 Gb SFP | Dual 24~48 VDC + Dual 48~57 VDC for PoE                                |                                                                                                                                                                                              |

Layer 2 models do not support MACsec M4-M5 modules.



## Feature Highlights:

- Maximum 128Gbps switching capacity, 95.24Mpps throughput
- Rugged industrial design for -40~75 ° C harsh environment operation
- Flexible modular configuration, 3 Module-dedicated slots
- Up to 24 PoE ports, with maximum 720W of PoE power budget
- 4 x 1 Gigabit or 4 x 10 Gigabit SFP Uplink slots
- Up to 20 possible configurations in 4 power input versions
- ITU-T G.8032 ERPS Ring, RSTP, or MRP (client) redundancy
- EN50155 / EN50121-4 Certified for Railway applications
- PROFINET v2.33 CC-B conformance, Provides GSD Description file
- Advanced management features



# Industrial Networking Solutions

## Specifications & Approvals



Switch Core Platforms | Layer 2 | 1U Rack Mount | Metal Housing | IP30 Rating

| Ethernet             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                      |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Standards            | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X)<br>IEEE 802.3ab for 1000BaseT(X)<br>IEEE 802.3z for 1000BaseX<br>IEEE 802.3ae For 10 Gigabit Ethernet Fiber<br>IEEE 802.3x for Flow Control, back pressure flow control<br>IEEE 802.1D-2004 for Spanning Tree Protocol<br>IEEE 802.1w for Rapid Spanning Tree Protocol<br>IEEE 802.1s for Multiple Spanning Tree Protocol<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1p for Class of Service<br>IEEE 802.1X for Authentication<br>IEEE 802.1ae for MAC security (MACsec) – on RHGM4-RHGM5 only<br>IEEE 802.3ad for Port Trunk with LACP<br>IEEE 802.3az for Energy Efficient Ethernet |                                                                                                      |
| Protocols            | IPv4, IPv6, IGMPv1/v2/v3, IGMP snooping, GARP, GMRP, GVRP, SNMPv1/v2c/v3, SNMP Inform, ICMP, Telnet, SSH, DHCP Relay/Client/IP-port-mapping, DHCP Option 66/67/82, BootP, RARP, TFTP, SMTP, SMTP (Gmail), RMON, HTTP, HTTPS, Syslog, MRP(Client), LLDP, 802.1x,EAP, RADIUS,TACACS+,Mirror port,QoS,ACL                                                                                                                                                                                                                                                                                                                                       |                                                                                                      |
| Redundancy           | ITU-T G.8032 ERPS Ring, STP, RSTP, MSTP, Compatible Ring/Chain, U-Ring                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                      |
| Time Synchronization | Network Synchronization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NTP Server/Client, SNTP                                                                              |
|                      | Precision Network Synchronization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | IEEE1588v1 OC/BC (Software)<br>IEEE1588v2 TC (Hardware) - ns accuracy<br>IEEE1588v2 OC/BC (Software) |
| Automation Profiles  | Profinet v2.33 CC-B conformance, EtherNet/IP, Modbus/TCP status registers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                      |
| MIB                  | MIB II, IF-MIB, SNMPv2 MIB, BRIDGE-MIB, RMON MIB Group 1,2,3,9, RFC 1157, RFC 1213, RFC 1215, RFC 1493, RFC 1643, RFC 1757, RFC 2011, RFC 2012, RFC 2013, RFC 2233, RFC 2571, RFC 2742, RFC 2819, RFC 2863, RFC 3411, RFC 3412, RFC 3413, RFC 3414, RFC 3415, RFC 2674                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                      |

| Power Management            |                                              |                                                        |                         |
|-----------------------------|----------------------------------------------|--------------------------------------------------------|-------------------------|
| Input Voltage               | Switch Core                                  | DC                                                     | Redundant 48~57 VDC     |
|                             |                                              | AC                                                     | Single 110~220 VAC      |
|                             |                                              | Redundant AC                                           | Dual 110~220 VAC        |
|                             |                                              | Mixed AC/DC -Redundant                                 | 1x110~220VAC & 48~57VDC |
|                             | PoE                                          | 2 x 48-57 VDC<br>(each power input max 360W)           |                         |
| Input Current (Max)         | CPU board AC/ redundant AC                   | 110-220 VAC, 0.58 A Max, 64W Max                       |                         |
|                             | CPU board redundand DC                       | 48-57 VDC , 0.68A Max, 32.7W Max                       |                         |
|                             | 802.3af PoE full loading                     | 45-57 VDC, 8.4A Max, 370W Max                          |                         |
|                             | 802.3at PoE+ full loading                    | 51-57 VDC, 14.4A Max, 720W Max                         |                         |
| Connectors                  | All Versions                                 | 2 x Lockable 5-pin terminal blocks for PoE power input |                         |
|                             | DC Versions                                  | 2 x Lockable 3-pin terminal blocks for DC power input  |                         |
|                             | non-redundant(x1) / -MR version(x1) / -R(x2) | 1-2 x AC power inlet                                   |                         |
|                             | -MR versions                                 | 1 x Lockable 3-pin terminal blocks for DC power input  |                         |
| Reverse Polarity Protection | Yes                                          |                                                        |                         |

| Environmental Limits      |                                |
|---------------------------|--------------------------------|
| Operating Temperature     | -40°C~75°C (-40°F~167°F)       |
| Storage Temperature       | -40°C~85°C (-40°F~185°F)       |
| Ambient Relative Humidity | 5 ~ 95% 55°C, (non-condensing) |

| Switch Properties         |                                                    |
|---------------------------|----------------------------------------------------|
| Priority Queues           | 8                                                  |
| VLAN Table                | 4096                                               |
| MAC-Based VLAN            | 512                                                |
| VLAN ID Range             | VID 1 to 4094                                      |
| Static IGMP Groups        | 128                                                |
| Dynamic IGMP Groups       | 256                                                |
| MAC Table Size            | 16K                                                |
| Packet Buffer Size        | 1.5 MB                                             |
| Jumbo Frame               | 9216 Byte                                          |
| Switching Fabric Capacity | 56 Gbps (1G uplinks) / 128 Gbps (10G uplinks)      |
| Maximum throughput        | 41.67 Mpps (1G uplinks) / 95.24 Mpps (10G uplinks) |

| Regulatory Approvals |                                                                                                               |                   |                     |       |
|----------------------|---------------------------------------------------------------------------------------------------------------|-------------------|---------------------|-------|
| Safety               | UL 60950-1 2nd Ed. / CSA C22.2 No.60950-1-07 2nd Ed. / EN 60950-1 / CB                                        |                   |                     |       |
| EMC                  | FCC Part 15, Subpart B, Class A<br>EN 55032, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-4 |                   |                     |       |
| EMS Test             | Item                                                                                                          |                   | Value               | Level |
| IEC 61000-4-2        | ESD                                                                                                           | Contact Discharge | ±8KV                | 4     |
|                      |                                                                                                               | Air Discharge     | ±15KV               | 4     |
| IEC 61000-4-3        | RS                                                                                                            | Enclosure Port    | 10(V/m), 80-1000MHz | 3*    |
| IEC 61000-4-4        | EFT                                                                                                           | AC Power Port     | ±2.0 KV             | 3     |
|                      |                                                                                                               | DC Power Port     | ±2.0 KV             | 3     |
|                      |                                                                                                               | Signal Port       | ±2.0 KV             | 4     |
|                      |                                                                                                               |                   |                     |       |
| IEC 61000-4-5        | Surge                                                                                                         | AC Power Port     | Line-to Line±1.0KV  | 3     |
|                      |                                                                                                               | AC Power Port     | Line-to Earth±2.0KV | 3     |
|                      |                                                                                                               | DC Power Port     | Line-to Line±1.0KV  | 3     |
|                      |                                                                                                               | DC Power Port     | Line-to Earth±2.0KV | 3     |
|                      |                                                                                                               | Signal Port       | Line-to Earth±2.0KV | 3     |
| IEC 61000-4-6        | CS                                                                                                            | 0.15-80MHz        | 10 Vrms             | 3*    |
| IEC 61000-4-8        | PFMF                                                                                                          | (Enclosure)       | AC 50Hz 10A/m       | 3     |
| IEC 61000-4-11       | DIP                                                                                                           | AC Power Port     | -                   | -     |
| Shock                | MIL-STD-810G Method 516.5                                                                                     |                   |                     |       |
| Drop                 | MIL-STD-810F Method 516.5                                                                                     |                   |                     |       |
| Vibration            | MIL-STD-810F Method 514.5 C-1 & C-2                                                                           |                   |                     |       |
| Rail Traffic         | EN50155 / EN50121-4 Certified                                                                                 |                   |                     |       |
| RoHS II              | Yes                                                                                                           |                   |                     |       |

\* EMC level 3 on CS/RS pass conditional to the use of Shielded Ethernet Cable.



# Industrial Networking Solutions

*Harsh Environments Switches*

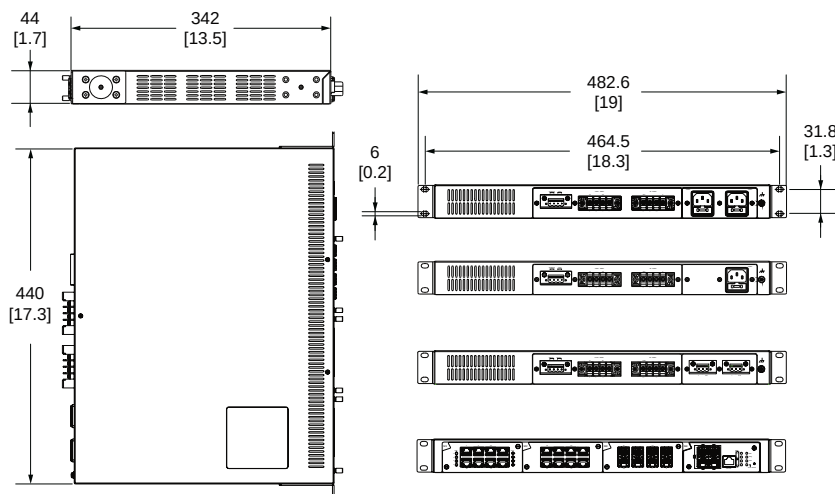


Switch Core Platforms | Layer 3 | 1U Rack Mount | Metal Housing | IP30 Rating



**Industrial Layer-3 Rack-Mount Managed Modular Gigabit Ethernet PoE Switches**

| Part Number            | Module Slots | Uplink Ports  | Power Supply                                                           | Features                                                                                                                                                                                     |
|------------------------|--------------|---------------|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RHG7628-CPU-4GSFP      | 3            | 4 x 1 Gb SFP  | Single 110~220 VAC + Dual 48~57 VDC for PoE                            | Industrial EMC Protection<br>Profinet & Ethernet/IP Ready<br>IEEE1588 Precision Timing<br>Redundant Ring<br>Advanced Security<br>MIL-STD Ruggedized<br>Redundant Power Input<br>Relay Output |
| RHG7628-CPU-4GSFP-R    | 3            | 4 x 1 Gb SFP  | Dual 110~220 VAC + Dual 48~57 VDC for PoE                              |                                                                                                                                                                                              |
| RHG7628-CPU-4GSFP-MR   | 3            | 4 x 1 Gb SFP  | Single 110~220 VAC + Single 48~57 VDC (CPU) and Dual 48~57 VDC for PoE |                                                                                                                                                                                              |
| RHG7628-CPU-4GSFP-DC   | 3            | 4 x 1 Gb SFP  | Dual 24~48 VDC + Dual 48~57 VDC for PoE                                |                                                                                                                                                                                              |
| RHG7628-CPU-410GSFP    | 3            | 4 x 10 Gb SFP | Single 110~220 VAC + Dual 48~57 VDC for PoE                            |                                                                                                                                                                                              |
| RHG7628-CPU-410GSFP-R  | 3            | 4 x 10 Gb SFP | Dual 110~220 VAC + Dual 48~57 VDC for PoE                              |                                                                                                                                                                                              |
| RHG7628-CPU-410GSFP-MR | 3            | 4 x 10 Gb SFP | Single 110~220 VAC + Single 48~57 VDC (CPU) and Dual 48~57 VDC for PoE |                                                                                                                                                                                              |
| RHG7628-CPU-410GSFP-DC | 3            | 4 x 10 Gb SFP | Dual 24~48 VDC + Dual 48~57 VDC for PoE                                |                                                                                                                                                                                              |



## Feature Highlights:

- Maximum 128Gbps switching capacity, 95.24Mpps throughput
- Rugged industrial design for -40~75 °C harsh environment operation
- Flexible modular configuration, 3 Module-dedicated slots
- Up to 24 PoE ports, with maximum 720W of PoE power budget
- 4 x 1 Gigabit or 4 x 10 Gigabit SFP Uplink slots
- Up to 54 possible configurations in 4 power input versions
- ITU-T G.8032 ERPS Ring, RSTP, or MRP (client) redundancy
- RIP, OSPF, Static Routing, PIM supported Layer-3 switching
- EN50155 / EN50121-4 Certified for Railway applications
- PROFINET CC-B v2.33 Conformance, Provides GSD Description file



# Industrial Networking Solutions

## Specifications & Approvals



Switch Core Platforms | Layer 3 | 1U Rack Mount | Metal Housing | IP30 Rating

| Ethernet                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                      |                         |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------|
| Standards                   | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X)<br>IEEE 802.3ab for 1000BaseT(X)<br>IEEE 802.3z for 1000BaseX<br>IEEE 802.3ae For 10 Gigabit Ethernet Fiber<br>IEEE 802.3x for Flow Control, back pressure flow control<br>IEEE 802.1D-2004 for Spanning Tree Protocol<br>IEEE 802.1w for Rapid Spanning Tree Protocol<br>IEEE 802.1s for Multiple Spanning Tree Protocol<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1p for Class of Service<br>IEEE 802.1X for Authentication<br>IEEE 802.1ae for MAC security (MACsec) – on RHGM4-RHGM5 only<br>IEEE 802.3ad for Port Trunk with LACP<br>IEEE 802.3az for Energy Efficient Ethernet |                                                                                                      |                         |
| Protocols                   | IPv4, IPv6, IGMPv1/v2/v3, IGMP Snooping, GARP, GMRP, GVRP, SNMPv1/v2c/v3, SNMP Inform, ICMP, Telnet, SSH, DHCP Relay/ Client/IP-port-mapping, DHCP Option 66/67/82, BootP, RARP, TFTP, SMTP, SMTP (Gmail), RMON, HTTP, HTTPS, Syslog, MRP (Client),LDP,802.1x,EAP,RADIUS,TACACS+,Mirror port, QoS, ACL                                                                                                                                                                                                                                                                                                                                       |                                                                                                      |                         |
| Redundancy                  | ITU-T G.8032 ERPS Ring, STP, RSTP, MSTP, Compatible Ring/Chain, U-Ring                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                      |                         |
| Time Synchronization        | Network Synchronization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NTP Server/Client, SNTP                                                                              |                         |
|                             | Precision Network Synchronization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | IEEE1588v1 OC/BC (Software)<br>IEEE1588v2 TC (Hardware) - ns accuracy<br>IEEE1588v2 OC/BC (Software) |                         |
| Layer-3 Switching Protocols | Routing: IPv4 Unicast static routing, RIP v1/v2, OSPFv2, Multicast: IGMPv1/v2/v3, DVMRP, PIM-DM, PIM-SM, PIM-SSM<br>Routing Redundancy: VRRP (Virtual Router Redundancy Protocol)                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                      |                         |
| Automation Profiles         | Profinet v2.33 CC-B conformance, EtherNet/IP, Modbus/TCP status registers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                      |                         |
| MIB                         | MIB II, IF-MIB, SNMPv2 MIB, BRIDGE-MIB, RMON MIB Group 1,2,3,9, RFC 1157, RFC 1213, RFC 1215, RFC 1493, RFC 1643, RFC 1757, RFC 2011, RFC 2012, RFC 2013, RFC 2233, RFC 2571, RFC 2742, RFC 2819, RFC 2863, RFC 3411, RFC 3412, RFC 3413, RFC 3414, RFC 3415, RFC 2674                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                      |                         |
| Power Management            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                      |                         |
| Input Voltage               | Switch Core                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | DC                                                                                                   | Redundant 48~57 VDC     |
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | AC                                                                                                   | Single 110~220 VAC      |
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Redundant AC                                                                                         | Dual 110~220 VAC        |
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Mixed AC/DC -Redundant                                                                               | 1x110~220VAC & 48~57VDC |
|                             | PoE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2 x 48-57 VDC<br>(each power input max 360W)                                                         |                         |
| Input Current (Max)         | CPU board AC/ redundant AC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 110-220 VAC, 0.58 A Max, 64W Max                                                                     |                         |
|                             | CPU board redundand DC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 48-57 VDC , 0.68A Max, 32.7W Max                                                                     |                         |
|                             | 802.3af PoE full loading                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 45-57 VDC, 8.4A Max, 370W Max                                                                        |                         |
|                             | 802.3at PoE+ full loading                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 51-57 VDC, 14.4A Max, 720W Max                                                                       |                         |
| Connectors                  | All Versions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2 x Lockable 5-pin terminal blocks for PoE power input                                               |                         |
|                             | DC Versions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 2 x Lockable 3-pin terminal blocks for DC power input                                                |                         |
|                             | non-redundant(x1) / -MR version(x1) / -R(x2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1-2 x AC power inlet                                                                                 |                         |
|                             | -MR versions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1 x Lockable 3-pin terminal blocks for DC power input                                                |                         |
| Environmental Limits        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                      |                         |
| Operating Temperature       | -40°C~-75°C (-40°F~167°F)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                      |                         |
| Storage Temperature         | -40°C~85°C (-40°F~185°F)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                      |                         |
| Ambient Relative Humidity   | 5 ~ 95% 55°C, (non-condensing)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                      |                         |

| Switch Properties         |                                                    |
|---------------------------|----------------------------------------------------|
| Priority Queues           | 8                                                  |
| VLAN Table                | 4096                                               |
| MAC-Based VLAN            | 512                                                |
| VLAN ID Range             | VID 1 to 4094                                      |
| Static IGMP Groups        | 128                                                |
| Dynamic IGMP Groups       | 256                                                |
| MAC Table Size            | 16K                                                |
| Packet Buffer Size        | 1.5 MB                                             |
| Jumbo Frame               | 9216 Byte                                          |
| Switching Fabric Capacity | 56 Gbps (1G uplinks) / 128 Gbps (10G uplinks)      |
| Maximum throughput        | 41.67 Mpps (1G uplinks) / 95.24 Mpps (10G uplinks) |

| Regulatory Approvals |                                                                                                               |                                                                                 |                        |    |
|----------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------|----|
| Safety               | UL 60950-1 2nd Ed. / CSA C22.2 No.60950-1-07 2nd Ed. / EN 60950-1 / CB                                        |                                                                                 |                        |    |
| EMC                  | FCC Part 15, Subpart B, Class A<br>EN 55032, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-4 |                                                                                 |                        |    |
| EMS Test             | Item                                                                                                          | Value                                                                           | Level                  |    |
| IEC 61000-4-2        | ESD                                                                                                           | Contact Discharge<br>Air Discharge                                              | ±8KV                   | 4  |
|                      |                                                                                                               |                                                                                 | ±15KV                  | 4  |
| IEC 61000-4-3        | RS                                                                                                            | Enclosure Port                                                                  | 10(V/m),<br>80-1000MHz | 3* |
| IEC 61000-4-4        | EFT                                                                                                           | AC Power Port<br>DC Power Port<br>Signal Port                                   | ±2.0 KV                | 3  |
|                      |                                                                                                               |                                                                                 | ±2.0 KV                | 3  |
|                      |                                                                                                               |                                                                                 | ±2.0 KV                | 4  |
|                      |                                                                                                               |                                                                                 | ±2.0 KV                | 4  |
| IEC 61000-4-5        | Surge                                                                                                         | AC Power Port<br>AC Power Port<br>DC Power Port<br>DC Power Port<br>Signal Port | Line-to Line±1.0KV     | 3  |
|                      |                                                                                                               |                                                                                 | Line-to Earth±2.0KV    | 3  |
|                      |                                                                                                               |                                                                                 | Line-to Line±1.0KV     | 3  |
|                      |                                                                                                               |                                                                                 | Line-to Earth±2.0KV    | 3  |
| IEC 61000-4-6        | CS                                                                                                            | 0.15-80MHz                                                                      | 10 Vrms                | 3* |
| IEC 61000-4-8        | PfMF                                                                                                          | (Enclosure)                                                                     | AC 50Hz 10A/m          | 3  |
| IEC 61000-4-11       | DIP                                                                                                           | AC Power Port                                                                   | -                      | -  |
| Shock                | MIL-STD-810G Method 516.5                                                                                     |                                                                                 |                        |    |
| Drop                 | MIL-STD-810F Method 516.5                                                                                     |                                                                                 |                        |    |
| Vibration            | MIL-STD-810F Method 514.5 C-1 & C-2                                                                           |                                                                                 |                        |    |
| Rail Traffic         | EN50155 / EN50121-4 Certified                                                                                 |                                                                                 |                        |    |
| RoHS II              | Yes                                                                                                           |                                                                                 |                        |    |

\* EMC level 3 on CS/RS pass conditional to the use of Shielded Ethernet Cable.



# Industrial Networking Solutions

Harsh Environments Switches



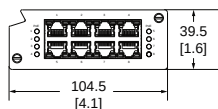
8 Port RJ45/SFP Modules | 4 Port Rj45/SFP MACsec Secure Modules



| Part Number | RJ45 PoE ports | RJ45 Non-PoE ports | SFP ports | RJ45 MACsec* | SFP MACsec* |
|-------------|----------------|--------------------|-----------|--------------|-------------|
| RHG7X28-M1  | 8              | N/A                | N/A       | N/A          | N/A         |
| RHG7X28-M2  | N/A            | 8                  | N/A       | N/A          | N/A         |
| RHG7X28-M3  | N/A            | N/A                | 8         | N/A          | N/A         |
| RHG7X28-M4  | N/A            | N/A                | N/A       | 4            | N/A         |
| RHG7X28-M5  | N/A            | N/A                | N/A       | N/A          | 4           |

\* Layer 2 models do not support MACsec M4-M5 modules.

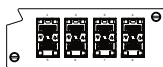
**RJ45 PoE**



**RJ45**



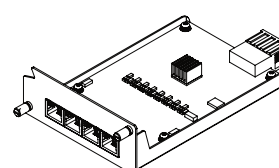
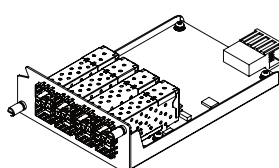
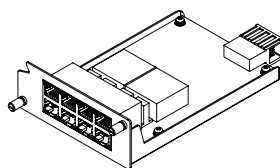
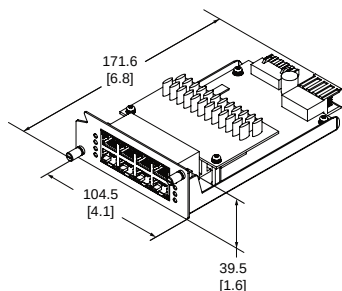
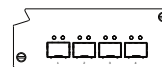
**SFP**



**RJ45 Secure  
MACsec**



**SFP Secure  
Macsec**





# Industrial Networking Solutions

## Specifications & Approvals



Switch Core Platforms | Modules | Metal Housing | IP30 Rating

### Non-Secure Models Technical Specifications

| Part Number        | RHG7X28-M1             | RHG7X28-M2             | RHG7X28-M3             |
|--------------------|------------------------|------------------------|------------------------|
| Description        | 8-Port RJ45 PoE module | 8-Port RJ45 module     | 8-Port SFP module      |
| PoE Power Per Port | 15.4/30W (802.3af/at)  | N/A                    | N/A                    |
| Total Max Power    | 240 W                  | N/A                    | N/A                    |
| Number of Ports    | 8                      | 8                      | 8                      |
| Port Speed         | 10/100/1000 BASE-T(X)  | 10/100/1000 BASE-T(X)  | 100/1000 BASE-F(X)     |
| Interface          | RJ45                   | RJ45                   | SFP Slot               |
| Dimensions         | 104.5 x 171.6 x 39.5mm | 104.5 x 171.6 x 39.5mm | 104.5 x 171.6 x 39.5mm |
| Fixing             | 2 x screws (included)  | 2 x screws (included)  | 2 x screws (included)  |

### Secure Models Technical Specifications

| Part Number        | RHG7X28-M4                       | RHG7X28-M5                      |
|--------------------|----------------------------------|---------------------------------|
| Description        | 4-Port RJ45 secure MACsec Module | 4-Port SFP secure MACsec Module |
| PoE Power Per Port | N/A                              | N/A                             |
| Total Max Power    | N/A                              | N/A                             |
| Number of Ports    | 4                                | 4                               |
| Port Speed         | 10/100/1000 BASE-T(X)            | 100/1000 BASE-F(X)              |
| Interface          | RJ45                             | SFP Slot                        |
| Dimensions         | 104.5 x 171.6 x 39.5mm           | 104.5 x 171.6 x 39.5mm          |
| Fixing             | 2 x screws (included)            | 2 x screws (included)           |





# Industrial Networking Solutions

Industry Specific Ethernet Switches

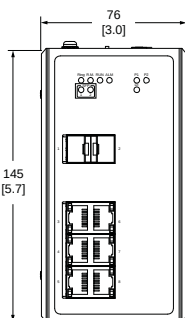
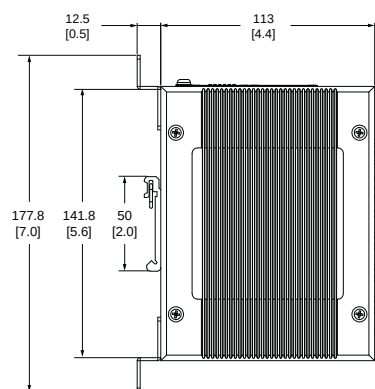


IEC 61850-3 DIN-Rail Managed Gigabit Switches | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

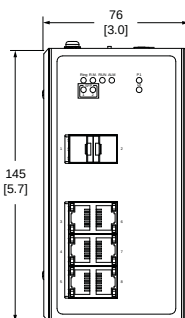


IEC 61850-3 Certified Managed Gigabit Switches

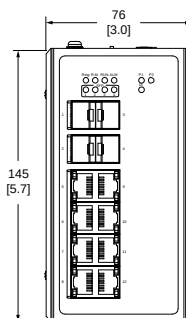
| Part Number<br>[MFG #]                         | 10/100/1000<br>RJ45 Ports | 1000<br>SFP Slots | Power Input            | Features                                                                                                                                                                                         |
|------------------------------------------------|---------------------------|-------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>E45MS-8M3-2SFP</b><br>[EHG9508-2SFP]        | 6                         | 2                 | Dual 24~57 VDC Input   | Industrial EMC Protection<br>Profinet & Ethernet/IP Ready<br>IEEE1588 Precision Timing<br>Redundant Ring<br>IEC 61850-3 Certified<br>MIL-STD Ruggedized<br>Redundant Power Input<br>Relay Output |
| <b>E45MS-8M3-2SFP-HV</b><br>[EHG9508-2SFP-HV]  | 6                         | 2                 | Dual 110~370 VDC Input |                                                                                                                                                                                                  |
| <b>E45MS-8M3-2SFP-AC</b><br>[EHG9508-2SFP-AC]  | 6                         | 2                 | Dual 100~240 VAC Input |                                                                                                                                                                                                  |
| <b>E45MS-12M3-4SFP</b><br>[EHG9512-4SFP]       | 8                         | 4                 | Dual 24~57 VDC Input   |                                                                                                                                                                                                  |
| <b>E45MS-12M3-4SFP-HV</b><br>[EHG9512-4SFP-HV] | 8                         | 4                 | Dual 110~370 VDC Input |                                                                                                                                                                                                  |
| <b>E45MS-12M3-4SFP-AC</b><br>[EHG9512-4SFP-AC] | 8                         | 4                 | Dual 100~240 VAC Input |                                                                                                                                                                                                  |



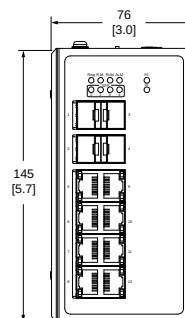
**E45MS-8M3-2SFP**



**E45MS-8M3-2SFP-HV**  
**E45MS-8M3-2SFP-AC**



**E45MS-12M3-4SFP**



**E45MS-12M3-4SFP-HV**  
**E45MS-12M3-4SFP-AC**

## Feature Highlights:

- IEC61850-3 Certified
- Up to 6 or 8 10/100/1000 BASE-T(X) ports and 2 or 4 1000 BASE-X SFP ports
- IEEE1588v2 Precision Time Protocol support, with nanosecond-accurate
- Hardware-based Transparent clock and  $\mu$ s-accurate Boundary Clock
- ERPS and Compatible Ring (recovery time < 20ms @ 40 switches), STP/RSTP/MSTP/MRP (Client) for network redundancy
- Remote management over Web browser, Telnet, Serial console, Utility
- PROFINET v2 Class B compatible & Ethernet/IP Ready
- Provides Generic Station Descr. file for integration with SIMATIC Step 7



# Industrial Networking Solutions

## Specifications & Approvals



IEC 61850-3 DIN-Rail Managed Gigabit Switches | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Switch Properties   |               |
|---------------------|---------------|
| Priority Queues     | 8             |
| VLAN Table          | 4096          |
| MAC-Based VLAN      | 512           |
| VLAN ID Range       | VID 1 to 4094 |
| Trunk Group         | 4             |
| Static IGMP Groups  | 128           |
| Dynamic IGMP Groups | 256           |
| MAC Table Size      | 16K           |
| Packet Buffer Size  | 1.5 MB        |
| Jumbo Frame         | 9216 Byte     |

| Power Management            |                                                                                  |
|-----------------------------|----------------------------------------------------------------------------------|
| Input Voltage               | 24-57 VDC<br>100~240 VAC for AC series<br>110~370 VDC for HV Series              |
| Input Current (System)      | 0.63A @ 24 VDC<br>0.16A @ 100 VAC for AC series<br>0.12A @ 110 VDC for HV series |
| Connector                   | 5-Pin 5.08mm Lockable Terminal Block                                             |
| Reverse Polarity Protection | Yes                                                                              |

| Interfaces         |                                                                                               |
|--------------------|-----------------------------------------------------------------------------------------------|
| RJ45 Ports         | Up to 8 10/100/1000BASE-T(X) auto negotiation speed                                           |
| Fiber Optics Ports | Up to 4 1000BASE-X SFP slot                                                                   |
| LED Indicators     | PWR1, PWR2, Alarm, Run, Ring, Ring Master, RJ-45 Link/Speed, SFP Link, RS232 (RJ45 connector) |
| Console            | RS232 (RJ45 connector)                                                                        |
| Relay Output       | 2 relay outputs with current carrying capacity of 1A @ 24 VDC                                 |
| DIP Switches       | Ring Control and Profinet Setting                                                             |
| Button             | Reset Button                                                                                  |

| Environmental Limits      |                               |
|---------------------------|-------------------------------|
| Operating Temperature     | -40°C~70°C (-40°F~158°F)      |
| Storage Temperature       | -40°C~85°C (-40°F~185°F)      |
| Ambient Relative Humidity | 5%~95%, 55°C (Non-condensing) |

| Ethernet            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards           | IEEE 802.3 for 10BASE-T<br>IEEE 802.3u for 100BASE-T(X)<br>IEEE 802.3ab for 1000BASE-T<br>IEEE 802.3z for 1000BASE-X<br>IEEE 802.3x for Flow Control/ Back pressure control<br>IEEE 802.1d-2004 for Spanning Tree Protocol<br>IEEE 802.1w for Rapid Spanning Tree Protocol<br>IEEE 802.1s for Multiple Spanning Tree Protocol<br>IEEE 802.1q for VLAN Tagging<br>IEEE 802.1p for Class of Service<br>IEEE 802.1x for Authentication                                                              |
| Protocols           | IPv4, IPv6, IGMPv1/v2, GARP, GMRP, GVRP, SNMPv1/v2c/v3, SNMP Inform, ICMP, Telnet, SSH, DHCP Server/Relay/Client, DHCP Option 66/67/82, BootP, RARP, TFTP, NTP Server/Client, SMTP, SMTP (Gmail), RMON, HTTP, HTTPS, Syslog, MRP (Client), LLDP, IEEE 1588 PTP V1/V2, IEEE 1588 Hardware-Assisted Transparent Clock and Software-assisted Boundary Clock, MRP (Client), 802.1x, EAP, RADIUS, TACACS+, Mirror port, QoS, ACL, Serial Console, U-Ring, STP, RSTP, MSTP, Redundancy Compatible Ring |
| Automation Profiles | Profinet, Ethernet/IP, Modbus/TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| SNMP MIB            | MIB II, IF-MIB, SNMPv2 MIB, BRIDGE-MIB, RMON MIB Group 1,2,3,9, RFC 1157, RFC 1213, RFC 1215, RFC 1493, RFC 1643, RFC 1757, RFC 2011, RFC 2012, RFC 2013, RFC 2233, RFC 2571, RFC 2742, RFC 2819, RFC 2863, RFC 3411, RFC 3412, RFC 3413, RFC 3414, RFC 3415                                                                                                                                                                                                                                     |

| Regulatory Approvals |                                                                                                            |                          |                                                                                                           |        |
|----------------------|------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------|--------|
| Safety               | UL/CUL/IEC(CB) 61010-2-201                                                                                 |                          |                                                                                                           |        |
| Industry Specific    | IEC61850-3 (Including 6.10.3 Seismic test), IEEE 1613                                                      |                          |                                                                                                           |        |
| EMC                  | FCC Part 15, Subpart B, Class A EN 55032, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-4 |                          |                                                                                                           |        |
| EMS Test             | Item                                                                                                       |                          | Value                                                                                                     | Level  |
| IEC 61000-4-2        | ESD                                                                                                        | Contact Discharge        | ±8KV                                                                                                      | 4      |
|                      |                                                                                                            | Air Discharge            | ±15KV                                                                                                     | 4      |
| IEC 61000-4-3        | RS                                                                                                         | 80-1000MHz<br>1.0-3.0GHz | 10(V/m)<br>80% AM                                                                                         | 3<br>3 |
| IEC 61000-4-4        | EFT                                                                                                        | AC Power Port            | ±4.0kV @2.5kHz                                                                                            | 4      |
|                      |                                                                                                            | DC Power Port            | ±4.0kV @2.5kHz                                                                                            | 4      |
|                      |                                                                                                            | Signal Port              | ±2.0kV @5.0kHz                                                                                            | 4      |
| IEC 61000-4-5        | Surge                                                                                                      | AC Power Port            | Line-to Line ±2.0kV                                                                                       | 4      |
|                      |                                                                                                            | AC Power Port            | Line-to Earth ±4.0kV                                                                                      | 4      |
|                      |                                                                                                            | DC Power Port            | Line-to Line ±1.0kV                                                                                       | 3      |
|                      |                                                                                                            | DC Power Port            | Line-to Earth ±2.0kV                                                                                      | 3      |
| IEC 61000-4-6        | CS                                                                                                         | AC Power Port            | 10V, 150kHz~80MHz, 80% AM                                                                                 | 3      |
|                      |                                                                                                            | DC Power Port            | 10V, 150kHz~80MHz, 80% AM                                                                                 | 3      |
|                      |                                                                                                            | Signal Port              | 10V, 150kHz~80MHz, 80% AM                                                                                 | 3      |
| IEC 61000-4-8        | PFMF                                                                                                       | Enclosure                | 100A/m continuous,<br>1000A/m for 3S                                                                      | 5<br>5 |
| IEC 61000-4-10       | Damped Oscillatory Magnetic Field                                                                          | Enclosure                | 100A/m, 100KHz, 1MHz                                                                                      | 5      |
| IEC 61000-4-11       | DIP                                                                                                        | AC Power Port            | Drop 70% 3 times/S (1 Period)<br>Drop 40% 3 times/1mS (50 Period)<br>Drop 100% 3 times/50mS (5&50 Period) | N/A    |
| Shock                | MIL-STD-810G Method 516.5                                                                                  |                          |                                                                                                           |        |
| Drop                 | MIL-STD-810F Method 516.5                                                                                  |                          |                                                                                                           |        |
| Vibration            | MIL-STD-810F Method 514.5 C-1 & C-2                                                                        |                          |                                                                                                           |        |
| RoHS II              | Yes                                                                                                        |                          |                                                                                                           |        |
| MTBF                 | 20 Years                                                                                                   |                          |                                                                                                           |        |



# Industrial Networking Solutions

Industry Specific Ethernet Switches

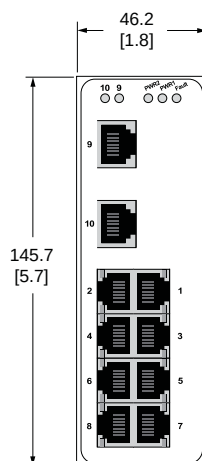
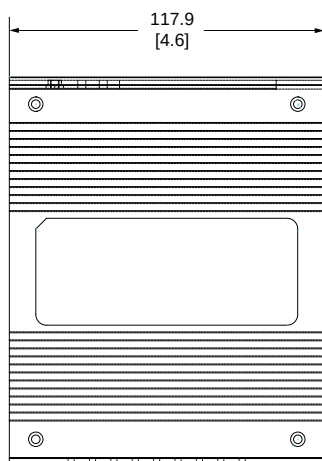


EN50155 Railway Unmanaged Switches | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

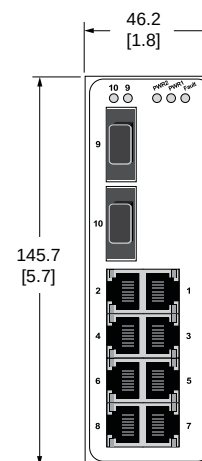


Unmanaged Fast-Ethernet Switches, Gigabit Uplink

| Part Number<br>[MFG #]                 | 10/100<br>RJ45 Ports | 10/100/1000<br>RJ45 Ports | 100<br>Fiber Ports | 1000<br>Fiber Ports | Features                                                                                                      |
|----------------------------------------|----------------------|---------------------------|--------------------|---------------------|---------------------------------------------------------------------------------------------------------------|
| <b>E45UM-10-2M</b><br>[EH7310-G]       | 8                    | 2                         | N/A                | N/A                 | Industrial EMC Protection<br>Railway Certified<br>MIL-STD Ruggedized<br>Redundant Power Input<br>Relay Output |
| <b>E45UM-10-2FMM</b><br>[EH7310-G-2FM] | 8                    | N/A                       | N/A                | 2 (m)               |                                                                                                               |
| <b>E45UM-10-2FSM</b><br>[EH7310-G-2FS] | 8                    | N/A                       | N/A                | 2 (s)               |                                                                                                               |
| <b>E45UM-10-2FM</b><br>[EH7310-2FM]    | 8                    | N/A                       | 2 (m)              | N/A                 |                                                                                                               |
| <b>E45UM-10-2FS</b><br>[EH7310-2FS]    | 8                    | N/A                       | 2 (s)              | N/A                 |                                                                                                               |



**E45UM-10-2M**



**E45UM-10-2FMM  
E45UM-10-2FSM  
E45UM-10-2FM  
E45UM-10-2FS**

## Feature Highlights:

- Extended Operating Temperature Range: -40 ~ 80 °C (-40 ~ 176 °F)
- No rotating fans or mechanical parts inside ensure the highest reliability
- Wide Power Supply Options: Redundant Dual Inputs (12/24/48 VDC)
- Failure to Trigger Fault Output Relay: Relay output warning for power failure and break alarm. Normally Closed
- Support up to 8K MAC addresses with automatic learning and aging.
- Transmits 802.1Q VLAN and 802.1p priority tagged message transparently
- Smart broadcast storm protection



# Industrial Networking Solutions

## Specifications & Approvals



EN50155 Railway Unmanaged Switches | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Technology                  |                                                                                                                  |
|-----------------------------|------------------------------------------------------------------------------------------------------------------|
| Standards                   | IEEE 802.3 10-Base-T<br>IEEE 802.3u 100Base-TX<br>IEEE 802.3 100Base-FX<br>IEEE 802.3 1000Base-SX, LX            |
| Switching Latency           | 5 µS                                                                                                             |
| Flow Control                | IEEE 802.3x Flow Control and Back-pressure                                                                       |
| Processing type             | Store-and-Forward                                                                                                |
| Interfaces                  |                                                                                                                  |
| RJ45 Ports                  | 10/100BaseT(X), Auto MDI/MDI-X<br>10/100/1000BaseT(X), Auto MDI/MDI-X (Uplink)                                   |
| Fiber Optics Ports          | 100BaseFX ports (SC connector) (Uplink)<br>1000BaseFX ports (SC connector) (Uplink)                              |
| LED Indicators              | LNK/ACT(Steady green-Link up/<br>Blinking-data transmitting & receiving)<br>PWR1(Green), PWR2(Green), Fault(Red) |
| Power Management            |                                                                                                                  |
| Dual Input Voltage          | 12/24/48 VDC                                                                                                     |
| Dual Input Current          | 0.49A @ 24VDC                                                                                                    |
| Overload Current Protection | 0.8A @ 12VDC                                                                                                     |
| Connector                   | Removable dual 3-pin Terminal Block for power input                                                              |
| Reverse Polarity Protection | Present                                                                                                          |
| Consumption                 | 11.875 Watts                                                                                                     |
| Environmental Limits        |                                                                                                                  |
| Operating Temperature       | -40°C~80°C (-40°F~176°F)                                                                                         |
| Storage Temperature         | -40°C~85°C (-40°F~185°F)                                                                                         |
| Ambient Relative Humidity   | 5%~95%, 55°C (Non-condensing)                                                                                    |

| Regulatory Approvals |                                                                |                                    |                                                                       |        |
|----------------------|----------------------------------------------------------------|------------------------------------|-----------------------------------------------------------------------|--------|
| Safety               | UL60950-1, CSA C222, No.60950-1-07, CB                         |                                    |                                                                       |        |
| EMI                  | FCC part 15, CISPR (EN55032) class A                           |                                    |                                                                       |        |
| EMC                  | EN50121-3-2, EN60068-2-1, EN60068-2-2, EN61373                 |                                    |                                                                       |        |
| EMS Test             | Item                                                           |                                    | Value                                                                 | Level  |
| EN61000-4-2          | ESD                                                            | Contact Discharge<br>Air Discharge | 8 KV, Criterion A<br>15 KV, Criterion A                               | 4<br>4 |
| EN61000-4-3          | RS                                                             | Enclosure ports                    | 10 V/m (80-1000 MHz),<br>Criterion A                                  | 3      |
| EN61000-4-4          | EFT                                                            | Power Line                         | 2 KV, Criterion B                                                     | 3      |
| EN61000-4-5          | Surge                                                          | Line to earth<br>Power Line        | 1 KV, Criterion B<br>2 KV, Criterion B                                | 2<br>3 |
| EN61000-4-6          | CS                                                             | Line to earth<br>Power Line        | 3 V (0.15 - 80 MHz), Criterion A<br>10 V (0.15 - 80 MHz), Criterion B | 3<br>3 |
| Shock                | MIL-STD-810F                                                   |                                    |                                                                       |        |
| Drop                 | MIL-STD-810F                                                   |                                    |                                                                       |        |
| Vibration            | MIL-STD-810F                                                   |                                    |                                                                       |        |
| MTBF                 | 201,976 hrs (23.06 Years) (Data base: MIL-HDBK-217F, GB 25°C ) |                                    |                                                                       |        |
| Warranty             | 5 Years                                                        |                                    |                                                                       |        |



# Industrial Networking Solutions

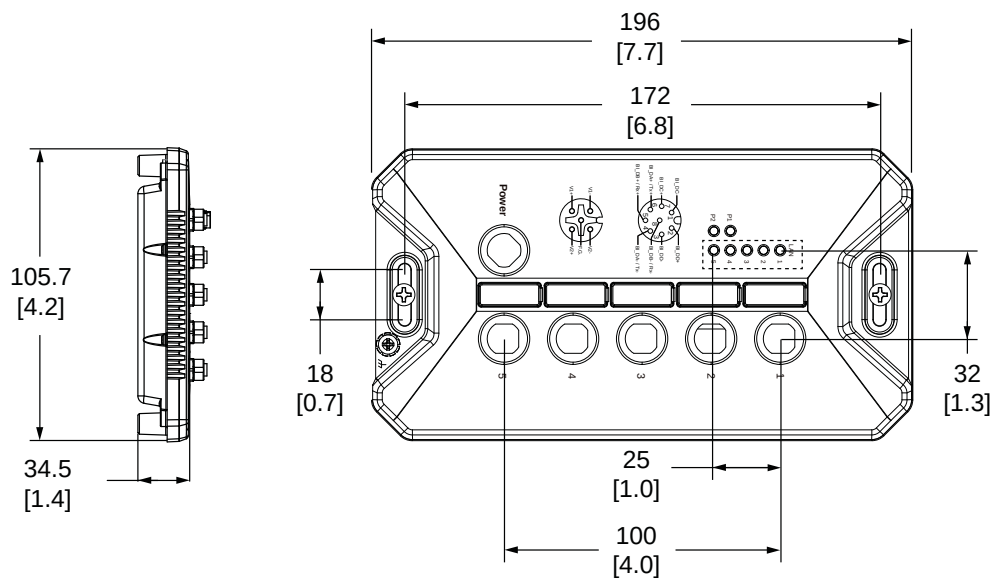
*Industry Specific Ethernet Switches*



EN50155 Railway Unmanaged Switches | Surface Mount | Aluminum Housing | IP67 Rating



| Unmanaged Waterproof Gigabit Switches |                          |          |                                                                                                               |
|---------------------------------------|--------------------------|----------|---------------------------------------------------------------------------------------------------------------|
| Part Number<br>[MFG #]                | 10/100/1000<br>M12 Ports | M12 Type | Features                                                                                                      |
| <b>MDE45UM-5M</b><br>[EMG8305-M12-A]  | 5                        | A Coding | Industrial EMC Protection<br>Railway Certified<br>MIL-STD Ruggedized<br>Redundant Power Input<br>Relay Output |
| <b>MDEX6UM-5M</b><br>[EMG8305-M12-X]  | 5                        | X Coding |                                                                                                               |



## Feature Highlights:

- 5 10/100/1000 BASE-T(X) ports, M12 connector (A or X coding)
- EN50155, EN50121-4 and UL 61010-2-201 certified
- Redundant power input 12~48 VDC
- Ruggedized IP67 aluminum case design
- Works from -40°C~75°C
- Prioritizes Profinet packets according to 802.1q



# Industrial Networking Solutions

## Specifications & Approvals



EN50155 Railway Unmanaged Switches | Surface Mount | Aluminum Housing | IP67 Rating

| Switch Properties           |                                                                                                                                                    |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Processing Scheme           | Store-and-Forward                                                                                                                                  |
| MAC Address Table           | 8096                                                                                                                                               |
| Packet Buffer Size          | 1Mbits                                                                                                                                             |
| Jumbo Frame                 | 10k Bytes                                                                                                                                          |
| Ethernet                    |                                                                                                                                                    |
| Compliance                  | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X)<br>IEEE 802.3ab for 1000BaseT<br>IEEE 802.3x for Flow Control,<br>back pressure flow control |
| Flow Control                | Back pressure and pause frame -<br>based flow control schemes                                                                                      |
| Transmission Rate           | 10/100/1000 Mbps                                                                                                                                   |
| Power Management            |                                                                                                                                                    |
| Input Voltage               | 12-48 VDC                                                                                                                                          |
| Input Current               | 0.42A @ 12 V                                                                                                                                       |
| Max Power Consumption       | 5W                                                                                                                                                 |
| Connector                   | 5-Pin 5.08mm Lockable Terminal Block                                                                                                               |
| Reverse Polarity Protection | Yes                                                                                                                                                |
| LED                         |                                                                                                                                                    |
| LED Indicators              | PWR1, PWR2, LAN1, LAN2, LAN3, LAN4, LAN5                                                                                                           |
| Physical Characteristics    |                                                                                                                                                    |
| Housing                     | IP67 protection according to EN 60529, Aluminum Housing                                                                                            |
| Environmental Limits        |                                                                                                                                                    |
| Operating Temperature       | -40°C~75°C (-40°F~167°F)                                                                                                                           |
| Storage Temperature         | -40°C~85°C (-40°F~185°F)                                                                                                                           |
| Ambient Relative Humidity   | 5%~95%, 55°C (Non-condensing)                                                                                                                      |

| Regulatory Approvals |                                                                                                 |                   |                     |       |
|----------------------|-------------------------------------------------------------------------------------------------|-------------------|---------------------|-------|
| Safety Rail Traffic  | EN 60950-1:2006, UL/IEC(CB) 61010-2-201<br>EN50155; EN50121-4                                   |                   |                     |       |
| EMC                  | FCC Part 15, Subpart B, Class A EN 55032, EN 55024,<br>EN 61000-3-3, EN 61000-6-2, EN 61000-6-4 |                   |                     |       |
| EMS Test             | Item                                                                                            |                   | Value               | Level |
| IEC 61000-4-2        | ESD                                                                                             | Contact Discharge | ±8KV                | 4     |
|                      |                                                                                                 | Air Discharge     | ±15KV               | 4     |
| IEC 61000-4-3        | RS                                                                                              | 80-1000MHz        | 10(V/m)             | 3     |
|                      |                                                                                                 | 800-1000MHz       | 20(V/m)             | 3     |
|                      |                                                                                                 | 1.4-2.1GHz        | 10(V/m)             | 3     |
|                      |                                                                                                 | 2.1-2.5GHz        | 5(V/m)              | 3     |
| IEC 61000-4-4        | EFT                                                                                             | AC Power Port     | ±4.0 KV             | 3     |
|                      |                                                                                                 | DC Power Port     | ±2.0 KV             | 3     |
| IEC 61000-4-5        | Surge                                                                                           | DC Power Port     | Line-to Line±1.0kV  | 3     |
|                      |                                                                                                 | DC Power Port     | Line-to Earth±2.0kV | 3     |
|                      |                                                                                                 | Signal Port       | Line-to Line±1.0kV  | 3     |
|                      |                                                                                                 | Signal Port       | Line-to Earth±2.0kV | 3     |
| IEC 61000-4-6        | CS                                                                                              | 0.15-80MHz        | 10 Vrms             | 3     |
| IEC 61000-4-8        | PfMF                                                                                            | Enclosure         | DC 300A/m           | 3     |
| Shock                | MIL-STD-810G Method 516.5                                                                       |                   |                     |       |
| Drop                 | MIL-STD-810F Method 516.5                                                                       |                   |                     |       |
| Vibration            | MIL-STD-810F Method 514.5 C-1 & C-2                                                             |                   |                     |       |
| RoHS II              | Yes                                                                                             |                   |                     |       |
| MTBF                 | 20 Years                                                                                        |                   |                     |       |
| Warranty             | 5 Years                                                                                         |                   |                     |       |





# Industrial Networking Solutions

Industry Specific Ethernet Switches



EN50155 Managed Switches | 8-Port | Surface Mount | Aluminum Housing | IP67 Rating

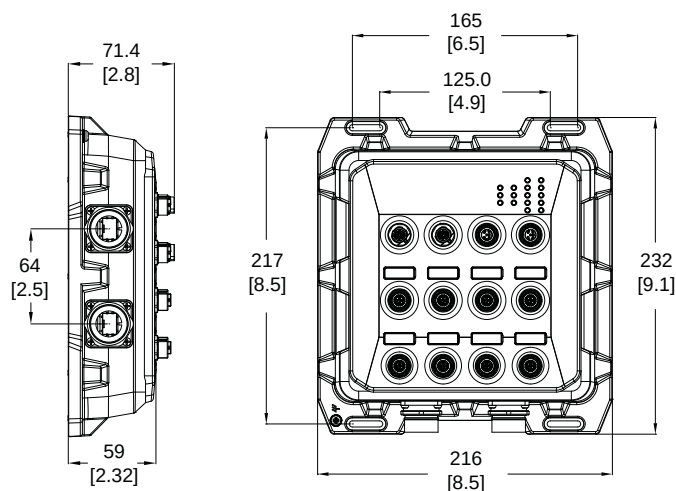


## 8-Port Managed Waterproof Gigabit Switches with Profinet

| 8-Port Managed Waterproof Gigabit Switches with Profinet  |                                                              |                          |                  |                                                                                                                                                                                     |
|-----------------------------------------------------------|--------------------------------------------------------------|--------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Part Number<br>[MFG #]                                    | Rating                                                       | 10/100/1000<br>M12 Ports | Max PoE<br>Ports | Features                                                                                                                                                                            |
| MDE45MS-8M<br>[EMG8508]                                   | 9-48 VDC<br>1.19A Max                                        | 8                        | N/A              | Profinet & Ethernet/IP Ready<br>Precision Timing<br>Redundant Ring<br>Industrial EMC Protection<br>Railway Certified<br>MIL-STD Ruggedized<br>Redundant Power Input<br>Relay Output |
| MDE45MS-8M-HV<br>[EMG8508-HV]                             | 50-150 VDC<br>0.27A max                                      | 8                        | N/A              |                                                                                                                                                                                     |
| Managed Waterproof Gigabit Switches with PoE and Profinet |                                                              |                          |                  |                                                                                                                                                                                     |
| MDE45MS-8M-4POE<br>[EMG8508-4POE]                         | 45-57 VDC, 3.08A Max<br>Full Loading<br>51-57 VDC, 5.03A Max | 8                        | 4                | Profinet & Ethernet/IP Ready<br>Precision Timing<br>Redundant Ring<br>Industrial EMC Protection<br>Railway Certified<br>MIL-STD Ruggedized<br>Redundant Power Input<br>Relay Output |
| MDE45MS-8M-8POE<br>[EMG8508-8POE]                         | 45-57 VDC, 3.08A Max<br>Full Loading<br>51-57 VDC, 5.03A Max | 8                        | 8                |                                                                                                                                                                                     |

### Feature Highlights:

- Up to 8 10/100/1000 BASE-T(X) ports, M12 connector
- Up to 4 or 8 802.3af or 802.3at complaint PoE ports
- EN50155, EN50121-4 and UL 61010-2-201 certified
- Redundant power input, DC or High Voltage DC
- Ruggedized IP67 aluminum enclosure
- Works from -40 °C ~ 75 °C
- 2x Relay outputs, 5-pin M12 A-Coding
- Profinet Conformance Class B compatible
- Ethernet/IP Compatible





# Industrial Networking Solutions

## Specifications & Approvals



EN50155 Managed Switches | 8-Port | Surface Mount | Aluminum Housing | IP67 Rating

| Switch Properties   |               |
|---------------------|---------------|
| Priority Queues     | 8             |
| VLAN Table          | 4096          |
| MAC-Based VLAN      | 512           |
| VLAN ID Range       | VID 1 to 4094 |
| Trunk Group         | 4             |
| Static IGMP Groups  | 128           |
| Dynamic IGMP Groups | 256           |
| MAC Table Size      | 16k           |
| Packet Buffer Size  | 1.5 MB        |
| Jumbo Frame         | 9216 Byte     |

| Ethernet            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards           | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X)<br>IEEE 802.3ab for 1000BaseT(X)<br>IEEE 802.3z for 1000BaseX<br>IEEE 802.3af / 802.3at for Power over Ethernet<br>IEEE 802.3x for Flow Control, back pressure flow control<br>IEEE 802.1d-2004 for Spanning Tree Protocol<br>IEEE 802.1w for Rapid Spanning Tree Protocol<br>IEEE 802.1s for Multiple Spanning Tree Protocol<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1p for Class of Service<br>IEEE 802.1X for Authentication<br>IEEE 802.3ad for Port Trunk with LACP<br>IEEE 802.3az for Energy Efficient Ethernet |
| Protocols           | IPv4, IPv6, IGMPv1/v2/v3, GARP, GMRP, GVRP, SNMPv1/v2c/v3, SNMP Inform, ICMP, Telnet, SSH, DHCP Server/Relay/Client, DHCP Option 66/67/82, BootP, RARP, TFTP, NTP Server/Client, SMTP, SMTP (Gmail), RMON, HTTP, HTTPS, Syslog, MRP (Client), LLD, IEEE 1588 PTP V1/V2, IEEE 1588 Hardware Transparent Clock, 802.1x, EAP, RADIUS, TACACS+, Mirror port, QoS, ACL, Serial Console, U-Ring, STP, RSTP, MSTP, Redundancy Compatible Ring                                                                                                                                           |
| Automation Profiles | Profinet, Ethernet/IP, Modbus/TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| SNMP MIB            | MIB II, IF-MIB, SNMPv2 MIB, BRIDGE-MIB, RMON MIB Group 1,2,3,9, RFC 1157, RFC 1213, RFC 1215, RFC 1493, RFC 1643, RFC 1757, RFC 2011, RFC 2012, RFC 2013, RFC 2233, RFC 2571, RFC 2742, RFC 2819, RFC 2863, RFC 3411, RFC 3412, RFC 3413, RFC 3414, RFC 3415, RFC 2674                                                                                                                                                                                                                                                                                                           |

| Interfaces         |                                                                                                |
|--------------------|------------------------------------------------------------------------------------------------|
| LED Indicators     | PWR1, PWR2, Alarm, Ethernet Act/Link, SFP Link, PoE, Ring                                      |
| Ethernet Ports     | 8 10/100/1000BASE-T(X) auto negotiation speed -M12 connector                                   |
| Console            | RS232 (A-coding M12 connector)                                                                 |
| Relay Output       | 2 relay outputs with current carrying capacity of 1A @ 24 VDC (through A-coding M12 connector) |
| Fiber Optics Ports | No                                                                                             |

| Environmental Limits      |                               |
|---------------------------|-------------------------------|
| Operating Temperature     | -40°C~75°C (-40°F~167°F)      |
| Storage Temperature       | -40°C~85°C (-40°F~185°F)      |
| Ambient Relative Humidity | 5%~95%, 55°C (Non-condensing) |

| Power Management            |                                     |                                 |
|-----------------------------|-------------------------------------|---------------------------------|
| Input Voltage               | High Voltage Product                | 50~145 VDC                      |
|                             | Non-PoE models                      | 12~57 VDC                       |
|                             | 802.3af mode/<br>802.3at mode       | 45~57 VDC/<br>51~57 VDC         |
| Input Current               | High voltage product                | 50~145 VDC, 0.27A max, 13.5W    |
|                             | Non-PoE models                      | 12 – 57 VDC, 1.19A max, 14.28W  |
|                             | 802.3af mode<br>(8-Ports)           | 45 – 57 VDC, 3.08A max, 138.6W  |
|                             | 802.3at mode<br>(8-Ports)           | 51 – 57 VDC, 5.03A max, 256.53W |
| Power input                 | 2 x S-Coding M12 connectors (4 Pin) |                                 |
| Reverse Polarity Protection | Yes                                 |                                 |

| Physical Characteristics |  |
|--------------------------|--|
|--------------------------|--|

|         |                                       |
|---------|---------------------------------------|
| Housing | IP67 protection according to EN 60529 |
|---------|---------------------------------------|

| Regulatory Approvals |  |
|----------------------|--|
|----------------------|--|

|        |                                         |
|--------|-----------------------------------------|
| Safety | EN 60950-1:2006, UL/IEC(CB) 61010-2-201 |
|--------|-----------------------------------------|

|     |                                                                                                             |
|-----|-------------------------------------------------------------------------------------------------------------|
| EMC | FCC Part 15, Subpart B, Class A, EN 55032, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-4 |
|-----|-------------------------------------------------------------------------------------------------------------|

| EMS Test       | Item  | Value                                                                           | Level                                                                                                                                  |
|----------------|-------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| IEC 61000-4-2  | ESD   | Contact Discharge<br>Air Discharge                                              | ±8KV<br>4<br>±15KV<br>4                                                                                                                |
| IEC 61000-4-3  | RS    | Enclosure Port                                                                  | 10(V/m),<br>80-1000MHz<br>3                                                                                                            |
| IEC 61000-4-4  | EFT   | AC Power Port<br>DC Power Port<br>Signal Port                                   | ±2.0KV<br>3<br>±2.0KV<br>3<br>±2.0KV<br>4                                                                                              |
| IEC 61000-4-5  | Surge | AC Power Port<br>AC Power Port<br>DC Power Port<br>DC Power Port<br>Signal Port | Line-to Line±1.0KV<br>3<br>Line-to Earth±2.0KV<br>3<br>Line-to Line±1.0KV<br>3<br>Line-to Earth±2.0KV<br>3<br>Line-to Earth±2.0KV<br>3 |
| IEC 61000-4-6  | CS    | 0.15-80MHz                                                                      | 10 Vrms<br>3                                                                                                                           |
| IEC 61000-4-8  | PFMF  | Enclosure                                                                       | AC 50Hz 10A/m<br>3                                                                                                                     |
| IEC 61000-4-11 | DIP   | AC Power Port                                                                   | -<br>-                                                                                                                                 |

|       |                           |
|-------|---------------------------|
| Shock | MIL-STD-810G Method 516.5 |
|-------|---------------------------|

|      |                           |
|------|---------------------------|
| Drop | MIL-STD-810F Method 516.5 |
|------|---------------------------|

|           |                                     |
|-----------|-------------------------------------|
| Vibration | MIL-STD-810F Method 514.5 C-1 & C-2 |
|-----------|-------------------------------------|

|         |     |
|---------|-----|
| RoHS II | Yes |
|---------|-----|

|          |         |
|----------|---------|
| Warranty | 5 Years |
|----------|---------|



# Industrial Networking Solutions

Industry Specific Ethernet Switches



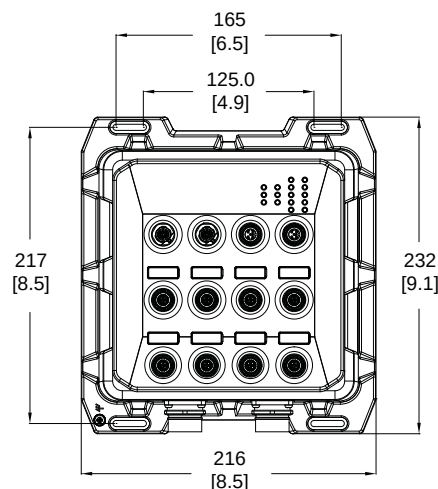
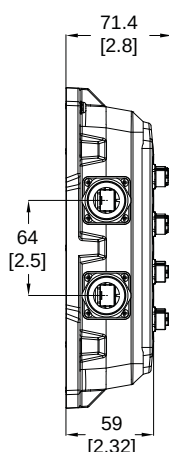
EN50155 Managed Switches | 10-Port | Surface Mount | Aluminum Housing | IP67 Rating



| 10-Port Managed Waterproof Gigabit Switches with Profinet |                                                              |                          |                   |                  |                                                                                                                                                                                     |
|-----------------------------------------------------------|--------------------------------------------------------------|--------------------------|-------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Part Number<br>[MFG #]                                    | Rating                                                       | 10/100/1000<br>M12 Ports | 1000<br>SFP Slots | Max PoE<br>Ports | Features                                                                                                                                                                            |
| MDE45MS-10M-2SFP<br>[EMG8510-2SFP]                        | 9-48 VDC<br>1.19A Max                                        | 8                        | 2                 | N/A              | Profinet & Ethernet/IP Ready<br>Precision Timing<br>Redundant Ring<br>Industrial EMC Protection<br>Railway Certified<br>MIL-STD Ruggedized<br>Redundant Power Input<br>Relay Output |
| MDE45MS-10M-2SFP-HV<br>[EMG8510-2SFP-HV]                  | 50-150 VDC<br>0.27A max                                      | 8                        | 2                 | N/A              |                                                                                                                                                                                     |
| Managed Waterproof Gigabit Switches with PoE and Profinet |                                                              |                          |                   |                  |                                                                                                                                                                                     |
| MDE45MS-10M-4POE-2SFP<br>[EMG8510-4POE- 2SFP]             | 45-57 VDC, 3.08A Max<br>Full Loading<br>51-57 VDC, 5.03A Max | 8                        | 2                 | 4                | Profinet & Ethernet/IP Ready<br>Precision Timing<br>Redundant Ring<br>Industrial EMC Protection<br>Railway Certified<br>MIL-STD Ruggedized<br>Redundant Power Input<br>Relay Output |
| MDE45MS-10M-8POE-2SFP<br>[EMG8510-8POE- 2SFP]             | 45-57 VDC, 3.08A Max<br>Full Loading<br>51-57 VDC, 5.03A Max | 8                        | 2                 | 8                |                                                                                                                                                                                     |

## Feature Highlights:

- 8 10/100/1000 BASE-T(X) ports, M12 connector
- 2 1000 Base-X SFP slots
- Up to 4 or 8 802.3af or 802.3at complaint PoE ports
- EN50155, EN50121-4 and UL 61010-2-201 certified
- Redundant power input, DC or High Voltage DC
- Ruggedized IP67 aluminum enclosure
- Works from -40°C~75°C
- 2x Relay outputs, 5-pin M12 A-Coding
- Profinet Conformance Class B compatible
- Ethernet/IP Compatible





# Industrial Networking Solutions

## Specifications & Approvals



EN50155 Managed Switches | 10-Port | Surface Mount | Aluminum Housing | IP67 Rating

| Switch Properties   |               |
|---------------------|---------------|
| Priority Queues     | 8             |
| VLAN Table          | 4096          |
| MAC-Based VLAN      | 512           |
| VLAN ID Range       | VID 1 to 4094 |
| Trunk Group         | 4             |
| Static IGMP Groups  | 128           |
| Dynamic IGMP Groups | 256           |
| MAC Table Size      | 16k           |
| Packet Buffer Size  | 1.5 MB        |
| Jumbo Frame         | 9216 Byte     |

| Ethernet            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards           | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X)<br>IEEE 802.3ab for 1000BaseT(X)<br>IEEE 802.3z for 1000Base-X<br>IEEE 802.3af / 802.3at for Power over Ethernet<br>IEEE 802.3x for Flow Control, back pressure flow control<br>IEEE 802.1d-2004 for Spanning Tree Protocol<br>IEEE 802.1w for Rapid Spanning Tree Protocol<br>IEEE 802.1s for Multiple Spanning Tree Protocol<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1p for Class of Service<br>IEEE 802.1X for Authentication<br>IEEE 802.3ad for Port Trunk with LACP<br>IEEE 802.3az for Energy Efficient Ethernet |
| Protocols           | IPv4, IPv6, IGMPv1/v2/v3, GARP, GMRP, GVRP, SNMPv1/v2c/v3, SNMP Inform, ICMP, Telnet, SSH, DHCP Server/Relay/Client, DHCP Option 66/67/82, BootP, RARP, TFTP, NTP Server/Client, SMTP, SMTP (Gmail), RMON, HTTP, HTTPS, Syslog, MRP (Client), LLD, IEEE 1588 PTP V1/V2, IEEE 1588 Hardware Transparent Clock, 802.1x, EAP, RADIUS, TACACS+, Mirror port, QoS, ACL, Serial Console, U-Ring, STP, RSTP, MSTP, Redundancy Compatible Ring                                                                                                                                            |
| Automation Profiles | Profinet, Ethernet/IP, Modbus/TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| SNMP MIB            | MIB II, IF-MIB, SNMPv2 MIB, BRIDGE-MIB, RMON MIB Group 1,2,3,9, RFC 1157, RFC 1213, RFC 1215, RFC 1493, RFC 1643, RFC 1757, RFC 2011, RFC 2012, RFC 2013, RFC 2233, RFC 2571, RFC 2742, RFC 2819, RFC 2863, RFC 3411, RFC 3412, RFC 3413, RFC 3414, RFC 3415, RFC 2674                                                                                                                                                                                                                                                                                                            |

| Interfaces         |                                                                                                |
|--------------------|------------------------------------------------------------------------------------------------|
| LED Indicators     | PWR1, PWR2, Alarm, Ethernet Act/Link, SFP Link, PoE, Ring                                      |
| Ethernet Ports     | 8 10/100/1000BASE-T(X) auto negotiation speed -M12 connector                                   |
| Console            | RS232 (A-coding M12 connector)                                                                 |
| Relay Output       | 2 relay outputs with current carrying capacity of 1A @ 24 VDC (through A-coding M12 connector) |
| Fiber Optics Ports | Two 1000BASE-X SFP slots                                                                       |

| Environmental Limits      |                               |
|---------------------------|-------------------------------|
| Operating Temperature     | -40°C~75°C (-40°F~167°F)      |
| Storage Temperature       | -40°C~85°C (-40°F~185°F)      |
| Ambient Relative Humidity | 5%~95%, 55°C (Non-condensing) |

| Power Management            |                                     |                                 |
|-----------------------------|-------------------------------------|---------------------------------|
| Input Voltage               | High Voltage Product                | 50~145 VDC                      |
|                             | Non-PoE models                      | 12~57 VDC                       |
|                             | 802.3af mode/<br>802.3at mode       | 45~57 VDC/<br>51~57 VDC         |
| Input Current               | High voltage product                | 50~145 VDC, 0.27A max, 13.5W    |
|                             | Non-PoE models                      | 12 ~ 57 VDC, 1.19A max, 14.28W  |
|                             | 802.3af mode<br>(8-Ports)           | 45 ~ 57 VDC, 3.08A max, 138.6W  |
|                             | 802.3at mode<br>(8-Ports)           | 51 ~ 57 VDC, 5.03A max, 256.53W |
| Power input                 | 2 x S-Coding M12 connectors (4 Pin) |                                 |
| Reverse Polarity Protection | Yes                                 |                                 |

| Physical Characteristics |  |
|--------------------------|--|
|--------------------------|--|

|         |                                       |
|---------|---------------------------------------|
| Housing | IP67 protection according to EN 60529 |
|---------|---------------------------------------|

| Regulatory Approvals |  |
|----------------------|--|
|----------------------|--|

|        |                                         |
|--------|-----------------------------------------|
| Safety | EN 60950-1:2006, UL/IEC(CB) 61010-2-201 |
|--------|-----------------------------------------|

|     |                                                                                                             |
|-----|-------------------------------------------------------------------------------------------------------------|
| EMC | FCC Part 15, Subpart B, Class A, EN 55032, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-4 |
|-----|-------------------------------------------------------------------------------------------------------------|

| EMS Test       | Item  | Value             | Level                  |
|----------------|-------|-------------------|------------------------|
| IEC 61000-4-2  | ESD   | Contact Discharge | ±8KV                   |
|                |       | Air Discharge     | ±15KV                  |
| IEC 61000-4-3  | RS    | Enclosure Port    | 10(V/m),<br>80-1000MHz |
| IEC 61000-4-4  | EFT   | AC Power Port     | ±2.0KV                 |
|                |       | DC Power Port     | ±2.0KV                 |
|                |       | Signal Port       | ±2.0KV                 |
| IEC 61000-4-5  | Surge | AC Power Port     | Line-to Line±1.0KV     |
|                |       | AC Power Port     | Line-to Earth±2.0KV    |
|                |       | DC Power Port     | Line-to Line±1.0KV     |
|                |       | DC Power Port     | Line-to Earth±2.0KV    |
|                |       | Signal Port       | Line-to Earth±2.0KV    |
| IEC 61000-4-6  | CS    | 0.15-80MHz        | 10 Vrms                |
| IEC 61000-4-8  | PFMF  | (Enclosure)       | AC 50Hz 10A/m          |
| IEC 61000-4-11 | DIP   | AC Power Port     | -                      |

|       |                           |
|-------|---------------------------|
| Shock | MIL-STD-810G Method 516.5 |
|-------|---------------------------|

|      |                           |
|------|---------------------------|
| Drop | MIL-STD-810F Method 516.5 |
|------|---------------------------|

|           |                                     |
|-----------|-------------------------------------|
| Vibration | MIL-STD-810F Method 514.5 C-1 & C-2 |
|-----------|-------------------------------------|

|         |     |
|---------|-----|
| RoHS II | Yes |
|---------|-----|

|          |         |
|----------|---------|
| Warranty | 5 Years |
|----------|---------|

\*802.3af PoE output starts from 43 VDC input and 802.3at output starts from 51 VDC input.



# Industrial Networking Solutions

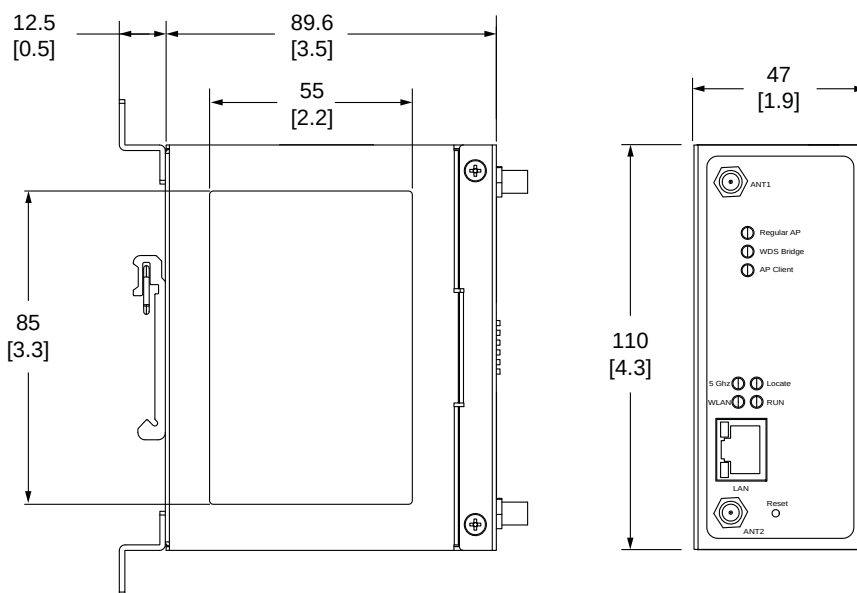
## Secure Routers



Industrial Wireless | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



| Industrial Wireless Access Point, IEEE 802.11 a/b/g/n |                                                     |                           |                                                                 |
|-------------------------------------------------------|-----------------------------------------------------|---------------------------|-----------------------------------------------------------------|
| Part Number<br>[MFG #]                                | Description                                         | 10/100/1000<br>RJ45 Ports | Features                                                        |
| <b>E45WAP</b><br>[AW5500]                             | IEEE 802.11 a/b/g/n<br>Access Point/ Bridge/ Client | 1                         | Industrial EMC Protection<br>Wireless Distribution System (WDS) |



### Feature Highlights:

- Designed for 802.11a/b/g/n networks
- Operating temperature: -10 °C ~ 60 °C
- Web server/Utility configuration (Device View)
- Upgrade via Device View or Web server
- 5 GHz frequency support to reduce interference on 2.4 GHz with other wireless devices
- Client isolation
- Different operating modes and topology options (WDS Bridge and AP Client)
- FCC (United States), ETSI (Europe), and NCC (Taiwan) certified wireless equipment



# Industrial Networking Solutions

## Specifications & Approvals



Industrial Wireless | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Power Management              |                                                                                                 |
|-------------------------------|-------------------------------------------------------------------------------------------------|
| Input Voltage                 | 9VDC-48VDC                                                                                      |
| Input Current (9VDC)          | 0.65A                                                                                           |
| Power Consumption             | Approx. 5.85W (max)                                                                             |
| Connector                     | 3-pin Lockable Terminal Block                                                                   |
| Reverse Polarity Protection   | Yes                                                                                             |
| LED                           |                                                                                                 |
| LED Indicators                | PWR1, PWR2, LAN1, LAN2, LAN3, LAN4, LAN5                                                        |
| Environmental Limits          |                                                                                                 |
| Operating Temperature         | -10°C ~ 60°C (14°F ~ 140°F)                                                                     |
| Storage Temperature           | -40°C ~ 85°C (-40°F ~ 185°F)                                                                    |
| Ambient Relative Humidity     | 5 ~ 95% RH, (non-condensing)                                                                    |
| Hardware Characteristics      |                                                                                                 |
| Watchdog                      | Hardware built-in                                                                               |
| Ethernet Switch & PHY         | IEEE802.3ab 1000 Base-T                                                                         |
| Wireless PCI-e Module         | Atheros AR9382                                                                                  |
| Tx / Rx                       | 2T2R MIMO (2x2 with MCS 0-15)                                                                   |
| Wireless Standard Conformance | 802.11a, 802.11b, 802.11g, and 802.11n                                                          |
| Antenna                       | 3/5 dBi Dual antenna design, SMA(R) Female connector                                            |
| Software Characteristics      |                                                                                                 |
| Operation Modes               | AP, WDS Hybrid, AP Client                                                                       |
| Wireless Security             | WEP, WPA, WPA2, TKIP, AES, 802.1x                                                               |
| Network Security              | Client Isolation, Firewall / Filtering, Turn off Radio                                          |
| Alerts Events                 | E-mail / SNMP Trap                                                                              |
| Supported Protocol            | ICMP, TCP, UDP, DHCP Server/Client, DNS, SNMP, NTP, SMTP, HTTP, IPv4, 802.1x, RADIUS, STP/ RSTP |

| Regulatory Approvals |                                                                       |                       |                     |       |
|----------------------|-----------------------------------------------------------------------|-----------------------|---------------------|-------|
| Safety               | UL60950-1/CB, EN60950-1, CNS 14336                                    |                       |                     |       |
| EMS                  | EN55032, EN55024                                                      |                       |                     |       |
| EMC                  | EN 301489-1/17 (Class A), FCC 15 Subpart B (Class A), CNS 13438       |                       |                     |       |
| Radio                | FCC 15 Subpart C, FCC 15 Subpart E, EN 301893, EN 300328, NCC LP00002 |                       |                     |       |
| EMS Test             | Item                                                                  |                       | Value               | Level |
| IEC 61000-4-2        | ESD                                                                   | Contact Discharge     | ±8KV                | 4     |
|                      |                                                                       | Air Discharge         | ±15KV               | 4     |
| IEC 61000-4-3        | RS                                                                    | Radiated (Enclosure)  | 10(V/m)             | 3     |
| IEC 61000-4-4        | EFT                                                                   | AC Power Port         | ±2.0 KV             | 3     |
|                      |                                                                       | DC Power Port         | ±2.0 KV             | 4     |
| IEC 61000-4-5        | Surge                                                                 | AC Powe Port          | Line-to Line±1.0kV  | 3     |
|                      |                                                                       | AC Powe Port          | Line-to Earth±2.0kV | 3     |
|                      |                                                                       | LAN Port              | Line-to Earth±2.0kV | 3     |
| IEC 61000-4-6        | CS                                                                    | Conducted (Enclosure) | 10 Vrms             | 3     |
| IEC 61000-4-8        | PfMF                                                                  | Enclosure             | 10(A/m)             | 3     |
| Shock                | IEC 60068-2-27                                                        |                       |                     |       |
| Drop                 | IEC 60068-2-32                                                        |                       |                     |       |
| Vibration            | IEC 60068-2-6                                                         |                       |                     |       |
| RoHS II              | Yes                                                                   |                       |                     |       |
| MTBF                 | 22 years (MIL-HDBK-217F)                                              |                       |                     |       |
| Warranty             | 5 Years                                                               |                       |                     |       |





# Industrial Networking Solutions

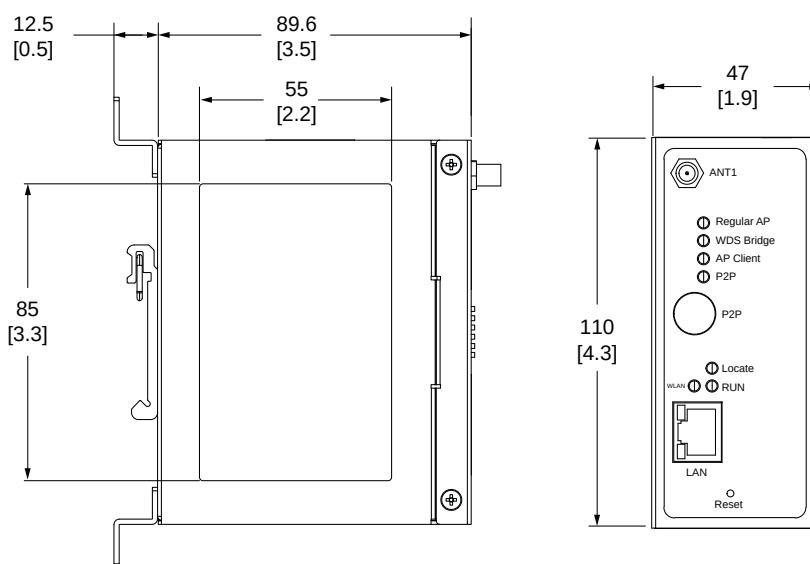
## Secure Routers



Industrial Wireless | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



| Industrial Wireless Access Point, IEEE 802.11 b/g/n |                                                                             |                           |                                                            |
|-----------------------------------------------------|-----------------------------------------------------------------------------|---------------------------|------------------------------------------------------------|
| Part Number<br>[MFG #]                              | Description                                                                 | 10/100/1000<br>RJ45 Ports | Features                                                   |
| E45WAP-P2P<br>[AW5500C]                             | IEEE 802.11 b/g/n<br>Access Point/ Bridge/ Client<br>Supporting WiFi Direct | 1                         | On-Click Wifi Paring<br>Wireless Distribution System (WDS) |



### Feature Highlights:

- Designed for 802.11 b/g/n networks
- Web server/Utility configuration (Device View)
- Upgrade via Device View or Web server
- Client isolation
- Different operating modes and topology options(WDS Bridge and AP Client)
- FCC (United States), ETSI (Europe) certified wireless equipment
- Support WPS(Wi-Fi protected setup)
- Support Wi-Fi Direct (Peer-to-Peer)



# Industrial Networking Solutions

## Specifications & Approvals



Industrial Wireless | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface             |                  |                                                 |
|-------------------------------|------------------|-------------------------------------------------|
| Connector                     |                  | RJ-45                                           |
| Speed                         |                  | IEEE802.3u, 100 Base-T(X)                       |
| Power Management              |                  |                                                 |
| Input Voltage                 |                  | 9VDC-48VDC                                      |
| Input Current (9VDC)          |                  | 0.65A                                           |
| Power Consumption             |                  | Approx. 5.85W (max)                             |
| Connector                     |                  | 5.08mm 3-pin Lockable Terminal Block            |
| Reverse Polarity Protection   |                  | Yes                                             |
| Mechanicals                   |                  |                                                 |
| Reset Button                  |                  | Yes                                             |
| WPS / Wi-Fi Direct Button     |                  | Yes                                             |
| Environmental Limits          |                  |                                                 |
| Operating Temperature         |                  | -10°C ~ 60°C (14°F ~ 140°F)                     |
| Storage Temperature           |                  | -40°C ~ 85°C (-40°F ~ 185°F)                    |
| Ambient Relative Humidity     |                  | 5 ~ 95% RH, (non-condensing)                    |
| Wireless Characteristics      |                  |                                                 |
| Wireless PCI-e Module         |                  | Atheros AR9382                                  |
| Tx / Rx                       |                  | 1T1R MIMO (1 x 1 with MCS 0-7)                  |
| Wireless Standard Conformance |                  | 802.11b, 802.11g, and 802.11n                   |
| Antenna                       |                  | 3/5 dBi antenna design, SMA(R) Female connector |
| Operating Frequency (2.4 Ghz) |                  |                                                 |
| United States (FCC)           |                  | 2412-2462(20Mhz)/2422-2452(40Mhz)               |
| Europe (ETSI)                 |                  | 2412-2472(20Mhz)/2422-2462(40Mhz)               |
| Data Rate                     |                  |                                                 |
| 802.11b                       |                  | 1, 2, 5.5 and 11Mbps                            |
| 802.11g                       |                  | 6, 9, 12, 18, 24, 36, 48, 54Mbps                |
| 802.11n                       | 20 MHz bandwidth | 1Nss: 65Mbps @ 800GI, 72.2Mbps @ 400GI (Max.)   |
|                               | 40 MHz bandwidth | 1Nss: 135Mbps @ 800GI, 150 Mbps @ 400GI (Max.)  |

| Software Characteristics |       |                                                                                                        |                                         |       |
|--------------------------|-------|--------------------------------------------------------------------------------------------------------|-----------------------------------------|-------|
| Operation Modes          |       | AP, WDS Hybrid, AP Client                                                                              |                                         |       |
| Wireless Security        |       | WEP, WPA, WPA2, TKIP, AES, 802.1x                                                                      |                                         |       |
| Network Security         |       | Client Isolation, Firewall / Filtering, Turn off Radio                                                 |                                         |       |
| Alerts Events            |       | E-mail / SNMP Trap                                                                                     |                                         |       |
| Supported Protocol       |       | ICMP, TCP, UDP, DHCP Server/Client, DNS, SNMP, NTP, SMTP, HTTP, IPv4, 802.1x, RADIUS, STP, WPS, Syslog |                                         |       |
| Regulatory Approvals     |       |                                                                                                        |                                         |       |
| Safety                   |       | UL60950-1/CB, EN60950-1                                                                                |                                         |       |
| EMC                      |       | EN 301489-1 V1.9.2, EN301489-17 V2.2.2 (Class A), FCC 15B (Class A)                                    |                                         |       |
| Radio                    |       | FCC 15C 15.247, EN 300328 V1.8.1,EN 301893 V1.7.1                                                      |                                         |       |
| EMF                      |       | EN 62311: 2008, EN 50385: 2002                                                                         |                                         |       |
| EMS Test                 | Item  |                                                                                                        | Value                                   | Level |
| IEC 61000-4-2            | ESD   | Contact Discharge                                                                                      | ±4KV                                    | 2     |
|                          |       | Air Discharge                                                                                          | ±8KV                                    | 3     |
| IEC 61000-4-3            | RS    | Radiated (Enclosure)                                                                                   | 3(V/m)                                  | 2     |
| IEC 61000-4-4            | EFT   | AC Power Port                                                                                          | ±2.0 KV                                 | 3     |
|                          |       | DC Power Port                                                                                          | ±0.5 KV / ±1.0 KV                       | 1/2   |
| IEC 61000-4-5            | Surge | Signal                                                                                                 | ±0.5 KV                                 | 3     |
|                          |       | AC Power Port                                                                                          | Line-to Line±1.0kV/ Line-to Earth±2.0kV | 3     |
|                          |       | DC Power Port                                                                                          | Line-to-Earth±0.5KV /±1.0 KV            | 1/2   |
| IEC 61000-4-6            | CS    | Conducted (Enclosure)                                                                                  | Line-to Line±1.0kV /Line-to Earth±1.0kV | 2     |
| IEC 61000-4-8            | PFMF  | Enclosure                                                                                              | 3 Vrms                                  | 2     |
| IEC 61000-4-11           | DIP   | AC Power Port                                                                                          | 3(A/m)                                  | 2     |
| Shock                    |       | -                                                                                                      |                                         |       |
| Drop                     |       | -                                                                                                      |                                         |       |
| Vibration                |       | -                                                                                                      |                                         |       |
| RoHS II                  |       | Yes                                                                                                    |                                         |       |
| MTBF                     |       | 15 years (MIL-HDBK-217F)                                                                               |                                         |       |
| Warranty                 |       | 5 Years                                                                                                |                                         |       |

\* AC Ports are tested through an power adaptor available in the accessory.



# Industrial Networking Solutions

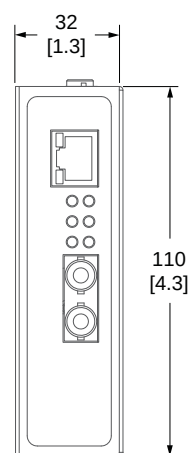
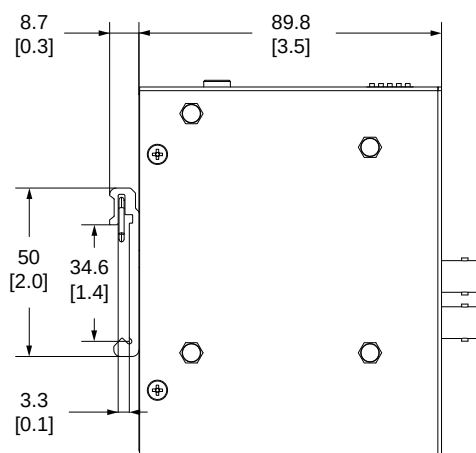
## Media Converters



Media Converters | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



| Industrial Smart Fast Ethernet to Fiber Media Converters |                      |                 |                |                       |
|----------------------------------------------------------|----------------------|-----------------|----------------|-----------------------|
| Part Number<br>[MFG #]                                   | 10/100<br>RJ45 Ports | Fiber Ports     | Rated Distance | Features              |
| <b>E45CT-1-FM-2KM</b><br>[EF23-1-1FM-SC-2]               | 1                    | 1 (Multi-Mode)  | 2 Km           | Redundant Power Input |
| <b>E45CT-1-FS-30KM</b><br>[EF23-1-1FS-SC-30]             | 1                    | 1 (Single-Mode) | 30 km          |                       |



### Feature Highlights:

- Supports Auto MDI/MDI-X and Auto Negotiation
- Supports Multi-mode 2KM, Single-mode 30KM
- Supports Link Fault Pass-Through (LFP)
- Operating temperature -10~70 °C



# Industrial Networking Solutions

## Specifications & Approvals



Media Converters | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Technology                   |                                                                      |                      |
|------------------------------|----------------------------------------------------------------------|----------------------|
| Standards                    | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X), 100BaseFX     |                      |
| Interface                    |                                                                      |                      |
| RJ45 Ports                   | 10/100BaseT(X)                                                       |                      |
| Fiber Ports                  | 100BaseFX (SC connector)                                             |                      |
| LED Indicators               | PWR,SPD,TX_LINK/ACT,TX_FDX/<br>COL,FX_LINK/ACT,FX_FDX/COL            |                      |
| DIP Switch                   | TX Duplex mode, FX Duplex mode,<br>Speed mode, LFP, Auto Negotiation |                      |
| Power Management             |                                                                      |                      |
| Input Voltage                | 6-48 VDC                                                             |                      |
| Input Current                | 0.5A max, 6 VDC                                                      |                      |
| Connector                    | Removable 3-pin Screw Terminal Block                                 |                      |
| Reverse Polarity Protection  | Present                                                              |                      |
| Environmental Limits         |                                                                      |                      |
| Operating Temperature        | -10°C ~ 70°C (14°F ~ 158°F)                                          |                      |
| Storage Temperature          | -40°C ~ 85°C (-40°F ~ 185°F)                                         |                      |
| Ambient Relative Humidity    | 5 to 95%, 55°C (non-condensing)                                      |                      |
| Optical Fiber Specifications |                                                                      |                      |
| P/N                          | 100Base                                                              |                      |
|                              | Multi-mode                                                           | Single-mode          |
| Distance                     | 2Km                                                                  | 30Km                 |
| Bit rate(Mbps)               | 155                                                                  | 155                  |
| Wavelength(nm)               | 1310(LED)                                                            | 1310(FP )            |
| Application                  | Fast Ethernet / OC3                                                  | S1.1 / Fast Ethernet |
| TX Power(dBm)                | -14~-20                                                              | -8~-15               |
| RX Sens.(dBm)                | <-31                                                                 | <-34                 |
| Remark                       | E45CT-1-FM-2KM                                                       | E45CT-1-FS-30KM      |

| Regulatory Approvals |                                                                                                                                                                                                                 |                                    |                                                         |        |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------------------------------------------|--------|
| EMI                  | FCC Part15, CISPR (EN55032) Class A                                                                                                                                                                             |                                    |                                                         |        |
| EMC                  | EN61000-4-2 (ESD) Level 3, Criteria B /<br>EN61000-4-3 (RS) Level 2, Criteria A<br>EN61000-4-4 (EFT) Level 3, Criteria A /<br>EN61000-4-5 (Surge) Level 3, Criteria B/A<br>EN61000-4-6 (CS) Level 2, Criteria A |                                    |                                                         |        |
| EMS Test             |                                                                                                                                                                                                                 | Item                               | Value                                                   | Level  |
| IEC 61000-4-2        | ESD                                                                                                                                                                                                             | Contact Discharge<br>Air Discharge | 6KV,Criterion A<br>8KV,Criterion B                      | 3<br>3 |
| IEC 61000-4-3        | RS                                                                                                                                                                                                              | Enclosure ports                    | 3V/m(unmodulated,<br>r.m.s) 80% AM 1KHz,<br>Criterion A | 2      |
| IEC 61000-4-4        | EFT                                                                                                                                                                                                             | Power Port<br>Single Port          | ±2KV,Cirterion A<br>±1KV,Cirterion A                    | 3<br>3 |
| IEC 61000-4-5        | Surge                                                                                                                                                                                                           | Power Port<br>Single Port          | ±2KV,Cirterion A<br>±2KV,Cirterion B                    | 3      |
| IEC 61000-4-6        | CS                                                                                                                                                                                                              | Power Port<br>Single Port          | 3V/m(unmodulated,<br>r.m.s) 80% AM 1KHz,<br>Criterion A | 2<br>2 |
| Shock                | MIL-STD-810F Method 516.5                                                                                                                                                                                       |                                    |                                                         |        |
| Drop                 | MIL-STD-810F Method 516.5                                                                                                                                                                                       |                                    |                                                         |        |
| Vibration            | MIL-STD-810F Method 514.5 C-1 & C-2                                                                                                                                                                             |                                    |                                                         |        |
| RoHS II              | Yes                                                                                                                                                                                                             |                                    |                                                         |        |
| MTBF                 | 823877 hrs (94.04Years)<br>(Data base: MIL-HDBK-217F, GB 25°C)                                                                                                                                                  |                                    |                                                         |        |
| Warranty             | 5 Years                                                                                                                                                                                                         |                                    |                                                         |        |



# Industrial Networking Solutions

## Media Converters

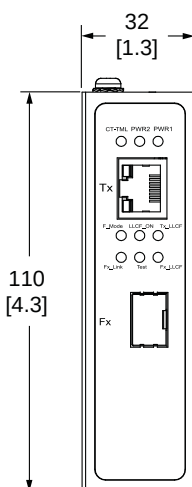
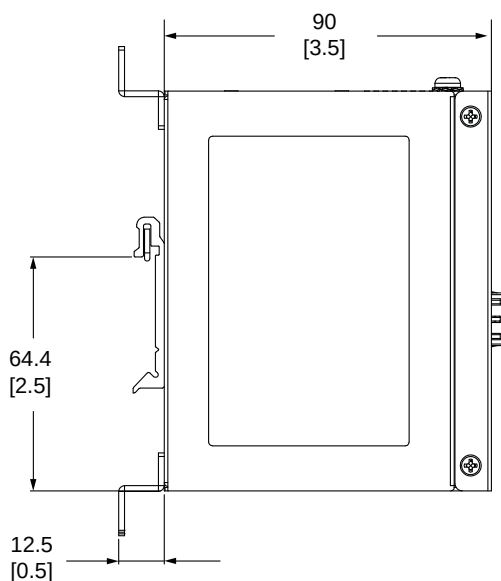


Media Converters | 1 Fiber Port | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

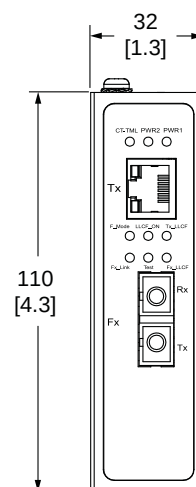


**Industrial Smart Gigabit Ethernet to Fiber Media Converters, 1-Fiber Port**

| Part Number<br>[MFG #]                           | 10/100/1000<br>RJ45 Ports | Auto Navigation<br>SFP Slots | Fiber<br>Ports     | Rated<br>Distance | Features              |
|--------------------------------------------------|---------------------------|------------------------------|--------------------|-------------------|-----------------------|
| <b>E45CT-1M-FM-550M</b><br>[EF24-1G-1FM-SC-550M] | 1                         | N/A                          | 1<br>(Multi-Mode)  | 550 M             | Redundant Power Input |
| <b>E45CT-1M-FS-10KM</b><br>[EF24-1G-1FS-SC-10]   | 1                         | N/A                          | 1<br>(Single-Mode) | 10 KM             |                       |
| <b>E45CT-1M-SFP</b><br>[EF24-1G-1SFP]            | 1                         | 1                            | 1<br>(SFP Slot)    | N/A               |                       |



**E45CT-1M-SFP**



**E45CT-1M-FM-550M  
E45CT-1M-FS-10KM**

### Feature Highlights:

- Cut-Through Forwarding Mode
- Available in both SC and SFP Fiber Connectors
- Redundant Power Input
- Jumbo packets up to 9K bytes
- Link Fault Pass-Through (LFP) and Link Loss Carry Forward
- Operating Temperature : -10°C ~ 70°C



# Industrial Networking Solutions

## Specifications & Approvals



Media Converters | 1 Fiber Port | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Technology                   |                                                                                                                                                   |                  |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Standards                    | IEEE 802.3 for 10BASE T<br>IEEE 802.3u for 100BASE-T(X) and 100BASE-FX<br>IEEE 802.3ab for 1000BASE-T(X)<br>IEEE 802.3z for 1000BASE-X            |                  |
| Interface                    |                                                                                                                                                   |                  |
| RJ45 Ports                   | 10/100/1000Base-T(X) auto negotiation speed                                                                                                       |                  |
| Fiber Ports                  | 100/1000BASE-(F)X or SFP Slot                                                                                                                     |                  |
| LED Indicators               | PWR1, PWR2, CT-TML, F_Mode, Fx_Link, LLCF_ON, Test, Tx_LLCF, Fx_LLCF                                                                              |                  |
| DIP Switch                   | Media Converter mode, Speed mode, Link Transparency, TS-1000 Terminal / Center mode, Power Save, Fiber Auto Negotiation, Jumbo Frame, Cut-through |                  |
| Power Management             |                                                                                                                                                   |                  |
| Input Voltage                | 9-48 VDC                                                                                                                                          |                  |
| Input Current                | Max. 0.3A @ 9VDC                                                                                                                                  |                  |
| Connector                    | Removable 5-pin Terminal Block                                                                                                                    |                  |
| Reverse Polarity Protection  | Present                                                                                                                                           |                  |
| Environmental Limits         |                                                                                                                                                   |                  |
| Operating Temperature        | -10°C ~ 70°C (14°F ~ 158°F)                                                                                                                       |                  |
| Storage Temperature          | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                                                      |                  |
| Ambient Relative Humidity    | 5 to 95%, 55°C (non-condensing)                                                                                                                   |                  |
| Optical Fiber Specifications |                                                                                                                                                   |                  |
| P/N                          | 100Base                                                                                                                                           |                  |
|                              | Multi-mode                                                                                                                                        | Single-mode      |
| Distance                     | 550M                                                                                                                                              | 10Km             |
| Bit rate(Mbps)               | 1250Mbps                                                                                                                                          | 1250Mbps         |
| Wavelength(nm)               | 850                                                                                                                                               | 1310             |
| Application                  | 1000Base-SX                                                                                                                                       | 1000Base-LX      |
| TX Power(dBm)                | -9.5~-4                                                                                                                                           | -9.5~-3          |
| RX Sens.(dBm)                | <-18                                                                                                                                              | <-20             |
| Remark                       | E45CT-1M-FM-550M                                                                                                                                  | E45CT-1M-FS-10KM |

| Regulatory Approvals |                                                                                        |                                                                |                                                                                        |                  |
|----------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------|
| Safety               | CB                                                                                     |                                                                |                                                                                        |                  |
| EMC                  | FCC Part 15, Subpart B, Class A<br>EN55032<br>EN 61000-3-2<br>EN 61000-3-3<br>EN 55024 |                                                                |                                                                                        |                  |
| EMS Test             | Item                                                                                   | Value                                                          | Level                                                                                  |                  |
| IEC 61000-4-2        | ESD                                                                                    | Contact Discharge<br>Air Discharge                             | ±6KV<br>±8KV                                                                           | 3<br>3           |
| IEC 61000-4-3        | RS                                                                                     | 80-1000MHz                                                     | 10 V/m                                                                                 | 3                |
| IEC 61000-4-4        | EFT                                                                                    | AC Power Port<br>DC Power Port<br>Signal Port                  | ±2.0KV<br>±2.0KV<br>±1.0KV                                                             | 3<br>3<br>3      |
| IEC 61000-4-5        | Surge                                                                                  | AC Power Port<br>AC Power Port<br>DC Power Port<br>Signal Port | Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Line±1.0KV<br>Line-to Earth±1.0KV | 3<br>3<br>3<br>3 |
| IEC 61000-4-6        | CS                                                                                     | Conducted (Enclosure)                                          | 3 Vrms                                                                                 | 2                |
| IEC 61000-4-8        | PFMF                                                                                   | (Enclosure)                                                    | AC 50/60 Hz 10 A/m                                                                     | 3                |
| IEC 61000-4-11       | DIP                                                                                    | AC Power Port                                                  | -                                                                                      | -                |
| Shock                | MIL-STD-810F Method 516.5                                                              |                                                                |                                                                                        |                  |
| Drop                 | MIL-STD-810F Method 516.5                                                              |                                                                |                                                                                        |                  |
| Vibration            | MIL-STD-810F Method 514.5 C-1 & C-2                                                    |                                                                |                                                                                        |                  |
| RoHS                 | Yes                                                                                    |                                                                |                                                                                        |                  |
| MTBF                 | 415,681.88 hrs / 47.45 years (25°C)                                                    |                                                                |                                                                                        |                  |
| Warranty             | 5 Years                                                                                |                                                                |                                                                                        |                  |





# Industrial Networking Solutions

## Media Converters

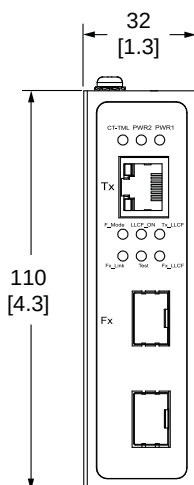
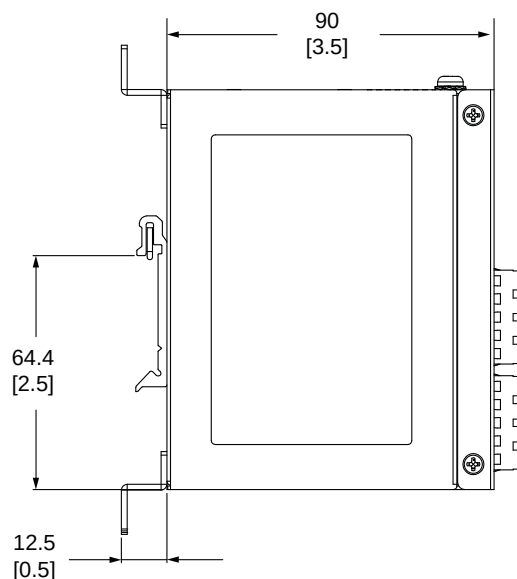


Media Converters | 2 Fiber Ports | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

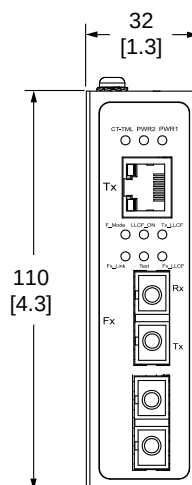


**Industrial Smart Gigabit Ethernet to Fiber Media Converters, 2-Fiber Port**

| Part Number<br>[MFG #]                             | 10/100/1000<br>RJ45 Ports | Auto Navigation<br>SFP Slots | Fiber<br>Ports     | Rated<br>Distance | Features              |
|----------------------------------------------------|---------------------------|------------------------------|--------------------|-------------------|-----------------------|
| <b>E45CTR-1M-2FM-550M</b><br>[EF24-1G-2FM-SC-550M] | 1                         | N/A                          | 2<br>(Multi-Mode)  | 550 M             | Redundant Power Input |
| <b>E45CTR-1M-2FS-10KM</b><br>[EF24-1G-2FS-SC-10]   | 1                         | N/A                          | 2<br>(Single-Mode) | 10 KM             |                       |
| <b>E45CT-1M-2SFP</b><br>[EF24-1G-2SFP]             | 1                         | 2                            | 2<br>(SFP Slot)    | N/A               |                       |



**E45CT-1M-2SFP**



**E45CTR-1M-2FM-550M**  
**E45CTR-1M-2FS-10KM**

### Feature Highlights:

- Cut-Through Forwarding Mode
- Available in both SC and SFP Fiber Connectors
- Redundant Power Input
- Jumbo packets up to 9K bytes
- Link Fault Pass-Through (LFP) and Link Loss Carry Forward
- Operating Temperature : -10°C ~ 70°C
- Works in Media Converter Mode or Fiber Repeater Mode



# Industrial Networking Solutions

## Specifications & Approvals



Media Converters | 2 Fiber Ports | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Technology                   |                                                                                                                                                                    |                    |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Standards                    | IEEE 802.3 for 10BASE T<br>IEEE 802.3u for 100BASE-T(X) and 100BASE-FX<br>IEEE 802.3ab for 1000BASE-T(X)<br>IEEE 802.3z for 1000BASE-X                             |                    |
| Interface                    |                                                                                                                                                                    |                    |
| RJ45 Ports                   | 10/100/1000Base-T(X) auto negotiation speed                                                                                                                        |                    |
| Fiber Ports                  | 100/1000BASE-(F)X or SFP Slot                                                                                                                                      |                    |
| LED Indicators               | PWR1, PWR2, CT-TML, Fx1_Link, Fx2_Link, Fx1_OAM, FP/MC, Fx_LLCF, Tx_LLCF                                                                                           |                    |
| DIP Switch                   | Media Converter / Repeater mode, Fiber Speed mode, Link Transparency, TS-1000 Terminal / Center mode, Power Save, Fiber Auto Negotiation, Jumbo Frame, Cut-through |                    |
| Power Management             |                                                                                                                                                                    |                    |
| Input Voltage                | 9-48 VDC                                                                                                                                                           |                    |
| Input Current                | Max. 0.3A @ 9VDC                                                                                                                                                   |                    |
| Connector                    | Removable 5-pin Terminal Block                                                                                                                                     |                    |
| Reverse Polarity Protection  | Present                                                                                                                                                            |                    |
| Environmental Limits         |                                                                                                                                                                    |                    |
| Operating Temperature        | -10°C ~ 70°C (14°F ~ 158°F)                                                                                                                                        |                    |
| Storage Temperature          | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                                                                       |                    |
| Ambient Relative Humidity    | 5 to 95%, 55°C (non-condensing)                                                                                                                                    |                    |
| Optical Fiber Specifications |                                                                                                                                                                    |                    |
| P/N                          | 100Base                                                                                                                                                            |                    |
|                              | Multi-mode                                                                                                                                                         | Single-mode        |
| Distance                     | 550M                                                                                                                                                               | 10Kkm              |
| Bit rate(Mbps)               | 1250Mbps                                                                                                                                                           | 1250Mbps           |
| Wavelength(nm)               | 850                                                                                                                                                                | 1310               |
| Application                  | 1000Base-SX                                                                                                                                                        | 1000Base-LX        |
| TX Power(dBm)                | -9.5~-4                                                                                                                                                            | -9.5~-3            |
| RX Sens.(dBm)                | <-18                                                                                                                                                               | <-20               |
| Remark                       | E45CTR-1M-2FM-550M                                                                                                                                                 | E45CTR-1M-2FS-10KM |

| Regulatory Approvals |                                                                                        |                                                                |                                                                                        |                  |
|----------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------|
| Safety               | CB                                                                                     |                                                                |                                                                                        |                  |
| EMC                  | FCC Part 15, Subpart B, Class A<br>EN55032<br>EN 61000-3-2<br>EN 61000-3-3<br>EN 55024 |                                                                |                                                                                        |                  |
| EMS Test             | Item                                                                                   | Value                                                          | Level                                                                                  |                  |
| IEC 61000-4-2        | ESD                                                                                    | Contact Discharge<br>Air Discharge                             | ±6KV<br>±8KV                                                                           | 3<br>3           |
| IEC 61000-4-3        | RS                                                                                     | 80-1000MHz                                                     | 10 V/m                                                                                 | 3                |
| IEC 61000-4-4        | EFT                                                                                    | AC Power Port<br>DC Power Port<br>Signal Port                  | ±2.0KV<br>±2.0KV<br>±1.0KV                                                             | 3<br>3<br>3      |
| IEC 61000-4-5        | Surge                                                                                  | AC Power Port<br>AC Power Port<br>DC Power Port<br>Signal Port | Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Line±1.0KV<br>Line-to Earth±1.0KV | 3<br>3<br>3<br>3 |
| IEC 61000-4-6        | CS                                                                                     | Conducted<br>(Enclosure)                                       | 3 Vrms                                                                                 | 2                |
| IEC 61000-4-8        | PFMF                                                                                   | (Enclosure)                                                    | AC 50/60 Hz 10 A/m                                                                     | 3                |
| IEC 61000-4-11       | DIP                                                                                    | AC Power Port                                                  | -                                                                                      | -                |
| Shock                | MIL-STD-810F Method 516.5                                                              |                                                                |                                                                                        |                  |
| Drop                 | MIL-STD-810F Method 516.5                                                              |                                                                |                                                                                        |                  |
| Vibration            | MIL-STD-810F Method 514.5 C-1 & C-2                                                    |                                                                |                                                                                        |                  |
| RoHS                 | Yes                                                                                    |                                                                |                                                                                        |                  |
| MTBF                 | 372,537.84 hrs / 42.52 years (25°C)                                                    |                                                                |                                                                                        |                  |
| Warranty             | 5 Years                                                                                |                                                                |                                                                                        |                  |



# Industrial Networking Solutions

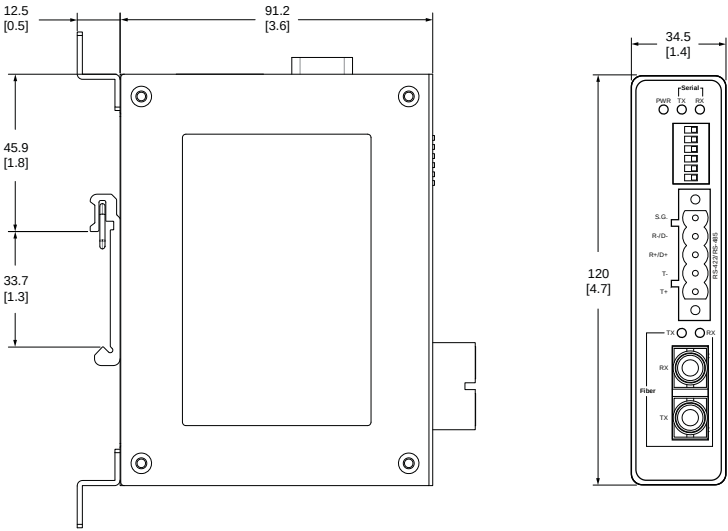
## Media Converters



Media Converters | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



| Industrial Serial to Fiber Media Converters       |                  |                                   |                    |                |
|---------------------------------------------------|------------------|-----------------------------------|--------------------|----------------|
| Part Number<br>[MFG #]                            | Fiber Connectors | RS-232<br>RS-422<br>RS-485<br>TB5 | Fiber Ports        | Rated Distance |
| E45CT-DB9-TB5-FMSC-2KM<br>[SF63-TB-DB-1FM-SC-2]   | SC               | 1                                 | 1<br>(Multi-Mode)  | 2 Km           |
| E45CT-DB9-TB5-FSSC-30KM<br>[SF63-TB-DB-1FS-SC-30] |                  | 1                                 | 1<br>(Single-Mode) | 30 km          |
| E45CT-DB9-TB5-FMST-2KM<br>[SF63-TB-DB-1FM-ST-2]   | ST               | 1                                 | 1<br>(Multi-Mode)  | 2 Km           |
| E45CT-DB9-TB5-FSST-30KM<br>[SF63-TB-DB-1FS-ST-30] |                  | 1                                 | 1<br>(Single-Mode) | 30 km          |



**Feature Highlights:**

- Supports Multi-mode 2KM, Single-mode 30KM
- PTP and Ring mode for serial fiber ring communication
- Supports RS-485 120 ohm line terminator
- Supports RS-485 Data signals pull high/low resistor
- Supports input voltage 9 ~ 48VDC
- -40 ~ 70 °C Wide range of operating temperature for hazardous environment applications



# Industrial Networking Solutions

## Specifications & Approvals



Media Converters | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Optical Fiber             |    |                                                                                |                      |
|---------------------------|----|--------------------------------------------------------------------------------|----------------------|
| Fiber Connector           |    | SC/ST                                                                          |                      |
| Cable Requirements        |    | Multi-mode                                                                     | 50/125um, 62.5/125um |
|                           |    | Single-mode                                                                    | 9/125um              |
| Transmission Distance     |    | Multi-mode                                                                     | 2km                  |
|                           |    | Single-mode                                                                    | 30km                 |
| Wavelength                | SC | Multi-Mode                                                                     | 850nm                |
|                           |    | Single-Mode                                                                    | 1310nm               |
|                           | ST | Multi-Mode                                                                     | 1310nm               |
|                           |    | Single-Mode                                                                    | 1310nm               |
| Tx Power                  | SC | Multi-Mode                                                                     | -4~-9.5 dBm          |
|                           |    | Single-Mode                                                                    | +3~-4 dBm            |
|                           | ST | Multi-Mode                                                                     | -14~-20 dBm          |
|                           |    | Single-Mode                                                                    | -8~-15 dBm           |
| Rx Sensitivity            | SC | Multi-Mode                                                                     | <-24                 |
|                           |    | Single-Mode                                                                    | <-34                 |
|                           | ST | Multi-Mode                                                                     | <-32                 |
|                           |    | Single-Mode                                                                    | <-34                 |
| RS-232/422/485            |    |                                                                                |                      |
| RS-232 Signals            |    | TxD, RxD, GND<br>( DCD, DTR, DSR internal short ;<br>CTS, RTS internal short ) |                      |
| RS-422 Signals            |    | TxD+, TxD-, RxD+, RxD-, GND                                                    |                      |
| RS-485-4w Signals         |    | TxD+, TxD-, RxD+, RxD-, GND                                                    |                      |
| RS-485-2w Signals         |    | Data+, Data-,GND                                                               |                      |
| Baud rate                 |    | 300bps to 921.6Kbps(RS-422/485)<br>300bps to 115.2Kbps(RS-232)                 |                      |
| Environmental Limits      |    |                                                                                |                      |
| Operating Temperature     |    | -40°C ~ 70°C (-40°F ~ 158°F)                                                   |                      |
| Storage Temperature       |    | -40°C ~ 85°C (-40°F ~ 185°F)                                                   |                      |
| Ambient Relative Humidity |    | 5 to 95%, 55°C (non-condensing)                                                |                      |

| Power Requirements          |                                                                                                                                                                                                                                                                                  |                                      |                                                     |        |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------------------------------------------------|--------|
| Input Voltage               |                                                                                                                                                                                                                                                                                  | 9~48 VDC                             |                                                     |        |
| Input Current               |                                                                                                                                                                                                                                                                                  | 0.28A max, 9 VDC                     |                                                     |        |
| Connection                  |                                                                                                                                                                                                                                                                                  | Removable 3-pin Screw Terminal Block |                                                     |        |
| Reverse Polarity Protection |                                                                                                                                                                                                                                                                                  | Present                              |                                                     |        |
| Regulatory Approvals        |                                                                                                                                                                                                                                                                                  |                                      |                                                     |        |
| EMI                         | FCC Part15, CISPR (EN55032) Class A                                                                                                                                                                                                                                              |                                      |                                                     |        |
| EMC                         | IEC61000-4-2 (ESD) Level 3, Criteria B<br>IEC61000-4-3 (RS) Level 3, Criteria A<br>IEC61000-4-4 (EFT) Level 3, Criteria A<br>IEC61000-4-5 (Surge) Level 3, Criteria B<br>IEC61000-4-6 (CS) Level 3, Criteria A<br>IEC61000-4-8 (PFMF) Level 3, Criteria A<br>IEC61000-4-11 (DIP) |                                      |                                                     |        |
| Safty                       | LVD (EN60950-1)                                                                                                                                                                                                                                                                  |                                      |                                                     |        |
| EMS Test                    | Item                                                                                                                                                                                                                                                                             |                                      | Value                                               | Level  |
| IEC 61000-4-2               | ESD                                                                                                                                                                                                                                                                              | Contact Discharge<br>Air Discharge   | 6KV,Criterion B<br>8KV,Criterion B                  | 3<br>3 |
| IEC 61000-4-3               | RS                                                                                                                                                                                                                                                                               | Enclosure ports                      | 10V/m(un-modulated, r.m.s) 80% AM 1KHz, Criterion A | 3      |
| IEC 61000-4-4               | EFT                                                                                                                                                                                                                                                                              | Power Port<br>Single port            | ±2KV,Cirterion A<br>±1KV,Cirterion A                | 3<br>3 |
| IEC 61000-4-5               | Surge                                                                                                                                                                                                                                                                            | Power Port<br>Single port            | ±2KV,Cirterion A<br>±2KV,Cirterion B                | 3<br>3 |
| IEC 61000-4-6               | CS                                                                                                                                                                                                                                                                               | Power Port                           | 10 V (0.15 - 80 MHz), Criterion A                   | 3      |
|                             |                                                                                                                                                                                                                                                                                  | Single Port                          | 10 V (0.15 - 80 MHz), Criterion A                   | 3      |
| IEC 61000-4-8               | PFMF                                                                                                                                                                                                                                                                             | Enclosure                            | 10 V/m, Criteria A                                  | 3      |
| IEC 61000-4-11              | DIP                                                                                                                                                                                                                                                                              | AC Power Port                        | -                                                   | -      |
| Shock                       | MIL-STD-810F Method 516.5                                                                                                                                                                                                                                                        |                                      |                                                     |        |
| Drop                        | MIL-STD-810F Method 516.5                                                                                                                                                                                                                                                        |                                      |                                                     |        |
| Vibration                   | MIL-STD-810F Method 514.5 C-1 & C-2                                                                                                                                                                                                                                              |                                      |                                                     |        |
| RoHS                        | Yes                                                                                                                                                                                                                                                                              |                                      |                                                     |        |
| MTBF                        | 75 Years                                                                                                                                                                                                                                                                         |                                      |                                                     |        |
| Warranty                    | 5 Years                                                                                                                                                                                                                                                                          |                                      |                                                     |        |



# Industrial Networking Solutions

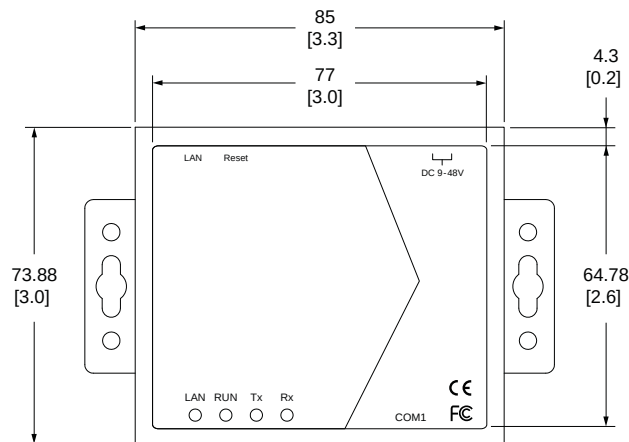
## Serial Device Servers



Entry-Level Serial Device Servers | Wall/DIN-Rail Mount | Metal Housing | IP30 Rating



| Entry-Level Serial Device Servers |                                   |                                   |                         |                       |
|-----------------------------------|-----------------------------------|-----------------------------------|-------------------------|-----------------------|
| Part Number<br>[MFG #]            | RS-232<br>RS-422<br>RS-485<br>TB5 | RS-232<br>RS-422<br>RS-485<br>DB9 | 10/100<br>RJ45<br>Ports | Magnetic<br>Isolation |
| E45SS-2-DB9<br>[SE5002]           | N/A                               | 2                                 | 1                       | N/A                   |
| E45SS-2-TB5-IS<br>[SE5002-S55IS]  | 2                                 | N/A                               | 1                       | 2 KV                  |



### Feature Highlights:

- Rugged metal case with DIN-Rail/wall-mount
- 15KV ESD protection for serial signals
- 10/100Mbps Fast Ethernet full duplex auto negotiation
- Support multipl link mode with TCP server/client, UDP and Virtual COM mode
- Monitor, manage and control industrial field devices remotely
- Configuration: Built-in Web Server /Serial Console/Telnet
- Windows Base utility for IP configuration
- Upgrade firmware from remote-PC via Ethernets



# Industrial Networking Solutions

## Specifications & Approvals



Entry-Level Serial Device Servers | Wall/DIN-Rail Mount | Metal Housing | IP30 Rating

| Ethernet          |                                             |                                    |
|-------------------|---------------------------------------------|------------------------------------|
| Compliance        | IEEE802.3                                   |                                    |
| Port              | 1-port                                      |                                    |
| Transmission Rate | 10/100Mbps Auto-detection                   |                                    |
| Connector         | RJ-45                                       |                                    |
| Auto MDI/MDI-X    | Yes                                         |                                    |
| Link Mode         |                                             |                                    |
| TCP Server        | Single connection or Virtual Com mode       |                                    |
| TCP Client        | Single destination                          |                                    |
| UDP               | Up to 4 Ranges of IPs                       |                                    |
| Serial            |                                             |                                    |
| Interface         | E45SS-2-DB9                                 | RS-232/422/485 software selectable |
|                   | E45SS-2-TB5-IS                              | RS-422/485 software selectable     |
| Ports             | 2-port                                      |                                    |
| Baud rate         | 1200bps~230Kbps                             |                                    |
| Parity            | None, Odd, Even, Mark, Space                |                                    |
| Data Bits         | 7, 8                                        |                                    |
| Stop Bits         | 1, 2                                        |                                    |
| Flow Control      | None, Software: Xon/Xoff, Hardware: RTS/CTS |                                    |
| Connector         | E45SS-2-DB9                                 | 9-pin D-Sub                        |
|                   | E45SS-2-TB5-IS                              | 5-pin 3.81mm Terminal block        |
| Protection        | 15KV ESD                                    |                                    |

| Power Requirements        |                                                            |
|---------------------------|------------------------------------------------------------|
| Input                     | 9~30V                                                      |
| Consumption               | Max. 1.5W(SE5002) / Max. 3 W                               |
| Environmental Limits      |                                                            |
| Operating Temperature     | 0°C ~ 60°C ( 32° ~ 140°F )                                 |
| Storage Temperature       | -40°C ~ 85°C (-40°F ~ 185°F)                               |
| Ambient Relative Humidity | 5 to 95%, RH (non-condensing)                              |
| Software                  |                                                            |
| Configuration             | Web Page / Telnet / Serial console / Windows utility       |
| Virtual Com               | Windows port redirection software                          |
| Support Protocol          | ICMP, TCP(UDP) / IP, DHCP client, SNMP, SMTP, HTTP, Telnet |
| Regulatory Approvals      |                                                            |
| Safety                    | EN 60950-1                                                 |
| EMC                       | FCC Class A, CE Class A                                    |
| EMS                       | Meet Minimal Regulatory Requirement                        |
| MTBF                      | 8 Years                                                    |
| Warranty                  | 5 Years                                                    |





# Industrial Networking Solutions

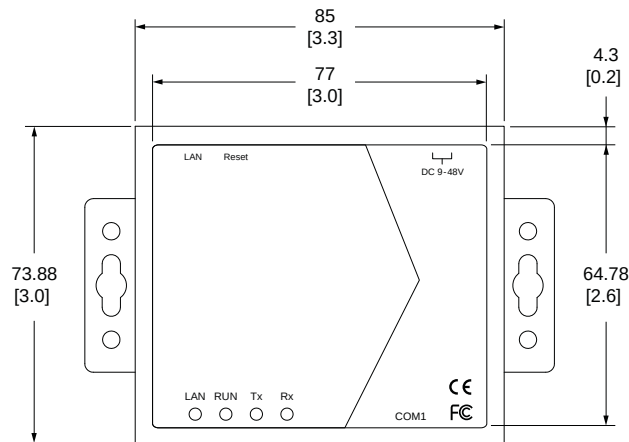
## Serial Device Servers



Entry-Level Serial Device Servers | Wall/DIN-Rail Mount | Metal Housing | IP30 Rating



| Industrial EMC Serial Servers |                                   |                                   |                         |                           |
|-------------------------------|-----------------------------------|-----------------------------------|-------------------------|---------------------------|
| Part Number<br>[MFG #]        | RS-232<br>RS-422<br>RS-485<br>TB5 | RS-232<br>RS-422<br>RS-485<br>DB9 | 10/100<br>RJ45<br>Ports | Features                  |
| E45SS-DB9-EMC<br>[SE5001A]    | N/A                               | 1                                 | 1                       | Industrial EMC Protection |
| E45SS-TB5-EMC<br>[SE5001A-TB] | 1                                 | N/A                               | 1                       |                           |



### Feature Highlights:

- Industrial EMC protection
- Rugged metal case with wall or DIN-Rail mount
- 10/100Mbps Fast Ethernet full duplex auto negotiation
- TCP Server/Client, UDP, Virtual COM and Tunneling modes supported
- Remotely monitor, manage, and control industrial field devices
- Configuration via Web Browser / Serial Console / Telnet Console / Windows Utility
- Remote firmware upgrade



# Industrial Networking Solutions

## Specifications & Approvals



Entry-Level Serial Device Servers | Wall/DIN-Rail Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                                                           |
|-----------------------------|-------------------------------------------------------------------------------------------|
| Ethernet                    | 1x RJ-45 IEEE802.3 10/100Mbps, Auto MDI/MDI-X                                             |
| Serial Interface            |                                                                                           |
| Connector                   | 10/100Mbps Auto-detection<br>3.81mm TB5 RS-232/422/485<br>software selectable (TB models) |
| Ports                       | 1-port                                                                                    |
| Baud Rate                   | 1200~230Kbps                                                                              |
| Data Bits                   | 7,8                                                                                       |
| Stop Bits                   | 1,2                                                                                       |
| Flow Control                | None, Xon/Xoff, RTS/CTS                                                                   |
| Power Characteristics       |                                                                                           |
| Input Voltage               | 9VDC - 48VDC                                                                              |
| Input Current(9VDC)         | 0.30A                                                                                     |
| Power Consumption           | Approx. 2.70W (max)                                                                       |
| Reverse Polarity Protection | Yes                                                                                       |
| Connector                   | 5.08mm 3-pin Lockable Terminal Block                                                      |
| Environmental Limits        |                                                                                           |
| Operating Temperature       | 0°C ~ 60°C ( 32° ~ 140°F )                                                                |
| Storage Temperature         | -40° ~ 85°C ( -40°~ 185°F )                                                               |
| Ambient Relative Humidity   | 5~95% RH, (non-condensing)                                                                |
| Software                    |                                                                                           |
| Protocols                   | IPv4, ICMP, TCP, UDP, DHCP Client, SNMP, HTTP, Telnet, RFC2217                            |
| Configuration               | Serial Manager, Web UI, Telnet                                                            |
| Virtual COM                 | Windows / Linux redirection software                                                      |
| Link Modes                  |                                                                                           |
| TCP Server                  | 4 connections, Virtual COM, or Reverse Telnet                                             |
| TCP Client                  | Single destination or Virtual COM                                                         |
| UDP                         | Up to 4 ranges of IPs                                                                     |

| Regulatory Approvals |                                                               |                       |                      |   |
|----------------------|---------------------------------------------------------------|-----------------------|----------------------|---|
| EMI                  | EN 60950-1: 2011 / IEC 60950-1:2009                           |                       |                      |   |
| EMC                  | EN 55022: 2007, EN 55024: 2010, FCC Part 15 Subpart B Class A |                       |                      |   |
| EMS Test             | Item                                                          | Value                 | Level                |   |
| IEC 61000-4-2        | ESD                                                           | Contact Discharge     | ±8KV                 | 4 |
|                      |                                                               | Air Discharge         | ±15KV                | 4 |
| IEC 61000-4-3        | RS                                                            | Radiated (Enclosure)  | 10(V/m)              | 3 |
| IEC 61000-4-4        | EFT                                                           | AC Power Port         | ±2.0 KV              | 3 |
|                      |                                                               | DC Power Port         | ±2.0 KV              | 3 |
| IEC 61000-4-5        | Surge                                                         | Signal Port           | ±2.0 KV              | 4 |
|                      |                                                               | AC Power Port         | Line-to-Line±2.0 KV  | 4 |
|                      |                                                               | AC Power Port         | Line-to-Earth±4.0 KV | 4 |
|                      |                                                               | DC Power Port         | Line-to-Line±0.5 KV  | 2 |
|                      |                                                               | DC Power Port         | Line-to-Earth±1 KV   | 2 |
|                      |                                                               | Signal Port           | Line-to-Earth±2.0 KV | 3 |
| IEC 61000-4-6        | CS                                                            | Conducted (Enclosure) | 10 V rms             | 3 |
| IEC 61000-4-8        | PfMF                                                          | Enclosure             | 10(A/m)              | 3 |
| IEC 61000-4-11       | DIP                                                           | AC Power Port         | -                    | - |
| Shock                | IEC 60068-2-27                                                |                       |                      |   |
| Drop                 | IEC 60068-2-32                                                |                       |                      |   |
| Vibration            | IEC 60068-2-6                                                 |                       |                      |   |
| RoHS                 | Yes                                                           |                       |                      |   |
| Warranty             | 5 Years                                                       |                       |                      |   |

\* AC Power Port means tested through the adapter in the accessories.



# Industrial Networking Solutions

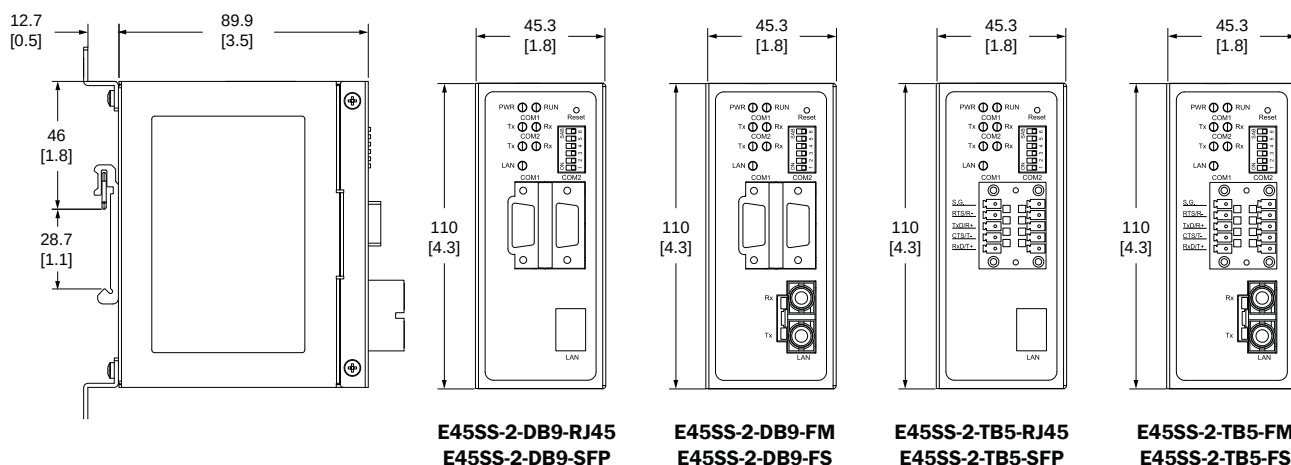
## Serial Device Servers



Entry-Level Serial Device Servers | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



| Industrial EMC Serial Servers       |                                   |                                   |                         |                          |                     |                           |
|-------------------------------------|-----------------------------------|-----------------------------------|-------------------------|--------------------------|---------------------|---------------------------|
| Part Number<br>[MFG #]              | RS-232<br>RS-422<br>RS-485<br>TB5 | RS-232<br>RS-422<br>RS-485<br>DB9 | 10/100<br>RJ45<br>Ports | 10/100<br>Fiber<br>Ports | 100<br>SFP<br>Slots | Features                  |
| E45SS-2-DB9-RJ45<br>[SE5002D]       | N/A                               | 2                                 | 1                       | N/A                      | N/A                 | Industrial EMC Protection |
| E45SS-2-TB5-RJ45<br>[SE5002D-TB]    | 2                                 | N/A                               | 1                       | N/A                      | N/A                 |                           |
| E45SS-2-DB9-FM<br>[SE5002D-FM]      | N/A                               | 2                                 | N/A                     | 1 (Multi)                | N/A                 |                           |
| E45SS-2-DB9-FS<br>[SE5002D-FS]      | N/A                               | 2                                 | N/A                     | 1 (Single)               | N/A                 |                           |
| E45SS-2-TB5-FM<br>[SE5002D-FM-TB]   | 2                                 | N/A                               | N/A                     | 1 (Multi)                | N/A                 |                           |
| E45SS-2-TB5-FS<br>[SE5002D-FS-TB]   | 2                                 | N/A                               | N/A                     | 1 (Single)               | N/A                 |                           |
| E45SS-2-DB9-SFP<br>[SE5002D-SFP]    | N/A                               | 2                                 | N/A                     | N/A                      | 1                   |                           |
| E45SS-2-TB5-SFP<br>[SE5002D-SFP-TB] | 2                                 | N/A                               | N/A                     | N/A                      | 1                   |                           |



### Feature Highlights:

- Industrial EMC protection
- Rugged metal case with wall or DIN-Rail mount
- 10/100Mbps Fast Ethernet over fiber optics
- TCP Server/Client, UDP, Virtual COM and Tunneling modes supported
- Remotely monitor, manage, and control industrial field devices
- Configuration via Web Browser / Serial Console / Telnet Console / Windows Utility
- Remote firmware upgrade



# Industrial Networking Solutions

## Specifications & Approvals



Entry-Level Serial Device Servers | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                                                                        |
|-----------------------------|--------------------------------------------------------------------------------------------------------|
| Fiber Optics                | 802.3 10BASE-F / 100BASE-FX with auto negotiation                                                      |
| Connector                   | IEC 61754-4 Standard Connector (SC)                                                                    |
| Serial Interface            |                                                                                                        |
| Connector                   | D-Sub9 RS-232/422/485 software selectable<br>3.81mm TB5 RS-232/422/485 software selectable (TB models) |
| Ports                       | 2-port                                                                                                 |
| Baud Rate                   | 1200~230Kbps                                                                                           |
| Data Bits                   | 7,8                                                                                                    |
| Stop Bits                   | 1,2                                                                                                    |
| Flow Control                | None, Xon/Xoff, RTS/CTS                                                                                |
| Power Characteristics       |                                                                                                        |
| Input Voltage               | 9VDC-48VDC                                                                                             |
| Input Current(9VDC)         | 0.45A                                                                                                  |
| Power Consumption           | 4.05Watts Max                                                                                          |
| Reverse Polarity Protection | Yes                                                                                                    |
| Connector                   | 5.08mm 3-pin Lockable Terminal Block                                                                   |
| Environmental Limits        |                                                                                                        |
| Operating Temperature       | 0°C ~ 60°C ( 32° ~ 140°F )                                                                             |
| Storage Temperature         | -40° ~ 85°C ( -40°~ 185°F )                                                                            |
| Ambient Relative Humidity   | 5~95% RH, (non-condensing)                                                                             |
| Software                    |                                                                                                        |
| Protocols                   | IPv4, ICMP, TCP, UDP, DHCP Client, SNMP, HTTP, Telnet, RFC2217                                         |
| Configuration               | Serial Manager, Web UI, Telnet                                                                         |
| Virtual COM                 | Windows / Linux redirection software                                                                   |
| Link Modes                  |                                                                                                        |
| TCP Server                  | 4 connections, Virtual COM, or Reverse Telnet                                                          |
| TCP Client                  | Single destination or Virtual COM                                                                      |
| UDP                         | Up to 4 ranges of IPs                                                                                  |

| Regulatory Approvals |                                                               |                                    |                      |        |
|----------------------|---------------------------------------------------------------|------------------------------------|----------------------|--------|
| Safety               | IEC/EN 60950-1                                                |                                    |                      |        |
| EMC                  | EN 55022: 2007, EN 55024: 2010, FCC Part 15 Subpart B Class A |                                    |                      |        |
| EMS Test             | Item                                                          |                                    | Value                | Level  |
| IEC 61000-4-2        | ESD                                                           | Contact Discharge<br>Air Discharge | ±8KV<br>±15KV        | 4<br>4 |
|                      | ESD (SFP Modules)                                             | Contact Discharge<br>Air Discharge | ±6KV<br>±8KV         | 3<br>3 |
| IEC 61000-4-3        | RS                                                            | Radiated (Enclosure)               | 10(V/m)              | 3      |
| IEC 61000-4-4        | EFT                                                           | AC Power Port                      | ±2.0 KV              | 3      |
|                      |                                                               | DC Power Port                      | ±2.0 KV              | 3      |
| IEC 61000-4-5        | Surge                                                         | Signal Port                        | ±1.0 KV              | 3      |
|                      |                                                               | AC Power Port                      | Line-to-Line±2.0 KV  | 3      |
|                      |                                                               | AC Power Port                      | Line-to-Earth±4.0 KV | 3      |
|                      |                                                               | DC Power Port                      | Line-to-Line±0.5 KV  | 2      |
|                      |                                                               | DC Power Port                      | Line-to-Earth±1 KV   | 2      |
| IEC 61000-4-6        | CS                                                            | Signal Port                        | Line-to-Earth±2.0 KV | 3      |
|                      |                                                               | Conducted (Enclosure)              | 10 V rms             | 3      |
| IEC 61000-4-8        | PFMF                                                          | Enclosure                          | 10(A/m)              | 3      |
| IEC 61000-4-11       | DIP                                                           | AC Power Port                      | -                    | -      |
| Shock                | IEC 60068-2-27                                                |                                    |                      |        |
| Drop                 | IEC 60068-2-32                                                |                                    |                      |        |
| Vibration            | IEC 60068-2-6                                                 |                                    |                      |        |
| RoHS                 | Yes                                                           |                                    |                      |        |
| Warranty             | 5 Years                                                       |                                    |                      |        |



# Industrial Networking Solutions

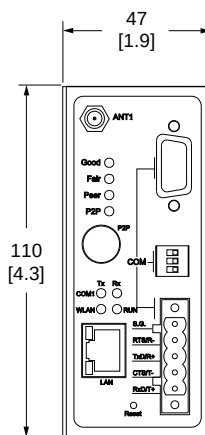
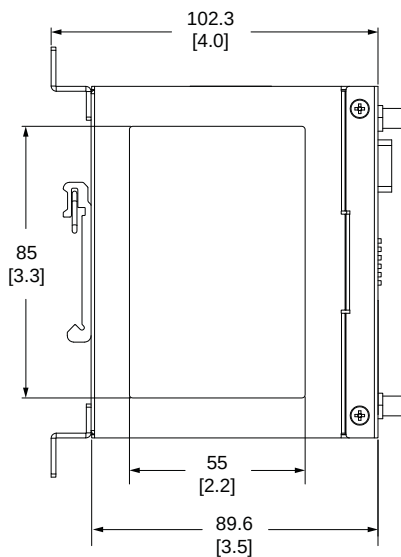
## Serial Device Servers



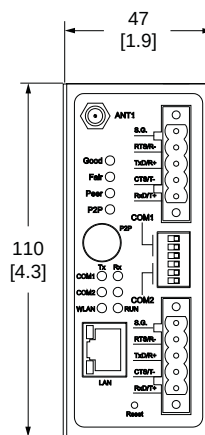
Wireless/Cellular Serial Device Servers | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



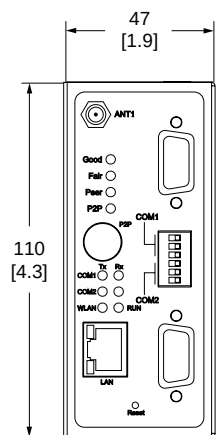
| Industrial Wireless IEEE 802.11 b/g/n Serial Device Servers |                                   |                                   |                      |                                    |
|-------------------------------------------------------------|-----------------------------------|-----------------------------------|----------------------|------------------------------------|
| Part Number<br>[MFG #]                                      | RS-232<br>RS-422<br>RS-485<br>TB5 | RS-232<br>RS-422<br>RS-485<br>DB9 | 10/100<br>RJ45 Ports | Features                           |
| E45WSS-DB9-TB5-P2P<br>[SW5501C]                             | (1)                               | (1)                               | 1                    | Wireless Distribution System (WDS) |
| E45WSS-2TB5-P2P<br>[SW5502C-TB]                             | 2                                 | N/A                               | 1                    |                                    |
| E45WSS-2DB9-P2P<br>[SW5502C]                                | N/A                               | 2                                 | 1                    |                                    |



E45WSS-DB9-TB5-P2P



E45WSS-2TB5-P2P



E45WSS-2DB9-P2P

### Feature Highlights:

- Designed for 802.11 b/g/n networks
- Web server/Utility configuration (Serial Manager)
- Upgrade via Serial Manager or Web server
- FCC (United States), ETSI (Europe) certified wireless equipment
- RS232/422/485 software selectable
- D-sub9 or TB5 combo serial port (SW5501C)
- Support Wi-Fi Direct (Peer-to-Peer)



# Industrial Networking Solutions

## Specifications & Approvals



Wireless/Cellular Serial Device Servers | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                                                             |                                                        |
|-----------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------|
| Connector                   | RJ-45                                                                                       |                                                        |
| Speed                       | IEEE802.3u, 100Base-T(X)                                                                    |                                                        |
| Power Management            |                                                                                             |                                                        |
| Input Voltage               | 9VDC - 48VDC                                                                                |                                                        |
| Input Current(9VDC)         | 0.65A                                                                                       |                                                        |
| Power Consumption           | Approx. 5.85Watts                                                                           |                                                        |
| Reverse Polarity Protection | Yes                                                                                         |                                                        |
| Connector                   | 5.08mm 3-pin Lockable Terminal Block                                                        |                                                        |
| Mechanicals                 |                                                                                             |                                                        |
| Reset Button                | Yes                                                                                         |                                                        |
| Wi-Fi Direct(P2P) Button    | Yes                                                                                         |                                                        |
| Environmental Limits        |                                                                                             |                                                        |
| Operating Temperature       | -10°C ~ 60°C (14°F ~ 140°F)                                                                 |                                                        |
| Storage Temperature         | -40° ~ 85°C ( -40~ 185°F )                                                                  |                                                        |
| Ambient Relative Humidity   | 5~95% RH, (non-condensing)                                                                  |                                                        |
| Software                    |                                                                                             |                                                        |
| Protocols                   | IPv4, ICMP, TCP, UDP, DHCP Client, SNMP, SMTP, HTTP, DNS, NTP, RADIUS, RFC2217, WPS, Syslog |                                                        |
| Configuration               | Serial Manager, Web UI                                                                      |                                                        |
| Virtual COM                 | Windows / Linux redirection software                                                        |                                                        |
| Serial Interface            |                                                                                             |                                                        |
| Connector                   | E45WSS-DB9-TB5-P2P                                                                          | D-Sub9 or TB5 combo RS-232/422/485 software selectable |
|                             | E45WSS-2TB5-P2P                                                                             | D-Sub9 RS-232/422/485 software selectable              |
|                             | E45WSS-2DB9-P2P                                                                             | 5.08mm TB5 RS-232/422/485 software selectable          |
| Ports                       | E45WSS-DB9-TB5-P2P                                                                          | 1 Port                                                 |
|                             | E45WSS-2DB9-P2P                                                                             | 2 Ports                                                |
| Baud Rate                   |                                                                                             | 110 ~ 921600Kbps                                       |
| Parity                      |                                                                                             | None, Odd, Even, Space, Mark                           |
| Data Bits                   |                                                                                             | 5, 6, 7,8                                              |
| Stop Bits                   |                                                                                             | 1,2                                                    |
| Flow Control                |                                                                                             | None, Xon/Xoff, RTS/CTS                                |

| Link Modes               |  |                                                                     |                                               |                                               |               |
|--------------------------|--|---------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------|---------------|
| TCP Server               |  | 4 connections, Virtual COM, or Reverse Telnet                       |                                               |                                               |               |
| TCP Client               |  | Single destination or Virtual COM                                   |                                               |                                               |               |
| UDP                      |  | Up to 4 ranges of IPs                                               |                                               |                                               |               |
| Wireless Characteristics |  |                                                                     |                                               |                                               |               |
| Wireless PCI-e Module    |  | Atheros AR9382                                                      |                                               |                                               |               |
| Tx / Rx                  |  | 1T1R MIMO (1 x 1 with MCS 0-7)                                      |                                               |                                               |               |
| Standard Conformance     |  | 802.11b, 802.11g, and 802.11n                                       |                                               |                                               |               |
| Antenna                  |  | 3/5 dBi antenna design, SMA(R) Female connector                     |                                               |                                               |               |
| Regulatory Approvals     |  |                                                                     |                                               |                                               |               |
| Safety                   |  | UL60950-1/CB, EN60950-1                                             |                                               |                                               |               |
| EMC                      |  | EN 301489-1 V1.9.2, EN301489-17 V2.2.2 (Class A), FCC 15B (Class A) |                                               |                                               |               |
| Radio                    |  | FCC 15C 15.247, FCC 15E 15.407, EN 301893 V1.7.1, EN 300328 V1.8.1  |                                               |                                               |               |
| EMF                      |  | EN 62311: 2008, EN 50385: 2002                                      |                                               |                                               |               |
| EMS Test                 |  | Item                                                                |                                               | Value                                         | Level         |
| IEC 61000-4-2            |  | ESD                                                                 | Contact Discharge<br>Air Discharge            | ±4KV<br>±8KV                                  | 2<br>3        |
| IEC 61000-4-3            |  | RS                                                                  | Radiated<br>(Enclosure)                       | 3(V/m)                                        | 2             |
| IEC 61000-4-4            |  | EFT                                                                 | AC Power Port<br>DC Power Port<br>Signal Port | ±2.0 KV<br>±0.5 KV / ±1.0 KV<br>±0.5 KV       | 3<br>1/2<br>2 |
| IEC 61000-4-5            |  | Surge                                                               | AC Power Port                                 | Line-to-Line±1.0 KV /<br>Line-to-Earth±2.0 KV | 3             |
|                          |  |                                                                     | DC Power Port                                 | Line-to-Earth±0.5KV /<br>±1.0 KV              | 1/2           |
|                          |  |                                                                     | Signal Port                                   | Line-to-Line±1.0 KV /<br>Line-to-Earth±1.0 KV | 2             |
| IEC 61000-4-6            |  | CS                                                                  | Conducted<br>(Enclosure)                      | 3 V rms                                       | 2             |
| IEC 61000-4-8            |  | PFMF                                                                | Enclosure                                     | 3(A/m)                                        | 2             |
| IEC 61000-4-11           |  | DIP                                                                 | AC Power Port                                 | -                                             | -             |
| Shock                    |  | IEC 60068-2-27                                                      |                                               |                                               |               |
| Drop                     |  | IEC 60068-2-32                                                      |                                               |                                               |               |
| Vibration                |  | IEC 60068-2-64                                                      |                                               |                                               |               |
| MTBF                     |  | 22 years (MIL-HDBK-217F)                                            |                                               |                                               |               |
| RoHS                     |  | Yes                                                                 |                                               |                                               |               |
| Warranty                 |  | 5 Years                                                             |                                               |                                               |               |





# Industrial Networking Solutions

## Serial Device Servers

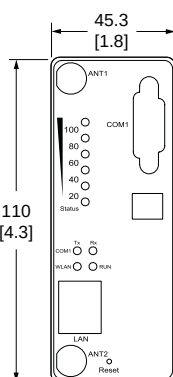
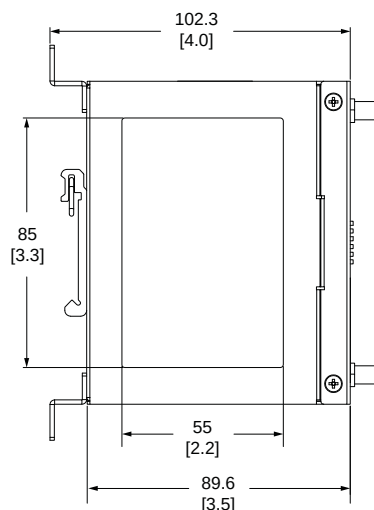


Wireless/Cellular Serial Device Servers | DIN-Rail Mount | Metal Housing | IP30 Rating

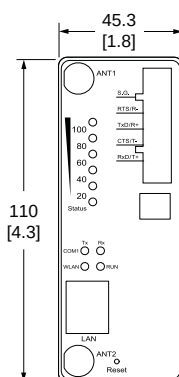


Industrial Wireless IEEE 802.11 a/b/g/n Serial Device Servers

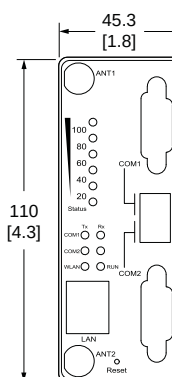
| Part Number<br>[MFG #]                | RS-232<br>RS-422<br>RS-485<br>TB5 | RS-232<br>RS-422<br>RS-485<br>DB9 | 10/100<br>/1000<br>RJ45<br>Ports | Isolation | Features                                                                                                                |
|---------------------------------------|-----------------------------------|-----------------------------------|----------------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------|
| <b>E45WSS-DB9</b><br>[SW5501]         | N/A                               | 1                                 | 1                                | N/A       | Industrial EMC Protection<br>Wireless Distribution System (WDS)<br>2 X 2 Multiple-Input-Multiple-Output (MIMO) Wireless |
| <b>E45WSS-TB5</b><br>[SW5501-TB]      | 1                                 | N/A                               | 1                                | N/A       |                                                                                                                         |
| <b>E45WSS-TB5-IS</b><br>[SW5501-SIS]  | 1                                 | N/A                               | 1                                | 2 KV      |                                                                                                                         |
| <b>E45WSS-2DB9</b><br>[SW5502]        | N/A                               | 2                                 | 1                                | N/A       |                                                                                                                         |
| <b>E45WSS-2TB5</b><br>[SW5502-TB]     | 2                                 | N/A                               | 1                                | N/A       |                                                                                                                         |
| <b>E45WSS-2TB5-IS</b><br>[SW5502-SIS] | 2                                 | N/A                               | 1                                | 2 KV      |                                                                                                                         |



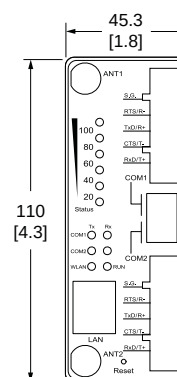
**E45WSS-DB9**



**E45WSS-TB5**  
**E45WSS-TB5-IS**



**E45WSS-2DB9**



**E45WSS-2TB5**  
**E45WSS-2TB5-IS**

### Feature Highlights:

- Designed for 802.11a/b/g/n networks
- Embedded PCB coating protection
- Web server/Utility configuration (Serial Manager)
- Upgrade via Serial Manager or Web server
- 5 GHz frequency support to reduce interference on 2.4 GHz with other wireless devices
- FCC (United States), ETSI (Europe), and NCC (Taiwan) certified wireless equipment



# Industrial Networking Solutions

## Specifications & Approvals



Wireless/Cellular Serial Device Servers | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                                                     |                                                         |
|-----------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------|
| Connector                   | RJ-45                                                                               |                                                         |
| Speed                       | IEEE802.3ab 10/100/1000Mbps                                                         |                                                         |
| Power Management            |                                                                                     |                                                         |
| Input Voltage               | 9VDC - 48VDC                                                                        |                                                         |
| Input Current(9VDC)         | 0.65A                                                                               |                                                         |
| Power Consumption           | Approx. 5.85Watts (max)                                                             |                                                         |
| Reverse Polarity Protection | Yes                                                                                 |                                                         |
| Connector                   | 5.08mm 3-pin Lockable Terminal Block                                                |                                                         |
| Environmental Limits        |                                                                                     |                                                         |
| Operating Temperature       | -10°C ~ 60°C (14°F ~ 140°F)                                                         |                                                         |
| Storage Temperature         | -40° ~ 85°C ( -40°~ 185°F )                                                         |                                                         |
| Ambient Relative Humidity   | 5~95% RH, (non-condensing)                                                          |                                                         |
| Software                    |                                                                                     |                                                         |
| Protocols                   | IPv4, ICMP, TCP, UDP, DHCP Client, SNMP, SMTP, HTTP, DNS, NTP, RADIUS, RFC2217, WPS |                                                         |
| Wireless Security           | WEP, WPA, WPA2, TKIP, AES, 802.1x                                                   |                                                         |
| Configuration               | Serial Manager, Web UI                                                              |                                                         |
| Virtual COM                 | Windows / Linux redirection software                                                |                                                         |
| Link Modes                  |                                                                                     |                                                         |
| TCP Server                  | 4 connections, Virtual COM, or Reverse Telnet                                       |                                                         |
| TCP Client                  | Dual destinations or Virtual COM                                                    |                                                         |
| UDP                         | Up to 4 ranges of IPs                                                               |                                                         |
| Wireless Characteristics    |                                                                                     |                                                         |
| Wireless PCI-e Module       | Atheros AR9382                                                                      |                                                         |
| Tx / Rx                     | 2T2R MIMO (2 x 2 with MCS 0-15)                                                     |                                                         |
| Standard Conformance        | 802.11a, 802.11b, 802.11g, and 802.11n                                              |                                                         |
| Antenna                     | 3/5 dBi antenna design, SMA(R) Female connector                                     |                                                         |
| Operating Frequency         | 2.4Ghz                                                                              | 5Ghz                                                    |
| United States (FCC)         | 2412-2462(20Mhz)/<br>2422-2452(40Mhz)                                               | 5180-5240, 5745-5825(20Mhz)/5190-5230, 5755-5795(40Mhz) |
| Europe (ETSI)               | 2412-2472(20Mhz)/2422-2462(40Mhz)                                                   | 5180-5240(20Mhz)/5190-5230(40Mhz)                       |
| Taiwan (NCC)                | 2412-2462(20Mhz)/2422-2452(40Mhz)                                                   | 5280-5320, 5745-5825(20Mhz)/5310, 5755-5795(40Mhz)      |

| Serial Interface     |                                                                                  |                                                        |                                                                                             |                  |
|----------------------|----------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------|
| Connector            | DB9 Models                                                                       |                                                        | D-Sub9 RS-232/422/485 software selectable                                                   |                  |
|                      | TB Models                                                                        |                                                        | 5.08mm TB5 RS-232/422/485 software selectable                                               |                  |
|                      | Sis Models                                                                       |                                                        | 5.08mm TB5 RS-422/485 software selectable                                                   |                  |
| Ports                | E45WSS-DB9<br>E45WSS-TB5<br>E45WSS-TB5-IS                                        |                                                        | 1 Port                                                                                      |                  |
|                      | E45WSS-2DB9<br>E45WSS-2TB5<br>E45WSS-2TB5-IS                                     |                                                        | 2 Ports                                                                                     |                  |
| Baud Rate            |                                                                                  |                                                        | 110 ~ 921600Kbps                                                                            |                  |
| Parity               |                                                                                  |                                                        | None, Odd, Even, Space, Mark                                                                |                  |
| Data Bits            |                                                                                  |                                                        | 5, 6, 7, 8                                                                                  |                  |
| Stop Bits            |                                                                                  |                                                        | 1, 2                                                                                        |                  |
| Flow Control         |                                                                                  |                                                        | None, Xon/Xoff, RTS/CTS                                                                     |                  |
| Regulatory Approvals |                                                                                  |                                                        |                                                                                             |                  |
| Safety               | UL60950-1/CB, EN60950-1, CNS 14336                                               |                                                        |                                                                                             |                  |
| EMC                  | EN 301489-1 VV1.9.2, EN301489-17 V2.2.2 (Class A), FCC 15B (Class A), CNS 13438  |                                                        |                                                                                             |                  |
| Radio                | FCC 15C 15.247, FCC 15E 15.407, EN 301893 V1.7.1, EN 300328 VV1.8.1, NCC LP00002 |                                                        |                                                                                             |                  |
| EMF                  | EN 62311: 2008, EN 50385: 2002                                                   |                                                        |                                                                                             |                  |
| EMS Test             | Item                                                                             |                                                        | Value                                                                                       | Level            |
| IEC 61000-4-2        | ESD                                                                              | Contact Discharge<br>Air Discharge                     | ±8KV<br>±15KV                                                                               | 4<br>4           |
| IEC 61000-4-3        | RS                                                                               | Radiated<br>(Enclosure)                                | 10(V/m)                                                                                     | 3                |
| IEC 61000-4-4        | EFT                                                                              | AC Power Port<br>LAN Port<br>COM Port                  | ±2.0 KV<br>±2.0 KV<br>±2.0 KV                                                               | 3<br>4<br>4      |
| IEC 61000-4-5        | Surge                                                                            | AC Power Port<br>AC Power Port<br>LAN Port<br>COM Port | Line-to-Line±1.0 KV<br>Line-to-Earth±2.0 KV<br>Line-to-Earth±2.0 KV<br>Line-to-Earth±2.0 KV | 3<br>3<br>3<br>3 |
| IEC 61000-4-6        | CS                                                                               | Conducted<br>(Enclosure)                               | 10 V rms                                                                                    | 3                |
| IEC 61000-4-8        | PFMF                                                                             | Enclosure                                              | 10(A/m)                                                                                     | 3                |
| IEC 61000-4-11       | DIP                                                                              | AC Power Port                                          | -                                                                                           | -                |
| Shock                | IEC 60068-2-27                                                                   |                                                        |                                                                                             |                  |
| Drop                 | IEC 60068-2-32                                                                   |                                                        |                                                                                             |                  |
| Vibration            | IEC 60068-2-6                                                                    |                                                        |                                                                                             |                  |
| MTBF                 | 22 years (MIL-HDBK-217F)                                                         |                                                        |                                                                                             |                  |
| RoHS                 | Yes                                                                              |                                                        |                                                                                             |                  |
| Warranty             | 5 Years                                                                          |                                                        |                                                                                             |                  |



# Industrial Networking Solutions

## Serial Device Servers



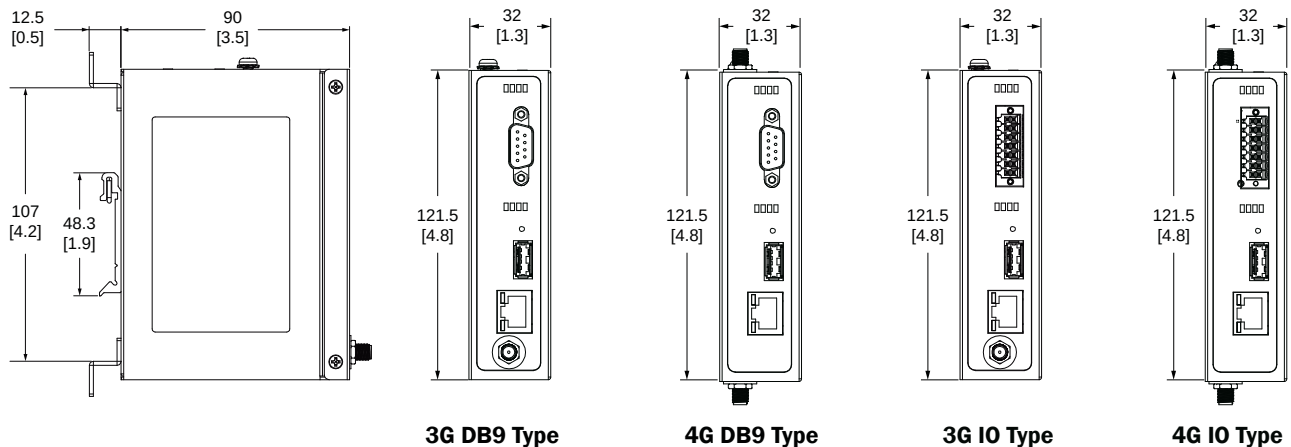
Wireless/Cellular Serial Device Servers | US Version | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



| Industrial Cellular 3G/4G Serial Device Servers, US |      |                          |                         |                                  |                             |                          |
|-----------------------------------------------------|------|--------------------------|-------------------------|----------------------------------|-----------------------------|--------------------------|
| Part Number                                         | Band | RS-232<br>RS-485<br>TB14 | RS-232<br>RS-485<br>DB9 | 10/100<br>/1000<br>RJ45<br>Ports | Digital<br>Input/<br>Output | GPS/<br>Battery Function |
| SE5901B-D3G-US                                      | 3G   | N/A                      | 1                       | 1                                | N/A                         | N/A                      |
| SE5901B-IO-D3G-US                                   | 3G   | 1+1*                     | N/A                     | 1                                | 2/2                         | N/A                      |
| SE5901B-IO-D3G-GPS-US                               | 3G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS                      |
| SE5901B-4G-US                                       | 4G   | N/A                      | 1                       | 1                                | N/A                         | N/A                      |
| SE5901B-IO-4G-US                                    | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | N/A                      |
| SE5901B-IO-4G-GPS-US                                | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS                      |
| SE5901B-4G-B-US                                     | 4G   | N/A                      | 1                       | 1                                | N/A                         | Battery Function         |
| SE5901B-IO-4G-B-US                                  | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | Battery Function         |
| SE5901B-IO-4G-GPS-B-US                              | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS/Battery Function     |

\* one TB sw-selectable RS485/RS232 and one TB RS232.

SDK version and SDK-Node-RED version are available, please consult the factory. See Appendix (Page 151) for Block Diagram.



3G DB9 Type

4G DB9 Type

3G IO Type

4G IO Type

### Feature Highlights:

- Extensive 3G and LTE Band Support
  - US: 1900/AWS/850/700/700/1900MHz (B2/B4/B5/B13/B17/B25)
- High-performance IPsec VPN throughput, data-rate up to 37.9Mbps
- Wide temperature, industrial grade platform
- 1 x 10/100/1000Mbps Ethernet port
- 1-port RS-232/485, baud rate up to 921.6 Kbps
- 1-Port USB2.0 high speed OTG + 1-Port USB Power only
- TCP Server/Client, UDP, Virtual COM supported
- 2 Digital Inputs/ 2 Digital outputs in I/O version
- Additional embedded power-bank for fault-relay capability (B version)



# Industrial Networking Solutions

## Specifications & Approvals



Wireless/Cellular Serial Device Servers | US Version | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface                  |                                                                                        |                                       |
|------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------|
| Standards                          | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X)<br>IEEE 802.3ab for 1000BaseT(X) |                                       |
| Compliance                         | 1x 10/100/1000BASE-TX RJ-45                                                            |                                       |
| Serial Interface                   |                                                                                        |                                       |
| Connector                          | DB Model                                                                               | D-Sub9 RS-232/485 software selectable |
|                                    | Integrated with DI/DOs                                                                 | 14-Pin 5.08mm Terminal Block          |
| Port                               | 1 port RS-232/485 (2-wire) software selectable<br>1 port RS-232 (IO model only)        |                                       |
| Baud Rate                          | 1,200 ~ 921,600bps software selectable                                                 |                                       |
| Data Bits                          | 7, 8 software selectable                                                               |                                       |
| Stop Bits                          | 1, 2 software selectable                                                               |                                       |
| Flow Control                       | None, Xon/Xoff, RTS/CTS (RS-232 only)                                                  |                                       |
| USB Interface                      |                                                                                        |                                       |
| USB ports                          | 2 x USB A Type (USB 2.0) - 1-port High-Speed OTG + 1-port power only                   |                                       |
| Digital Inputs/Outputs (IO Models) |                                                                                        |                                       |
| Digital Inputs (DIs)               | 2 channels photo coupler isolated digital input                                        |                                       |
| Digital Outputs (DOs)              | 2 channels digital output. N.O.( 2A@24VDC)                                             |                                       |
| Link Mode                          |                                                                                        |                                       |
| TCP Server                         | 4 connections, Virtual COM, or Reverse Telnet                                          |                                       |
| TCP Client                         | Single destination or Virtual COM                                                      |                                       |
| UDP                                | Up to 4 ranges of IPs                                                                  |                                       |
| Power Management                   |                                                                                        |                                       |
| Input Voltage                      | 9-48 VDC                                                                               |                                       |
| Connector                          | 3-Pin 5.08mm Lockable Terminal Block                                                   |                                       |
| Power Consumption                  | 0.6A @ 12VDC (7.2 W Max)                                                               |                                       |
| Power Redundancy                   | USB DC 5V Power Input                                                                  |                                       |
| Reverse Polarity Protection        | Yes                                                                                    |                                       |
| Environmental limits               |                                                                                        |                                       |
| Operating Temperature              | -40°C~70°C (-40°F~158°F)                                                               |                                       |
| Storage Temperature                | -40°C~85°C (-40°F~185°F)                                                               |                                       |
| Ambient Relative Humidity          | 5%~95%, (Non-condensing)                                                               |                                       |
| Mechanicals                        |                                                                                        |                                       |
| Reset Button                       | Yes                                                                                    |                                       |

| Software              |                                                                                                                                                                                         |                                               |                                                                                         |              |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------|--------------|
| Serial Server-related | VirtualCOM (Serial/IP), Virtual Server (port Forwarding)                                                                                                                                |                                               |                                                                                         |              |
| Security              | VPN IPsec. Max VPN throughput 37.9Mbps *                                                                                                                                                |                                               |                                                                                         |              |
| Network               | IPv4, Dynamic DNS, DHCP Client, ICMP, TCP, UDP, HTTP, RFC2217, TELNET                                                                                                                   |                                               |                                                                                         |              |
| Configuration         | Embedded Web-Server (Web UI), TELNET, Atop Device Management Utility                                                                                                                    |                                               |                                                                                         |              |
| Features              | IPsec, OpenVPN, RSTP, PPTP                                                                                                                                                              |                                               |                                                                                         |              |
| Wireless Interface    |                                                                                                                                                                                         |                                               |                                                                                         |              |
| Standard              | GSM/ GPRS/ EDGE/ UMTS/ HSPA+/ SCDMA/ LTE                                                                                                                                                |                                               |                                                                                         |              |
| Wireless Module       | Quectel EC20-A                                                                                                                                                                          |                                               |                                                                                         |              |
| Band Options          | Band                                                                                                                                                                                    | Bands                                         |                                                                                         |              |
|                       | FDD LTE                                                                                                                                                                                 | 1900/1700/850/700/700bMHz (B2/B4/B5/B12/B17)  |                                                                                         |              |
|                       | TDD LTE                                                                                                                                                                                 | 1900/1700/850MHz (B2/B4/B5)                   |                                                                                         |              |
|                       | GSM                                                                                                                                                                                     | 850/1900MHz                                   |                                                                                         |              |
| Data Rate             | Band                                                                                                                                                                                    | Downlink Speed                                |                                                                                         | Uplink Speed |
|                       | LTE-FDD                                                                                                                                                                                 | 100 Mbps                                      |                                                                                         | 50 Mbps      |
|                       | LTE-TDD                                                                                                                                                                                 | 61 Mbps                                       |                                                                                         | 18 Mbps      |
|                       | DC-HSPA+                                                                                                                                                                                | 42 Mbps                                       |                                                                                         | 5.76 Mbps    |
|                       | UMTS                                                                                                                                                                                    | 384 Kbps                                      |                                                                                         | 384 Kbps     |
|                       | TD-SCDMA                                                                                                                                                                                | 4.2 Mbps                                      |                                                                                         | 2.2 Mbps     |
|                       | EDGE                                                                                                                                                                                    | 236.8 Kbps                                    |                                                                                         | 236.8 Kbps   |
| GPRS                  | 85.6 Kbps                                                                                                                                                                               |                                               | 85.6 Kbps                                                                               |              |
| Regulatory Approvals  |                                                                                                                                                                                         |                                               |                                                                                         |              |
| Safety                | EN 60950-1:2006, UL60950                                                                                                                                                                |                                               |                                                                                         |              |
| EMC/Radio             | FCC 47 CFR PART 22H, FCC 47 CFR PART 24H, FCC PART 27L, FCC Part 15B, EN301511, EN301908-1, EN301908-2, EN301489-1, EN301489-7, EN301489-24, EN55032, EN55024, EN61000-6-2, EN61000-6-4 |                                               |                                                                                         |              |
| EMS Test              | Item                                                                                                                                                                                    |                                               | Value                                                                                   | Level        |
| IEC 61000-4-2         | ESD                                                                                                                                                                                     | Contact Discharge<br>Air Discharge            | ±6KV<br>±8KV                                                                            | 3<br>3       |
| IEC 61000-4-3         | RS                                                                                                                                                                                      | Enclosure Port                                | 10(V/m), 80-1000MHz                                                                     | 3            |
| IEC 61000-4-4         | EFT                                                                                                                                                                                     | AC Power Port<br>DC Power Port<br>Signal Port | ±2.0KV<br>±2.0KV<br>±1.0KV                                                              | 3<br>3<br>3  |
| IEC 61000-4-5         | Surge                                                                                                                                                                                   | DC Power Port<br>DC Power Port<br>Signal Port | Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV                        | 3<br>3<br>3  |
| IEC 61000-4-6         | CS                                                                                                                                                                                      | 0.15-80MHz                                    | 10 V rms                                                                                | 3            |
| IEC 61000-4-8         | PFMF                                                                                                                                                                                    | (Enclosure)                                   | AC 50Hz 10A/m                                                                           | 3            |
| IEC 61000-4-11        | DIP                                                                                                                                                                                     | AC Power Port                                 | >95%, Reduction, 0.5 period<br>30%, Reduction, 25 period<br>>95%, Reduction, 250 period | -            |
| Shock                 | IEC 60068-2-27                                                                                                                                                                          |                                               |                                                                                         |              |
| Drop                  | IEC 60068-2-32                                                                                                                                                                          |                                               |                                                                                         |              |
| Vibration             | IEC 60068-2-64                                                                                                                                                                          |                                               |                                                                                         |              |
| RoHS                  | Yes                                                                                                                                                                                     |                                               |                                                                                         |              |
| Warranty              | 5 Years                                                                                                                                                                                 |                                               |                                                                                         |              |

\* : test carried out with one VPN-IPsec Tunnel, Peer-to-Peer mode, Ethernet cable. Performance can change based on the Cellular Network



# Industrial Networking Solutions

## Serial Device Servers



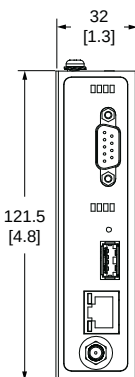
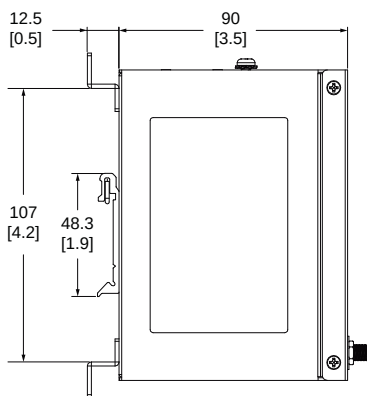
Wireless/Cellular Serial Device Servers | EU Version | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



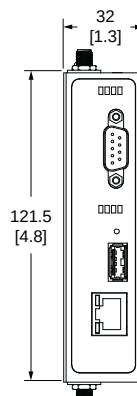
| Industrial Cellular 3G/4G Serial Device Servers, EU |      |                          |                         |                                  |                             |                          |
|-----------------------------------------------------|------|--------------------------|-------------------------|----------------------------------|-----------------------------|--------------------------|
| Part Number                                         | Band | RS-232<br>RS-485<br>TB14 | RS-232<br>RS-485<br>DB9 | 10/100<br>/1000<br>RJ45<br>Ports | Digital<br>Input/<br>Output | GPS/<br>Battery Function |
| SE5901B-D3G-EU                                      | 3G   | N/A                      | 1                       | 1                                | N/A                         | N/A                      |
| SE5901B-IO-D3G-EU                                   | 3G   | 1+1*                     | N/A                     | 1                                | 2/2                         | N/A                      |
| SE5901B-IO-D3G-GPS-EU                               | 3G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS                      |
| SE5901B-4G-EU                                       | 4G   | N/A                      | 1                       | 1                                | N/A                         | N/A                      |
| SE5901B-IO-4G-EU                                    | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | N/A                      |
| SE5901B-IO-4G-GPS-EU                                | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS                      |
| SE5901B-4G-B-EU                                     | 4G   | N/A                      | 1                       | 1                                | N/A                         | Battery Function         |
| SE5901B-IO-4G-B-EU                                  | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | Battery Function         |
| SE5901B-IO-4G-GPS-B-EU                              | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS/Battery Function     |

\* one TB sw-selectable RS485/RS232 and one TB RS232.

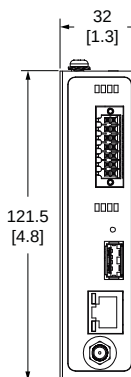
SDK version and SDK-Node-RED version are available, please consult the factory. See Appendix (Page 151) for Block Diagram.



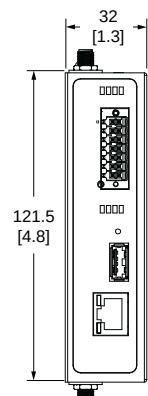
3G DB9 Type



4G DB9 Type



3G IO Type



4G IO Type

### Feature Highlights:

- Extensive 3G and LTE Band Support
  - EU: 2100/1800/850/2600/900/800MHz (B1/B3/B5/B7/B8/B20)
- High-performance IPsec VPN throughput, data-rate up to 37.9Mbps
- Wide temperature, industrial grade platform
- 1 x 10/100/1000Mbps Ethernet port
- 1-port RS-232/485, baud rate up to 921.6 Kbps
- 1-Port USB2.0 high speed OTG + 1-Port USB Power only
- TCP Server/Client, UDP, Virtual COM supported
- 2 Digital Inputs/ 2 Digital outputs in I/O version
- Additional embedded power-bank for fault-relay capability (B version)



# Industrial Networking Solutions

## Specifications & Approvals



Wireless/Cellular Serial Device Servers | EU Version | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface                  |                                                                                        |                                       |
|------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------|
| Standards                          | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X)<br>IEEE 802.3ab for 1000BaseT(X) |                                       |
| Compliance                         | 1x 10/100/1000BASE-TX RJ-45                                                            |                                       |
| Serial Interface                   |                                                                                        |                                       |
| Connector                          | DB Model                                                                               | D-Sub9 RS-232/485 software selectable |
|                                    | Integrated with DI/DOs                                                                 | 14-Pin 5.08mm Terminal Block          |
| Port                               | 1 port RS-232/485 (2-wire) software selectable<br>1 port RS-232 (IO model only)        |                                       |
| Baud Rate                          | 1,200 ~ 921,600bps software selectable                                                 |                                       |
| Data Bits                          | 7, 8 software selectable                                                               |                                       |
| Stop Bits                          | 1, 2 software selectable                                                               |                                       |
| Flow Control                       | None, Xon/Xoff, RTS/CTS (RS-232 only)                                                  |                                       |
| USB Interface                      |                                                                                        |                                       |
| USB ports                          | 2 x USB A Type (USB 2.0) - 1-port High-Speed OTG + 1-port power only                   |                                       |
| Digital Inputs/Outputs (IO Models) |                                                                                        |                                       |
| Digital Inputs (DIs)               | 2 channels photo coupler isolated digital input                                        |                                       |
| Digital Outputs (DOs)              | 2 channels digital output. N.O. ( 2A@24VDC)                                            |                                       |
| Link Mode                          |                                                                                        |                                       |
| TCP Server                         | 4 connections, Virtual COM, or Reverse Telnet                                          |                                       |
| TCP Client                         | Single destination or Virtual COM                                                      |                                       |
| UDP                                | Up to 4 ranges of IPs                                                                  |                                       |
| Power Management                   |                                                                                        |                                       |
| Input Voltage                      | 9-48 VDC                                                                               |                                       |
| Connector                          | 3-Pin 5.08mm Lockable Terminal Block                                                   |                                       |
| Power Consumption                  | 0.6A @ 12VDC (7.2 W Max)                                                               |                                       |
| Power Redundancy                   | USB DC 5V Power Input                                                                  |                                       |
| Reverse Polarity Protection        | Yes                                                                                    |                                       |
| Environmental limits               |                                                                                        |                                       |
| Operating Temperature              | -40°C~70°C (-40°F~158°F)                                                               |                                       |
| Storage Temperature                | -40°C~85°C (-40°F~185°F)                                                               |                                       |
| Ambient Relative Humidity          | 5%~95%, (Non-condensing)                                                               |                                       |
| Mechanicals                        |                                                                                        |                                       |
| Reset Button                       | Yes                                                                                    |                                       |

| Software              |                                                                                                                                                                                 |                                               |                                                                                    |             |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------------------------------------|-------------|
| Serial Server-related | VirtualCOM (Serial/IP), Virtual Server (port Forwarding)                                                                                                                        |                                               |                                                                                    |             |
| Security              | VPN IPsec. Max VPN throughput 37.9Mbps *                                                                                                                                        |                                               |                                                                                    |             |
| Network               | IPv4, Dynamic DNS, DHCP Client, ICMP, TCP, UDP, HTTP, RFC2217, TELNET                                                                                                           |                                               |                                                                                    |             |
| Configuration         | Embedded Web-Server (Web UI), TELNET, Atop Device Management Utility                                                                                                            |                                               |                                                                                    |             |
| Features              | IPsec, OpenVPN, RSTP, PPTP                                                                                                                                                      |                                               |                                                                                    |             |
| Wireless Interface    |                                                                                                                                                                                 |                                               |                                                                                    |             |
| Standard              | GSM/ GPRS/ EDGE/ UMTS/ HSPA+/ SCDMA/ LTE                                                                                                                                        |                                               |                                                                                    |             |
| Wireless Module       | Quectel EC25-E                                                                                                                                                                  |                                               |                                                                                    |             |
| Band Options          | Band                                                                                                                                                                            | Bands                                         |                                                                                    |             |
|                       | FDD LTE                                                                                                                                                                         | 1900/1700/850/700/700bMHz (B2/B4/B5/B12/B17)  |                                                                                    |             |
|                       | TDD LTE                                                                                                                                                                         | 1900/1700/850MHz (B2/B4/B5)                   |                                                                                    |             |
|                       | WCDMA                                                                                                                                                                           | 2100/850/900MHz (B1/B5/B8)                    |                                                                                    |             |
|                       | GSM                                                                                                                                                                             | 850/1900MHz                                   |                                                                                    |             |
| Data Rate             | Band                                                                                                                                                                            | Downlink Speed                                | Uplink Speed                                                                       |             |
|                       | LTE-FDD                                                                                                                                                                         | 150 Mbps                                      | 50 Mbps                                                                            |             |
|                       | LTE-TDD                                                                                                                                                                         | 130 Mbps                                      | 35 Mbps                                                                            |             |
|                       | DC-HSPA+                                                                                                                                                                        | 42 Mbps                                       | 5.76 Mbps                                                                          |             |
|                       | UMTS                                                                                                                                                                            | 384 Kbps                                      | 384 Kbps                                                                           |             |
|                       | TD-SCDMA                                                                                                                                                                        | 4.2 Mbps                                      | 2.2 Mbps                                                                           |             |
|                       | EDGE                                                                                                                                                                            | 236.8 Kbps                                    | 236.8 Kbps                                                                         |             |
| GPRS                  | 85.6 Kbps                                                                                                                                                                       | 85.6 Kbps                                     |                                                                                    |             |
| Regulatory Approvals  |                                                                                                                                                                                 |                                               |                                                                                    |             |
| Safety                | EN 60950-1:2006, UL60950                                                                                                                                                        |                                               |                                                                                    |             |
| EMC/Radio             | FCC 47 CFR PART 22H, FCC 47 CFR PART 24H,FCC PART 27L, FCC Part 15B, EN301511,EN301908-1,EN301908-2,EN301489-1,EN301489-7,EN301489-24, EN55032,EN55024, EN61000-6-2,EN61000-6-4 |                                               |                                                                                    |             |
| EMS Test              | Item                                                                                                                                                                            |                                               | Value                                                                              | Level       |
| IEC 61000-4-2         | ESD                                                                                                                                                                             | Contact Discharge<br>Air Discharge            | ±6KV<br>±8KV                                                                       | 3<br>3      |
| IEC 61000-4-3         | RS                                                                                                                                                                              | Enclosure Port                                | 10(V/m), 80-1000MHz                                                                | 3           |
| IEC 61000-4-4         | EFT                                                                                                                                                                             | AC Power Port<br>DC Power Port<br>Signal Port | ±2.0KV<br>±2.0KV<br>±1.0KV                                                         | 3<br>3<br>3 |
| IEC 61000-4-5         | Surge                                                                                                                                                                           | DC Power Port<br>DC Power Port<br>Signal Port | Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV                   | 3<br>3<br>3 |
| IEC 61000-4-6         | CS                                                                                                                                                                              | 0.15-80MHz                                    | 10 V rms                                                                           | 3           |
| IEC 61000-4-8         | PFMF                                                                                                                                                                            | (Enclosure)                                   | AC 50Hz 10A/m                                                                      | 3           |
| IEC 61000-4-11        | DIP                                                                                                                                                                             | AC Power Port                                 | >95%,Reduction,0.5 period<br>30%, Reduction,25 period<br>>95%,Reduction,250 period | -           |
| Shock                 | IEC 60068-2-27                                                                                                                                                                  |                                               |                                                                                    |             |
| Drop                  | IEC 60068-2-32                                                                                                                                                                  |                                               |                                                                                    |             |
| Vibration             | IEC 60068-2-64                                                                                                                                                                  |                                               |                                                                                    |             |
| RoHS                  | Yes                                                                                                                                                                             |                                               |                                                                                    |             |
| Warranty              | 5 Years                                                                                                                                                                         |                                               |                                                                                    |             |

\* : test carried out with one VPN-IPsec Tunnel, Peer-to-Peer mode, Ethernet cable. Performance can change based on the Cellular Network



# Industrial Networking Solutions

## Serial Device Servers

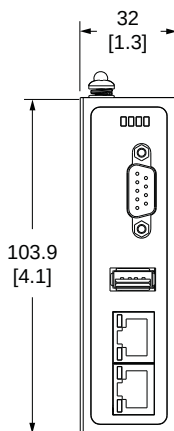
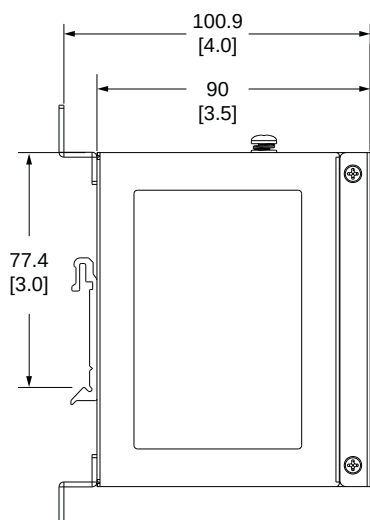


Advanced Serial Device Servers | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

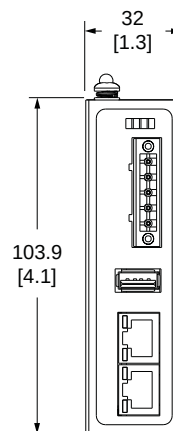


| Advanced Industrial Serial Device Servers |                                   |                                   |                         |                |                           |
|-------------------------------------------|-----------------------------------|-----------------------------------|-------------------------|----------------|---------------------------|
| Part Number<br>[MFG #]                    | RS-232<br>RS-422<br>RS-485<br>TB5 | RS-232<br>RS-422<br>RS-485<br>DB9 | 10/100<br>RJ45<br>Ports | PoE<br>Powered | Features                  |
| E45SS-DB9-2RJ45<br>[SE5901-DB]            | N/A                               | 1                                 | 2                       | No             | Industrial EMC Protection |
| E45SS-TB5-2RJ45<br>[SE5901-TB]            | 1                                 | N/A                               | 2                       | No             |                           |
| E45SS-DB9-2RJ45-POE<br>[SE5901-POE-DB]    | N/A                               | 1                                 | 2                       | Yes            |                           |
| E45SS-TB5-2-RJ45-POE<br>[SE5901-POE-TB]   | 1                                 | N/A                               | 2                       | Yes            |                           |

SDK version and SDK-Node-RED version are available, please consult the factory. See Appendix (Page 151) for Block Diagram.



**E45SS-DB9-2RJ45**  
**E45SS-DB9-2RJ45-POE**



**E45SS-TB5-2RJ45**  
**E45SS-TB5-2-RJ45-POE**

### Feature Highlights:

- Industrial EMC protection, wide temperature operation, -40 °C~85 °C
- Rugged metal case with wall or DIN-Rail mount
- 2-port 10/100Mbps Fast Ethernet, 1-port USB 2.0 high speed OTG
- TCP Server/Client, UDP, Virtual COM and Tunneling modes supported
- Remotely monitor, manage, and control industrial field devices
- Configuration via Web Browser / Serial Console / Telnet Console / Windows Utility
- Remote firmware upgrade
- Optional 802.3af PoE models can be powered through the Ethernet cable





# Industrial Networking Solutions

## Specifications & Approvals



Advanced Serial Device Servers | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                                      |
|-----------------------------|----------------------------------------------------------------------|
| Speed                       | IEEE 802.3 10BaseT, IEEE 802.3u 100BaseT(X)                          |
| PoE standard supported      | IEEE 802.3 af (PoE)                                                  |
| Connector ports             | RJ45 x 2                                                             |
| Serial Interface            |                                                                      |
| Connector                   | DB Models D-Sub9 RS-232/422/485 software selectable                  |
|                             | TB Models 5.08mm 5-Pin Terminal block RS-232/422/485 sw selectable   |
| Ports                       | 1                                                                    |
| Baud Rate                   | 110 ~ 921.6Kbps software selectable                                  |
| Data Bits                   | 5, 6, 7, 8 software selectable                                       |
| Stop Bits                   | 1, 2 software selectable                                             |
| Flow Control                | None, Xon/Xoff, RTS/CTS                                              |
| USB interface               |                                                                      |
| Speed                       | USB 2.0                                                              |
| Connector                   | USB A Type                                                           |
| Power Management            |                                                                      |
| Input Voltage               | 9 - 48VDC (non-PoE Models); or through Ethernet Cable (PoE versions) |
| Input Current (@ 9VDC)      | 0.65 A                                                               |
| Power Consumption           | Approximately 6 W (Max)                                              |
| Connector                   | 3-Pin 5.08mm Lockable Terminal Block                                 |
| Reverse Polarity Protection | Yes                                                                  |
| Mechanicals                 |                                                                      |
| Reset Button                | Yes                                                                  |
| Environmental Limits        |                                                                      |
| Operating Temperature       | -40°C ~ 75°C (-40°F ~ 167°F)                                         |
| Storage Temperature         | -40°C ~ 85°C (-40°F ~ 185°F)                                         |
| Ambient Relative Humidity   | 5%~95%, 55°C (Non-condensing)                                        |

| Software             |                                                                                                            |                                               |                                                                  |             |
|----------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------------------|-------------|
| Protocols            | IPv4, ICMP, TCP, UDP, DHCP Client, SNMPv1,v2c,v3, HTTP, Telnet, RFC2217                                    |                                               |                                                                  |             |
| Configuration        | Atop Management Utility, Web UI, Telnet                                                                    |                                               |                                                                  |             |
| VirtualCOM           | Windows/Linux redirection software                                                                         |                                               |                                                                  |             |
| Features             | IPsec, OpenVPN, RSTP, PPTP                                                                                 |                                               |                                                                  |             |
| Link Modes           |                                                                                                            |                                               |                                                                  |             |
| TCP Client           | Single destination or VirtualCOM                                                                           |                                               |                                                                  |             |
| TCP Server           | 4 Connections; VirtualCOM or reverse Telnet                                                                |                                               |                                                                  |             |
| UDP                  | Up to 4 Ranges IP                                                                                          |                                               |                                                                  |             |
| Regulatory Approvals |                                                                                                            |                                               |                                                                  |             |
| Safety               | EN60950-1:2006                                                                                             |                                               |                                                                  |             |
| EMC                  | FCC Part 15, Subpart B, Class A EN 55032, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-4 |                                               |                                                                  |             |
| EMS Test             | Item                                                                                                       |                                               | Value                                                            | Level       |
| IEC 61000-4-2        | ESD                                                                                                        | Contact Discharge<br>Air Discharge            | ±8KV<br>±15KV                                                    | 4<br>4      |
| IEC 61000-4-3        | RS                                                                                                         | Radiated<br>(Enclosure)                       | 10(V/m)                                                          | 3           |
| IEC 61000-4-4        | EFT                                                                                                        | DC Power Port<br>Signal Port                  | ±2.0 KV<br>±2.0 KV                                               | 3<br>3      |
| IEC 61000-4-5        | Surge                                                                                                      | DC Power Port<br>DC Power Port<br>Signal Port | Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV | 3<br>3<br>3 |
| IEC 61000-4-6        | CS                                                                                                         | Conducted<br>(Enclosure)                      | 10 V rms                                                         | 3           |
| IEC 61000-4-8        | PFMF                                                                                                       | Enclosure                                     | 10(A/m)                                                          | 3           |
| IEC 61000-4-11       | DIP                                                                                                        | Power Port                                    | -                                                                | A           |
| Shock                | IEC 60068-2-27                                                                                             |                                               |                                                                  |             |
| Drop                 | IEC 60068-2-32                                                                                             |                                               |                                                                  |             |
| Vibration            | IEC 60068-2-6                                                                                              |                                               |                                                                  |             |
| RoHS II              | Yes                                                                                                        |                                               |                                                                  |             |
| Warranty             | 5 Years                                                                                                    |                                               |                                                                  |             |



# Industrial Networking Solutions

## Serial Device Servers



Advanced Serial Device Servers | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating

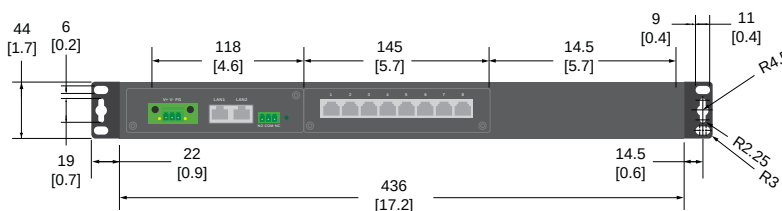


| 8-Port Advanced Serial Device Servers      |                                    |                      |           |                    |                           |
|--------------------------------------------|------------------------------------|----------------------|-----------|--------------------|---------------------------|
| Part Number<br>[MFG #]                     | RS-232<br>RS-422<br>RS-485<br>RJ45 | 10/100<br>RJ45 Ports | Isolation | Power<br>Connector | Features                  |
| RMSS-8RJ45<br>[SE5908-DC]                  | 8<br>(RS-232/422/485)              | 2                    | N/A       | DC TB3             | Industrial EMC Protection |
| RMSS-8RJ45-422-IS<br>[SE5908-SIS-DC]       | 8<br>(RS-422/485)                  | 2                    | 2.5 KV    | DC TB3             |                           |
| RMSS-8RJ45-US-AC<br>[SE5908-US]            | 8<br>(RS-232/422/485)              | 2                    | N/A       | AC Inlet (US)      |                           |
| RMSS-8RJ45-422-IS-US-AC<br>[SE5908-SIS-US] | 8<br>(RS-422/485)                  | 2                    | 2.5 KV    | AC Inlet (US)      |                           |
| RMSS-8RJ45-EU-AC<br>[SE5908-EU]            | 8<br>(RS-232/422/485)              | 2                    | N/A       | AC Inlet (EU)      |                           |
| RMSS-8RJ45-422-IS-EU-AC<br>[SE5908-SIS-EU] | 8<br>(RS-422/485)                  | 2                    | 2.5 KV    | AC Inlet (EU)      |                           |

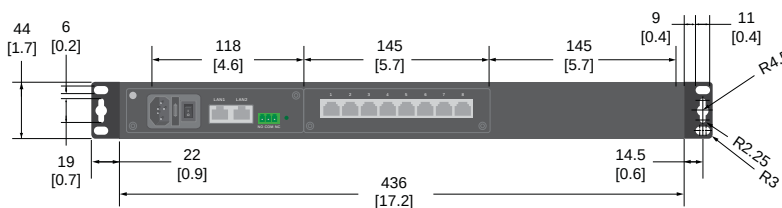
RS-232/RS-485/RS-422 function is available on non-isolated versions. Isolated versions support RS-485 and RS-422 only.

SDK version and SDK-Node-RED version are available, please consult the factory. See Appendix (Page 151) for Block Diagram.

**DC Terminal Block**



**AC Inlet**



### Feature Highlights:

- Remotely monitor, manage, and control industrial field devices
- Industrial EMC protection, Opt. Serial port Isolation, -20°C~70°C operation
- 2 Fast-Ethernet ports with RSTP allowing also dual-subnet or redundancy
- 8/16 sw-selectable RS-232/485/422 (\*) RJ45 serial ports, up to 921kbps with adjustable pull-high / pull-low resistors.
- 24~48 VDC Power Input or 100~240 VAC Power input (EU or US version)
- TCP Server/Client, UDP, Virtual COM and Tunneling modes supported
- Supports SNMPv1/v2c/v3, RSTP 802.1d:2004 and cascade connecting
- Configuration via Web Browser / Serial Console / Telnet Console / Windows Utility



# Industrial Networking Solutions

## Specifications & Approvals



Advanced Serial Device Servers | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                                                                  |                                      |
|-----------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------|
| Speed                       | IEEE 802.3 10BaseT<br>IEEE 802.3u 100BaseT(X)                                                    |                                      |
| LAN Mode                    | Dual Subnets or Network Redundancy                                                               |                                      |
| Connector ports             | 2 x 10/100BASE-T(X) RJ-45                                                                        |                                      |
| Power Management            |                                                                                                  |                                      |
| Input Voltage               | DC                                                                                               | 24 - 48VDC                           |
|                             | US/EU                                                                                            | 100~240 VAC (EU or US Plug)          |
| Input Current               | DC                                                                                               | 0.54 A @24VDC                        |
|                             | US/EU                                                                                            | 0.21A@100VAC                         |
| Power Consumption           | Approximately 21 W (Max)                                                                         |                                      |
| Connector                   | DC                                                                                               | 5.08mm 3-pin Lockable Terminal Block |
|                             | US/EU                                                                                            | IEC 60320-1 C14 AC Power Inlet       |
| Power Redundancy            | No                                                                                               |                                      |
| Reverse Polarity Protection | Yes (DC Input only)                                                                              |                                      |
| Relay Output                | Yes (1)                                                                                          |                                      |
| Mechanicals                 |                                                                                                  |                                      |
| Reset Button                | Yes                                                                                              |                                      |
| Environmental Limits        |                                                                                                  |                                      |
| Operating Temperature       | -20°C ~ 70°C (-4°F ~ 158°F)                                                                      |                                      |
| Storage Temperature         | -40°C ~ 85°C (-40°F ~ 185°F)                                                                     |                                      |
| Ambient Relative Humidity   | 5 ~ 95%, (non-condensing)                                                                        |                                      |
| Software                    |                                                                                                  |                                      |
| Protocol                    | IPv4, ARP, ICMP, TCP, UDP, DHCP Client, DNS Client, SNMPv1,v2c,v3, HTTP, Telnet, RFC2217, Syslog |                                      |
| Configuration               | Atop Management Utility, Web UI, Telnet                                                          |                                      |
| Virtual COM                 | Windows / Linux redirection software                                                             |                                      |
| Features                    | IPsec, OpenVPN, RSTP, PPTP                                                                       |                                      |
| Link Modes                  |                                                                                                  |                                      |
| TCP Server                  | Dual destination supports raw-data or VirtualCOM                                                 |                                      |
| TCP Server                  | 4 Connections mode supports raw-data; VirtualCOM or reverse Telnet                               |                                      |
| UDP                         | Up to 4 Ranges IP                                                                                |                                      |

| Serial Interface     |                                                                                                          |                                                                                 |                                                                                                               |             |
|----------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-------------|
| Connector            | Non-Isolation Models                                                                                     | RJ45 RS-232/422/485 software selectable                                         |                                                                                                               |             |
|                      | Isolation Models                                                                                         | RJ45 Isolated RS-422/485 software selectable                                    |                                                                                                               |             |
| Ports                | 8 Ports                                                                                                  |                                                                                 |                                                                                                               |             |
| Mode                 | RS-232/422/485, software selectable.<br>Consult factory for the different modes supported in each model. |                                                                                 |                                                                                                               |             |
| Baud Rate            | 50 ~ 921,600 bps software selectable                                                                     |                                                                                 |                                                                                                               |             |
| Parity               | None, Odd, Even, Space, Mark                                                                             |                                                                                 |                                                                                                               |             |
| Data bits            | 5, 6, 7, 8 software selectable                                                                           |                                                                                 |                                                                                                               |             |
| Stop Bit             | 1, 2 software selectable                                                                                 |                                                                                 |                                                                                                               |             |
| Flow Control         | None, Xon/Xoff, RTS/CTS (RS-232 only)                                                                    |                                                                                 |                                                                                                               |             |
| Isolation            | 2.5 KV (Isolation models only)                                                                           |                                                                                 |                                                                                                               |             |
| Regulatory Approvals |                                                                                                          |                                                                                 |                                                                                                               |             |
| Safety               | EN60950-1:2006/ IEC60950-1 LVD                                                                           |                                                                                 |                                                                                                               |             |
| EMC                  | FCC Part 15, Subpart B, Class B<br>EN 55022, Class B, EN 61000-3-2, EN 61000-3-3, EN 55024               |                                                                                 |                                                                                                               |             |
| EMS Test             | Item                                                                                                     |                                                                                 | Value                                                                                                         | Level       |
| IEC 61000-4-2        | ESD                                                                                                      | Enclosure Contact<br>Air Discharge                                              | ±8kV<br>±15kV                                                                                                 | 4<br>4      |
| IEC 61000-4-3        | RS                                                                                                       | Radiated (enclosure)                                                            | 10 V/m                                                                                                        | 3           |
| IEC 61000-4-4        | EFT                                                                                                      | AC Power Port<br>DC Power Port<br>Signal Port                                   | ±4.0KV<br>±4.0KV<br>±2.0KV                                                                                    | 4<br>4<br>3 |
| IEC 61000-4-5        | Surge                                                                                                    | AC Power Port<br>AC Power Port<br>DC Power Port<br>DC Power Port<br>Signal Port | Line-to Line±2.0KV<br>Line-to Earth±4.0KV<br>Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV | 3           |
| IEC 61000-4-6        | CS                                                                                                       | AC Power Port<br>DC Power Port<br>Signal Port                                   | 10 V rms<br>10 V rms<br>10 V rms                                                                              | 3<br>3<br>3 |
| IEC 61000-4-8        | PFMF                                                                                                     | Enclosure                                                                       | 1 A/m                                                                                                         | 3           |
| IEC 61000-4-11       | DIP                                                                                                      | AC Power Ports                                                                  | -                                                                                                             | -           |
| Shock                | IEC 60068-2-27                                                                                           |                                                                                 |                                                                                                               |             |
| Drop                 | ISTA Test Procedure 2A                                                                                   |                                                                                 |                                                                                                               |             |
| Vibration            | IEC 60068-2-64                                                                                           |                                                                                 |                                                                                                               |             |
| RoHS II              | Yes                                                                                                      |                                                                                 |                                                                                                               |             |
| Warranty             | 5 Years                                                                                                  |                                                                                 |                                                                                                               |             |



# Industrial Networking Solutions

## Serial Device Servers



Advanced Serial Device Servers | 16-Port | 19" Rack Mount | Metal Housing | IP30 Rating

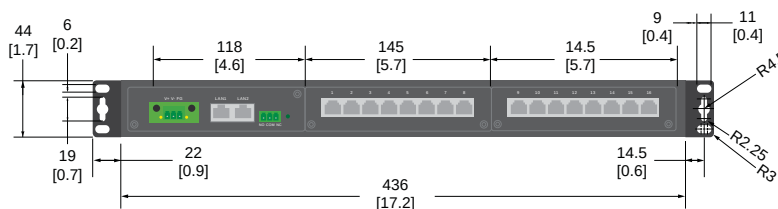


| 16-Port Advanced Serial Device Servers      |                                    |                      |           |                    |                           |
|---------------------------------------------|------------------------------------|----------------------|-----------|--------------------|---------------------------|
| Part Number<br>[MFG #]                      | RS-232<br>RS-422<br>RS-485<br>RJ45 | 10/100<br>RJ45 Ports | Isolation | Power<br>Connector | Features                  |
| RMSS-16RJ45<br>[SE5916-DC]                  | 16<br>(RS-232/422/485)             | 2                    | N/A       | DC TB3             | Industrial EMC Protection |
| RMSS-16RJ45-422-IS<br>[SE5916-SIS-DC]       | 16<br>(RS-422/485)                 | 2                    | 2.5 KV    | DC TB3             |                           |
| RMSS-16RJ45-US-AC<br>[SE5916-US]            | 16<br>(RS-232/422/485)             | 2                    | N/A       | AC Inlet (US)      |                           |
| RMSS-16RJ45-422-IS-US-AC<br>[SE5916-SIS-US] | 16<br>(RS-422/485)                 | 2                    | 2.5 KV    | AC Inlet (US)      |                           |
| RMSS-16RJ45-EU-AC<br>[SE5916-EU]            | 16<br>(RS-232/422/485)             | 2                    | N/A       | AC Inlet (EU)      |                           |
| RMSS-16RJ45-422-IS-EU-AC<br>[SE5916-SIS-EU] | 16<br>(RS-422/485)                 | 2                    | 2.5 KV    | AC Inlet (EU)      |                           |

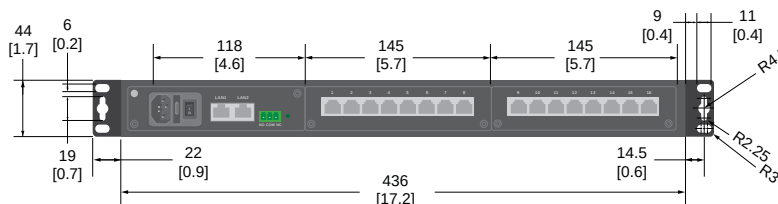
RS-232/RS-485-RS-422 function is available on non-isolated versions. Isolated versions support RS-485 and RS-422 only.

SDK version and SDK-Node-RED version are available, please consult the factory. See Appendix (Page 151) for Block Diagram.

**DC Terminal Block**



**AC Inlet**



### Feature Highlights:

- Remotely monitor, manage, and control industrial field devices
- Industrial EMC protection, Opt. Serial port Isolation, -20°C~70°C operation
- 2 Fast-Ethernet ports with RSTP allowing also dual-subnet or redundancy
- 8/16 sw-selectable RS-232/485/422 (\*) RJ45 serial ports, up to 921kbps with adjustable pull-high / pull-low resistors.
- 24~48 VDC Power Input or 100~240 VAC Power input (EU or US version)
- TCP Server/Client, UDP, Virtual COM and Tunneling modes supported
- Supports SNMPv1/v2c/v3, RSTP 802.1d:2004 and cascade connecting
- Configuration via Web Browser / Serial Console / Telnet Console / Windows Utility



# Industrial Networking Solutions

## Specifications & Approvals



Advanced Serial Device Servers | 16-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                                                                  |                                      |
|-----------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------|
| Speed                       | IEEE 802.3 10BaseT<br>IEEE 802.3u 100BaseT(X)                                                    |                                      |
| LAN Mode                    | Dual Subnets or Network Redundancy                                                               |                                      |
| Connector ports             | 2 x 10/100BASE-T(X) RJ-45                                                                        |                                      |
| Power Management            |                                                                                                  |                                      |
| Input Voltage               | DC                                                                                               | 24 - 48VDC                           |
|                             | US/EU                                                                                            | 100~240 VAC                          |
| Input Current               | DC                                                                                               | 0.54 A @24VDC                        |
|                             | US/EU                                                                                            | 0.21A@100VAC                         |
| Power Consumption           | Approximately 21 W (Max)                                                                         |                                      |
| Connector                   | DC                                                                                               | 5.08mm 3-pin Lockable Terminal Block |
|                             | US/EU                                                                                            | IEC 60320-1 C14 AC Power Inlet       |
| Power Redundancy            | No                                                                                               |                                      |
| Reverse Polarity Protection | Yes (DC Input only)                                                                              |                                      |
| Relay Output                | Yes (1)                                                                                          |                                      |
| Mechanicals                 |                                                                                                  |                                      |
| Reset Button                | Yes                                                                                              |                                      |
| Environmental Limits        |                                                                                                  |                                      |
| Operating Temperature       | -20°C ~ 70°C (-4°F ~ 158°F)                                                                      |                                      |
| Storage Temperature         | -40°C ~ 85°C (-40°F ~ 185°F)                                                                     |                                      |
| Ambient Relative Humidity   | 5 ~ 95%, (non-condensing)                                                                        |                                      |
| Software                    |                                                                                                  |                                      |
| Protocol                    | IPv4, ARP, ICMP, TCP, UDP, DHCP Client, DNS Client, SNMPv1,v2c,v3, HTTP, Telnet, RFC2217, Syslog |                                      |
| Configuration               | Atop Management Utility, Web UI, Telnet                                                          |                                      |
| Virtual COM                 | Windows / Linux redirection software                                                             |                                      |
| Features                    | IPsec, OpenVPN, RSTP, PPTP                                                                       |                                      |
| Link Modes                  |                                                                                                  |                                      |
| TCP Server                  | Dual destination supports raw-data or VirtualCOM                                                 |                                      |
| TCP Server                  | 4 Connections mode supports raw-data; VirtualCOM or reverse Telnet                               |                                      |
| UDP                         | Up to 4 Ranges IP                                                                                |                                      |

| Serial Interface     |                                                                                                          |                                                                                 |                                                                                                               |             |
|----------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-------------|
| Connector            | Non-Isolation Models                                                                                     | RJ45 RS-232/422/485 software selectable                                         |                                                                                                               |             |
|                      | Isolation Models                                                                                         | RJ45 Isolated RS-422/485 software selectable                                    |                                                                                                               |             |
| Ports                | 16 Ports                                                                                                 |                                                                                 |                                                                                                               |             |
| Mode                 | RS-232/422/485, software selectable.<br>Consult factory for the different modes supported in each model. |                                                                                 |                                                                                                               |             |
| Baud Rate            | 50 ~ 921,600 bps software selectable                                                                     |                                                                                 |                                                                                                               |             |
| Parity               | None, Odd, Even, Space, Mark                                                                             |                                                                                 |                                                                                                               |             |
| Data bits            | 5, 6, 7, 8 software selectable                                                                           |                                                                                 |                                                                                                               |             |
| Stop Bit             | 1, 2 software selectable                                                                                 |                                                                                 |                                                                                                               |             |
| Flow Control         | None, Xon/Xoff, RTS/CTS (RS-232 only)                                                                    |                                                                                 |                                                                                                               |             |
| Isolation            | 2.5 KV (Isolation models only)                                                                           |                                                                                 |                                                                                                               |             |
| Regulatory Approvals |                                                                                                          |                                                                                 |                                                                                                               |             |
| Safety               | EN60950-1:2006/ IEC60950-1 LVD                                                                           |                                                                                 |                                                                                                               |             |
| EMC                  | FCC Part 15, Subpart B, Class B<br>EN 55022, Class B, EN 61000-3-2, EN 61000-3-3, EN 55024               |                                                                                 |                                                                                                               |             |
| EMS Test             | Item                                                                                                     |                                                                                 | Value                                                                                                         | Level       |
| IEC 61000-4-2        | ESD                                                                                                      | Enclosure Contact<br>Air Discharge                                              | ±8kV<br>±15kV                                                                                                 | 4<br>4      |
| IEC 61000-4-3        | RS                                                                                                       | Radiated (enclosure)                                                            | 10 V/m                                                                                                        | 3           |
| IEC 61000-4-4        | EFT                                                                                                      | AC Power Port<br>DC Power Port<br>Signal Port                                   | ±4.0KV<br>±4.0KV<br>±2.0KV                                                                                    | 4<br>4<br>3 |
| IEC 61000-4-5        | Surge                                                                                                    | AC Power Port<br>AC Power Port<br>DC Power Port<br>DC Power Port<br>Signal Port | Line-to Line±2.0KV<br>Line-to Earth±4.0KV<br>Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV | 3           |
| IEC 61000-4-6        | CS                                                                                                       | AC Power Port<br>DC Power Port<br>Signal Port                                   | 10 V rms<br>10 V rms<br>10 V rms                                                                              | 3<br>3<br>3 |
| IEC 61000-4-8        | PFMF                                                                                                     | Enclosure                                                                       | 1 A/m                                                                                                         | 3           |
| IEC 61000-4-11       | DIP                                                                                                      | AC Power Ports                                                                  | -                                                                                                             | -           |
| Shock                | IEC 60068-2-27                                                                                           |                                                                                 |                                                                                                               |             |
| Drop                 | ISTA Test Procedure 2A                                                                                   |                                                                                 |                                                                                                               |             |
| Vibration            | IEC 60068-2-64                                                                                           |                                                                                 |                                                                                                               |             |
| RoHS II              | Yes                                                                                                      |                                                                                 |                                                                                                               |             |
| Warranty             | 5 Years                                                                                                  |                                                                                 |                                                                                                               |             |



# Industrial Networking Solutions

## Serial Device Servers

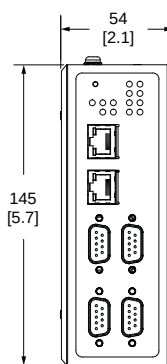
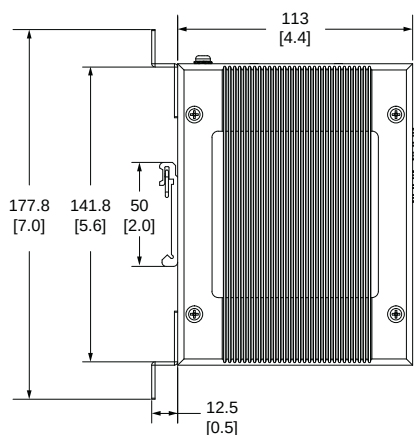


Industrial Serial Device Servers | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

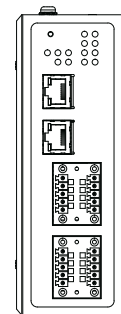


| Industrial Serial Device Servers                       |                                   |                                   |                      |                   |           |                           |
|--------------------------------------------------------|-----------------------------------|-----------------------------------|----------------------|-------------------|-----------|---------------------------|
| Part Number<br>[MFG #]                                 | RS-232<br>RS-422<br>RS-485<br>TB5 | RS-232<br>RS-422<br>RS-485<br>DB9 | 10/100<br>RJ45 Ports | 1000<br>SFP Slots | Isolation | Features                  |
| <b>E45SS-4DB9-2RJ45</b><br>[SE5904D-4P-DB]             | N/A                               | 4                                 | 2                    | N/A               | N/A       | Industrial EMC Protection |
| <b>E45SS-4TB5-2RJ45</b><br>[SE5904D-4P-TB]             | 4                                 | N/A                               | 2                    | N/A               | N/A       |                           |
| <b>E45SS-4TB5-2RJ45-IS</b><br>[SE5904D-4P-SIS]         | 4                                 | N/A                               | 2                    | N/A               | 3 KV      |                           |
| <b>E45SS-4DB9-2POE</b><br>[SE5904D-4P-POE-DB]          | N/A                               | 4                                 | 2 with PoE           | N/A               | N/A       |                           |
| <b>E45SS-4TB5-2POE</b><br>[SE5904D-4P-POE-TB]          | 4                                 | N/A                               | 2 with PoE           | N/A               | N/A       |                           |
| <b>E45SS-4TB5-2POE-IS</b><br>[SE5904D-4P-POE-SIS]      | 4                                 | N/A                               | 2 with PoE           | N/A               | 3 KV      |                           |
| <b>E45SS-4M-4DB9-2SFP</b><br>[SE5904D-4P-G-DB-SFP]     | N/A                               | 4                                 | N/A                  | 2                 | N/A       |                           |
| <b>E45SS-4M-4TB5-2SFP</b><br>[SE5904D-4P-G-TB-SFP]     | 4                                 | N/A                               | N/A                  | 2                 | N/A       |                           |
| <b>E45SS-4M-4TB5-2SFP-IS</b><br>[SE5904D-4P-G-SIS-SFP] | 4                                 | N/A                               | N/A                  | 2                 | 3 KV      |                           |

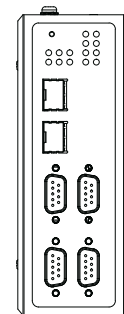
SDK version and SDK-Node-RED version are available, please consult the factory. See Appendix (Page 152) for Block Diagram.



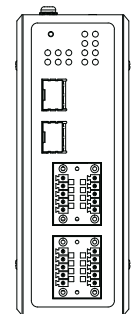
RJ45 DB9 Type



RJ45 TB5 Type



SFP DB9 Type



SFP TB5 Type

### Feature Highlights:

- Industrial EMC protection, wide temperature operation, -40°C~85°C
- Rugged metal case with wall or DIN-Rail mount
- 2 Fast-Ethernet ports or SFP Gigabit slots
- 4 Software-selectable RS-232/RS-485/RS-422 serial ports, up to 921kbps
- Isolated Redundant 12~48 VDC Power Inputs or powered (PoE models) through through the Ethernet cable (802.3af)
- TCP Server/Client, UDP, Virtual COM and Tunneling modes supported
- Remotely monitor, manage, and control industrial field devices
- Configuration via Web Browser / Serial Console / Telnet Console / Windows Utility



# Industrial Networking Solutions

## Specifications & Approvals



Industrial Serial Device Servers | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface              |                                                                               |
|--------------------------------|-------------------------------------------------------------------------------|
| Speed                          | IEEE 802.3 10BaseT<br>IEEE 802.3u 100BaseT(X)<br>IEEE 802.3z for 1000Base-X   |
| PoE standard supported         | IEEE 802.3 af                                                                 |
| LAN Mode                       | Dual Subnets or Network Redundancy                                            |
| Connector ports                | 2x 10/100BASE-T(X) RJ-45 or<br>2x 1000 Base-X SFP Slots (SFP version)         |
| USB Interface                  |                                                                               |
| Speed                          | USB 2.0                                                                       |
| Connector                      | USB A Type x 1                                                                |
| Link Mode                      |                                                                               |
| TCP Server                     | 4 Connections; VirtualCOM or reverse Telnet                                   |
| TCP Client                     | Single destination or VirtualCOM                                              |
| UDP                            | Up to 4 Ranges IP                                                             |
| Power Management               |                                                                               |
| Input Voltage                  | Dual 12 - 48VDC (non-POE Models);<br>or through Ethernet Cable (POE versions) |
| Input Current<br>(@ 12VDC)     | 0.65 A                                                                        |
| Power Consumption              | Approximately 6 W (Max)                                                       |
| Connector                      | 7-Pin 5.08mm Lockable Terminal Block                                          |
| Power Redundancy               | Yes                                                                           |
| Reverse Polarity<br>Protection | Yes                                                                           |
| Relay Output                   | 1A @ 30 VDC (normal open)                                                     |
| Physical Characteristics       |                                                                               |
| Reset Button                   | Yes                                                                           |
| Environment Limits             |                                                                               |
| Operating                      | -40°C~85°C (-40°F~185°F)                                                      |
| Storage                        | -40°C~85°C (-40°F~185°F)                                                      |
| Humidity                       | 5%~95%, 55°C (Non-condensing)                                                 |
| Software                       |                                                                               |
| Protocols                      | IPv4, ICMP, TCP, UDP, DHCP Client,<br>SNMPv1,v2c,v3, HTTP, Telnet, RFC2217    |
| Configuration                  | Atop Management Utility, Web UI, Telnet                                       |
| VirtualCOM                     | Windows/Linux redirection software                                            |
| Features                       | IPsec, OpenVPN, RSTP, PPTP                                                    |

| Serial Interface     |                                                                                                                  |                                                             |                                                                  |             |
|----------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------------|-------------|
| Connector            | DB Models                                                                                                        | D-Sub9 RS-232/422/485 software selectable                   |                                                                  |             |
|                      | TB Models                                                                                                        | 5.08mm 5-Pin Terminal block<br>RS-232/422/485 sw selectable |                                                                  |             |
| Ports                |                                                                                                                  | 4 + 1 console port (RJ45)                                   |                                                                  |             |
| Baud Rate            |                                                                                                                  | 110 ~ 921,600 bps software selectable                       |                                                                  |             |
| Data Bits            |                                                                                                                  | 7, 8 software selectable                                    |                                                                  |             |
| Stop Bits            |                                                                                                                  | 1, 2 software selectable                                    |                                                                  |             |
| Flow Control         |                                                                                                                  | None, Xon/Xoff, RTS/CTS                                     |                                                                  |             |
| Isolation            |                                                                                                                  | 3 kV (Isolation versions only)                              |                                                                  |             |
| Regulatory Approvals |                                                                                                                  |                                                             |                                                                  |             |
| Safety               | UL61010-2-201                                                                                                    |                                                             |                                                                  |             |
| EMC                  | FCC Part 15, Subpart B, Class A<br>EN 55032, EN 55024, EN 61000-3-2, EN 61000-3-3,<br>EN 61000-6-2, EN 61000-6-4 |                                                             |                                                                  |             |
| EMS Test             | Item                                                                                                             |                                                             | Value                                                            | Level       |
| IEC 61000-4-2        | ESD                                                                                                              | Enclosure Contact<br>Enclosure Air                          | ±8kV<br>±15kV                                                    | 4<br>4      |
| IEC 61000-4-3        | RS                                                                                                               | Radiated<br>(enclosure)                                     | 10 V/m                                                           | 3           |
| IEC 61000-4-4        | EFT                                                                                                              | AC Power Port<br>Signal Port                                | ±2.0KV<br>±2.0KV                                                 | 3<br>4      |
| IEC 61000-4-5        | Surge                                                                                                            | AC Power Port<br>AC Power Port<br>Signal Port               | Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV | 3<br>3<br>3 |
| IEC 61000-4-6        | CS                                                                                                               | Conducted<br>(enclosure)                                    | 10 V rms                                                         | 3           |
| IEC 61000-4-8        | PFMF                                                                                                             | Enclosure                                                   | 10 A/m                                                           | 3           |
| IEC 61000-4-11       | DIP                                                                                                              | Power Port                                                  | -                                                                | -           |
| Shock                | IEC 60068-2-27                                                                                                   |                                                             |                                                                  |             |
| Drop                 | IEC 60068-2-32                                                                                                   |                                                             |                                                                  |             |
| Vibration            | IEC 60068-2-64                                                                                                   |                                                             |                                                                  |             |
| RoHS II              | Yes                                                                                                              |                                                             |                                                                  |             |
| Warranty             | 5 Years                                                                                                          |                                                             |                                                                  |             |





# Industrial Networking Solutions

## Serial Device Servers

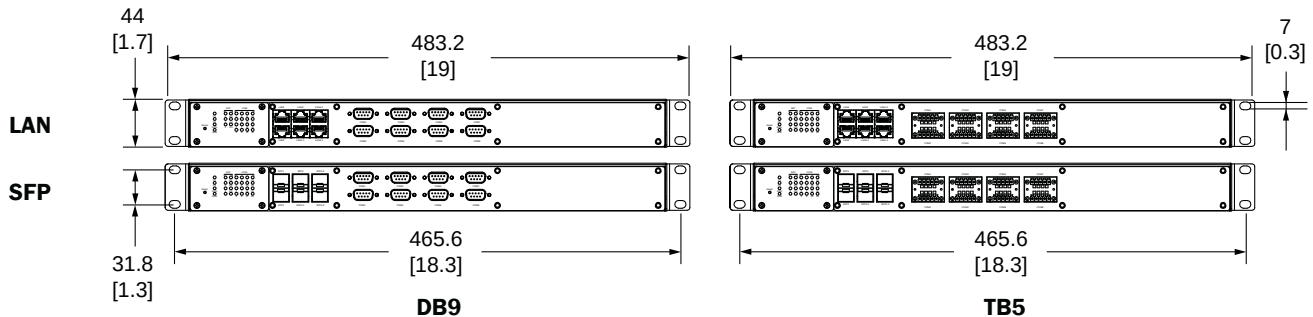


Industrial Serial Device Servers | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating



| IEC61850-3 Certified Industrial 8-Port Serial Device Servers |                             |                     |              |           |                                                   |
|--------------------------------------------------------------|-----------------------------|---------------------|--------------|-----------|---------------------------------------------------|
| Part Number<br>[MFG #]                                       | Input Voltage               | Fast Ethernet Ports | Serial Ports | Isolation | Features                                          |
| RMSS-IND-6RJ45-8DB9<br>[SE5908A]                             | 24-48 VDC                   | 6 (RJ45)            | 8 x DB9      | N/A       | Industrial EMC Protection<br>IEC61850-3 Certified |
| RMSS-IND-6RJ45-8TB5<br>[SE5908A-TB]                          |                             | 6 (RJ45)            | 8 x TB5      | N/A       |                                                   |
| RMSS-IND-6RJ45-8TB5-IS<br>[SE5908A-SIS]                      |                             | 6 (RJ45)            | 8 x TB5      | 2.5KV     |                                                   |
| RMSS-IND-6SFP-8DB9<br>[SE5908A-6SFP]                         |                             | 6 (SFP Slot)        | 8 x DB9      | N/A       |                                                   |
| RMSS-IND-6SFP-8TB5<br>[SE5908A-6SFP-TB]                      |                             | 6 (SFP Slot)        | 8 x TB5      | N/A       |                                                   |
| RMSS-IND-6SFP-8TB5-IS<br>[SE5908A-6SFP-SIS]                  |                             | 6 (SFP Slot)        | 8 x TB5      | 2.5KV     |                                                   |
| RMSS-IND-6RJ45-8DB9-HV<br>[SE5908A-HV]                       | 100-240 VAC/<br>100-370 VDC | 6 (RJ45)            | 8 x DB9      | N/A       |                                                   |
| RMSS-IND-6RJ45-8TB5-HV<br>[SE5908A-TB-HV]                    |                             | 6 (RJ45)            | 8 x TB5      | N/A       |                                                   |
| RMSS-IND-6RJ45-8TB5-IS-HV<br>[SE5908A-SIS-HV]                |                             | 6 (RJ45)            | 8 x TB5      | 2.5KV     |                                                   |
| RMSS-IND-6SFP-8DB9-HV<br>[SE5908A-6SFP-HV]                   |                             | 6 (SFP Slot)        | 8 x DB9      | N/A       |                                                   |
| RMSS-IND-6SFP-8TB5-HV<br>[SE5908A-6SFP-TB-HV]                |                             | 6 (SFP Slot)        | 8 x TB5      | N/A       |                                                   |
| RMSS-IND-6SFP-8TB5-IS-HV<br>[SE5908A-6SFP-SIS-HV]            |                             | 6 (SFP Slot)        | 8 x TB5      | 2.5KV     |                                                   |

SDK version and SDK-Node-RED version are available, please consult the factory. See Appendix (Page 152) for Block Diagram.



### Feature Highlights:

- Remotely monitor, manage, and control industrial field devices
- Industrial EMC protection, wide temperature operation, -40°C~85°C
- IEC61850-3 certified, can be easily set up into IEC61850-3 substations
- Redundant Power Input for fault protection, either 24~48 VDC or High-Voltage AC/DC
- 6 Fast-Ethernet ports, either RJ45 or SFP slot
- 8 or 16 RS-232/RS-485/RS-422 Serial ports
- TCP Server/Client, UDP, Virtual COM and Tunneling modes supported
- Configuration via Web Browser / Serial Console / Telnet Console / Windows Utility, remote firmware upgrade



# Industrial Networking Solutions

## Specifications & Approvals



Industrial Serial Device Servers | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                                                                      |
|-----------------------------|------------------------------------------------------------------------------------------------------|
| Speed                       | IEEE 802.3 10BaseT<br>IEEE 802.3u 100BaseT(X) - RJ45 version<br>IEEE 802.3u 100Base-FX - SFP version |
| Connector ports             | RJ45 x 6 (RJ45 version)<br>SFP x 6 (SFP version)                                                     |
| Power Management            |                                                                                                      |
| Input Voltage               | Redundant 24-48 VDC or<br>Redundant 100-240 VAC/ 100-370 VDC (HV Series)                             |
| Input Current               | 0.73 A @ 24 VDC<br>0.35 A @ 100 VAC<br>0.20 A @ 100 VDC                                              |
| Power Consumption           | Approximately 20 W                                                                                   |
| Power Redundancy            | Yes                                                                                                  |
| Connector                   | 10-Pin Terminal Block                                                                                |
| Reverse Polarity Protection | Yes                                                                                                  |
| Mechanicals                 |                                                                                                      |
| Reset Button                | Yes                                                                                                  |
| Environmental Limits        |                                                                                                      |
| Operating Temperature       | -40°C ~ 85°C (-40°F ~ 185°F)                                                                         |
| Storage Temperature         | -40°C ~ 85°C (-40°F ~ 185°F)                                                                         |
| Ambient Relative Humidity   | 5 ~ 95% RH, (non-condensing)                                                                         |
| Software                    |                                                                                                      |
| Protocol                    | IPv4, ARP, ICMP, TCP, UDP, DHCP Client, SNMPv1,v2c,v3, HTTP, Telnet, Syslog                          |
| Configuration               | Atop Management Utility, Web UI, Telnet, Console                                                     |
| Virtual COM                 | Windows/Linux redirection software                                                                   |
| Features                    | IPsec, OpenVPN, RSTP, PPTP                                                                           |
| Link Modes                  |                                                                                                      |
| TCP Server                  | Single destination or VirtualCOM                                                                     |
| TCP Client                  | 4 Connections; VirtualCOM or reverse Telnet                                                          |
| UDP                         | Up to 4 Ranges IP                                                                                    |

| Serial Interface     |                                                                                                                                                       |                                               |                                  |       |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|----------------------------------|-------|
| Connector            | D-Sub9 (DB models, supporting only 5-pin RS-232 mode) or 5.08mm 5-Pin Terminal block (TB Models)                                                      |                                               |                                  |       |
| Ports                | 8 Ports                                                                                                                                               |                                               |                                  |       |
| Mode                 | RS-232/422/485 Software selectable                                                                                                                    |                                               |                                  |       |
| Baud Rate            | 110 ~ 921.6Kbps software selectable                                                                                                                   |                                               |                                  |       |
| Parity               | None, Odd, Even, Mark, Space                                                                                                                          |                                               |                                  |       |
| Data bits            | 5, 6, 7, 8 software selectable                                                                                                                        |                                               |                                  |       |
| Stop Bit             | 1, 2 software selectable                                                                                                                              |                                               |                                  |       |
| Flow Control         | None, Xon/Xoff, RTS/CTS (RS-232 only)                                                                                                                 |                                               |                                  |       |
| Isolation            | 2.5 KV (Isolation models only)                                                                                                                        |                                               |                                  |       |
| Regulatory Approvals |                                                                                                                                                       |                                               |                                  |       |
| Safety               | EN 61010-2-201                                                                                                                                        |                                               |                                  |       |
| EMI                  | FCC Part 15, Subpart B, Class B, EN 55032, Class B, EN 61000-6-2 Class B, EN 61000-3-2, EN 61000-3-3, EN 55024, EN 61000-6-4, IEC 61850-3 / IEEE 1613 |                                               |                                  |       |
| EMS Test             | Item                                                                                                                                                  |                                               | Value                            | Level |
| IEC 61000-4-2        | ESD                                                                                                                                                   | Contact Discharge                             | ±8kV                             | 4     |
|                      |                                                                                                                                                       | Air Discharge                                 | ±15kV                            | 4     |
| IEC 61000-4-3        | RS                                                                                                                                                    | Radiated (enclosure)                          | 10 V/m                           | 3     |
| IEC 61000-4-4        | EFT                                                                                                                                                   | AC Power Port                                 | ±4.0KV                           | 4     |
|                      |                                                                                                                                                       | DC Power Port                                 | ±4.0KV                           | 4     |
|                      |                                                                                                                                                       | Signal Port                                   | ±4.0KV                           | 4     |
| IEC 61000-4-5        | Surge                                                                                                                                                 | AC Power Port                                 | Line-to Line±2.0KV               | 4     |
|                      |                                                                                                                                                       | AC Power Port                                 | Line-to Earth±4.0KV              | 4     |
|                      |                                                                                                                                                       | DC Power Port                                 | Line-to Line±1.0KV               | 3     |
|                      |                                                                                                                                                       | DC Power Port                                 | Line-to Earth±2.0KV              | 3     |
|                      |                                                                                                                                                       | Signal Port                                   | Line-to Earth±2.0KV              | 4     |
| IEC 61000-4-6        | CS                                                                                                                                                    | AC Power Port<br>DC Power Port<br>Signal Port | 10 V rms                         | 3     |
| IEC 61000-4-8        | PFMF                                                                                                                                                  | Enclosure                                     | 100 A/m                          | 5     |
| IEC 61000-4-10       | Damped Oscillatory Magnetic Field                                                                                                                     | Enclosure                                     | 100 A/m                          | 5     |
| IEC 61000-4-11       | DIP                                                                                                                                                   | AC Power Ports                                | -                                | -     |
| IEC 61000-4-11       | Damped Oscillatory                                                                                                                                    | AC Power Port                                 | 2.5 KV common, 1 KV differential | 3     |
|                      |                                                                                                                                                       | Signal Port                                   | 2.5 KV common, 1 KV differential | 3     |
| Shock                | MIL-STD-810F Method 516                                                                                                                               |                                               |                                  |       |
| Drop                 | MIL-STD-810F Method 516                                                                                                                               |                                               |                                  |       |
| Vibration            | MIL-STD-810F Method 514.5 C1 & C2                                                                                                                     |                                               |                                  |       |
| RoHS II              | Yes                                                                                                                                                   |                                               |                                  |       |
| Warranty             | 5 Years                                                                                                                                               |                                               |                                  |       |



# Industrial Networking Solutions

## Serial Device Servers

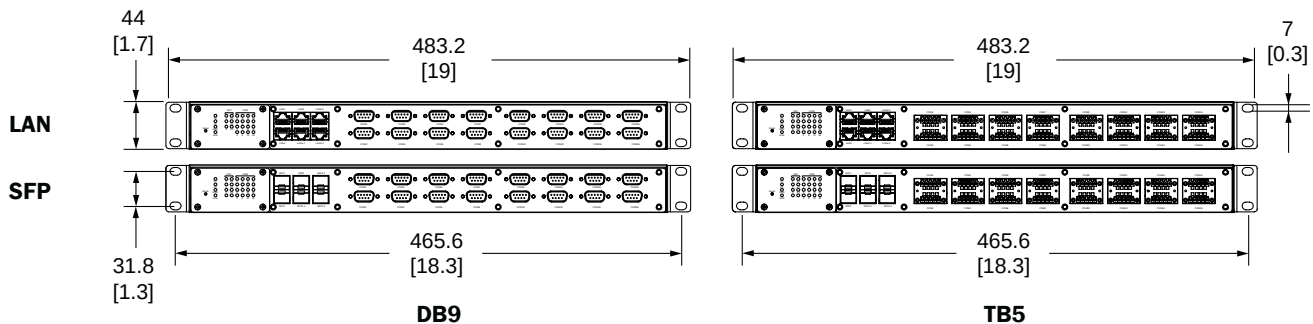


Industrial Serial Device Servers | 16-Port | 19" Rack Mount | Metal Housing | IP30 Rating



| IEC61850-3 Certified Industrial 16-Port Serial Device Servers |                             |                     |              |           |                                                   |
|---------------------------------------------------------------|-----------------------------|---------------------|--------------|-----------|---------------------------------------------------|
| Part Number<br>[MFG #]                                        | Input Voltage               | Fast Ethernet Ports | Serial Ports | Isolation | Features                                          |
| RMSS-IND-6RJ45-16DB9<br>[SE5916A]                             | 24-48 VDC                   | 6 (RJ45)            | 16 x DB9     | N/A       | Industrial EMC Protection<br>IEC61850-3 Certified |
| RMSS-IND-6RJ45-16TB5<br>[SE5916A-TB]                          |                             | 6 (RJ45)            | 16 x TB5     | N/A       |                                                   |
| RMSS-IND-6RJ45-16TB5-IS<br>[SE5916A-SIS]                      |                             | 6 (RJ45)            | 16 x TB5     | 2.5KV     |                                                   |
| RMSS-IND-6SFP-16DB9<br>[SE5916A-6SFP]                         |                             | 6 (SFP Slot)        | 16 x DB9     | N/A       |                                                   |
| RMSS-IND-6SFP-16TB5<br>[SE5916A-6SFP-TB]                      |                             | 6 (SFP Slot)        | 16 x TB5     | N/A       |                                                   |
| RMSS-IND-6SFP-16TB5-IS<br>[SE5916A-6SFP-SIS]                  |                             | 6 (SFP Slot)        | 16 x TB5     | 2.5KV     |                                                   |
| RMSS-IND-6RJ45-16DB9-HV<br>[SE5916A-HV]                       | 100-240 VAC/<br>100-370 VDC | 6 (RJ45)            | 16 x DB9     | N/A       |                                                   |
| RMSS-IND-6RJ45-16TB5-HV<br>[SE5916A-TB-HV]                    |                             | 6 (RJ45)            | 16 x TB5     | N/A       |                                                   |
| RMSS-IND-6RJ45-16TB5-IS-HV<br>[SE5916A-SIS-HV]                |                             | 6 (RJ45)            | 16 x TB5     | 2.5KV     |                                                   |
| RMSS-IND-6SFP-16DB9-HV<br>[SE5916A-6SFP-HV]                   |                             | 6 (SFP Slot)        | 16 x DB9     | N/A       |                                                   |
| RMSS-IND-6SFP-16TB5-HV<br>[SE5916A-6SFP-TB-HV]                |                             | 6 (SFP Slot)        | 16 x TB5     | N/A       |                                                   |
| RMSS-IND-6SFP-16TB5-IS-HV<br>[SE5916A-6SFP-SIS-HV]            |                             | 6 (SFP Slot)        | 16 x TB5     | 2.5KV     |                                                   |

SDK version and SDK-Node-RED version are available, please consult the factory. See Appendix (Page 152) for Block Diagram.



### Feature Highlights:

- Remotely monitor, manage, and control industrial field devices
- Industrial EMC protection, wide temperature operation, -40°C~85°C
- IEC61850-3 certified, can be easily set up into IEC61850-3 substations
- Redundant Power Input for fault protection, either 24~48 VDC or High-Voltage AC/DC
- 6 Fast-Ethernet ports, either RJ45 or SFP slot
- 8 or 16 RS-232/RS-485/RS-422 Serial ports
- TCP Server/Client, UDP, Virtual COM and Tunneling modes supported
- Configuration via Web Browser / Serial Console / Telnet Console / Windows Utility, remote firmware upgrade



# Industrial Networking Solutions

## Specifications & Approvals



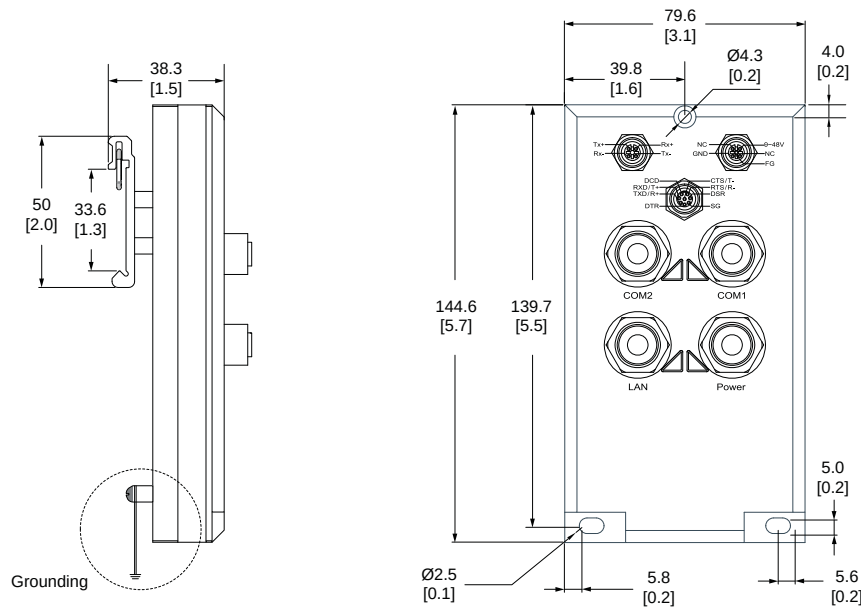
Industrial Serial Device Servers | 16-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                                                                      |
|-----------------------------|------------------------------------------------------------------------------------------------------|
| Speed                       | IEEE 802.3 10BaseT<br>IEEE 802.3u 100BaseT(X) - RJ45 version<br>IEEE 802.3u 100Base-FX - SFP version |
| Connector ports             | RJ45 x 6 (RJ45 version)<br>SFP x 6 (SFP version)                                                     |
| Power Management            |                                                                                                      |
| Input Voltage               | Redundant 24-48 VDC or<br>Redundant 100-240 VAC/ 100-370 VDC (HV Series)                             |
| Input Current               | 0.73 A @ 24 VDC<br>0.35 A @ 100 VAC<br>0.20 A @ 100 VDC                                              |
| Power Consumption           | Approximately 20 W                                                                                   |
| Power Redundancy            | Yes                                                                                                  |
| Connector                   | 10-Pin Terminal Block                                                                                |
| Reverse Polarity Protection | Yes                                                                                                  |
| Mechanicals                 |                                                                                                      |
| Reset Button                | Yes                                                                                                  |
| Environmental Limits        |                                                                                                      |
| Operating Temperature       | -40°C ~ 85°C (-40°F ~ 185°F)                                                                         |
| Storage Temperature         | -40°C ~ 85°C (-40°F ~ 185°F)                                                                         |
| Ambient Relative Humidity   | 5 ~ 95% RH, (non-condensing)                                                                         |
| Software                    |                                                                                                      |
| Protocol                    | IPv4, ARP, ICMP, TCP, UDP, DHCP Client, SNMPv1,v2c,v3, HTTP, Telnet, Syslog                          |
| Configuration               | Atop Management Utility, Web UI, Telnet, Console                                                     |
| Virtual COM                 | Windows/Linux redirection software                                                                   |
| Features                    | IPsec, OpenVPN, RSTP, PPTP                                                                           |
| Link Modes                  |                                                                                                      |
| TCP Server                  | Single destination or VirtualCOM                                                                     |
| TCP Client                  | 4 Connections; VirtualCOM or reverse Telnet                                                          |
| UDP                         | Up to 4 Ranges IP                                                                                    |

| Serial Interface     |                                                                                                                                                       |                                                                                 |                                                                                                               |                       |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------|
| Connector            | D-Sub9 (DB models, supporting only 5-pin RS-232 mode) or 5.08mm 5-Pin Terminal block (TB Models)                                                      |                                                                                 |                                                                                                               |                       |
| Ports                | 16 Ports                                                                                                                                              |                                                                                 |                                                                                                               |                       |
| Mode                 | RS-232/422/485 Software selectable                                                                                                                    |                                                                                 |                                                                                                               |                       |
| Baud Rate            | 110 ~ 921.6Kbps software selectable                                                                                                                   |                                                                                 |                                                                                                               |                       |
| Parity               | None, Odd, Even, Mark, Space                                                                                                                          |                                                                                 |                                                                                                               |                       |
| Data bits            | 5, 6, 7, 8 software selectable                                                                                                                        |                                                                                 |                                                                                                               |                       |
| Stop Bit             | 1, 2 software selectable                                                                                                                              |                                                                                 |                                                                                                               |                       |
| Flow Control         | None, Xon/Xoff, RTS/CTS (RS-232 only)                                                                                                                 |                                                                                 |                                                                                                               |                       |
| Isolation            | 2.5 KV (Isolation models only)                                                                                                                        |                                                                                 |                                                                                                               |                       |
| Regulatory Approvals |                                                                                                                                                       |                                                                                 |                                                                                                               |                       |
| Safety               | EN 61010-2-201                                                                                                                                        |                                                                                 |                                                                                                               |                       |
| EMI                  | FCC Part 15, Subpart B, Class B, EN 55032, Class B, EN 61000-6-2 Class B, EN 61000-3-2, EN 61000-3-3, EN 55024, EN 61000-6-4, IEC 61850-3 / IEEE 1613 |                                                                                 |                                                                                                               |                       |
| EMS Test             | Item                                                                                                                                                  |                                                                                 | Value                                                                                                         | Level                 |
| IEC 61000-4-2        | ESD                                                                                                                                                   | Contact Discharge<br>Air Discharge                                              | ±8kV<br>±15kV                                                                                                 | 4<br>4                |
| IEC 61000-4-3        | RS                                                                                                                                                    | Radiated<br>(enclosure)                                                         | 10 V/m                                                                                                        | 3                     |
| IEC 61000-4-4        | EFT                                                                                                                                                   | AC Power Port<br>DC Power Port<br>Signal Port                                   | ±4.0KV<br>±4.0KV<br>±4.0KV                                                                                    | 4<br>4<br>4           |
| IEC 61000-4-5        | Surge                                                                                                                                                 | AC Power Port<br>AC Power Port<br>DC Power Port<br>DC Power Port<br>Signal Port | Line-to Line±2.0KV<br>Line-to Earth±4.0KV<br>Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV | 4<br>4<br>3<br>3<br>4 |
| IEC 61000-4-6        | CS                                                                                                                                                    | AC Power Port<br>DC Power Port<br>Signal Port                                   | 10 V rms                                                                                                      | 3                     |
| IEC 61000-4-8        | PFMF                                                                                                                                                  | Enclosure                                                                       | 100 A/m                                                                                                       | 5                     |
| IEC 61000-4-10       | Damped<br>Oscillatory<br>Magnetic<br>Field                                                                                                            | Enclosure                                                                       | 100 A/m                                                                                                       | 5                     |
| IEC 61000-4-11       | DIP                                                                                                                                                   | AC Power Ports                                                                  | -                                                                                                             | -                     |
| IEC 61000-4-11       | Damped<br>Oscillatory                                                                                                                                 | AC Power Port                                                                   | 2.5 KV common,<br>1 KV differential                                                                           | 3                     |
|                      |                                                                                                                                                       | Signal Port                                                                     | 2.5 KV common,<br>1 KV differential                                                                           | 3                     |
| Shock                | MIL-STD-810F Method 516                                                                                                                               |                                                                                 |                                                                                                               |                       |
| Drop                 | MIL-STD-810F Method 516                                                                                                                               |                                                                                 |                                                                                                               |                       |
| Vibration            | MIL-STD-810F Method 514.5 C1 & C2                                                                                                                     |                                                                                 |                                                                                                               |                       |
| RoHS II              | Yes                                                                                                                                                   |                                                                                 |                                                                                                               |                       |
| Warranty             | 5 Years                                                                                                                                               |                                                                                 |                                                                                                               |                       |



| EN50155 Railway Waterproof Serial Device Servers |                                   |                        |           |                                           |
|--------------------------------------------------|-----------------------------------|------------------------|-----------|-------------------------------------------|
| Part Number<br>[MFG #]                           | RS-232<br>RS-422<br>RS-485<br>M12 | 10/100<br>M12<br>Ports | Isolation | Features                                  |
| MDE45SS-2-RW<br>[SE8502-M12]                     | 2                                 | 1                      | N/A       | Industrial EMC Protection<br>Relay Output |
| MDE45SS-2-IS-RW<br>[SE8502-SIS-M12]              | 2                                 | 1                      | 2 KV      |                                           |



### Feature Highlights:

- 15KV ESD protection for serial signals
- 10/100 Mbps Fast Ethernet full duplex auto negotiation
- Support multiple link mode with TCP server/client, UDP and Virtual COM mode
- Monitor, manage and control industrial field devices remotely
- Configuration: Built-in Web Server /Serial Console/ Telnet
- Windows-based utility for IP configuration
- Firmware upgrade remotely via Ethernet
- Rigid aluminum case design compliant with IP68 standard
- Wide operating temperature range : -40°C ~ 75°C



# Industrial Networking Solutions

## Specifications & Approvals



Railway Specific Serial Device Servers | Surface/DIN-Rail Mount | Aluminum Housing | IP68 Rating

| Ethernet                  |                                                                                |
|---------------------------|--------------------------------------------------------------------------------|
| Compliance                | IEEE802.3 10BASE-T / IEEE802.3u 100BASE-TX                                     |
| Port                      | 1-Port                                                                         |
| Transmission Rate         | 10/100 Mbps                                                                    |
| Connector                 | 4-Pin D-coded Female M12                                                       |
| Auto MDI/MDI-X            | Yes                                                                            |
| Power Management          |                                                                                |
| Input Voltage             | 9-48 VDC                                                                       |
| Input Current             | 0.40A max                                                                      |
| Power Consumption         | Max. 3.6W                                                                      |
| Connector                 | 5-Pin A-coded Female M12                                                       |
| LED                       |                                                                                |
| Indicator                 | COM, LAN, RUN                                                                  |
| Software                  |                                                                                |
| Configuration             | Serial Manager / Web UI / Telnet                                               |
| Virtual COM               | Windows / Linux driver                                                         |
| Protocol                  | IPv4, ICMP, TCP, UDP, DHCP Client, SNMP, HTTP, Telnet, RFC2217, NTP, DNS, SMTP |
| Environmental Limits      |                                                                                |
| Operating Temperature     | -40°C ~ 75°C(-40°F ~ 167°F)                                                    |
| Storage Temperature       | -40°C ~ 85°C(-40°F ~ 185°F)                                                    |
| Ambient Relative Humidity | 5 ~ 95% (non-condensing)                                                       |

| Serial Interface     |                                                                |                                    |
|----------------------|----------------------------------------------------------------|------------------------------------|
| Mode                 | MDE45SS-2-RW                                                   | RS-232/422/485 Software selectable |
|                      | MDE45SS-2-IS-RW                                                | RS-422/485 Software selectable     |
| Ports                | 2-Ports                                                        |                                    |
| Baud Rate            | MDE45SS-2-RW                                                   | 110bps~921kbps                     |
|                      | MDE45SS-2-IS-RW                                                | 110bps~230kbps                     |
| Parity               | None, Odd, Even, Mark, Space                                   |                                    |
| Data bits            | 5, 6, 7, 8                                                     |                                    |
| Stop Bit             | 1, 2                                                           |                                    |
| Flow Control         | None, Xon/Xoff, RTS/CTS                                        |                                    |
| Connector            | 8-Pin A-Coded Female M12                                       |                                    |
| Regulatory Approvals |                                                                |                                    |
| EMI                  | EN 55022 Class A, FCC Part 15, Subpart B, Class A              |                                    |
| EMS Test             | Item                                                           | Level                              |
| EN 55024             | -                                                              | -                                  |
| IEC 61000-4-2        | ESD                                                            | 3                                  |
| IEC 61000-4-3        | RS                                                             | 3                                  |
| IEC 61000-4-4        | EFT                                                            | 3                                  |
| IEC 61000-4-5        | Surge                                                          | 3                                  |
| IEC 61000-4-6        | CS                                                             | 2                                  |
| IEC 61000-4-8        | PFMF                                                           | 1                                  |
| IEC 61000-4-11       | Dip                                                            | -                                  |
| Rail Traffic         | EN50155, EN50121-3-2, EN50121-4                                |                                    |
| Shock                | IEC 60068-2-27                                                 |                                    |
| Drop                 | IEC 60068-2-32 (ISTA Test Procedure 2A)                        |                                    |
| Vibration            | IEC 60068-2-64                                                 |                                    |
| MTBF                 | 264711 hrs (30.21Years)<br>(Data base: MIL-HDBK-217F, GB 25°C) |                                    |
| RoHS II              | Yes                                                            |                                    |
| Warranty             | 5 Years                                                        |                                    |



# Industrial Networking Solutions

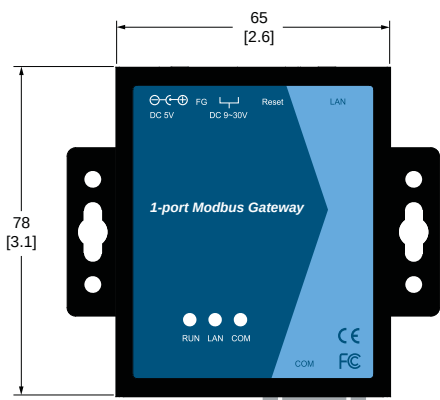
## Modbus Gateways



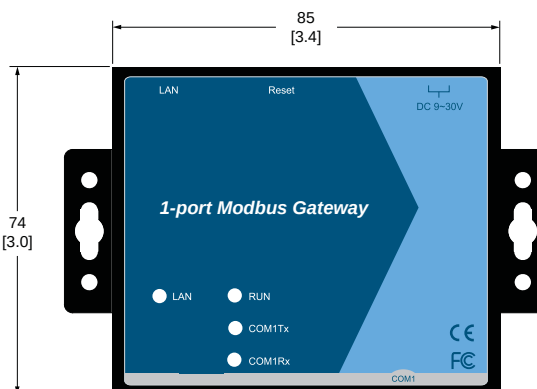
Entry-Level Modbus Gateways | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



| Modbus TCP/RTU/ASCII Gateways             |                               |              |           |
|-------------------------------------------|-------------------------------|--------------|-----------|
| Part Number<br>[MFG #]                    | 10/100 RJ45<br>Ethernet Ports | Serial Ports | Isolation |
| <b>E45MB-DB9-RJ45</b><br>[MB5001C]        | 1                             | 1 (DB9)      | N/A       |
| <b>E45MB-TB5-RJ45-IS</b><br>[MB5001C-SIS] | 1                             | 1 (TB)       | 2 KV      |



**E45MB-DB9-RJ45**



**E45MB-TB5-RJ45-IS**

### Feature Highlights:

- Rugged metal housing with DIN-Rail / Wall-Mount
- Ease-of-use in Modbus protocol conversion include RTU, ASCII and TCP
- 15 KV ESD protection for serial signals(MB5001C-Sis only)
- 10/100Mbps Fast Ethernet Full Duplex Auto Negotiation
- Monitor, Manage and Control Industrial Field Devices Remotely
- Configurable via Built-In Web Server Serial Console, or Telnet
- Upgradeable firmware from remote-PC via Ethernet
- Modbus compact design
- Rugged high-strength housing





# Industrial Networking Solutions

## Specifications & Approvals



Entry-Level Modbus Gateways | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Ethernet                                      |                                                      |                               |
|-----------------------------------------------|------------------------------------------------------|-------------------------------|
| Compliance                                    | IEEE802.3                                            |                               |
| Port                                          | 1-Port                                               |                               |
| Transmission Rate                             | 10/100Mbps Auto-detection                            |                               |
| Connector                                     | RJ-45                                                |                               |
| Auto MDI/MDI-X                                | Yes                                                  |                               |
| Link Mode                                     |                                                      |                               |
| ModBus TCP                                    | Yes                                                  |                               |
| ModBus ASC                                    | Yes                                                  |                               |
| ModBus RTU                                    | Yes                                                  |                               |
| Power Management                              |                                                      |                               |
| Input                                         | E45MB-DB9-RJ45                                       | DC 5V(DC-Jack) and 9-30V(TB3) |
|                                               | E45MB-TB5-RJ45-IS                                    | DC 9-30V(TB3)                 |
| Power Consumption                             | E45MB-DB9-RJ45                                       | Max. 2.7 W                    |
|                                               | E45MB-TB5-RJ45-IS                                    | Max. 3.6 W                    |
| Environmental Limits                          |                                                      |                               |
| Operating Temperature                         | 0℃ ~ 60℃ ( 32° ~ 140°F )                             |                               |
| Storage Temperature                           | 20° ~ 70℃ ( -4°~ 158°F )                             |                               |
| Ambient Relative Humidity                     | 5 ~ 95%RH, (non-condensing)                          |                               |
| Software                                      |                                                      |                               |
| Configuration                                 | Web Page / Telnet / Serial console / Windows utility |                               |
| Virtual Com/<br>DeviceView/<br>Serial Manager | Atop Product Management tool(DeviceView)             |                               |
| Support Protocol                              | ModBus TCP/ASCII/RTU,SNMP,HTTP                       |                               |

| Serial Interface     |                                                                                                                                                                                                                         |                                             |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Mode                 | E45MB-DB9-RJ45                                                                                                                                                                                                          | RS-232/RS-422/RS-485 Software selectable    |
|                      | E45MB-TB5-RJ45-IS                                                                                                                                                                                                       | RS-422/RS-485 Isolation Software selectable |
| Ports                | 1-Port                                                                                                                                                                                                                  |                                             |
| Baud Rate            | 1200bps~230Kbps                                                                                                                                                                                                         |                                             |
| Parity               | None, Odd, Even, Mark, Space                                                                                                                                                                                            |                                             |
| Data bits            | 7, 8                                                                                                                                                                                                                    |                                             |
| Stop Bit             | 1, 2                                                                                                                                                                                                                    |                                             |
| Flow Control         | None, Software: Xon/Xoff, Hardware: RTS/CTS                                                                                                                                                                             |                                             |
| Connector            | E45MB-DB9-RJ45                                                                                                                                                                                                          | 9-pin D-Sub                                 |
|                      | E45MB-TB5-RJ45-IS                                                                                                                                                                                                       | 5-pin 3.81mm Terminal block                 |
| Regulatory Approvals |                                                                                                                                                                                                                         |                                             |
| FCC                  | FCC Part 15, Subpart B, Class A<br>CISPR 22<br>ICES-003<br>ANSI C63.4                                                                                                                                                   |                                             |
| CE                   | EN 55022<br>EN 61000-3-2<br>EN 61000-3-3<br>EN 55024<br>IEC 61000-4-2 (ESD)<br>IEC 61000-4-3 (RS)<br>IEC 61000-4-4 (EFT)<br>IEC 61000-4-5 (Surge)<br>IEC 61000-4-6 (CS)<br>IEC 61000-4-8 (PFMP)<br>IEC 61000-4-11 (DIP) |                                             |
| Shock                | IEC 60068-2-27                                                                                                                                                                                                          |                                             |
| Drop                 | IEC 60068-2-32                                                                                                                                                                                                          |                                             |
| Vibration            | IEC 60068-2-6                                                                                                                                                                                                           |                                             |
| MTBF                 | E45MB-DB9-RJ45                                                                                                                                                                                                          | 485853hrs / 55.46 years (25°C)              |
| RoHS II              | Lead(Pb) Free                                                                                                                                                                                                           |                                             |
| Warranty             | 5 Years                                                                                                                                                                                                                 |                                             |



# Industrial Networking Solutions

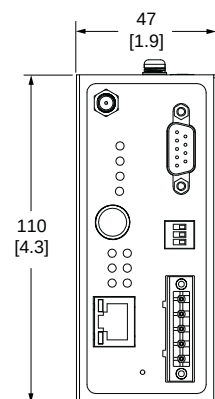
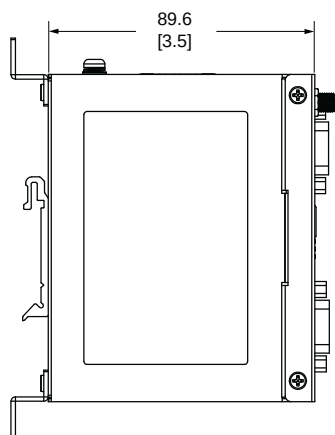
## Modbus Gateways



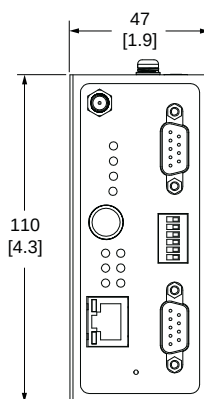
Wireless/Cellular Modbus Gateways | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



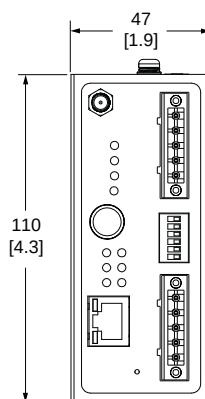
| Wireless b/g/n Modbus TCP/RTU/ASCII Gateways |                               |                                |           |                                    |
|----------------------------------------------|-------------------------------|--------------------------------|-----------|------------------------------------|
| Part Number<br>[MFG #]                       | 10/100 RJ45<br>Ethernet Ports | RS-232/422/485<br>Serial Ports | Isolation | Features                           |
| <b>E45MW-DB9-TB5-P2P</b><br>[MW5501C]        | 1                             | 1 Combo<br>(DB9 or TB5)        | N/A       | Wireless Distribution System (WDS) |
| <b>E45MW-2DB9-P2P</b><br>[MW5502C]           | 1                             | 2<br>(DB9)                     | N/A       |                                    |
| <b>E45MW-2TB5-P2P</b><br>[MW5502C-TB]        | 1                             | 2<br>(TBS)                     | 2.5 KV    |                                    |



**E45MW-DB9-TB5-P2P**



**E45MW-2DB9-P2P**



**E45MW-2TB5-P2P**

### Feature Highlights:

- Designed for 802.11 b/g/n networks, FCC (USA), ETSI (Europe) certified
- 1 x 100BaseT(X) RJ45 port, and 1 or 2 sw-selectable RS-232/485/422 ports, either D-Sub 9 or Terminal Block connector
- Bi-Directional Modbus TCP/RTU/ASCII conversion from Serial to Ethernet or Wireless and Vice-versa
- Advanced features include Virtual ID remapping, VirtualCOM mode, exception handling and many others
- Supports WiFi-Direct for Simple Peer Pairing
- Web server / Utility configuration



# Industrial Networking Solutions

## Specifications & Approvals



Wireless/Cellular Modbus Gateways | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface                    |              |                                                                                                                                            |                                            |
|--------------------------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| Wired                                |              | IEEE 802.3 10BaseT<br>IEEE 802.3u 100BaseT(X)                                                                                              |                                            |
| Connector ports                      |              | RJ45 x 1                                                                                                                                   |                                            |
| Wireless interface                   |              |                                                                                                                                            |                                            |
| Wireless Standard Conformance        | IEEE 802.11b | 1, 2, 5.5 and 11 Mbps                                                                                                                      |                                            |
|                                      | IEEE 802.11g | 6, 9, 12, 18, 24, 36, 48 and 54 Mbps                                                                                                       |                                            |
|                                      | IEEE 802.11n | 20 MHz: 1Nss                                                                                                                               | 65Mbps @ 800GI,<br>72.2Mbps @ 400GI (Max.) |
|                                      |              | 40MHz: 1Nss                                                                                                                                | 135Mbps @ 800GI,<br>150Mbps @ 400GI (Max.) |
| Wireless Module                      |              | Atheros AR9382                                                                                                                             |                                            |
| Tx/Rx                                |              | 1T1R MIMO (1 x 1 with MCS 0-7)                                                                                                             |                                            |
| Antenna                              |              | 3/5 dBi antenna design, SMA(R) Female connector                                                                                            |                                            |
| Operating Frequency                  |              | 2.4 GHz                                                                                                                                    |                                            |
| United States (FCC)<br>Europe (ETSI) |              | 2412-2462(20Mhz)/ 2422-2452(40Mhz)<br>2412-2472(20Mhz)/ 2422-2462(40Mhz)                                                                   |                                            |
| Power Management                     |              |                                                                                                                                            |                                            |
| Input Voltage                        |              | 9 ~ 48VDC                                                                                                                                  |                                            |
| Input Current (@ 9VDC)               |              | 0.65 A                                                                                                                                     |                                            |
| Power Consumption                    |              | Approximately 5.85 W (Max)                                                                                                                 |                                            |
| Connector                            |              | 3-Pin 5.08mm Lockable Terminal Block                                                                                                       |                                            |
| Reverse Polarity Protection          |              | Yes                                                                                                                                        |                                            |
| Mechanicals                          |              |                                                                                                                                            |                                            |
| Reset Button                         |              | Yes                                                                                                                                        |                                            |
| Wifi-Direct Button                   |              | Yes                                                                                                                                        |                                            |
| Environmental Limits                 |              |                                                                                                                                            |                                            |
| Operating Temperature                |              | -10°C ~ 60°C (14°F ~ 140°F)                                                                                                                |                                            |
| Storage Temperature                  |              | -40° ~ 85°C ( -40°~ 185°F )                                                                                                                |                                            |
| Ambient Relative Humidity            |              | 5~95%, 55°C (non-condensing)                                                                                                               |                                            |
| Software                             |              |                                                                                                                                            |                                            |
| Protocols                            |              | IPv4, ICMP, TCP, UDP, DHCP Client, SNMPv1,v2c,v3, SMTP, HTTP, DNS, NTP, RADIUS, RFC2217, WPS, SysLog, Modbus TCP, Modbus RTU, Modbus ASCII |                                            |
| Wireless Security                    |              | WEP, WPA, WPA2, TKIP, AES, 802.1x                                                                                                          |                                            |
| Configuration                        |              | Atop Management Utility, Web UI                                                                                                            |                                            |
| Virtual COM                          |              | Windows / Linux redirection software                                                                                                       |                                            |
| Link Modes                           |              |                                                                                                                                            |                                            |
| TCP Server                           |              | 4 Connections; VirtualCOM or reverse Telnet                                                                                                |                                            |
| TCP Client                           |              | Dual destination or VirtualCOM                                                                                                             |                                            |
| UDP                                  |              | Up to 4 ranges of IPs                                                                                                                      |                                            |

| Serial Interface     |                                                                                       |                                               |                                                          |               |
|----------------------|---------------------------------------------------------------------------------------|-----------------------------------------------|----------------------------------------------------------|---------------|
| Connector            | DB9 Models                                                                            |                                               | D-Sub9 RS-232/422/485 software selectable                |               |
|                      | TB Models                                                                             |                                               | 5.08mm 5-Pin Terminal block RS-232/422/485 sw selectable |               |
| Ports                | E45MW-DB9-TB5-P2P                                                                     |                                               | 1 Port                                                   |               |
|                      | E45MW-2DB9-P2P<br>E45MW-2TB5-P2P                                                      |                                               | 2 Ports                                                  |               |
| Baud Rate            |                                                                                       |                                               | 110 ~ 921,600 bps software selectable                    |               |
| Parity               |                                                                                       |                                               | None, Odd, Even, Mark, Space                             |               |
| Data Bits            |                                                                                       |                                               | 5, 6, 7, 8 software selectable                           |               |
| Stop Bits            |                                                                                       |                                               | 1, 2 software selectable                                 |               |
| Flow Control         |                                                                                       |                                               | None, Xon/Xoff, RTS/CTS                                  |               |
| Regulatory Approvals |                                                                                       |                                               |                                                          |               |
| Safety               | UL60950-1/CB, EN60950-1                                                               |                                               |                                                          |               |
| EMC                  | EN 301489-1 V1.9.2, EN301489-17 V2.2.2 (Class A), FCC 15B (Class A), EN55032, EN55024 |                                               |                                                          |               |
| Radio                | FCC 15C 15.247, FCC 15E 15.407, EN 301893 V1.7.1, EN 300328 V1.8.1                    |                                               |                                                          |               |
| EMF                  | EN 62311: 2008, EN 50385: 2002                                                        |                                               |                                                          |               |
| EMS Test             | Item                                                                                  |                                               | Value                                                    | Level         |
| IEC 61000-4-2        | ESD                                                                                   | Contact Discharge<br>Air Discharge            | ±4KV<br>±8KV                                             | 2<br>3        |
| IEC 61000-4-3        | RS                                                                                    | Radiated<br>(Enclosure)                       | 3 (V/m)                                                  | 2             |
| IEC 61000-4-4        | EFT                                                                                   | AC Power Port<br>DC Power Port<br>Signal Port | ±2.0 KV<br>±0.5kV / ±1.0kV<br>±0.5kV                     | 3<br>1/2<br>2 |
| IEC 61000-4-5        | Surge                                                                                 | AC Power Port                                 | L-to-L±1.0kV/L-to Earth±2.0kV                            | 3             |
|                      |                                                                                       | DC Power Port                                 | Line-to Earth±0.5kV / ±1.0kV                             | 1/2           |
|                      |                                                                                       | Signal Port                                   | L-to-L±1.0KV/L-to Earth±1.0KV                            | 2             |
| IEC 61000-4-6        | CS                                                                                    | Conducted<br>(Enclosure)                      | 3 V rms                                                  | 2             |
| IEC 61000-4-8        | PFMF                                                                                  | Enclosure                                     | 3 A/m                                                    | 2             |
| IEC 61000-4-11       | DIP                                                                                   | Power Port                                    | -                                                        | -             |
| Shock                | IEC 60068-2-27                                                                        |                                               |                                                          |               |
| Drop                 | IEC 60068-2-32                                                                        |                                               |                                                          |               |
| Vibration            | IEC 60068-2-64                                                                        |                                               |                                                          |               |
| MTBF                 | 22 years (MIL-HDBK-217F)                                                              |                                               |                                                          |               |
| RoHS                 | Yes                                                                                   |                                               |                                                          |               |
| Warranty             | 5 Years                                                                               |                                               |                                                          |               |



# Industrial Networking Solutions

## Modbus Gateways



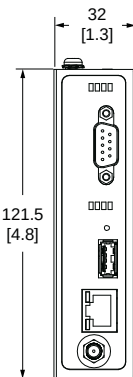
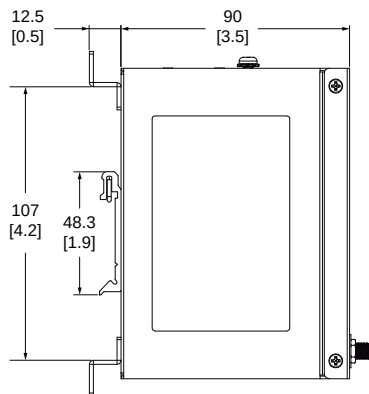
Wireless/Cellular Modbus Gateways | US Version | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



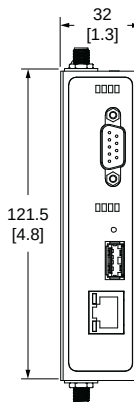
**3G/4G LTE Cellular to Ethernet and Serial Secure Modbus Gateway/Router, US**

| Part Number            | Band | RS-232<br>RS-485<br>TB14 | RS-232<br>RS-485<br>DB9 | 10/100<br>/1000<br>RJ45<br>Ports | Digital<br>Input/<br>Output | GPS/<br>Battery Function |
|------------------------|------|--------------------------|-------------------------|----------------------------------|-----------------------------|--------------------------|
| MB5901B-D3G-US         | 3G   | N/A                      | 1                       | 1                                | N/A                         | N/A                      |
| MB5901B-IO-D3G-US      | 3G   | 1+1*                     | N/A                     | 1                                | 2/2                         | N/A                      |
| MB5901B-IO-D3G-GPS-US  | 3G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS                      |
| MB5901B-4G-US          | 4G   | N/A                      | 1                       | 1                                | N/A                         | N/A                      |
| MB5901B-IO-4G-US       | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | N/A                      |
| MB5901B-IO-4G-GPS-US   | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS                      |
| MB5901B-4G-B-US        | 4G   | N/A                      | 1                       | 1                                | N/A                         | Battery Function         |
| MB5901B-IO-4G-B-US     | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | Battery Function         |
| MB5901B-IO-4G-GPS-B-US | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS/Battery Function     |

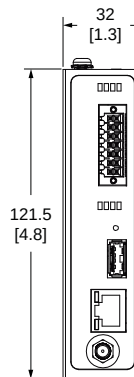
\* one TB sw-selectable RS485/RS232 and one TB RS232.



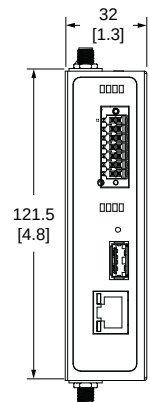
**3G DB9 Type**



**4G DB9 Type**



**3G IO Type**



**4G IO Type**

### Feature Highlights:

- GPRS/3G/4G Cellular Protocol Gateway with extensive LTE Band support:
  - EU Model: 2100/1800/850/2600/900/800MHz (B1/B3/B5/B7/B8/B20)
- Industrial-grade hardware for operating in harsh environments
- Wide temperature range for operations at extreme temperatures
- VPN over IPsec or OpenVPN with throughput up to 37.9Mbps
- 1 x 10/100/1000Mbps Ethernet port, 1 x RS-232/485 port, up to 921.6 Kbps
- Modbus TCP to RTU/ASCII conversion
- Management via Web Browser, SMS, SNMP v1/v2c/v3
- 2 Digital Inputs; 2 Digital outputs / Additional RS-232 in I/O version
- Additional embedded power-bank for fault-relay capability (B version)



# Industrial Networking Solutions

## Specifications & Approvals



Wireless/Cellular Modbus Gateways | US Version | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface                  |                                                                                        |                                       |
|------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------|
| Standards                          | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X)<br>IEEE 802.3ab for 1000BaseT(X) |                                       |
| Compliance                         | 1x 10/100/1000BASE-TX RJ-45                                                            |                                       |
| Serial Interface                   |                                                                                        |                                       |
| Connector                          | DB Model                                                                               | D-Sub9 RS-232/485 software selectable |
|                                    | Integrated with D/DOs                                                                  | 14-Pin 5.08mm Terminal Block          |
| Port                               | 1 port RS-232/485 (2-wire) software selectable<br>1 port RS-232 (IO model only)        |                                       |
| Baud Rate                          | 1,200 ~ 921,600bps software selectable                                                 |                                       |
| Data Bits                          | 7, 8 software selectable                                                               |                                       |
| Stop Bits                          | 1, 2 software selectable                                                               |                                       |
| Flow Control                       | None, Xon/Xoff, RTS/CTS (RS-232 only)                                                  |                                       |
| USB Interface                      |                                                                                        |                                       |
| USB ports                          | 2 x USB A Type (USB 2.0) - 1-port High-Speed OTG + 1-port power only                   |                                       |
| Digital Inputs/Outputs (IO Models) |                                                                                        |                                       |
| Digital Inputs (DIs)               | 2 channels photo coupler isolated digital input                                        |                                       |
| Digital Outputs (DOs)              | 2 channels digital output. N.O.( 2A@24VDC)                                             |                                       |
| Modbus Features                    |                                                                                        |                                       |
| Protocol                           | Bi-directional Modbus TCP/RTU/ASCII, Virtual ID mapping                                |                                       |
| Supported Modes                    | Ethernet                                                                               | Modbus TCP Server/Client(or VCOM)     |
|                                    | Serial                                                                                 | Modbus RTU/ASCII (master/slave)       |
| Maximum number of clients/slaves   | Modbus TCP: Maximum 16 clients;<br>Maximum 32 slave connections                        |                                       |
| Power Management                   |                                                                                        |                                       |
| Input Voltage                      | 9-48 VDC                                                                               |                                       |
| Connector                          | 3-Pin 5.08mm Lockable Terminal Block                                                   |                                       |
| Power Consumption                  | 0.6A @ 12VDC (7.2 W Max)                                                               |                                       |
| Power Redundancy                   | USB DC 5V Power Input                                                                  |                                       |
| Reverse Polarity Protection        | Yes                                                                                    |                                       |
| Environmental limits               |                                                                                        |                                       |
| Operating Temperature              | -40°C~70°C (-40°F~158°F)                                                               |                                       |
| Storage Temperature                | -40°C~85°C (-40°F~185°F)                                                               |                                       |
| Ambient Relative Humidity          | 5%~95%, (Non-condensing)                                                               |                                       |
| Mechanicals                        |                                                                                        |                                       |
| Reset Button                       | Yes                                                                                    |                                       |

| Software             |                                                                                                                                                                                 |                                               |                                                                                    |             |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------------------------------------|-------------|
| Security             | IPsec or OpenVPN VPN tunneling. Max VPN throughput 37.9Mbps *                                                                                                                   |                                               |                                                                                    |             |
| Network              | IPv4, DHCP Client, ICMP, TCP, UDP, HTTP, RFC2217, TELNET, NAT                                                                                                                   |                                               |                                                                                    |             |
| Management           | Web, ATOP Device Management Utility, SNMPv1/v2c/v3, SMS                                                                                                                         |                                               |                                                                                    |             |
| Configuration        | Embedded Web-Server (Web UI), TELNET, Atop Device Management Utility                                                                                                            |                                               |                                                                                    |             |
| Features             | IPsec, OpenVPN, RSTP, PPTP                                                                                                                                                      |                                               |                                                                                    |             |
| Wireless Interface   |                                                                                                                                                                                 |                                               |                                                                                    |             |
| Standard             | GSM/ GPRS/ EDGE/ UMTS/ HSPA+/ SCDMA/ LTE                                                                                                                                        |                                               |                                                                                    |             |
| Wireless Module      | Quectel EC20-A                                                                                                                                                                  |                                               |                                                                                    |             |
| Band Options         | Band                                                                                                                                                                            | Bands                                         |                                                                                    |             |
|                      | FDD LTE                                                                                                                                                                         | 1900/1700/850/700/700bMHz (B2/B4/B5/B12/B17)  |                                                                                    |             |
|                      | TDD LTE                                                                                                                                                                         | 1900/1700/850MHz (B2/B4/B5)                   |                                                                                    |             |
|                      | GSM                                                                                                                                                                             | 850/1900MHz                                   |                                                                                    |             |
| Data Rate            | Band                                                                                                                                                                            | Downlink Speed                                | Uplink Speed                                                                       |             |
|                      | LTE-FDD                                                                                                                                                                         | 100 Mbps                                      | 50 Mbps                                                                            |             |
|                      | LTE-TDD                                                                                                                                                                         | 61 Mbps                                       | 18 Mbps                                                                            |             |
|                      | DC-HSPA+                                                                                                                                                                        | 42 Mbps                                       | 5.76 Mbps                                                                          |             |
|                      | UMTS                                                                                                                                                                            | 384 Kbps                                      | 384 Kbps                                                                           |             |
|                      | TD-SCDMA                                                                                                                                                                        | 4.2 Mbps                                      | 2.2 Mbps                                                                           |             |
|                      | EDGE                                                                                                                                                                            | 236.8 Kbps                                    | 236.8 Kbps                                                                         |             |
|                      | GPRS                                                                                                                                                                            | 85.6 Kbps                                     | 85.6 Kbps                                                                          |             |
| Regulatory Approvals |                                                                                                                                                                                 |                                               |                                                                                    |             |
| Safety               | EN 60950-1:2006, UL60950                                                                                                                                                        |                                               |                                                                                    |             |
| EMC/Radio            | FCC 47 CFR PART 22H, FCC 47 CFR PART 24H,FCC PART 27L, FCC Part 15B, EN301511,EN301908-1,EN301908-2,EN301489-1,EN301489-7,EN301489-24, EN55032,EN55024, EN61000-6-2,EN61000-6-4 |                                               |                                                                                    |             |
| EMS Test             | Item                                                                                                                                                                            |                                               | Value                                                                              | Level       |
| IEC 61000-4-2        | ESD                                                                                                                                                                             | Contact Discharge<br>Air Discharge            | ±6KV<br>±8KV                                                                       | 3<br>3      |
| IEC 61000-4-3        | RS                                                                                                                                                                              | Enclosure Port                                | 10(V/m), 80-1000MHz                                                                | 3           |
| IEC 61000-4-4        | EFT                                                                                                                                                                             | AC Power Port<br>DC Power Port<br>Signal Port | ±2.0KV<br>±2.0KV<br>±1.0KV                                                         | 3<br>3<br>3 |
| IEC 61000-4-5        | Surge                                                                                                                                                                           | DC Power Port<br>DC Power Port<br>Signal Port | Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV                   | 3<br>3<br>3 |
| IEC 61000-4-6        | CS                                                                                                                                                                              | 0.15-80MHz                                    | 10 V rms                                                                           | 3           |
| IEC 61000-4-8        | PFMF                                                                                                                                                                            | (Enclosure)                                   | AC 50Hz 10A/m                                                                      | 3           |
| IEC 61000-4-11       | DIP                                                                                                                                                                             | AC Power Port                                 | >95%,Reduction,0.5 period<br>30%, Reduction,25 period<br>>95%,Reduction,250 period | -           |
| Shock                | IEC 60068-2-27                                                                                                                                                                  |                                               |                                                                                    |             |
| Drop                 | IEC 60068-2-32                                                                                                                                                                  |                                               |                                                                                    |             |
| Vibration            | IEC 60068-2-64                                                                                                                                                                  |                                               |                                                                                    |             |
| RoHS                 | Yes                                                                                                                                                                             |                                               |                                                                                    |             |
| Warranty             | 5 Years                                                                                                                                                                         |                                               |                                                                                    |             |

\* : test carried out with one VPN-IPsec Tunnel, Peer-to-Peer mode, Ethernet cable. Performance can change based on the Cellular Network



# Industrial Networking Solutions

## Modbus Gateways



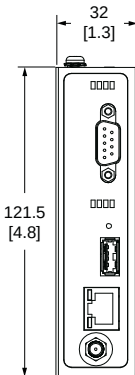
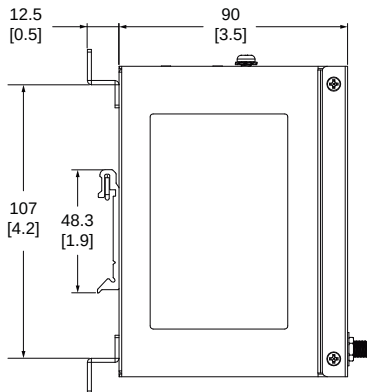
Wireless/Cellular Modbus Gateways | EU Version | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



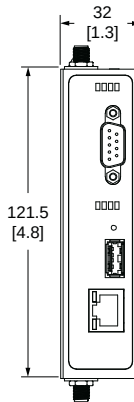
**3G/4G LTE Cellular to Ethernet and Serial Secure Modbus Gateway/Router, EU**

| Part Number            | Band | RS-232<br>RS-485<br>TB14 | RS-232<br>RS-485<br>DB9 | 10/100<br>/1000<br>RJ45<br>Ports | Digital<br>Input/<br>Output | GPS/<br>Battery Function |
|------------------------|------|--------------------------|-------------------------|----------------------------------|-----------------------------|--------------------------|
| MB5901B-D3G-EU         | 3G   | N/A                      | 1                       | 1                                | N/A                         | N/A                      |
| MB5901B-IO-D3G-EU      | 3G   | 1+1*                     | N/A                     | 1                                | 2/2                         | N/A                      |
| MB5901B-IO-D3G-GPS-EU  | 3G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS                      |
| MB5901B-4G-EU          | 4G   | N/A                      | 1                       | 1                                | N/A                         | N/A                      |
| MB5901B-IO-4G-EU       | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | N/A                      |
| MB5901B-IO-4G-GPS-EU   | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS                      |
| MB5901B-4G-B-EU        | 4G   | N/A                      | 1                       | 1                                | N/A                         | Battery Function         |
| MB5901B-IO-4G-B-EU     | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | Battery Function         |
| MB5901B-IO-4G-GPS-B-EU | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS/Battery Function     |

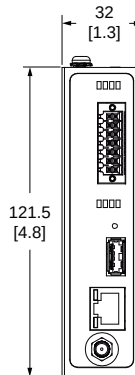
\* one TB sw-selectable RS485/RS232 and one TB RS232.



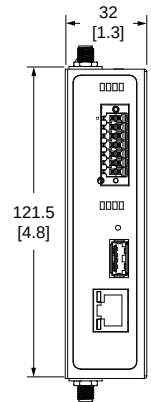
**3G DB9 Type**



**4G DB9 Type**



**3G IO Type**



**4G IO Type**

### Feature Highlights:

- GPRS/3G/4G Cellular Protocol Gateway with extensive LTE Band support:
  - EU Model: 2100/1800/850/2600/900/800MHz (B1/B3/B5/B7/B8/B20)
- Industrial-grade hardware for operating in harsh environments
- Wide temperature range for operations at extreme temperatures
- VPN over IPsec or OpenVPN with throughput up to 37.9Mbps
- 1 x 10/100/1000Mbps Ethernet port, 1 x RS-232/485 port, up to 921.6 Kbps
- Modbus TCP to RTU/ASCII conversion
- Management via Web Browser, SMS, SNMP v1/v2c/v3
- 2 Digital Inputs; 2 Digital outputs / Additional RS-232 in I/O version
- Additional embedded power-bank for fault-relay capability (B version))



# Industrial Networking Solutions

## Specifications & Approvals



Wireless/Cellular Modbus Gateways | EU Version | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface                  |                                                                                        |                                       |
|------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------|
| Standards                          | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X)<br>IEEE 802.3ab for 1000BaseT(X) |                                       |
| Compliance                         | 1x 10/100/1000BASE-TX RJ-45                                                            |                                       |
| Serial Interface                   |                                                                                        |                                       |
| Connector                          | DB Model                                                                               | D-Sub9 RS-232/485 software selectable |
|                                    | Integrated with DI/DOs                                                                 | 14-Pin 5.08mm Terminal Block          |
| Port                               | 1 port RS-232/485 (2-wire) software selectable<br>1 port RS-232 (IO model only)        |                                       |
| Baud Rate                          | 1,200 ~ 921,600bps software selectable                                                 |                                       |
| Data Bits                          | 7, 8 software selectable                                                               |                                       |
| Stop Bits                          | 1, 2 software selectable                                                               |                                       |
| Flow Control                       | None, Xon/Xoff, RTS/CTS (RS-232 only)                                                  |                                       |
| USB Interface                      |                                                                                        |                                       |
| USB ports                          | 2 x USB A Type (USB 2.0) - 1-port High-Speed OTG + 1-port power only                   |                                       |
| Digital Inputs/Outputs (IO Models) |                                                                                        |                                       |
| Digital Inputs (DIs)               | 2 channels photo coupler isolated digital input                                        |                                       |
| Digital Outputs (DOs)              | 2 channels digital output. N.O.( 2A@24VDC)                                             |                                       |
| Modbus Features                    |                                                                                        |                                       |
| Protocol                           | Bi-directional Modbus TCP/RTU/ASCII, Virtual ID mapping                                |                                       |
| Supported Modes                    | Ethernet                                                                               | Modbus TCP Server/Client(or VCOM)     |
|                                    | Serial                                                                                 | Modbus RTU/ASCII (master/slave)       |
| Maximum number of clients/slaves   | Modbus TCP: Maximum 16 clients;<br>Maximum 32 slave connections                        |                                       |
| Power Management                   |                                                                                        |                                       |
| Input Voltage                      | 9-48 VDC                                                                               |                                       |
| Connector                          | 3-Pin 5.08mm Lockable Terminal Block                                                   |                                       |
| Power Consumption                  | 0.6A @ 12VDC (7.2 W Max)                                                               |                                       |
| Power Redundancy                   | USB DC 5V Power Input                                                                  |                                       |
| Reverse Polarity Protection        | Yes                                                                                    |                                       |
| Environmental limits               |                                                                                        |                                       |
| Operating Temperature              | -40°C~70°C (-40°F~158°F)                                                               |                                       |
| Storage Temperature                | -40°C~85°C (-40°F~185°F)                                                               |                                       |
| Ambient Relative Humidity          | 5%~95%, (Non-condensing)                                                               |                                       |
| Mechanicals                        |                                                                                        |                                       |
| Reset Button                       | Yes                                                                                    |                                       |

| Software             |                                                                                                                                                                                 |                                                    |                                                                                    |             |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|------------------------------------------------------------------------------------|-------------|
| Security             | IPsec or OpenVPN VPN tunneling. Max VPN throughput 37.9Mbps *                                                                                                                   |                                                    |                                                                                    |             |
| Network              | IPv4, DHCP Client, ICMP, TCP, UDP, HTTP, RFC2217, TELNET, NAT                                                                                                                   |                                                    |                                                                                    |             |
| Management           | Web, ATOP Device Management Utility, SNMPv1/v2c/v3, SMS                                                                                                                         |                                                    |                                                                                    |             |
| Configuration        | Embedded Web-Server (Web UI), TELNET, Atop Device Management Utility                                                                                                            |                                                    |                                                                                    |             |
| Features             | IPsec, OpenVPN, RSTP, PPTP                                                                                                                                                      |                                                    |                                                                                    |             |
| Wireless Interface   |                                                                                                                                                                                 |                                                    |                                                                                    |             |
| Standard             | GSM/ GPRS/ EDGE/ UMTS/ HSPA+ / SCDMA/ LTE                                                                                                                                       |                                                    |                                                                                    |             |
| Wireless Module      | Quectel EC25-E                                                                                                                                                                  |                                                    |                                                                                    |             |
| Band Options         | Band                                                                                                                                                                            | Bands                                              |                                                                                    |             |
|                      | FDD LTE                                                                                                                                                                         | 2100/1800/850/2600/900/800MHz (B1/B3/B5/B7/B8/B20) |                                                                                    |             |
|                      | TDD LTE                                                                                                                                                                         | 2600/2300/2500MHz (B38/B40/B41)                    |                                                                                    |             |
|                      | WCDMA                                                                                                                                                                           | 2100/850/900MHz (B1/B5/B8)                         |                                                                                    |             |
|                      | GSM                                                                                                                                                                             | 900/1800                                           |                                                                                    |             |
| Data Rate            | Band                                                                                                                                                                            | Downlink Speed                                     | Uplink Speed                                                                       |             |
|                      | LTE-FDD                                                                                                                                                                         | 150 Mbps                                           | 50 Mbps                                                                            |             |
|                      | LTE-TDD                                                                                                                                                                         | 130 Mbps                                           | 35 Mbps                                                                            |             |
|                      | DC-HSPA+                                                                                                                                                                        | 42 Mbps                                            | 5.76 Mbps                                                                          |             |
|                      | UMTS                                                                                                                                                                            | 384 Kbps                                           | 384 Kbps                                                                           |             |
|                      | TD-SCDMA                                                                                                                                                                        | 4.2 Mbps                                           | 2.2 Mbps                                                                           |             |
|                      | EDGE                                                                                                                                                                            | 236.8 Kbps                                         | 236.8 Kbps                                                                         |             |
| GPRS                 | 85.6 Kbps                                                                                                                                                                       | 85.6 Kbps                                          |                                                                                    |             |
| Regulatory Approvals |                                                                                                                                                                                 |                                                    |                                                                                    |             |
| Safety               | EN 60950-1:2006, UL60950                                                                                                                                                        |                                                    |                                                                                    |             |
| EMC/Radio            | FCC 47 CFR PART 22H, FCC 47 CFR PART 24H,FCC PART 27L, FCC Part 15B, EN301511,EN301908-1,EN301908-2,EN301489-1,EN301489-7,EN301489-24, EN55032,EN55024, EN61000-6-2,EN61000-6-4 |                                                    |                                                                                    |             |
| EMS Test             | Item                                                                                                                                                                            |                                                    | Value                                                                              | Level       |
| IEC 61000-4-2        | ESD                                                                                                                                                                             | Contact Discharge<br>Air Discharge                 | ±6KV<br>±8KV                                                                       | 3<br>3      |
| IEC 61000-4-3        | RS                                                                                                                                                                              | Enclosure Port                                     | 10(V/m), 80-1000MHz                                                                | 3           |
| IEC 61000-4-4        | EFT                                                                                                                                                                             | AC Power Port<br>DC Power Port<br>Signal Port      | ±2.0KV<br>±2.0KV<br>±1.0KV                                                         | 3<br>3<br>3 |
| IEC 61000-4-5        | Surge                                                                                                                                                                           | DC Power Port<br>DC Power Port<br>Signal Port      | Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV                   | 3<br>3<br>3 |
| IEC 61000-4-6        | CS                                                                                                                                                                              | 0.15-80MHz                                         | 10 V rms                                                                           | 3           |
| IEC 61000-4-8        | PFMF                                                                                                                                                                            | (Enclosure)                                        | AC 50Hz 10A/m                                                                      | 3           |
| IEC 61000-4-11       | DIP                                                                                                                                                                             | AC Power Port                                      | >95%,Reduction,0.5 period<br>30%, Reduction,25 period<br>>95%,Reduction,250 period | -           |
| Shock                | IEC 60068-2-27                                                                                                                                                                  |                                                    |                                                                                    |             |
| Drop                 | IEC 60068-2-32                                                                                                                                                                  |                                                    |                                                                                    |             |
| Vibration            | IEC 60068-2-64                                                                                                                                                                  |                                                    |                                                                                    |             |
| RoHS                 | Yes                                                                                                                                                                             |                                                    |                                                                                    |             |
| Warranty             | 5 Years                                                                                                                                                                         |                                                    |                                                                                    |             |

\* : test carried out with one VPN-IPsec Tunnel, Peer-to-Peer mode, Ethernet cable. Performance can change based on the Cellular Network





# Industrial Networking Solutions

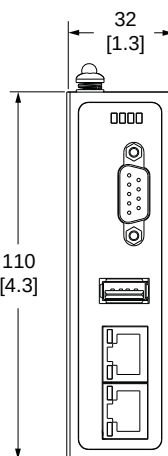
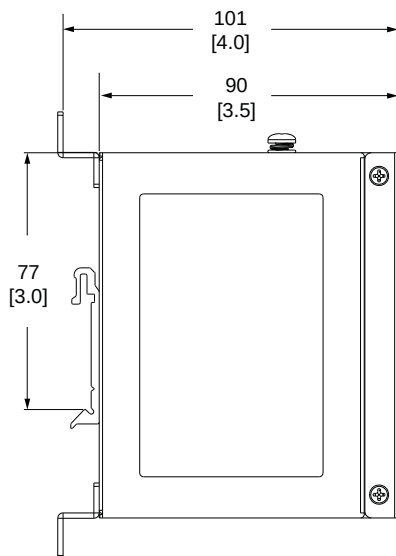
## Modbus Gateways



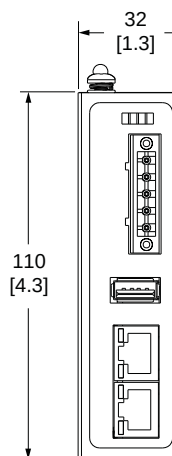
Advanced Modbus Gateways | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



| Advanced Modbus TCP/RTU/ASCII Gateways        |                               |              |                           |
|-----------------------------------------------|-------------------------------|--------------|---------------------------|
| Part Number<br>[MFG #]                        | 10/100 RJ45<br>Ethernet Ports | Serial Ports | Features                  |
| <b>E45MB-DB9-2RJ45</b><br>[MB5901-DB]         | 2                             | 1 (DB9)      | Industrial EMC Protection |
| <b>E45MB-TB5-2RJ45</b><br>[MB5901-TB]         | 2                             | 1 (TB5)      |                           |
| <b>E45MB-DB9-2RJ45-POE</b><br>[MB5901-POE-DB] | 2 with PoE                    | 1 (DB9)      |                           |
| <b>E45MB-TB5-2RJ45-POE</b><br>[MB5901-POE-TB] | 2 with PoE                    | 1 (TB5)      |                           |



**E45MB-DB9-2RJ45**  
**E45MB-DB9-2RJ45-POE**



**E45MB-TB5-2RJ45**  
**E45MB-TB5-2RJ45-POE**

### Feature Highlights:

- Industrial EMC protection, wide temperature operation, -40°C~85°C
- 2-port 10/100Mbps Fast Ethernet, 1-port USB 2.0 high speed OTG
- Bi-Directional Modbus TCP/RTU/ASCII conversion from Serial to Ethernet and Vice-versa
- Advanced features include Virtual ID remapping, VirtualCOM mode, exception handling and many others
- Rugged metal case with wall or DIN-Rail mount
- Configuration via Web Browser / Serial-Telnet Console / Windows Utility
- Remote firmware upgrade
- Optional 802.3af PoE models can be powered through the Ethernet cable



# Industrial Networking Solutions

## Specifications & Approvals



Advanced Modbus Gateways | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network interface           |                                                                      |                                                          |
|-----------------------------|----------------------------------------------------------------------|----------------------------------------------------------|
| Standards supported         | IEEE 802.3 10BaseT<br>IEEE 802.3u 100BaseT(X)<br>IEEE 802.3 af (PoE) |                                                          |
| Connector Port(s)           | 2 x RJ45                                                             |                                                          |
| Serial Interface            |                                                                      |                                                          |
| Connector                   | DB Models                                                            | D-Sub9 RS-232/422/485 software selectable                |
|                             | TB models                                                            | 5.08mm 5-Pin Terminal block RS-232/422/485 sw selectable |
| Port(s)                     | 1                                                                    |                                                          |
| Baud rate                   | 110 ~ 921.6Kbps software selectable                                  |                                                          |
| Data bits                   | 5, 6, 7, 8 software selectable                                       |                                                          |
| Stop Bit                    | 1, 2 software selectable                                             |                                                          |
| Flow Control                | None, Xon/Xoff, RTS/CTS                                              |                                                          |
| USB Interface               |                                                                      |                                                          |
| Speed                       | USB 2.0                                                              |                                                          |
| Connector                   | USB A Type                                                           |                                                          |
| Power Management            |                                                                      |                                                          |
| Input Voltage               | 9 - 48 VDC                                                           |                                                          |
| Input Current (@9VDC)       | 0.65A                                                                |                                                          |
| Power Consumption           | Approximately 6 W (Max)                                              |                                                          |
| Connector                   | 3-Pin 5.08mm Lockable Terminal Block                                 |                                                          |
| Reverse Polarity Protection | Yes (DC input)                                                       |                                                          |
| Mechanicals                 |                                                                      |                                                          |
| Reset Button                | Yes                                                                  |                                                          |
| Environmental Limits        |                                                                      |                                                          |
| Operating Temperature       | -40°C ~ 80°C (-40~176°F)                                             |                                                          |
| Storage Temperature         | -40°~85°C (-40°~185°F)                                               |                                                          |
| Ambient Relative Humidity   | 5 ~ 95%, 55°C, (non-condensing)                                      |                                                          |

| Software                         |                                                                                                            |                                                  |                                                                  |             |
|----------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------|-------------|
| Protocols                        | IPv4, ICMP, TCP, UDP, DHCP Client, SNMPv1,v2c,v3, HTTP, Telnet, RFC2217                                    |                                                  |                                                                  |             |
| Configuration                    | Atop Management Utility, Web UI, Telnet                                                                    |                                                  |                                                                  |             |
| Virtual COM                      | Windows / Linux driver                                                                                     |                                                  |                                                                  |             |
| Features                         | IPsec, OpenVPN, RSTP, PPTP                                                                                 |                                                  |                                                                  |             |
| Link Mode                        |                                                                                                            |                                                  |                                                                  |             |
| TCP Server                       | Single destination or VirtualCOM                                                                           |                                                  |                                                                  |             |
| TCP Server                       | 4 Connections; VirtualCOM or reverse Telnet                                                                |                                                  |                                                                  |             |
| UDP                              | Up to 4 Ranges IP                                                                                          |                                                  |                                                                  |             |
| Modbus Features                  |                                                                                                            |                                                  |                                                                  |             |
| Supported Modes                  | Ethernet: Modbus TCP Server/Client(or VCOM);<br>Serial: Modbus RTU/ASCII (master/slave)                    |                                                  |                                                                  |             |
| Maximum number of clients/slaves | Modbus TCP: Maximum 16 clients;<br>Maximum 32 slave connections                                            |                                                  |                                                                  |             |
| Regulatory Approvals             |                                                                                                            |                                                  |                                                                  |             |
| Safety                           | EN60950-1:2006                                                                                             |                                                  |                                                                  |             |
| EMC                              | FCC Part 15, Subpart B, Class A EN 55032, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-4 |                                                  |                                                                  |             |
| EMS Test                         | Item                                                                                                       |                                                  | Value                                                            | Level       |
| IEC 61000-4-2                    | ESD                                                                                                        | Contact Discharge<br>Air Discharge               | ±8 kV<br>±5 kV                                                   | 4<br>4      |
| IEC 61000-4-3                    | RS                                                                                                         | Radiated<br>(enclosure)                          | 10 V/m                                                           | 3           |
| IEC 61000-4-4                    | EFT                                                                                                        | DC Power Ports<br>Signal Ports                   | ±2 KV<br>±2 KV                                                   | 3<br>3      |
| IEC 61000-4-5                    | Surge                                                                                                      | DC Power Ports<br>DC Power Ports<br>Signal Ports | Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV | 3<br>3<br>3 |
| IEC 61000-4-6                    | CS                                                                                                         | Conducted<br>(enclosure)                         | 10 V rms                                                         | 3           |
| IEC 61000-4-8                    | PFMF                                                                                                       | Enclosure                                        | 10 A/m                                                           | 3           |
| IEC 61000-4-11                   | DIP                                                                                                        | Power Ports                                      | -                                                                | A           |
| Shock                            | IEC 60068-2-27                                                                                             |                                                  |                                                                  |             |
| Drop                             | IEC 60068-2-32                                                                                             |                                                  |                                                                  |             |
| Vibration                        | IEC 60068-2-6                                                                                              |                                                  |                                                                  |             |
| RoHS II                          | Yes                                                                                                        |                                                  |                                                                  |             |
| Warranty                         | 5 Years                                                                                                    |                                                  |                                                                  |             |



# Industrial Networking Solutions

## Modbus Gateways

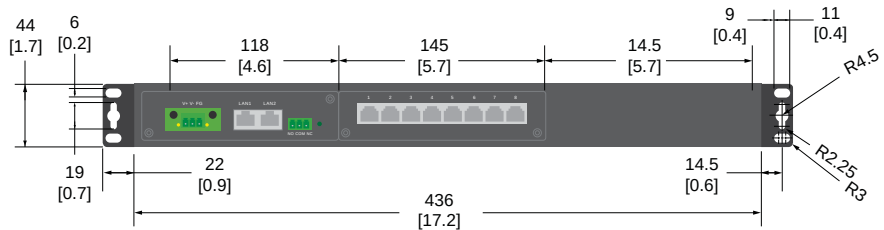


Advanced Modbus Gateways | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating

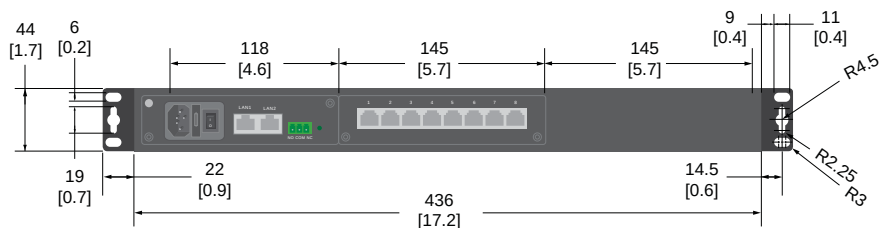


| 8-Port Advanced Secure Modbus TCP/RTU/ASCII Gateways |                                    |                      |           |                    |                           |
|------------------------------------------------------|------------------------------------|----------------------|-----------|--------------------|---------------------------|
| Part Number                                          | RS-232<br>RS-422<br>RS-485<br>RJ45 | 10/100<br>RJ45 Ports | Isolation | Power<br>Connector | Features                  |
| MB5908-DC                                            | 8<br>(RS-232/422/485)              | 2                    | N/A       | DC TB3             | Industrial EMC Protection |
| MB5908-SIS-DC                                        | 8<br>(RS-422/485)                  | 2                    | 2.5 KV    | DC TB3             |                           |
| MB5908-US                                            | 8<br>(RS-232/422/485)              | 2                    | N/A       | AC Inlet (US)      |                           |
| MB5908-SIS-US                                        | 8<br>(RS-422/485)                  | 2                    | 2.5 KV    | AC Inlet (US)      |                           |
| MB5908-EU                                            | 8<br>(RS-232/422/485)              | 2                    | N/A       | AC Inlet (EU)      |                           |
| MB5908-SIS-EU                                        | 8<br>(RS-422/485)                  | 2                    | 2.5 KV    | AC Inlet (EU)      |                           |

**DC Terminal Block**



**AC Inlet**



### Feature Highlights:

- Industrial EMC protection, Opt. Serial port Isolation, -20°C~70°C operation
- 2 Fast-Ethernet ports, dual-subnet or redundancy
- 8/16 sw-selectable RS-232/485/422 (\*) RJ45 serial ports, up to 921kbps
- 24~48 VDC Power Input or 100~240 VAC Power input (EU or US version)
- Bi-Directional Modbus TCP/RTU/ASCII conversion from Serial to Ethernet and viceversa, VirtualCOM support, advanced Modbus Options available
- Supports SNMPv1/v2c/v3, Embedded security with IPsec VPN
- Configuration via Web Browser / Serial Console / Telnet Console / Windows Utility / LCM Matrix



# Industrial Networking Solutions

## Specifications & Approvals



Advanced Modbus Gateways | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface           |                                               |                                              |
|-----------------------------|-----------------------------------------------|----------------------------------------------|
| Speed                       | IEEE 802.3 10BaseT<br>IEEE 802.3u 100BaseT(X) |                                              |
| LAN Mode                    | Dual Subnets or Network Redundancy            |                                              |
| Connector ports             | 2x 10/100BASE-T(X) RJ-45                      |                                              |
| Serial Interface            |                                               |                                              |
| Connector                   | Non-Isolation Models                          | RJ45 RS-232/422/485 software selectable      |
|                             | Isolation Models                              | RJ45 Isolated RS-422/485 software selectable |
| Port(s)                     | 8                                             |                                              |
| Baud rate                   | 1,200 ~ 921,600 bps software selectable       |                                              |
| Data bits                   | 5, 6, 7, 8 software selectable                |                                              |
| Stop Bit                    | 1, 2 software selectable                      |                                              |
| Parity                      | None, Odd, Even, Space, Mark                  |                                              |
| Flow Control                | None, Xon/Xoff, RTS/CTS (RS-232 only)         |                                              |
| Isolation                   | 2.5 kV (SiS versions only)                    |                                              |
| Power Management            |                                               |                                              |
| Connector                   | AC                                            | IEC 60320-1 C14 AC Power Inlet               |
|                             | DC                                            | 5.08mm 3-pin Lockable Terminal Block         |
| Input Voltage               | AC                                            | 100~240 VAC                                  |
|                             | DC                                            | 24-48 VDC                                    |
| Power Consumption           | Approximately 21 W (Max)                      |                                              |
| Power Redundancy            | No                                            |                                              |
| Reverse Polarity Protection | Yes (DC version only)                         |                                              |
| Relay Output                | Yes (1)                                       |                                              |
| Mechanicals                 |                                               |                                              |
| Reset Button                | Yes                                           |                                              |
| Environmental Limits        |                                               |                                              |
| Operating Temperature       | -20°C ~ 70°C (-4°F ~ 158°F)                   |                                              |
| Storage Temperature         | -40~85°C (-40~185°F)                          |                                              |
| Ambient Relative Humidity   | 5 ~ 95%, (non-condensing)                     |                                              |

| Software                         |                                                                                                                                                                            |                                                                                   |                                                                                                               |                       |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------|
| Protocols                        | IPv4, ICMP, TCP, UDP, DHCP Client, SNMPv1,v2c,v3, HTTP, HTTPS, Telnet, RFC2217, Security through IPsec host-to-host or host-to-side VPN with up to 37.9Mbps VPN throughput |                                                                                   |                                                                                                               |                       |
| Configuration                    | Atop Management Utility, Web UI, Telnet, Serial Console, LCM Display                                                                                                       |                                                                                   |                                                                                                               |                       |
| VirtualCOM                       | Windows/Linux redirection software                                                                                                                                         |                                                                                   |                                                                                                               |                       |
| Features                         | IPsec, OpenVPN, RSTP, PPTP                                                                                                                                                 |                                                                                   |                                                                                                               |                       |
| Modbus Features                  |                                                                                                                                                                            |                                                                                   |                                                                                                               |                       |
| Supported Modes                  | Ethernet: Modbus TCP Server/Client(or VCOM); Serial: Modbus RTU/ASCII (master/slave)                                                                                       |                                                                                   |                                                                                                               |                       |
| Maximum number of clients/slaves | Modbus TCP: Maximum 16 clients; Maximum 32 slave connections                                                                                                               |                                                                                   |                                                                                                               |                       |
| Regulatory Approvals             |                                                                                                                                                                            |                                                                                   |                                                                                                               |                       |
| Safety                           | EN60950-1:2006/ IEC60950-1 LVD                                                                                                                                             |                                                                                   |                                                                                                               |                       |
| EMC                              | FCC Part 15, Subpart B, Class B<br>EN 55022, Class B, EN 61000-3-2, EN 61000-3-3, EN 55024                                                                                 |                                                                                   |                                                                                                               |                       |
| EMS Test                         | Item                                                                                                                                                                       |                                                                                   | Value                                                                                                         | Level                 |
| IEC 61000-4-2                    | ESD                                                                                                                                                                        | Contact Discharge<br>Air Discharge                                                | ±8 kV<br>±15 kV                                                                                               | 4<br>4                |
| IEC 61000-4-3                    | RS                                                                                                                                                                         | Radiated (enclosure)                                                              | 10 V/m                                                                                                        | 3                     |
| IEC 61000-4-4                    | EFT                                                                                                                                                                        | AC Power Port<br>DC Power Port<br>Signal Port                                     | ±4.0KV<br>±4.0KV<br>±2.0KV                                                                                    | 4<br>4<br>3           |
| IEC 61000-4-5                    | Surge                                                                                                                                                                      | AC Power Port<br>AC Power Port<br>DC Power Ports<br>DC Power Ports<br>Signal Port | Line-to Line±2.0KV<br>Line-to Earth±4.0KV<br>Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV | 4<br>4<br>3<br>3<br>4 |
| IEC 61000-4-6                    | CS                                                                                                                                                                         | AC Power Port<br>DC Power Port<br>Signal Port                                     | 10 Vrms<br>10 Vrms<br>10 Vrms                                                                                 | 3<br>3<br>3           |
| IEC 61000-4-8                    | PFMF                                                                                                                                                                       | Enclosure                                                                         | 1 A/m                                                                                                         | 3                     |
| IEC 61000-4-11                   | DIP                                                                                                                                                                        | AC Power Port                                                                     | -                                                                                                             | -                     |
| Shock                            | IEC 60068-2-27                                                                                                                                                             |                                                                                   |                                                                                                               |                       |
| Drop                             | ISTA Test Procedure 2A                                                                                                                                                     |                                                                                   |                                                                                                               |                       |
| Vibration                        | IEC 60068-2-64                                                                                                                                                             |                                                                                   |                                                                                                               |                       |
| RoHS II                          | Yes                                                                                                                                                                        |                                                                                   |                                                                                                               |                       |
| Warranty                         | 5 Years                                                                                                                                                                    |                                                                                   |                                                                                                               |                       |



# Industrial Networking Solutions

## Modbus Gateways

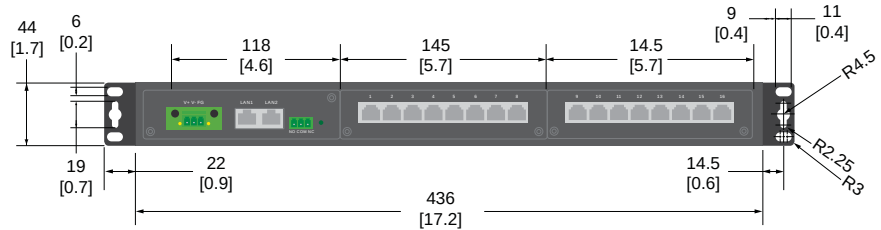


Advanced Modbus Gateways | 16-Port | 19" Rack Mount | Metal Housing | IP30 Rating

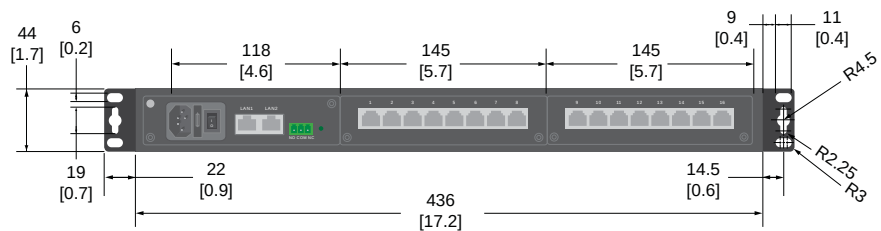


| 16-Port Advanced Secure Modbus TCP/RTU/ASCII Gateways |                                    |                      |           |                    |                           |
|-------------------------------------------------------|------------------------------------|----------------------|-----------|--------------------|---------------------------|
| Part Number                                           | RS-232<br>RS-422<br>RS-485<br>RJ45 | 10/100<br>RJ45 Ports | Isolation | Power<br>Connector | Features                  |
| MB5916-DC                                             | 16<br>(RS-232/422/485)             | 2                    | N/A       | DC TB3             | Industrial EMC Protection |
| MB5916-SIS-DC                                         | 16<br>(RS-422/485)                 | 2                    | 2.5 KV    | DC TB3             |                           |
| MB5916-US                                             | 16<br>(RS-232/422/485)             | 2                    | N/A       | AC Inlet (US)      |                           |
| MB5916-SIS-US                                         | 16<br>(RS-422/485)                 | 2                    | 2.5 KV    | AC Inlet (US)      |                           |
| MB5916-EU                                             | 16<br>(RS-232/422/485)             | 2                    | N/A       | AC Inlet (EU)      |                           |
| MB5916-SIS-EU                                         | 16<br>(RS-422/485)                 | 2                    | 2.5 KV    | AC Inlet (EU)      |                           |

**DC Terminal Block**



**AC Inlet**



### Feature Highlights:

- Industrial EMC protection, Opt. Serial port Isolation, -20°C~70°C operation
- 2 Fast-Ethernet ports, dual-subnet or redundancy
- 8/16 sw-selectable RS-232/485/422 (\*) RJ45 serial ports, up to 921kbps
- 24~48 VDC Power Input or 100~240 VAC Power input (EU or US version)
- Bi-Directional Modbus TCP/RTU/ASCII conversion from Serial to Ethernet and viceversa, VirtualCOM support, advanced Modbus Options available
- Supports SNMPv1/v2c/v3, Embedded security with IPsec VPN
- Configuration via Web Browser / Serial Console / Telnet Console / Windows Utility / LCM Matrix



# Industrial Networking Solutions

## Specifications & Approvals



Advanced Modbus Gateways | 16-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface           |                                               |                                              |
|-----------------------------|-----------------------------------------------|----------------------------------------------|
| Speed                       | IEEE 802.3 10BaseT<br>IEEE 802.3u 100BaseT(X) |                                              |
| LAN Mode                    | Dual Subnets or Network Redundancy            |                                              |
| Connector ports             | 2x 10/100BASE-T(X) RJ-45                      |                                              |
| Serial Interface            |                                               |                                              |
| Connector                   | Non-Isolation Models                          | RJ45 RS-232/422/485 software selectable      |
|                             | Isolation Models                              | RJ45 Isolated RS-422/485 software selectable |
| Port(s)                     | 16                                            |                                              |
| Baud rate                   | 1,200 ~ 921,600 bps software selectable       |                                              |
| Data bits                   | 5, 6, 7, 8 software selectable                |                                              |
| Stop Bit                    | 1, 2 software selectable                      |                                              |
| Parity                      | None, Odd, Even, Space, Mark                  |                                              |
| Flow Control                | None, Xon/Xoff, RTS/CTS (RS-232 only)         |                                              |
| Isolation                   | 2.5 kV (SiS versions only)                    |                                              |
| Power Management            |                                               |                                              |
| Connector                   | AC                                            | IEC 60320-1 C14 AC Power Inlet               |
|                             | DC                                            | 5.08mm 3-pin Lockable Terminal Block         |
| Input Voltage               | AC                                            | 100~240 VAC                                  |
|                             | DC                                            | 24-48 VDC                                    |
| Power Consumption           | Approximately 21 W (Max)                      |                                              |
| Power Redundancy            | No                                            |                                              |
| Reverse Polarity Protection | Yes (DC version only)                         |                                              |
| Relay Output                | Yes (1)                                       |                                              |
| Mechanicals                 |                                               |                                              |
| Reset Button                | Yes                                           |                                              |
| Environmental Limits        |                                               |                                              |
| Operating Temperature       | -20°C ~ 70°C (-4°F ~ 158°F)                   |                                              |
| Storage Temperature         | -40°~85°C (-40°~185°F)                        |                                              |
| Ambient Relative Humidity   | 5 ~ 95%, (non-condensing)                     |                                              |

| Software                         |                                                                                                                                                                            |                                                                                   |                                                                                                               |                       |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------|
| Protocols                        | IPv4, ICMP, TCP, UDP, DHCP Client, SNMPv1,v2c,v3, HTTP, HTTPS, Telnet, RFC2217, Security through IPsec host-to-host or host-to-side VPN with up to 37.9Mbps VPN throughput |                                                                                   |                                                                                                               |                       |
| Configuration                    | Atop Management Utility, Web UI, Telnet, Serial Console, LCM Display                                                                                                       |                                                                                   |                                                                                                               |                       |
| VirtualCOM                       | Windows/Linux redirection software                                                                                                                                         |                                                                                   |                                                                                                               |                       |
| Features                         | IPsec, OpenVPN, RSTP, PPTP                                                                                                                                                 |                                                                                   |                                                                                                               |                       |
| Modbus Features                  |                                                                                                                                                                            |                                                                                   |                                                                                                               |                       |
| Supported Modes                  | Ethernet: Modbus TCP Server/Client(or VCOM); Serial: Modbus RTU/ASCII (master/slave)                                                                                       |                                                                                   |                                                                                                               |                       |
| Maximum number of clients/slaves | Modbus TCP: Maximum 16 clients; Maximum 32 slave connections                                                                                                               |                                                                                   |                                                                                                               |                       |
| Regulatory Approvals             |                                                                                                                                                                            |                                                                                   |                                                                                                               |                       |
| Safety                           | EN60950-1:2006/ IEC60950-1 LVD                                                                                                                                             |                                                                                   |                                                                                                               |                       |
| EMC                              | FCC Part 15, Subpart B, Class B<br>EN 55022, Class B, EN 61000-3-2, EN 61000-3-3, EN 55024                                                                                 |                                                                                   |                                                                                                               |                       |
| EMS Test                         | Item                                                                                                                                                                       |                                                                                   | Value                                                                                                         | Level                 |
| IEC 61000-4-2                    | ESD                                                                                                                                                                        | Contact Discharge<br>Air Discharge                                                | ±8 kV<br>±15 kV                                                                                               | 4<br>4                |
| IEC 61000-4-3                    | RS                                                                                                                                                                         | Radiated (enclosure)                                                              | 10 V/m                                                                                                        | 3                     |
| IEC 61000-4-4                    | EFT                                                                                                                                                                        | AC Power Port<br>DC Power Port<br>Signal Port                                     | ±4.0KV<br>±4.0KV<br>±2.0KV                                                                                    | 4<br>4<br>3           |
| IEC 61000-4-5                    | Surge                                                                                                                                                                      | AC Power Port<br>AC Power Port<br>DC Power Ports<br>DC Power Ports<br>Signal Port | Line-to Line±2.0KV<br>Line-to Earth±4.0KV<br>Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV | 4<br>4<br>3<br>3<br>4 |
| IEC 61000-4-6                    | CS                                                                                                                                                                         | AC Power Port<br>DC Power Port<br>Signal Port                                     | 10 Vrms<br>10 Vrms<br>10 Vrms                                                                                 | 3<br>3<br>3           |
| IEC 61000-4-8                    | PFMF                                                                                                                                                                       | Enclosure                                                                         | 1 A/m                                                                                                         | 3                     |
| IEC 61000-4-11                   | DIP                                                                                                                                                                        | AC Power Port                                                                     | -                                                                                                             | -                     |
| Shock                            | IEC 60068-2-27                                                                                                                                                             |                                                                                   |                                                                                                               |                       |
| Drop                             | ISTA Test Procedure 2A                                                                                                                                                     |                                                                                   |                                                                                                               |                       |
| Vibration                        | IEC 60068-2-64                                                                                                                                                             |                                                                                   |                                                                                                               |                       |
| RoHS II                          | Yes                                                                                                                                                                        |                                                                                   |                                                                                                               |                       |
| Warranty                         | 5 Years                                                                                                                                                                    |                                                                                   |                                                                                                               |                       |



# Industrial Networking Solutions

## Modbus Gateways

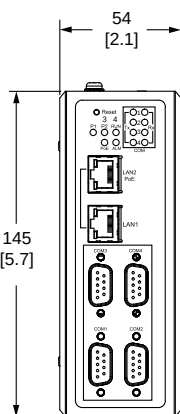
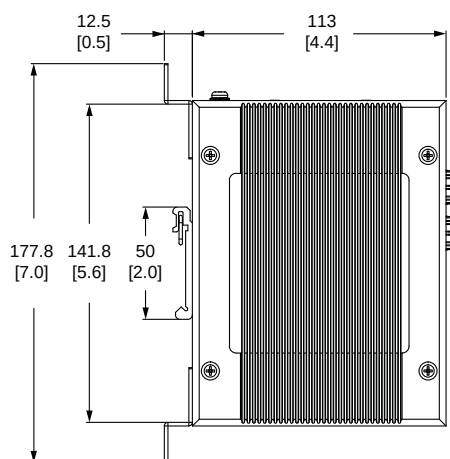


Industrial Modbus Gateways | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

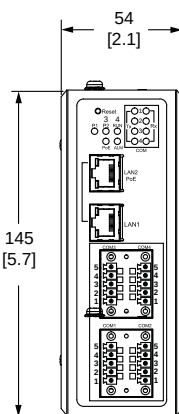


Industrial Secure Modbus TCP/RTU/ASCII Gateways

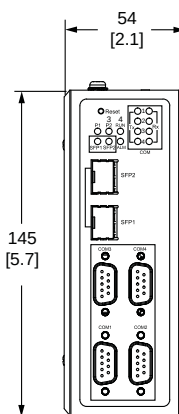
| Part Number          | Ethernet Ports    | Serial Ports | Isolation | Features                  |
|----------------------|-------------------|--------------|-----------|---------------------------|
| MB5904D-4P-DB        | 2 x RJ45          | 4 x DB9      | N/A       | Industrial EMC Protection |
| MB5904D-4P-TB        | 2 x RJ45          | 4 x TB5      | N/A       |                           |
| MB5904D-4P-SIS       | 2 x RJ45          | 4 x TB5      | 3 KV      |                           |
| MB5904D-4P-POE-DB    | 2 x RJ45 with PoE | 4 x DB9      | N/A       |                           |
| MB5904D-4P-POE-TB    | 2 x RJ45 with PoE | 4 x TB5      | N/A       |                           |
| MB5904D-4P-POE-SIS   | 2 x RJ45 with PoE | 4 x TB5      | 3 KV      |                           |
| MB5904D-4P-G-DB-SFP  | 2 x SFP Slot      | 4 x DB9      | N/A       |                           |
| MB5904D-4P-G-TB-SFP  | 2 x SFP Slot      | 4 x TB5      | N/A       |                           |
| MB5904D-4P-G-SIS-SFP | 2 x SFP Slot      | 4 x TB5      | 3 KV      |                           |



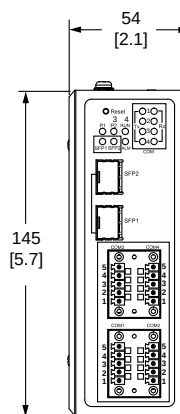
RJ45 DB9 Type



RJ45 TB5 Type



SFP DB9 Type



SFP TB5 Type

### Feature Highlights:

- Industrial EMC protection, wide temperature operation, -40°C~85°C
- 2 Fast-Ethernet ports or 100/1000 SFP slots
- 4 Software-selectable RS-232/RS-485/RS-422 serial ports, up to 921kbps
- Bi-Directional Modbus TCP/RTU/ASCII conversion from Serial to Ethernet and viceversa, VirtualCOM support, advanced Modbus Options available
- Isolated Redundant 12~48 VDC Power Inputs or powered (PoE models) through the Ethernet cable (802.3af)
- Embedded security with IPsec VPN
- Configuration via Web Browser/ Serial Console/ Telnet Console/ Utility
- Rugged metal case with wall or DIN-Rail mount





# Industrial Networking Solutions

## Specifications & Approvals



Industrial Modbus Gateways | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface              |                                                                                                                          |                                                                |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Supported Standards            | IEEE 802.3 10BaseT<br>IEEE 802.3u 100BaseT(X)<br>IEEE 802.3u for 100Base-X IEEE 802.3z for 1000Base-X (SFP version only) |                                                                |
| Power over Ethernet            | IEEE 802.3af for Power over Ethernet (PD)<br>- PoE version only                                                          |                                                                |
| LAN Mode                       | Dual Subnets or Network Redundancy                                                                                       |                                                                |
| Connector ports                | 2x 10/100BASE-T(X) RJ-45 or<br>2x 100/1000 Base-X SFP Slots (SFP version)                                                |                                                                |
| Serial Interface               |                                                                                                                          |                                                                |
| Connector                      | DB                                                                                                                       | 4x D-Sub9<br>RS-232/422/485 software selectable                |
|                                | TB                                                                                                                       | 4x 5.08mm 5-Pin Terminal block<br>RS-232/422/485 sw selectable |
| Baud rate                      | 1,200 ~ 921,600 bps software selectable                                                                                  |                                                                |
| Data bits                      | 7, 8 software selectable                                                                                                 |                                                                |
| Stop Bit                       | 1, 2 software selectable                                                                                                 |                                                                |
| Flow Control                   | None, Xon/Xoff, RTS/CTS                                                                                                  |                                                                |
| Isolation                      | 3 kV (Sis versions only)                                                                                                 |                                                                |
| USB Interface                  |                                                                                                                          |                                                                |
| Universal Serial Bus           | 1x USB A Type connector (USB 2.0)                                                                                        |                                                                |
| Power Management               |                                                                                                                          |                                                                |
| Input Voltage                  | Dual 12 - 48VDC (non-PoE Models); or<br>through Ethernet Cable (PoE versions)                                            |                                                                |
| Input Current<br>(@ 12VDC)     | 0.65 A                                                                                                                   |                                                                |
| Power Consumption              | Approximately 6 W (Max)                                                                                                  |                                                                |
| Power Redundancy               | Yes                                                                                                                      |                                                                |
| Reverse Polarity<br>Protection | Yes                                                                                                                      |                                                                |
| Connector                      | 7-Pin 5.08mm Lockable Terminal Block                                                                                     |                                                                |
| Relay Output                   | 1A@30 VDC (normal open)                                                                                                  |                                                                |
| Mechanicals                    |                                                                                                                          |                                                                |
| Reset Button                   | Yes                                                                                                                      |                                                                |
| Environmental Limits           |                                                                                                                          |                                                                |
| Operating Temperature          | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                             |                                                                |
| Storage Temperature            | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                             |                                                                |
| Ambient Relative Humidity      | 5%~95%, 55°C (Non-condensing)                                                                                            |                                                                |

| Software                         |                                                                                                                                                                            |                                               |                                                                  |             |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------------------|-------------|
| Protocols                        | IPv4, ICMP, TCP, UDP, DHCP Client, SNMPv1,v2c,v3, HTTP, HTTPS, Telnet, RFC2217, Security through IPsec host-to-host or host-to-side VPN with up to 37.9Mbps VPN throughput |                                               |                                                                  |             |
| Configuration                    | Atop Management Utility, Web UI, Telnet                                                                                                                                    |                                               |                                                                  |             |
| VirtualCOM                       | Windows/Linux redirection software                                                                                                                                         |                                               |                                                                  |             |
| Features                         | IPsec, OpenVPN, RSTP, PPTP                                                                                                                                                 |                                               |                                                                  |             |
| Modbus Features                  |                                                                                                                                                                            |                                               |                                                                  |             |
| Supported Modes                  | Ethernet: Modbus TCP Server/Client(or VCOM);<br>Serial: Modbus RTU/ASCII (master/slave)                                                                                    |                                               |                                                                  |             |
| Maximum number of clients/slaves | Modbus TCP: Maximum 16 clients;<br>Maximum 32 slave connections                                                                                                            |                                               |                                                                  |             |
| Regulatory Approvals             |                                                                                                                                                                            |                                               |                                                                  |             |
| Safety                           | EN 61010-2-201                                                                                                                                                             |                                               |                                                                  |             |
| EMC                              | FCC Part 15, Subpart B, Class A<br>EN 55032, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-4                                                              |                                               |                                                                  |             |
| EMS Test                         | Item                                                                                                                                                                       |                                               | Value                                                            | Level       |
| IEC 61000-4-2                    | ESD                                                                                                                                                                        | Contact Discharge<br>Air Discharge            | ±8 kV<br>±15 kV                                                  | 4<br>4      |
| IEC 61000-4-3                    | RS                                                                                                                                                                         | Radiated<br>(enclosure)                       | 10 V/m                                                           | 3           |
| IEC 61000-4-4                    | EFT                                                                                                                                                                        | AC Power Port<br>Signal Port                  | ±2.0KV<br>±2.0KV                                                 | 3<br>4      |
| IEC 61000-4-5                    | Surge                                                                                                                                                                      | AC Power Port<br>AC Power Port<br>Signal Port | Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV | 3<br>3<br>3 |
| IEC 61000-4-6                    | CS                                                                                                                                                                         | Conducted<br>(enclosure)                      | 10 Vrms                                                          | 3           |
| IEC 61000-4-8                    | PFMF                                                                                                                                                                       | Enclosure                                     | 10 A/m                                                           | 3           |
| IEC 61000-4-11                   | DIP                                                                                                                                                                        | Power Port                                    | -                                                                | -           |
| Shock                            | IEC 60068-2-27                                                                                                                                                             |                                               |                                                                  |             |
| Drop                             | IEC 60068-2-32                                                                                                                                                             |                                               |                                                                  |             |
| Vibration                        | IEC 60068-2-64                                                                                                                                                             |                                               |                                                                  |             |
| RoHS                             | Yes                                                                                                                                                                        |                                               |                                                                  |             |
| Warranty                         | 5 Years                                                                                                                                                                    |                                               |                                                                  |             |



# Industrial Networking Solutions

## Modbus Gateways

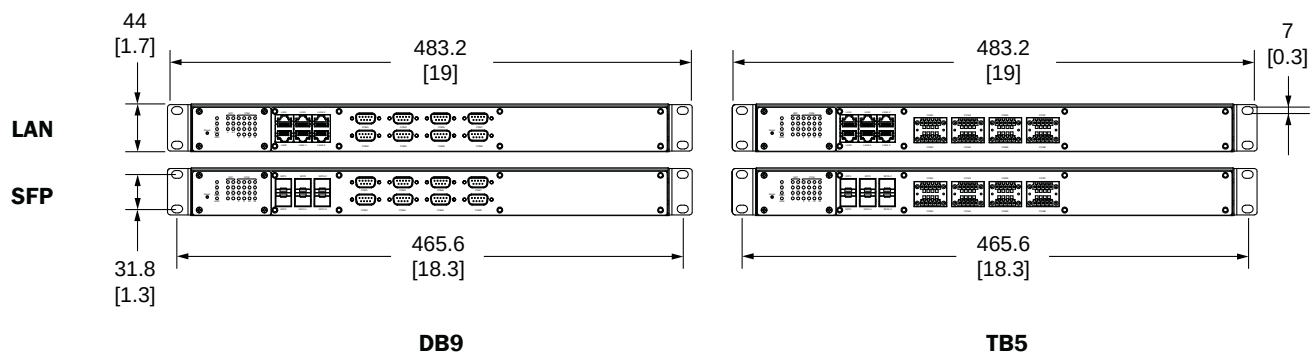


Industrial Modbus Gateways | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating



8-Port IEC61850-3 Certified Industrial Secure Modbus Gateways

| Part Number         | Input Voltage               | Fast Ethernet Ports | Serial Ports | Isolation | Features                                           |
|---------------------|-----------------------------|---------------------|--------------|-----------|----------------------------------------------------|
| MB5908A             | 24-48 VDC                   | 6 (RJ45)            | 8 x DB9      | N/A       | Industrial EMC Protection<br>IEC 61850-3 Certified |
| MB5908A-TB          |                             | 6 (RJ45)            | 8 x TB5      | N/A       |                                                    |
| MB5908A-8P-SIS      |                             | 6 (RJ45)            | 8 x TB5      | 2.5KV     |                                                    |
| MB5908A-6SFP        |                             | 6 (SFP Slot)        | 8 x DB9      | N/A       |                                                    |
| MB5908A-6SFP-TB     |                             | 6 (SFP Slot)        | 8 x TB5      | N/A       |                                                    |
| MB5908A-6SFP-SIS    |                             | 6 (SFP Slot)        | 8 x TB5      | 2.5KV     |                                                    |
| MB5908A-HV          | 100-240 VAC/<br>100-370 VDC | 6 (RJ45)            | 8 x DB9      | N/A       |                                                    |
| MB5908A-TB-HV       |                             | 6 (RJ45)            | 8 x TB5      | N/A       |                                                    |
| MB5908A-SIS-HV      |                             | 6 (RJ45)            | 8 x TB5      | 2.5KV     |                                                    |
| MB5908A-6SFP-HV     |                             | 6 (SFP Slot)        | 8 x DB9      | N/A       |                                                    |
| MB5908A-6SFP-TB-HV  |                             | 6 (SFP Slot)        | 8 x TB5      | N/A       |                                                    |
| MB5908A-6SFP-SIS-HV |                             | 6 (SFP Slot)        | 8 x TB5      | 2.5KV     |                                                    |



### Feature Highlights:

- Remotely access Modbus RTU/ASCII devices, convert to Modbus TCP
- Supporting advanced Modbus Features. Configuration via Web Browser
- IEC61850-3 certified, can be easily set up into IEC61850-3 substations
- Industrial EMC protection, wide temperature operation, -40°C~85°C
- Redundant Power Input for fault protection, either 24~48 VDC or High-Voltage AC/DC (100~240VAC or 100~370VDC)
- 6 Fast-Ethernet interfaces, either RJ45 or SFP slot
- 8 or 16 RS-232/RS-485/RS-422 Serial ports, with or without isolation
- Supporting VirtualCOM, embedded security with IPsec VPN
- Configuration via Web Browser/ Serial Console / Telnet/ Windows Utility



# Industrial Networking Solutions

## Specifications & Approvals



Industrial Modbus Gateways | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface                |                                                                                                                                                                                      |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Speed                            | IEEE 802.3 10BaseT<br>IEEE 802.3u 100BaseT(X) - RJ45 version<br>IEEE 802.3u 100Base-FX - SFP version                                                                                 |
| Connector ports                  | RJ45 x 6 (RJ45 version)<br>SFP x 6 (SFP version)                                                                                                                                     |
| Serial Interface                 |                                                                                                                                                                                      |
| Connector                        | D-Sub9 (supporting only 5-pin RS-232 mode)<br>or 5.08mm 5-Pin Terminal block                                                                                                         |
| Port(s)                          | 8                                                                                                                                                                                    |
| Mode                             | RS-232/422/485 or<br>RS-422/485 (SiS version) Software selectable                                                                                                                    |
| Serial port isolation            | 3 kV isolation (SiS version only)                                                                                                                                                    |
| Baud rate                        | 1,200 ~ 921,600 bps software selectable                                                                                                                                              |
| Parity                           | None, Odd, Even, Mark, Space                                                                                                                                                         |
| Data bits                        | 5, 6, 7, 8 software selectable                                                                                                                                                       |
| Stop Bit                         | 1, 2 software selectable                                                                                                                                                             |
| Flow Control                     | None, Xon/Xoff, RTS/CTS (RS-232 only)                                                                                                                                                |
| Power Management                 |                                                                                                                                                                                      |
| Connector                        | 10-Pin Terminal Block                                                                                                                                                                |
| Input Voltage                    | Redundant 24-48 VDC or<br>Redundant 100-240 VAC/ 100-370 VDC (HV Series)                                                                                                             |
| Input Current                    | 0.73A @ 24 VDC<br>0.35A @ 100 VAC<br>0.2A @ 100 VDC                                                                                                                                  |
| Power Consumption                | Approximately 20 W                                                                                                                                                                   |
| Power Redundancy                 | Yes                                                                                                                                                                                  |
| Reverse Polarity Protection      | Yes                                                                                                                                                                                  |
| Software                         |                                                                                                                                                                                      |
| Protocols                        | IPv4, ICMP, TCP, UDP, DHCP Client, SNMPv1,<br>v2c,v3, HTTP, HTTPS, Telnet, RFC2217,<br>Security through IPsec host-to-host or host-to-side VPN<br>with up to 37.9Mbps VPN throughput |
| Configuration                    | Atop Management Utility, Web UI, Telnet, Console                                                                                                                                     |
| VirtualCOM                       | Windows/Linux redirection software                                                                                                                                                   |
| Features                         | IPsec, OpenVPN, RSTP, PPTP                                                                                                                                                           |
| Modbus Features                  |                                                                                                                                                                                      |
| Supported Modes                  | Ethernet: Modbus TCP Server/Client(or VCOM);<br>Serial: Modbus RTU/ASCII (master/slave)                                                                                              |
| Maximum number of clients/slaves | Modbus TCP: Maximum 16 clients;<br>Maximum 247 slaves                                                                                                                                |

| Mechanicals               |                                      |                                                                                                                                                       |                                     |             |
|---------------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------|
| Reset Button              |                                      | Yes                                                                                                                                                   |                                     |             |
| Environmental Limits      |                                      |                                                                                                                                                       |                                     |             |
| Operating Temperature     |                                      | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                                                          |                                     |             |
| Storage Temperature       |                                      | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                                                          |                                     |             |
| Ambient Relative Humidity |                                      | 5%~95%, 55°C (Non-condensing)                                                                                                                         |                                     |             |
| Regulatory Approvals      |                                      |                                                                                                                                                       |                                     |             |
| Safety                    |                                      | EN 61010-2-201                                                                                                                                        |                                     |             |
| EMC                       |                                      | FCC Part 15, Subpart B, Class B, EN 55032, Class B, EN 61000-6-2 Class B, EN 61000-3-2, EN 61000-3-3, EN 55024, EN 61000-6-4, IEC 61850-3 / IEEE 1613 |                                     |             |
| EMS Test                  | Item                                 |                                                                                                                                                       | Value                               | Level       |
| IEC 61000-4-2             | ESD                                  | Contact Discharge<br>Air Discharge                                                                                                                    | ±8 kV<br>±15 kV                     | 4<br>4      |
| IEC 61000-4-3             | RS                                   | Radiated<br>(enclosure)                                                                                                                               | 10 V/m                              | 3           |
| IEC 61000-4-4             | EFT                                  | AC Power Port<br>DC Power Port<br>Signal Port                                                                                                         | ±4.0KV<br>±4.0KV<br>±4.0KV          | 4<br>4<br>4 |
| IEC 61000-4-5             | Surge                                | AC Power Port                                                                                                                                         | Line-to Line±2.0KV                  | 4           |
|                           |                                      | AC Power Port                                                                                                                                         | Line-to Earth±4.0KV                 | 4           |
|                           |                                      | DC Power Ports                                                                                                                                        | Line-to Line±1.0KV                  | 3           |
|                           |                                      | DC Power Ports                                                                                                                                        | Line-to Earth±2.0KV                 | 3           |
|                           |                                      | Signal Port                                                                                                                                           | Line-to Line±2.0KV                  | 4           |
| IEC 61000-4-6             | CS                                   | AC Power Port<br>DC Power Port<br>Signal Port                                                                                                         | 10 Vrms<br>10 Vrms<br>10 Vrms       | 3<br>3<br>3 |
| IEC 61000-4-8             | PFMF                                 | Enclosure                                                                                                                                             | 100 A/m                             | 5           |
| IEC 61000-4-10            | Damped Oscillatory<br>Magnetic Field | Enclosure                                                                                                                                             | 100 A/m                             | 5           |
| IEC 61000-4-11            | DIP                                  | AC Power Port                                                                                                                                         | -                                   | -           |
| IEC 61000-4-12            | Damped Oscillatory                   | AC Power Port                                                                                                                                         | 2.5 KV common,<br>1 KV differential | 3           |
|                           |                                      | Signal Port                                                                                                                                           | 2.5 KV common,<br>1 KV differential | 3           |
| Shock                     | MIL-STD-810F Method 516.5            |                                                                                                                                                       |                                     |             |
| Drop                      | MIL-STD-810F Method 516.5            |                                                                                                                                                       |                                     |             |
| Vibration                 | MIL-STD-810F Method 514.5 C1 & C2    |                                                                                                                                                       |                                     |             |
| RoHS                      | Yes                                  |                                                                                                                                                       |                                     |             |
| Warranty                  | 5 Years                              |                                                                                                                                                       |                                     |             |



# Industrial Networking Solutions

## Modbus Gateways

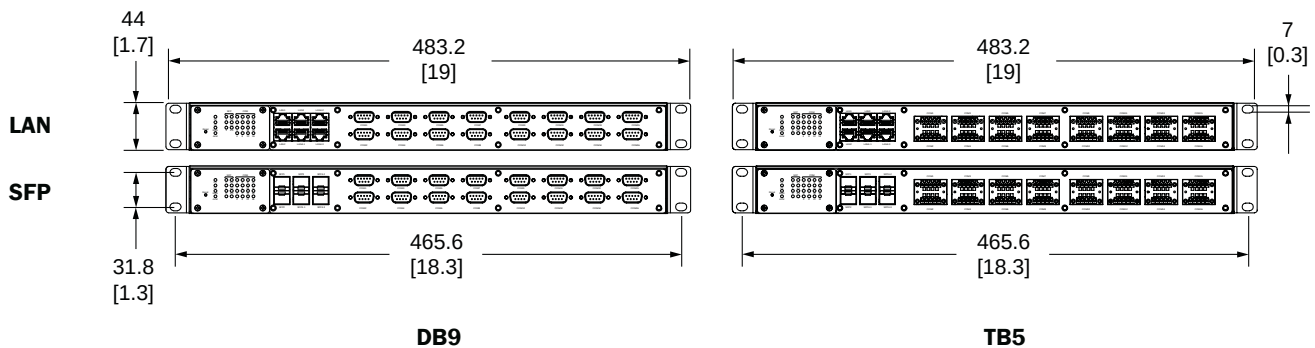


Industrial Modbus Gateways | 16-Port | 19" Rack Mount | Metal Housing | IP30 Rating



**16-Port IEC61850-3 Certified Industrial Secure Modbus Gateways**

| Part Number         | Input Voltage               | Fast Ethernet Ports | Serial Ports | Isolation | Features                                           |
|---------------------|-----------------------------|---------------------|--------------|-----------|----------------------------------------------------|
| MB5916A             | 24-48 VDC                   | 6 (RJ45)            | 16 x DB9     | N/A       | Industrial EMC Protection<br>IEC 61850-3 Certified |
| MB5916A-TB          |                             | 6 (RJ45)            | 16 x TB5     | N/A       |                                                    |
| MB5916A-8P-SIS      |                             | 6 (RJ45)            | 16 x TB5     | 2.5KV     |                                                    |
| MB5916A-6SFP        |                             | 6 (SFP Slot)        | 16 x DB9     | N/A       |                                                    |
| MB5916A-6SFP-TB     |                             | 6 (SFP Slot)        | 16 x TB5     | N/A       |                                                    |
| MB5916A-6SFP-SIS    |                             | 6 (SFP Slot)        | 16 x TB5     | 2.5KV     |                                                    |
| MB5916A-HV          | 100-240 VAC/<br>100-370 VDC | 6 (RJ45)            | 16 x DB9     | N/A       |                                                    |
| MB5916A-TB-HV       |                             | 6 (RJ45)            | 16 x TB5     | N/A       |                                                    |
| MB5916A-SIS-HV      |                             | 6 (RJ45)            | 16 x TB5     | 2.5KV     |                                                    |
| MB5916A-6SFP-HV     |                             | 6 (SFP Slot)        | 16 x DB9     | N/A       |                                                    |
| MB5916A-6SFP-TB-HV  |                             | 6 (SFP Slot)        | 16 x TB5     | N/A       |                                                    |
| MB5916A-6SFP-SIS-HV |                             | 6 (SFP Slot)        | 16 x TB5     | 2.5KV     |                                                    |



### Feature Highlights:

- Remotely access Modbus RTU/ASCII devices, convert to Modbus TCP
- Supporting advanced Modbus Features. Configuration via Web Browser
- IEC61850-3 certified, can be easily set up into IEC61850-3 substations
- Industrial EMC protection, wide temperature operation, -40°C~85°C
- Redundant Power Input for fault protection, either 24~48 VDC or High-Voltage AC/DC (100~240VAC or 100~370VDC)
- 6 Fast-Ethernet interfaces, either RJ45 or SFP slot
- 8 or 16 RS-232/RS-485/RS-422 Serial ports, with or without isolation
- Supporting VirtualCOM, embedded security with IPsec VPN
- Configuration via Web Browser/ Serial Console / Telnet/ Windows Utility



# Industrial Networking Solutions

## Specifications & Approvals



Industrial Modbus Gateways | 16-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface                |                                                                                                                                                                              |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Speed                            | IEEE 802.3 10BaseT<br>IEEE 802.3u 100BaseT(X) - RJ45 version<br>IEEE 802.3u 100Base-FX - SFP version                                                                         |
| Connector ports                  | RJ45 x 6 (RJ45 version)<br>SFP x 6 (SFP version)                                                                                                                             |
| Serial Interface                 |                                                                                                                                                                              |
| Connector                        | D-Sub9 (supporting only 5-pin RS-232 mode)<br>or 5.08mm 5-Pin Terminal block                                                                                                 |
| Port(s)                          | 16                                                                                                                                                                           |
| Mode                             | RS-232/422/485 or<br>RS-422/485 (SiS version) Software selectable                                                                                                            |
| Serial port isolation            | 3 kV isolation (SiS version only)                                                                                                                                            |
| Baud rate                        | 1,200 ~ 921,600 bps software selectable                                                                                                                                      |
| Parity                           | None, Odd, Even, Mark, Space                                                                                                                                                 |
| Data bits                        | 5, 6, 7, 8 software selectable                                                                                                                                               |
| Stop Bit                         | 1, 2 software selectable                                                                                                                                                     |
| Flow Control                     | None, Xon/Xoff, RTS/CTS (RS-232 only)                                                                                                                                        |
| Power Management                 |                                                                                                                                                                              |
| Connector                        | 10-Pin Terminal Block                                                                                                                                                        |
| Input Voltage                    | Redundant 24-48 VDC or<br>Redundant 100-240 VAC/ 100-370 VDC (HV Series)                                                                                                     |
| Input Current                    | 0.73A @ 24 VDC<br>0.35A @ 100 VAC<br>0.2A @ 100 VDC                                                                                                                          |
| Power Consumption                | Approximately 20 W                                                                                                                                                           |
| Power Redundancy                 | Yes                                                                                                                                                                          |
| Reverse Polarity Protection      | Yes                                                                                                                                                                          |
| Software                         |                                                                                                                                                                              |
| Protocols                        | IPv4, ICMP, TCP, UDP, DHCP Client, SNMPv1, v2c, v3, HTTP, HTTPS, Telnet, RFC2217, Security through IPsec host-to-host or host-to-side VPN with up to 37.9Mbps VPN throughput |
| Configuration                    | Atop Management Utility, Web UI, Telnet, Console                                                                                                                             |
| VirtualCOM                       | Windows/Linux redirection software                                                                                                                                           |
| Features                         | IPsec, OpenVPN, RSTP, PPTP                                                                                                                                                   |
| Modbus Features                  |                                                                                                                                                                              |
| Supported Modes                  | Ethernet: Modbus TCP Server/Client(or VCOM);<br>Serial: Modbus RTU/ASCII (master/slave)                                                                                      |
| Maximum number of clients/slaves | Modbus TCP: Maximum 16 clients;<br>Maximum 247 slaves                                                                                                                        |

| Mechanicals               |                                                                                                                                                       |                                               |                                     |             |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------|-------------|
| Reset Button              | Yes                                                                                                                                                   |                                               |                                     |             |
| Environmental Limits      |                                                                                                                                                       |                                               |                                     |             |
| Operating Temperature     | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                                                          |                                               |                                     |             |
| Storage Temperature       | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                                                          |                                               |                                     |             |
| Ambient Relative Humidity | 5%~95%, 55°C (Non-condensing)                                                                                                                         |                                               |                                     |             |
| Regulatory Approvals      |                                                                                                                                                       |                                               |                                     |             |
| Safety                    | EN 61010-2-201                                                                                                                                        |                                               |                                     |             |
| EMC                       | FCC Part 15, Subpart B, Class B, EN 55032, Class B, EN 61000-6-2 Class B, EN 61000-3-2, EN 61000-3-3, EN 55024, EN 61000-6-4, IEC 61850-3 / IEEE 1613 |                                               |                                     |             |
| EMS Test                  | Item                                                                                                                                                  |                                               | Value                               | Level       |
| IEC 61000-4-2             | ESD                                                                                                                                                   | Contact Discharge<br>Air Discharge            | ±8 kV<br>±15 kV                     | 4<br>4      |
| IEC 61000-4-3             | RS                                                                                                                                                    | Radiated<br>(enclosure)                       | 10 V/m                              | 3           |
| IEC 61000-4-4             | EFT                                                                                                                                                   | AC Power Port<br>DC Power Port<br>Signal Port | ±4.0KV<br>±4.0KV<br>±4.0KV          | 4<br>4<br>4 |
| IEC 61000-4-5             | Surge                                                                                                                                                 | AC Power Port                                 | Line-to Line±2.0KV                  | 4           |
|                           |                                                                                                                                                       | AC Power Port                                 | Line-to Earth±4.0KV                 | 4           |
|                           |                                                                                                                                                       | DC Power Ports                                | Line-to Line±1.0KV                  | 3           |
|                           |                                                                                                                                                       | DC Power Ports                                | Line-to Earth±2.0KV                 | 3           |
|                           |                                                                                                                                                       | Signal Port                                   | Line-to Line±2.0KV                  | 4           |
| IEC 61000-4-6             | CS                                                                                                                                                    | AC Power Port<br>DC Power Port<br>Signal Port | 10 Vrms<br>10 Vrms<br>10 Vrms       | 3<br>3<br>3 |
| IEC 61000-4-8             | PFMF                                                                                                                                                  | Enclosure                                     | 100 A/m                             | 5           |
| IEC 61000-4-10            | Damped Oscillatory<br>Magnetic Field                                                                                                                  | Enclosure                                     | 100 A/m                             | 5           |
| IEC 61000-4-11            | DIP                                                                                                                                                   | AC Power Port                                 | -                                   | -           |
| IEC 61000-4-12            | Damped Oscillatory                                                                                                                                    | AC Power Port                                 | 2.5 KV common,<br>1 KV differential | 3           |
|                           |                                                                                                                                                       | Signal Port                                   | 2.5 KV common,<br>1 KV differential | 3           |
| Shock                     | MIL-STD-810F Method 516.5                                                                                                                             |                                               |                                     |             |
| Drop                      | MIL-STD-810F Method 516.5                                                                                                                             |                                               |                                     |             |
| Vibration                 | MIL-STD-810F Method 514.5 C1 & C2                                                                                                                     |                                               |                                     |             |
| RoHS                      | Yes                                                                                                                                                   |                                               |                                     |             |
| Warranty                  | 5 Years                                                                                                                                               |                                               |                                     |             |



# Industrial Networking Solutions

## Modbus Gateways

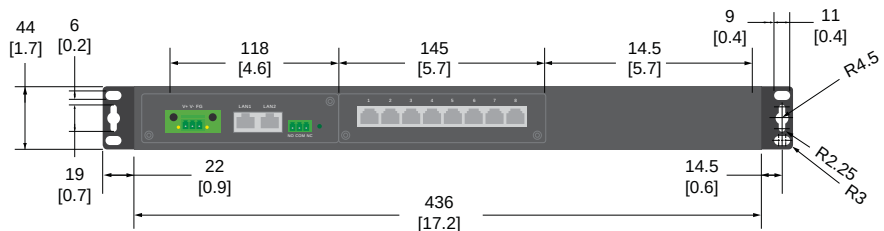


Advanced Modbus Concentrators | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating

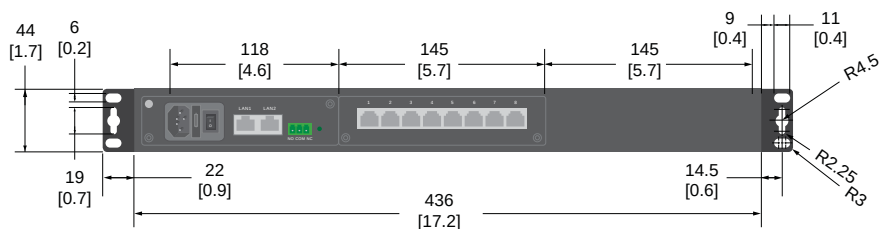


| 8-Port Advanced Modbus TCP/RTU/ASCII Concentrators |                                    |                      |           |                    |                                                                |
|----------------------------------------------------|------------------------------------|----------------------|-----------|--------------------|----------------------------------------------------------------|
| Part Number                                        | RS-232<br>RS-422<br>RS-485<br>RJ45 | 10/100<br>RJ45 Ports | Isolation | Power<br>Connector | Features                                                       |
| MB5908-DC-CT                                       | 8<br>(RS-232/422/485)              | 2                    | N/A       | DC TB3             | Industrial EMC Protection<br>Concentrator<br>Device Redundancy |
| MB5908-SIS-DC-CT                                   | 8<br>(RS-422/485)                  | 2                    | 2.5 KV    | DC TB3             |                                                                |
| MB5908-US-CT                                       | 8<br>(RS-232/422/485)              | 2                    | N/A       | AC Inlet (US)      |                                                                |
| MB5908-SIS-US-CT                                   | 8<br>(RS-422/485)                  | 2                    | 2.5 KV    | AC Inlet (US)      |                                                                |
| MB5908-EU-CT                                       | 8<br>(RS-232/422/485)              | 2                    | N/A       | AC Inlet (EU)      |                                                                |
| MB5908-SIS-EU-CT                                   | 8<br>(RS-422/485)                  | 2                    | 2.5 KV    | AC Inlet (EU)      |                                                                |

DC Terminal Block



AC Inlet



### Feature Highlights:

- With only one connection/one query, master device will be able to access all connected IEDs' data through the MB5908-CT series
- Database synchronization for redundancy when two concentrators work in pair
- 8 port RS-232/422/485, baud rate up to 921.6 Kbps
- LCM display with 4-key touch pad for configuration
- Isolated redundant power inputs with 24-48 VDC ,100-240 VAC variations
- Works in environments from -20 to 70 °C
- Embedded IPsec VPN for enhanced security



# Industrial Networking Solutions

## Specifications & Approvals



Advanced Modbus Concentrators | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                 |                                      |
|-----------------------------|-------------------------------------------------|--------------------------------------|
| Ethernet Port               | 2 x RJ-45                                       |                                      |
| LAN Mode                    | Dual Subnets or LAN Redundancy                  |                                      |
| Compliance                  | IEEE 802.3 10BASE-T<br>IEEE 802.3u 100BASE-T(X) |                                      |
| Serial Interface            |                                                 |                                      |
| Connector                   | RJ45                                            |                                      |
| Mode                        | RS-232/422/485, software selectable             |                                      |
| Port(s)                     | 8                                               |                                      |
| Baud rate                   | 1,200~921,600 bps                               |                                      |
| Parity                      | None, Odd, Even, Space, Mark                    |                                      |
| Data bits                   | 5, 6, 7, 8                                      |                                      |
| Stop Bit                    | 1, 2                                            |                                      |
| Flow Control                | None, Xon/Xoff, RTS/CTS (RS-232 only)           |                                      |
| Power Management            |                                                 |                                      |
| Connector                   | AC                                              | IEC 60320-1 C14 AC Power Inlet       |
|                             | DC                                              | 5.08mm 3-pin Lockable Terminal Block |
| Input Voltage               | AC                                              | 100~240 VAC                          |
|                             | DC                                              | 24-48 VDC                            |
| Power Consumption           | AC                                              | 0.21A @100 VAC                       |
|                             | DC                                              | 0.54A @24 VDC                        |
| Reverse Polarity Protection | Yes (DC input only)                             |                                      |
| Power Redundancy            | No                                              |                                      |
| Mechanicals                 |                                                 |                                      |
| Reset Button                | Yes                                             |                                      |
| Environmental Limits        |                                                 |                                      |
| Operating Temperature       | -20°C ~ 70°C (-4°F ~ 158°F)                     |                                      |
| Storage Temperature         | -40°~85°C (-40°~185°F)                          |                                      |
| Ambient Relative Humidity   | 5 ~ 95%RH, (non-condensing)                     |                                      |

| Software                   |                                                                                                                                         |                   |                     |       |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|-------|
| Protocols                  | Modbus TCP/ASCII/RTU, IPv4, ARP, ICMP, TCP, DHCP Client, SNMPv1/v2c/v3, HTTP, HTTPS, Telnet, RFC2217, NTP, DNS, SMTP, Syslog, IPsec VPN |                   |                     |       |
| Modbus TCP Slave           | 32 connections                                                                                                                          |                   |                     |       |
| Modbus TCP Master          | 16 client                                                                                                                               |                   |                     |       |
| Modbus Slave Node Address  | 1-255 (248 reserved for concentrator)                                                                                                   |                   |                     |       |
| Concentrator Slave         | 16 slaves on each port                                                                                                                  |                   |                     |       |
| Concentrator Slave Command | 32 profiles x 32 commands each                                                                                                          |                   |                     |       |
| Features                   | IPsec, OpenVPN, RSTP, PPTP                                                                                                              |                   |                     |       |
| Regulatory Approvals       |                                                                                                                                         |                   |                     |       |
| Safety                     | EN 60950-1/IEC60950-1 LVD                                                                                                               |                   |                     |       |
| EMC                        | FCC Part 15, Subpart B, Class B<br>EN 55022, Class B<br>EN 61000-3-2<br>EN 61000-3-3<br>EN 55024                                        |                   |                     |       |
| EMS Test                   | Item                                                                                                                                    |                   | Value               | Level |
| IEC 61000-4-2              | ESD                                                                                                                                     | Contact Discharge | ±8 kV               | 4     |
|                            |                                                                                                                                         | Air Discharge     | ±15 kV              | 4     |
| IEC 61000-4-3              | RS                                                                                                                                      | Enclosure         | 10 V/m              | 3     |
| IEC 61000-4-4              | EFT                                                                                                                                     | AC Power Port     | ±4.0KV              | 4     |
|                            |                                                                                                                                         | DC Power Port     | ±4.0KV              | 4     |
|                            |                                                                                                                                         | Signal Port       | ±2.0KV              | 3     |
| IEC 61000-4-5              | Surge                                                                                                                                   | AC Power Port     | Line-to Line±2.0KV  | 4     |
|                            |                                                                                                                                         | AC Power Port     | Line-to Earth±4.0KV | 4     |
|                            |                                                                                                                                         | DC Power Ports    | Line-to Line±1.0KV  | 3     |
|                            |                                                                                                                                         | DC Power Ports    | Line-to Earth±2.0KV | 3     |
|                            |                                                                                                                                         | Signal Port       | Line-to Line±2.0KV  | 4     |
| IEC 61000-4-6              | CS                                                                                                                                      | AC Power Port     | 10 Vrms             | 3     |
|                            |                                                                                                                                         | DC Power Port     | 10 Vrms             | 3     |
|                            |                                                                                                                                         | Signal Port       | 10 Vrms             | 3     |
| IEC 61000-4-8              | PFMF                                                                                                                                    | Enclosure         | 1 A/m               | 3     |
| IEC 61000-4-11             | Dip                                                                                                                                     | AC Power Port     | -                   | -     |
| Shock                      | IEC 60068-2-27                                                                                                                          |                   |                     |       |
| Drop                       | ISTA Test Procedure 2A                                                                                                                  |                   |                     |       |
| Vibration                  | IEC 60068-2-64                                                                                                                          |                   |                     |       |
| RoHS                       | Yes                                                                                                                                     |                   |                     |       |
| Warranty                   | 5 Years                                                                                                                                 |                   |                     |       |





# Industrial Networking Solutions

## Modbus Gateways

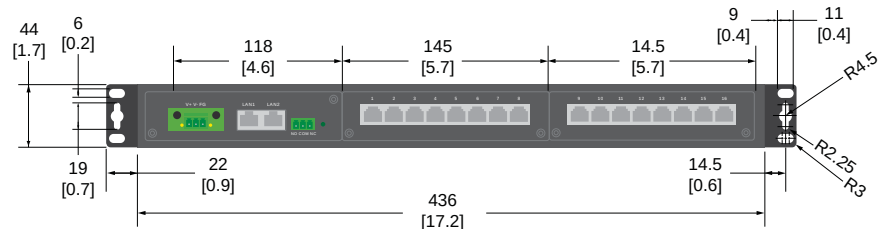


Advanced Modbus Concentrators | 16-Port | 19" Rack Mount | Metal Housing | IP30 Rating

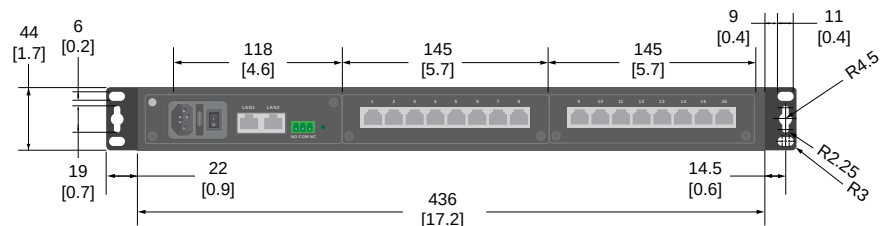


| 16-Port Advanced Modbus TCP/RTU/ASCII Concentrators |                                    |                      |           |                    |                                                                |
|-----------------------------------------------------|------------------------------------|----------------------|-----------|--------------------|----------------------------------------------------------------|
| Part Number                                         | RS-232<br>RS-422<br>RS-485<br>RJ45 | 10/100<br>RJ45 Ports | Isolation | Power<br>Connector | Features                                                       |
| MB5916-DC-CT                                        | 16<br>(RS-232/422/485)             | 2                    | N/A       | DC TB3             | Industrial EMC Protection<br>Concentrator<br>Device Redundancy |
| MB5916-SIS-DC-CT                                    | 16<br>(RS-422/485)                 | 2                    | 2.5 KV    | DC TB3             |                                                                |
| MB5916-US-CT                                        | 16<br>(RS-232/422/485)             | 2                    | N/A       | AC Inlet (US)      |                                                                |
| MB5916-SIS-US-CT                                    | 16<br>(RS-422/485)                 | 2                    | 2.5 KV    | AC Inlet (US)      |                                                                |
| MB5916-EU-CT                                        | 16<br>(RS-232/422/485)             | 2                    | N/A       | AC Inlet (EU)      |                                                                |
| MB5916-SIS-EU-CT                                    | 16<br>(RS-422/485)                 | 2                    | 2.5 KV    | AC Inlet (EU)      |                                                                |

DC Terminal Block



AC Inlet



### Feature Highlights:

- With only one connection/one query, master device will be able to access all connected IEDs' data through the MB5916-CT series
- Database synchronization for redundancy when two concentrators work in pair
- 16 port RS-232/422/485, baud rate up to 921.6 Kbps
- LCM display with 4-key touch pad for configuration
- Isolated redundant power inputs with 24-48 VDC ,100-240 VAC variations
- Works in environments from -20 to 70 °C
- Embedded IPsec VPN for enhanced security



# Industrial Networking Solutions

## Specifications & Approvals



Advanced Modbus Concentrators | 16-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                 |                                      |
|-----------------------------|-------------------------------------------------|--------------------------------------|
| Ethernet Port               | 2 x RJ-45                                       |                                      |
| LAN Mode                    | Dual Subnets or LAN Redundancy                  |                                      |
| Compliance                  | IEEE 802.3 10BASE-T<br>IEEE 802.3u 100BASE-T(X) |                                      |
| Serial Interface            |                                                 |                                      |
| Connector                   | RJ45                                            |                                      |
| Mode                        | RS-232/422/485, software selectable             |                                      |
| Port(s)                     | 16                                              |                                      |
| Baud rate                   | 1,200~921,600 bps                               |                                      |
| Parity                      | None, Odd, Even, Space, Mark                    |                                      |
| Data bits                   | 5, 6, 7, 8                                      |                                      |
| Stop Bit                    | 1, 2                                            |                                      |
| Flow Control                | None, Xon/Xoff, RTS/CTS (RS-232 only)           |                                      |
| Power Management            |                                                 |                                      |
| Connector                   | AC                                              | IEC 60320-1 C14 AC Power Inlet       |
|                             | DC                                              | 5.08mm 3-pin Lockable Terminal Block |
| Input Voltage               | AC                                              | 100~240 VAC                          |
|                             | DC                                              | 24-48 VDC                            |
| Power Consumption           | AC                                              | 0.21A @100 VAC                       |
|                             | DC                                              | 0.54A @24 VDC                        |
| Reverse Polarity Protection | Yes (DC input only)                             |                                      |
| Power Redundancy            | No                                              |                                      |
| Mechanicals                 |                                                 |                                      |
| Reset Button                | Yes                                             |                                      |
| Environmental Limits        |                                                 |                                      |
| Operating Temperature       | -20°C ~ 70°C (-4°F ~ 158°F)                     |                                      |
| Storage Temperature         | -40°~85°C (-40°~185°F)                          |                                      |
| Ambient Relative Humidity   | 5 ~ 95%RH, (non-condensing)                     |                                      |

| Software                   |                                                                                                                                         |                   |                     |       |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|-------|
| Protocols                  | Modbus TCP/ASCII/RTU, IPv4, ARP, ICMP, TCP, DHCP Client, SNMPv1/v2c/v3, HTTP, HTTPS, Telnet, RFC2217, NTP, DNS, SMTP, Syslog, IPsec VPN |                   |                     |       |
| Modbus TCP Slave           | 32 connections                                                                                                                          |                   |                     |       |
| Modbus TCP Master          | 16 client                                                                                                                               |                   |                     |       |
| Modbus Slave Node Address  | 1-255 (248 reserved for concentrator)                                                                                                   |                   |                     |       |
| Concentrator Slave         | 16 slaves on each port                                                                                                                  |                   |                     |       |
| Concentrator Slave Command | 32 profiles x 32 commands each                                                                                                          |                   |                     |       |
| Features                   | IPsec, OpenVPN, RSTP, PPTP                                                                                                              |                   |                     |       |
| Regulatory Approvals       |                                                                                                                                         |                   |                     |       |
| Safety                     | EN 60950-1/IEC60950-1 LVD                                                                                                               |                   |                     |       |
| EMC                        | FCC Part 15, Subpart B, Class B<br>EN 55022, Class B<br>EN 61000-3-2<br>EN 61000-3-3<br>EN 55024                                        |                   |                     |       |
| EMS Test                   | Item                                                                                                                                    |                   | Value               | Level |
| IEC 61000-4-2              | ESD                                                                                                                                     | Contact Discharge | ±8 kV               | 4     |
|                            |                                                                                                                                         | Air Discharge     | ±15 kV              | 4     |
| IEC 61000-4-3              | RS                                                                                                                                      | Enclosure         | 10 V/m              | 3     |
| IEC 61000-4-4              | EFT                                                                                                                                     | AC Power Port     | ±4.0KV              | 4     |
|                            |                                                                                                                                         | DC Power Port     | ±4.0KV              | 4     |
|                            |                                                                                                                                         | Signal Port       | ±2.0KV              | 3     |
| IEC 61000-4-5              | Surge                                                                                                                                   | AC Power Port     | Line-to Line±2.0KV  | 4     |
|                            |                                                                                                                                         | AC Power Port     | Line-to Earth±4.0KV | 4     |
|                            |                                                                                                                                         | DC Power Ports    | Line-to Line±1.0KV  | 3     |
|                            |                                                                                                                                         | DC Power Ports    | Line-to Earth±2.0KV | 3     |
|                            |                                                                                                                                         | Signal Port       | Line-to Line±2.0KV  | 4     |
| IEC 61000-4-6              | CS                                                                                                                                      | AC Power Port     | 10 Vrms             | 3     |
|                            |                                                                                                                                         | DC Power Port     | 10 Vrms             | 3     |
|                            |                                                                                                                                         | Signal Port       | 10 Vrms             | 3     |
| IEC 61000-4-8              | PFMF                                                                                                                                    | Enclosure         | 1 A/m               | 3     |
| IEC 61000-4-11             | Dip                                                                                                                                     | AC Power Port     | -                   | -     |
| Shock                      | IEC 60068-2-27                                                                                                                          |                   |                     |       |
| Drop                       | ISTA Test Procedure 2A                                                                                                                  |                   |                     |       |
| Vibration                  | IEC 60068-2-64                                                                                                                          |                   |                     |       |
| RoHS                       | Yes                                                                                                                                     |                   |                     |       |
| Warranty                   | 5 Years                                                                                                                                 |                   |                     |       |



# Industrial Networking Solutions

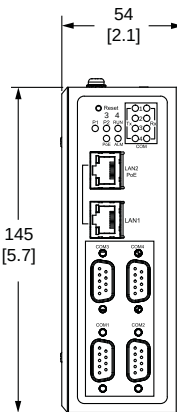
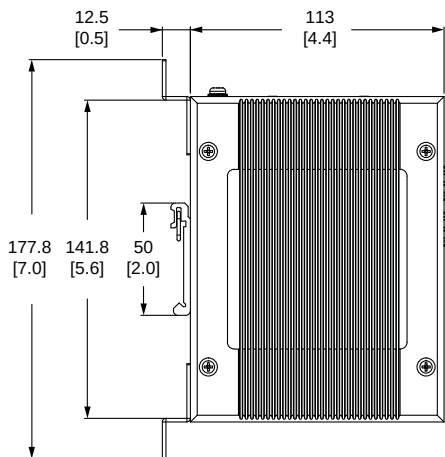
## Modbus Gateways



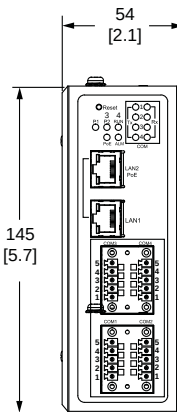
Industrial Modbus Concentrators | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



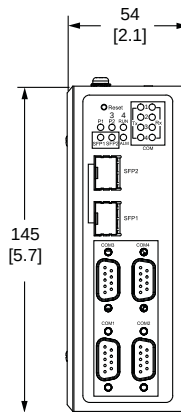
| Industrial Modbus TCP/RTU/ASCII Concentrators |                   |              |           |                                                                                |
|-----------------------------------------------|-------------------|--------------|-----------|--------------------------------------------------------------------------------|
| Part Number                                   | Ethernet Ports    | Serial Ports | Isolation | Features                                                                       |
| MB5904D-4P-DB-CT                              | 2 x RJ45          | 4 x DB9      | N/A       | Industrial EMC Protection<br>Relay Output<br>Concentrator<br>Device Redundancy |
| MB5904D-4P-TB-CT                              | 2 x RJ45          | 4 x TB5      | N/A       |                                                                                |
| MB5904D-4P-SIS-CT                             | 2 x RJ45          | 4 x TB5      | 3 KV      |                                                                                |
| MB5904D-4P-POE-DB-CT                          | 2 x RJ45 with PoE | 4 x DB9      | N/A       |                                                                                |
| MB5904D-4P-POE-TB-CT                          | 2 x RJ45 with PoE | 4 x TB5      | N/A       |                                                                                |
| MB5904D-4P-POE-SIS-CT                         | 2 x RJ45 with PoE | 4 x TB5      | 3 KV      |                                                                                |
| MB5904D-4P-G-DB-SFP-CT                        | 2 x SFP Slot      | 4 x DB9      | N/A       |                                                                                |
| MB5904D-4P-G-TB-SFP-CT                        | 2 x SFP Slot      | 4 x TB5      | N/A       |                                                                                |
| MB5904D-4P-G-SIS-SFP-CT                       | 2 x SFP Slot      | 4 x TB5      | 3 KV      |                                                                                |



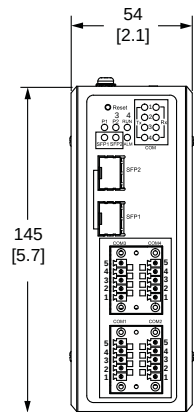
RJ45 DB9 Type



RJ45 TB5 Type



SFP DB9 Type



SFP TB5 Type

### Feature Highlights:

- With only one connection/one query, master device will be able to access all connected IEDs' data through the MB5904D-CT series
- Database synchronization for redundancy when two concentrators work in pair
- Dual 10/100 Mbps Ethernet port, with optional PoE or 1000 Mbps SFP Slot
- 4-port RS-232/422/485, baud rate up to 921.6 Kbps
- Isolated redundant power inputs with 12-48VDC (48VDC for PoE models)
- PoE powered models are available for better flexibility when installing
- Works in environments from -40 to 85 °C



# Industrial Networking Solutions

## Specifications & Approvals



Industrial Modbus Concentrators | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                                                       |
|-----------------------------|---------------------------------------------------------------------------------------|
| Ethernet Port               | 2x 10/100BASE-T(X) RJ-45 or<br>2x 1000 Base-X SFP Slots                               |
| LAN Mode                    | Dual Subnets or LAN Redundancy                                                        |
| Compliance                  | IEEE 802.3 for 10BASE-T<br>IEEE 802.3u for 100BASE-T(X)<br>IEEE 802.3z for 1000BASE-X |
| Serial Interface            |                                                                                       |
| Connector                   | 1x2 5 pin 3.81mm Terminal Block, or<br>D-sub9 connector                               |
| Port(s)                     | 4                                                                                     |
| Mode                        | RS-232/422/485, software selectable                                                   |
| Baud rate                   | 50~921,600 bps                                                                        |
| Parity                      | None, Odd, Even, Space, Mark                                                          |
| Data bits                   | 7,8                                                                                   |
| Stop Bit                    | 1,2                                                                                   |
| Flow Control                | None, Xon/Xoff, RTS/CTS                                                               |
| Isolation                   | 3 KV                                                                                  |
| USB Interface               |                                                                                       |
| Speed                       | USB 2.0                                                                               |
| Connector                   | USB A Type *1                                                                         |
| Power Management            |                                                                                       |
| Connector                   | Terminal Block                                                                        |
| Input Voltage               | 12-48 VDC, or 48 VDC (supplied by PoE)                                                |
| Power Consumption           | 0.65A @12 VDC (max.)                                                                  |
| Reverse Polarity Protection | Yes                                                                                   |
| Redundancy                  | Yes                                                                                   |
| Relay Output                | 1A@30 VDC (normal open)                                                               |
| Mechanicals                 |                                                                                       |
| Reset Button                | Yes                                                                                   |
| Environmental Limits        |                                                                                       |
| Operating Temperature       | -40°C ~ 85°C (-40°F ~ 185°F)                                                          |
| Storage Temperature         | -40°C ~ 85°C (-40°F ~ 185°F)                                                          |
| Ambient Relative Humidity   | 5 ~ 95% RH, (non-condensing)                                                          |

| Software                   |                                                                                                              |                                               |                                                                  |             |
|----------------------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------------------|-------------|
| Protocols                  | Modbus TCP/ASCII/RTU, IPv4, ARP, ICMP, TCP, DHCP Client, SNMP, HTTP, Telnet, RFC2217, NTP, DNS, SMTP, Syslog |                                               |                                                                  |             |
| Modbus TCP Slave           | 32 connections                                                                                               |                                               |                                                                  |             |
| Modbus TCP Master          | 16 client                                                                                                    |                                               |                                                                  |             |
| Modbus Slave Node Address  | 1-255 (248 reserved for concentrator)                                                                        |                                               |                                                                  |             |
| Concentrator Slave         | 16 slaves on each port                                                                                       |                                               |                                                                  |             |
| Concentrator Slave Command | 32 profiles x 32 commands each                                                                               |                                               |                                                                  |             |
| Features                   | IPsec, OpenVPN, RSTP, PPTP                                                                                   |                                               |                                                                  |             |
| Regulatory Approvals       |                                                                                                              |                                               |                                                                  |             |
| Safety                     | EN 61010-2-201                                                                                               |                                               |                                                                  |             |
| EMC                        | FCC Part 15, Subpart B, Class A<br>EN 55032<br>EN 61000-3-2<br>EN 61000-3-3<br>EN 55024                      |                                               |                                                                  |             |
| EMS Test                   | Item                                                                                                         |                                               | Value                                                            | Level       |
| IEC 61000-4-2              | ESD                                                                                                          | Contact Discharge<br>Air Discharge            | ±8 kV<br>±15 kV                                                  | 4<br>4      |
| IEC 61000-4-3              | RS                                                                                                           | 80-1000MHz                                    | 10 V/m                                                           | 3           |
| IEC 61000-4-4              | EFT                                                                                                          | AC Power Port<br>Signal Port                  | ±2.0KV<br>±2.0KV                                                 | 3<br>4      |
| IEC 61000-4-5              | Surge                                                                                                        | AC Power Port<br>AC Power Port<br>Signal Port | Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV | 3<br>3<br>3 |
| IEC 61000-4-6              | CS                                                                                                           | 0.15-80MHz                                    | 10 Vrms                                                          | 3           |
| IEC 61000-4-8              | PFMF                                                                                                         | Enclosure                                     | 10 A/m                                                           | 3           |
| IEC 61000-4-11             | Dip                                                                                                          | AC Power Port                                 | 1. >95%, Reduction, 0.5period                                    | -           |
|                            |                                                                                                              |                                               | 2. 30%, Reduction, 25 period                                     |             |
|                            |                                                                                                              |                                               | 3. >95%, Reduction, 250 period                                   |             |
| Shock                      | IEC 60068-2-27                                                                                               |                                               |                                                                  |             |
| Drop                       | IEC 60068-2-32                                                                                               |                                               |                                                                  |             |
| Vibration                  | IEC 60068-2-64                                                                                               |                                               |                                                                  |             |
| RoHS                       | Yes                                                                                                          |                                               |                                                                  |             |
| Warranty                   | 5 Years                                                                                                      |                                               |                                                                  |             |



# Industrial Networking Solutions

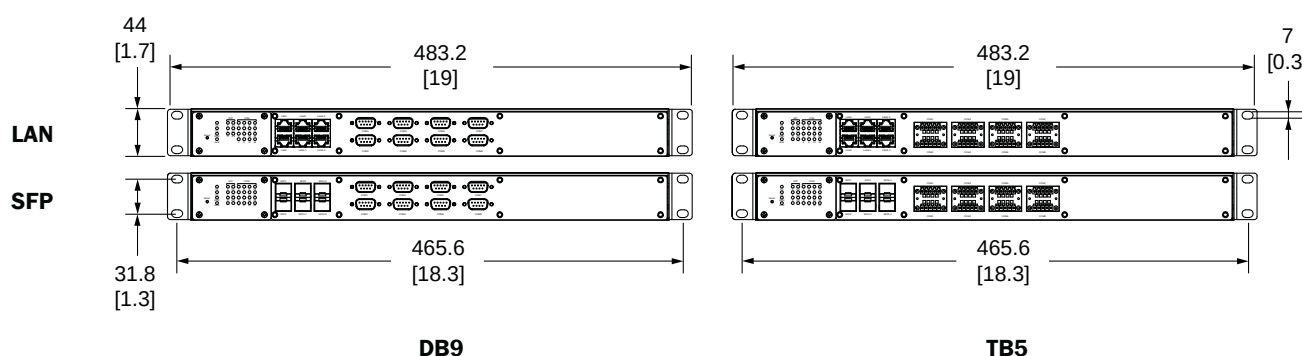
## Modbus Gateways



Industrial Modbus Concentrators | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating



| Industrial 8-Port Modbus TCP/RTU/ASCII Concentrators |                             |                     |              |           |                                                                                         |
|------------------------------------------------------|-----------------------------|---------------------|--------------|-----------|-----------------------------------------------------------------------------------------|
| Part Number                                          | Input Voltage               | Fast Ethernet Ports | Serial Ports | Isolation | Features                                                                                |
| MB5908A-CT                                           | 24-48 VDC                   | 6 (RJ45)            | 8 x DB9      | N/A       | Industrial EMC Protection<br>IEC 61850-3 Certified<br>Concentrator<br>Device Redundancy |
| MB5908A-TB-CT                                        |                             | 6 (RJ45)            | 8 x TB5      | N/A       |                                                                                         |
| MB5908A-8P-SIS-CT                                    |                             | 6 (RJ45)            | 8 x TB5      | 2.5KV     |                                                                                         |
| MB5908A-6SFP-CT                                      |                             | 6 (SFP Slot)        | 8 x DB9      | N/A       |                                                                                         |
| MB5908A-6SFP-TB-CT                                   |                             | 6 (SFP Slot)        | 8 x TB5      | N/A       |                                                                                         |
| MB5908A-6SFP-SIS-CT                                  |                             | 6 (SFP Slot)        | 8 x TB5      | 2.5KV     |                                                                                         |
| MB5908A-HV-CT                                        | 100-240 VAC/<br>100-370 VDC | 6 (RJ45)            | 8 x DB9      | N/A       |                                                                                         |
| MB5908A-TB-HV-CT                                     |                             | 6 (RJ45)            | 8 x TB5      | N/A       |                                                                                         |
| MB5908A-SIS-HV-CT                                    |                             | 6 (RJ45)            | 8 x TB5      | 2.5KV     |                                                                                         |
| MB5908A-6SFP-HV-CT                                   |                             | 6 (SFP Slot)        | 8 x DB9      | N/A       |                                                                                         |
| MB5908A-6SFP-TB-HV-CT                                |                             | 6 (SFP Slot)        | 8 x TB5      | N/A       |                                                                                         |
| MB5908A-6SFP-SIS-HV-CT                               |                             | 6 (SFP Slot)        | 8 x TB5      | 2.5KV     |                                                                                         |



### Feature Highlights:

- With only one connection/one query, master device will be able to access all connected IEDs' data through the MB5908A-CT Series
- Database synchronization for redundancy when two concentrators work in pair
- 8 or 16-port RS-232/422/485, baud rate up to 921.6 Kbps
- Isolated redundant power inputs with 24-48 VDC ,100-240 VAC, 100-370 VDC variations
- Works in environments from -40 to 85 °C
- IEC 61850-3 and IEEE 1613 Power Substation Standards certified



# Industrial Networking Solutions

## Specifications & Approvals



Industrial Modbus Concentrators | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                                                                              |
|-----------------------------|--------------------------------------------------------------------------------------------------------------|
| Ethernet Port               | 6 x RJ-45 or 6 x SFP slot                                                                                    |
| LAN Mode                    | Dual Subnets or LAN Redundancy                                                                               |
| Compliance                  | IEEE 802.3 10BASE-T<br>IEEE 802.3u 100BASE-T(X) and 100BASE-FX                                               |
| Serial Interface            |                                                                                                              |
| Connector                   | 5-Pin 5.08mm Terminal Block or D-Sub9 connector                                                              |
| Port(s)                     | 8                                                                                                            |
| Mode                        | RS-232/422/485, software selectable                                                                          |
| Baud rate                   | 50~921,600 bps                                                                                               |
| Parity                      | None, Odd, Even, Space, Mark                                                                                 |
| Data bits                   | 5,6,7,8                                                                                                      |
| Stop Bit                    | 1,2                                                                                                          |
| Flow Control                | None, Xon/Xoff, RTS/CTS (RS-232 only)                                                                        |
| Power Management            |                                                                                                              |
| Connector                   | 10-Pin Terminal Block                                                                                        |
| Input Voltage               | 24-48 VDC<br>100-240 VAC/ 100-370 VDC for HV Series                                                          |
| Power Consumption           | 0.73A @ 24 VDC<br>0.35A @ 100 VAC<br>0.2A @ 100 VDC                                                          |
| Reverse Polarity Protection | Yes (Two Modules)                                                                                            |
| Redundancy                  | Yes                                                                                                          |
| Mechanicals                 |                                                                                                              |
| Reset Button                | Yes                                                                                                          |
| Software                    |                                                                                                              |
| Protocols                   | Modbus TCP/ASCII/RTU, IPv4, ARP, ICMP, TCP, DHCP Client, SNMP, HTTP, Telnet, RFC2217, NTP, DNS, SMTP, Syslog |
| Modbus TCP Slave            | 32 connections                                                                                               |
| Modbus TCP Master           | 16 client                                                                                                    |
| Modbus Slave Node Address   | 1-255 (248 reserved for concentrator)                                                                        |
| Concentrator Slave          | 16 slaves on each port                                                                                       |
| Concentrator Slave Command  | 32 profiles x 32 commands each                                                                               |
| Features                    | IPsec, OpenVPN, RSTP, PPTP                                                                                   |

| Environmental Limits      |                                                                                                                                                                      |                                               |                                     |             |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------|-------------|
| Operating Temperature     |                                                                                                                                                                      | -40°C ~ 85°C (-40°F ~ 185°F)                  |                                     |             |
| Storage Temperature       |                                                                                                                                                                      | -40°C ~ 85°C (-40°F ~ 185°F)                  |                                     |             |
| Ambient Relative Humidity |                                                                                                                                                                      | 5 ~ 95% RH, (non-condensing)                  |                                     |             |
| Regulatory Approvals      |                                                                                                                                                                      |                                               |                                     |             |
| Safety                    | EN 61010-2-201                                                                                                                                                       |                                               |                                     |             |
| EMC                       | FCC Part 15, Subpart B, Class B<br>EN 55032, Class B<br>EN 61000-6-2, Class B<br>EN 61000-3-2<br>EN 61000-3-3<br>EN 55024<br>EN 61000-6-4<br>IEC 61850-3 / IEEE 1613 |                                               |                                     |             |
| EMS Test                  | Item                                                                                                                                                                 |                                               | Value                               | Level       |
| IEC 61000-4-2             | ESD                                                                                                                                                                  | Contact Discharge<br>Air Discharge            | ±8 kV<br>±15 kV                     | 4<br>4      |
| IEC 61000-4-3             | RS                                                                                                                                                                   | Enclosure Ports                               | 10 V/m                              | 3           |
| IEC 61000-4-4             | EFT                                                                                                                                                                  | AC Power Port<br>DC Power Port<br>Signal Port | ±4.0KV<br>±4.0KV<br>±4.0KV          | 4<br>4<br>4 |
| IEC 61000-4-5             | Surge                                                                                                                                                                | AC Power Port                                 | Line-to Line±2.0KV                  | 4           |
|                           |                                                                                                                                                                      | AC Power Port                                 | Line-to Earth±4.0KV                 | 4           |
|                           |                                                                                                                                                                      | DC Power Ports                                | Line-to Line±1.0KV                  | 3           |
|                           |                                                                                                                                                                      | DC Power Ports                                | Line-to Earth±2.0KV                 | 3           |
|                           |                                                                                                                                                                      | Signal Port                                   | Line-to Line±2.0KV                  | 4           |
| IEC 61000-4-6             | CS                                                                                                                                                                   | AC Power Port<br>DC Power Port<br>Signal Port | 10 Vrms<br>10 Vrms<br>10 Vrms       | 3<br>3<br>3 |
| IEC 61000-4-8             | PFMF                                                                                                                                                                 | Enclosure                                     | 100 A/m                             | 5           |
| IEC 61000-4-10            | Damped Oscillatory Magnetic Field                                                                                                                                    | Enclosure                                     | 100 A/m                             | 5           |
| IEC 61000-4-11            | Dip                                                                                                                                                                  | AC Power Port                                 | -                                   | -           |
| IEC 61000-4-12            | Damped Oscillatory                                                                                                                                                   | AC Power Port                                 | 2.5 KV common,<br>1 KV differential | 3           |
|                           |                                                                                                                                                                      | Signal Port                                   | 2.5 KV common,<br>1 KV differential | 3           |
| Shock                     | IEC 60068-2-27                                                                                                                                                       |                                               |                                     |             |
| Drop                      | ISTA Test Procedure 2A                                                                                                                                               |                                               |                                     |             |
| Vibration                 | IEC 60068-2-64                                                                                                                                                       |                                               |                                     |             |
| RoHS                      | Yes                                                                                                                                                                  |                                               |                                     |             |
| Warranty                  | 5 Years                                                                                                                                                              |                                               |                                     |             |



# Industrial Networking Solutions

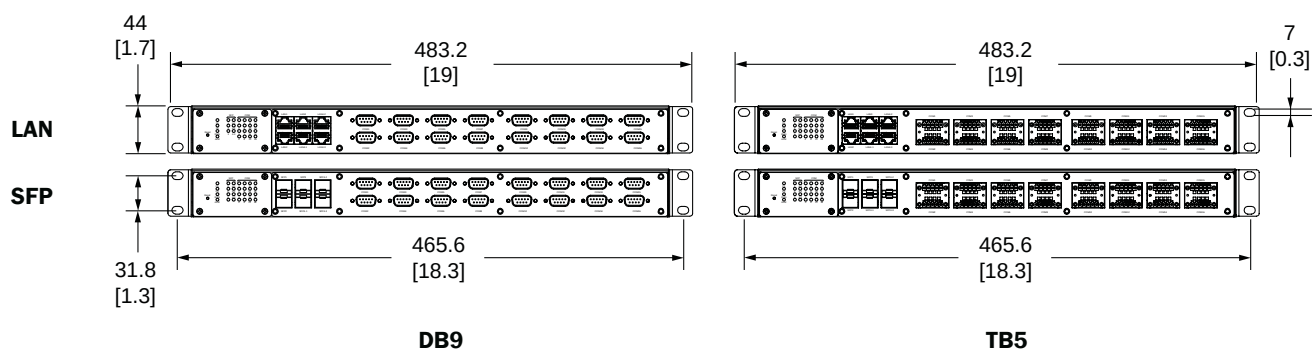
## Modbus Gateways



Industrial Modbus Concentrators | 16-Port | 19" Rack Mount | Metal Housing | IP30 Rating



| Industrial 16-Port Modbus TCP/RTU/ASCII Concentrators |                             |                     |              |           |                                                                                         |
|-------------------------------------------------------|-----------------------------|---------------------|--------------|-----------|-----------------------------------------------------------------------------------------|
| Part Number                                           | Input Voltage               | Fast Ethernet Ports | Serial Ports | Isolation | Features                                                                                |
| MB5916A-CT                                            | 24-48 VDC                   | 6 (RJ45)            | 16 x DB9     | N/A       | Industrial EMC Protection<br>IEC 61850-3 Certified<br>Concentrator<br>Device Redundancy |
| MB5916A-TB-CT                                         |                             | 6 (RJ45)            | 16 x TB5     | N/A       |                                                                                         |
| MB5916A-8P-SIS-CT                                     |                             | 6 (RJ45)            | 16 x TB5     | 2.5KV     |                                                                                         |
| MB5916A-6SFP-CT                                       |                             | 6 (SFP Slot)        | 16 x DB9     | N/A       |                                                                                         |
| MB5916A-6SFP-TB-CT                                    |                             | 6 (SFP Slot)        | 16 x TB5     | N/A       |                                                                                         |
| MB5916A-6SFP-SIS-CT                                   |                             | 6 (SFP Slot)        | 16 x TB5     | 2.5KV     |                                                                                         |
| MB5916A-HV-CT                                         | 100-240 VAC/<br>100-370 VDC | 6 (RJ45)            | 16 x DB9     | N/A       |                                                                                         |
| MB5916A-TB-HV-CT                                      |                             | 6 (RJ45)            | 16 x TB5     | N/A       |                                                                                         |
| MB5916A-SIS-HV-CT                                     |                             | 6 (RJ45)            | 16 x TB5     | 2.5KV     |                                                                                         |
| MB5916A-6SFP-HV-CT                                    |                             | 6 (SFP Slot)        | 16 x DB9     | N/A       |                                                                                         |
| MB5916A-6SFP-TB-HV-CT                                 |                             | 6 (SFP Slot)        | 16 x TB5     | N/A       |                                                                                         |
| MB5916A-6SFP-SIS-HV-CT                                |                             | 6 (SFP Slot)        | 16 x TB5     | 2.5KV     |                                                                                         |



### Feature Highlights:

- With only one connection/one query, master device will be able to access all connected IEDs' data through the MB5916A-CT Series
- Database synchronization for redundancy when two concentrators work in pair
- 8 or 16-port RS-232/422/485, baud rate up to 921.6 Kbps
- Isolated redundant power inputs with 24-48 VDC ,100-240 VAC, 100-370 VDC variations
- Works in environments from -40 to 85 °C
- IEC 61850-3 and IEEE 1613 Power Substation Standards certified





# Industrial Networking Solutions

## Specifications & Approvals



Industrial Modbus Concentrators | 16-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                                                                              |
|-----------------------------|--------------------------------------------------------------------------------------------------------------|
| Ethernet Port               | 6 x RJ-45 or 6 x SFP slot                                                                                    |
| LAN Mode                    | Dual Subnets or LAN Redundancy                                                                               |
| Compliance                  | IEEE 802.3 10BASE-T<br>IEEE 802.3u 100BASE-T(X) and 100BASE-FX                                               |
| Serial Interface            |                                                                                                              |
| Connector                   | 5-Pin 5.08mm Terminal Block or D-Sub9 connector                                                              |
| Port(s)                     | 16                                                                                                           |
| Mode                        | RS-232/422/485, software selectable                                                                          |
| Baud rate                   | 50~921,600 bps                                                                                               |
| Parity                      | None, Odd, Even, Space, Mark                                                                                 |
| Data bits                   | 5,6,7,8                                                                                                      |
| Stop Bit                    | 1,2                                                                                                          |
| Flow Control                | None, Xon/Xoff, RTS/CTS (RS-232 only)                                                                        |
| Power Management            |                                                                                                              |
| Connector                   | 10-Pin Terminal Block                                                                                        |
| Input Voltage               | 24-48 VDC<br>100-240 VAC/ 100-370 VDC for HV Series                                                          |
| Power Consumption           | 0.73A @ 24 VDC<br>0.35A @ 100 VAC<br>0.2A @ 100 VDC                                                          |
| Reverse Polarity Protection | Yes (Two Modules)                                                                                            |
| Redundancy                  | Yes                                                                                                          |
| Mechanicals                 |                                                                                                              |
| Reset Button                | Yes                                                                                                          |
| Software                    |                                                                                                              |
| Protocols                   | Modbus TCP/ASCII/RTU, IPv4, ARP, ICMP, TCP, DHCP Client, SNMP, HTTP, Telnet, RFC2217, NTP, DNS, SMTP, Syslog |
| Modbus TCP Slave            | 32 connections                                                                                               |
| Modbus TCP Master           | 16 client                                                                                                    |
| Modbus Slave Node Address   | 1-255 (248 reserved for concentrator)                                                                        |
| Concentrator Slave          | 16 slaves on each port                                                                                       |
| Concentrator Slave Command  | 32 profiles x 32 commands each                                                                               |
| Features                    | IPsec, OpenVPN, RSTP, PPTP                                                                                   |

| Environmental Limits      |                                         |                                                                                                                                                                      |                                     |             |
|---------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------|
| Operating Temperature     |                                         | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                                                                         |                                     |             |
| Storage Temperature       |                                         | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                                                                         |                                     |             |
| Ambient Relative Humidity |                                         | 5 ~ 95% RH, (non-condensing)                                                                                                                                         |                                     |             |
| Regulatory Approvals      |                                         |                                                                                                                                                                      |                                     |             |
| Safety                    |                                         | EN 61010-2-201                                                                                                                                                       |                                     |             |
| EMC                       |                                         | FCC Part 15, Subpart B, Class B<br>EN 55032, Class B<br>EN 61000-6-2, Class B<br>EN 61000-3-2<br>EN 61000-3-3<br>EN 55024<br>EN 61000-6-4<br>IEC 61850-3 / IEEE 1613 |                                     |             |
| EMS Test                  | Item                                    |                                                                                                                                                                      | Value                               | Level       |
| IEC 61000-4-2             | ESD                                     | Contact Discharge<br>Air Discharge                                                                                                                                   | ±8 kV<br>±15 kV                     | 4<br>4      |
| IEC 61000-4-3             | RS                                      | Enclosure Ports                                                                                                                                                      | 10 V/m                              | 3           |
| IEC 61000-4-4             | EFT                                     | AC Power Port<br>DC Power Port<br>Signal Port                                                                                                                        | ±4.0KV<br>±4.0KV<br>±4.0KV          | 4<br>4<br>4 |
| IEC 61000-4-5             | Surge                                   | AC Power Port                                                                                                                                                        | Line-to Line±2.0KV                  | 4           |
|                           |                                         | AC Power Port                                                                                                                                                        | Line-to Earth±4.0KV                 | 4           |
|                           |                                         | DC Power Ports                                                                                                                                                       | Line-to Line±1.0KV                  | 3           |
|                           |                                         | DC Power Ports                                                                                                                                                       | Line-to Earth±2.0KV                 | 3           |
|                           |                                         | Signal Port                                                                                                                                                          | Line-to Line±2.0KV                  | 4           |
| IEC 61000-4-6             | CS                                      | AC Power Port<br>DC Power Port<br>Signal Port                                                                                                                        | 10 Vrms<br>10 Vrms<br>10 Vrms       | 3<br>3<br>3 |
| IEC 61000-4-8             | PFMF                                    | Enclosure                                                                                                                                                            | 100 A/m                             | 5           |
| IEC 61000-4-10            | Damped<br>Oscillatory<br>Magnetic Field | Enclosure                                                                                                                                                            | 100 A/m                             | 5           |
| IEC 61000-4-11            | Dip                                     | AC Power Port                                                                                                                                                        | -                                   | -           |
| IEC 61000-4-12            | Damped<br>Oscillatory                   | AC Power Port                                                                                                                                                        | 2.5 KV common,<br>1 KV differential | 3           |
|                           |                                         | Signal Port                                                                                                                                                          | 2.5 KV common,<br>1 KV differential | 3           |
| Shock                     |                                         | IEC 60068-2-27                                                                                                                                                       |                                     |             |
| Drop                      |                                         | ISTA Test Procedure 2A                                                                                                                                               |                                     |             |
| Vibration                 |                                         | IEC 60068-2-64                                                                                                                                                       |                                     |             |
| RoHS                      |                                         | Yes                                                                                                                                                                  |                                     |             |
| Warranty                  |                                         | 5 Years                                                                                                                                                              |                                     |             |



# Industrial Networking Solutions

## Protocol Gateways



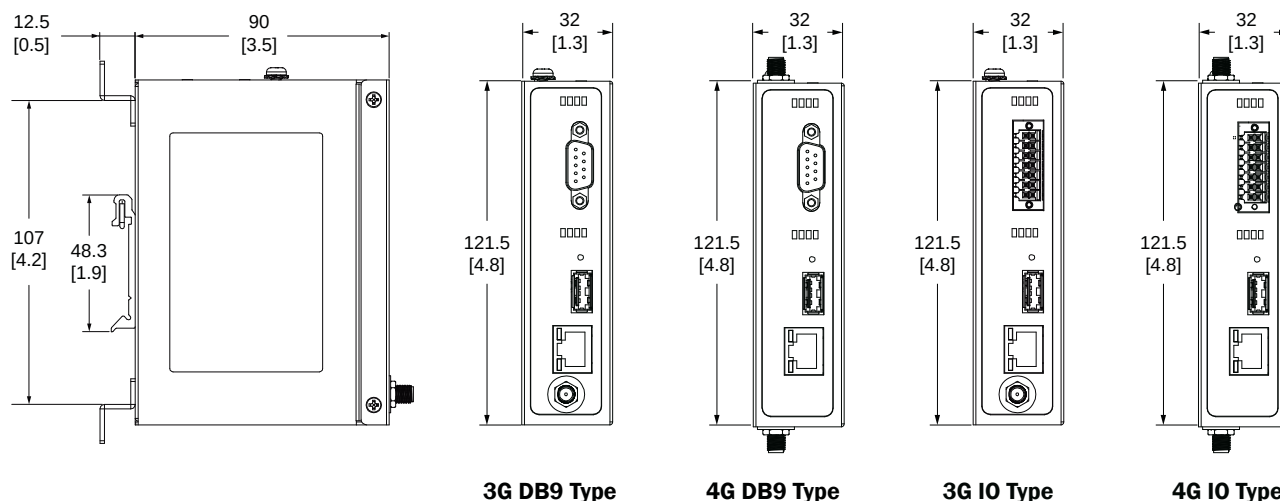
Wireless/Cellular Protocol Gateways | US Version | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



Industrial M2M Cellular Protocol Gateways, US

| Part Number            | Band | RS-232<br>RS-485<br>TB14 | RS-232<br>RS-485<br>DB9 | 10/100<br>/1000<br>RJ45<br>Ports | Digital<br>Input/<br>Output | GPS/<br>Battery Function |
|------------------------|------|--------------------------|-------------------------|----------------------------------|-----------------------------|--------------------------|
| PG5901B-D3G-US         | 3G   | N/A                      | 1                       | 1                                | N/A                         | N/A                      |
| PG5901B-IO-D3G-US      | 3G   | 1+1*                     | N/A                     | 1                                | 2/2                         | N/A                      |
| PG5901B-IO-D3G-GPS-US  | 3G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS                      |
| PG5901B-4G-US          | 4G   | N/A                      | 1                       | 1                                | N/A                         | N/A                      |
| PG5901B-IO-4G-US       | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | N/A                      |
| PG5901B-IO-4G-GPS-US   | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS                      |
| PG5901B-4G-B-US        | 4G   | N/A                      | 1                       | 1                                | N/A                         | Battery Function         |
| PG5901B-IO-4G-B-US     | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | Battery Function         |
| PG5901B-IO-4G-GPS-B-US | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS/Battery Function     |

\* one TB sw-selectable RS485/RS232 and one TB RS232.



### Feature Highlights:

- Supports Modbus TCP/RTU/ASCII, DNP3, IEC61850, IEC60870-5-101/104, and Ethernet/Serial in client/server master/slave modes.
- GPRS/3G/4G Cellular Protocol Gateway with extensive LTE Band support, including:
  - US Model: 1900/AWS/850/700/700/1900MHz (B2/B4/B5/B13/B17/B25)
- Industrial-grade hardware for operating in harsh environments
- 1 x 10/100/1000Mbps Ethernet port
- 1 x RS-232/485 port – baud rate up to 921.6 Kbps
- 2 x High speed USB 2.0 ports
- Configuration via Web Browser and Windows Utility
- VPN over IPsec or OpenVPN for secure communications



# Industrial Networking Solutions

## Specifications & Approvals



Wireless/Cellular Protocol Gateways | US Version | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface                              |                                                                                                  |
|------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Ethernet Port                                  | 1x 10/100/1000BASE-TX RJ-45                                                                      |
| Compliance                                     | IEEE 802.3 10BASE-T<br>IEEE 802.3u for 100BASE-T(X)<br>IEEE 802.3ab for 1000BASE-T               |
| Serial Interface                               |                                                                                                  |
| Connector                                      | 14-Pin 5.08mm Terminal Block (integrated with DI/DOs) or D-Sub9 connector                        |
| Port                                           | 1 or 2 (IO model only)                                                                           |
| Mode                                           | 1 port RS-232/485 (2-wire) software selectable<br>1 port RS-232 (IO model only)                  |
| Baud Rate                                      | 1,200~921,600 bps                                                                                |
| Parity                                         | None, Odd, Even, Space, Mark                                                                     |
| Data Bits                                      | 7, 8                                                                                             |
| Stop Bits                                      | 1, 2                                                                                             |
| Flow Control                                   | None, Xon/Xoff, RTS/CTS (RS-232 only)                                                            |
| USB Interface                                  |                                                                                                  |
| Speed                                          | USB 2.0                                                                                          |
| Connector                                      | USB A Type x 2                                                                                   |
| Digital Inputs/Outputs (IO Models)             |                                                                                                  |
| Digital Inputs (DIs)                           | 2 channels photo coupler isolated digital input                                                  |
| Digital Outputs (DOs)                          | 2 channels digital output. N.O. (2A@24VDC)                                                       |
| Internal Battery function (Battery model only) |                                                                                                  |
| Battery function                               | Provide normal operation at least 10 seconds after power failure function<br>*No need to replace |
| Power Management                               |                                                                                                  |
| Connector                                      | 3-Pin 5.08mm Lockable Terminal Block                                                             |
| Input Voltage                                  | 9-48 VDC                                                                                         |
| Power Consumption                              | 0.6A @ 12VDC                                                                                     |
| Power Redundancy                               | USB DC 5V Power Input                                                                            |
| Reverse Polarity Protection                    | Yes                                                                                              |
| Environmental limits                           |                                                                                                  |
| Operating Temperature                          | -40°C~70°C (-40°F~158°F)                                                                         |
| Storage Temperature                            | -40°C~85°C (-40°F~185°F)                                                                         |
| Ambient Relative Humidity                      | 5%~95%, (Non-condensing)                                                                         |
| Mechanicals                                    |                                                                                                  |
| Reset Button                                   | Yes                                                                                              |

| Software             |                                                                                                             |                                               |                                                                                    |                |
|----------------------|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------------------------------------|----------------|
| Protocols            | IPv4, ICMP, TCP, UDP, DHCP Client, SNMPv1/v2c/v3, HTTP, HTTPS, RFC2217, RSTP                                |                                               |                                                                                    |                |
| Additional features  | Remote SMS monitoring                                                                                       |                                               |                                                                                    |                |
| Security             | VPN through IPsec tunneling (max 10 tunnels) and OpenVPN on cellular or LAN                                 |                                               |                                                                                    |                |
| Network              | NAT                                                                                                         |                                               |                                                                                    |                |
| Features             | IPsec, OpenVPN, RSTP, PPTP                                                                                  |                                               |                                                                                    |                |
| Wireless Interface   |                                                                                                             |                                               |                                                                                    |                |
| Standard             | GSM/ GPRS/ EDGE/ UMTS/ HSPA+/ SCDMA/ LTE                                                                    |                                               |                                                                                    |                |
| Band Options         | Band                                                                                                        | Bands                                         |                                                                                    |                |
|                      | FDD LTE                                                                                                     | 1900/1700/850/700/700bMHz (B2/B4/B5/B12/B17)  |                                                                                    |                |
|                      | WCDMA                                                                                                       | 1900/1700/850MHz (B2/B4/B5)                   |                                                                                    |                |
|                      | GSM                                                                                                         | 850/1900MHz                                   |                                                                                    |                |
| Data Rate            | Band                                                                                                        | Downlink Speed                                |                                                                                    | Uplink Speed   |
|                      | LTE-FDD                                                                                                     | Max100 Mbps                                   |                                                                                    | Max 50 Mbps    |
|                      | LTE-TDD                                                                                                     | Max 61 Mbps                                   |                                                                                    | Max 18 Mbps    |
|                      | DC-HSPA+                                                                                                    | Max 42 Mbps                                   |                                                                                    | Max 5.76 Mbps  |
|                      | UMTS                                                                                                        | Max 384 Kbps                                  |                                                                                    | Max 384 Kbps   |
|                      | TD-SCDMA                                                                                                    | Max 4.2 Mbps                                  |                                                                                    | Max 2.2 Mbps   |
|                      | EDGE                                                                                                        | Max 236.8 Kbps                                |                                                                                    | Max 236.8 Kbps |
| GPRS                 | Max 85.6 Kbps                                                                                               |                                               | Max 85.6 Kbps                                                                      |                |
| Regulatory Approvals |                                                                                                             |                                               |                                                                                    |                |
| Safety               | EN 60950-1, UL60950                                                                                         |                                               |                                                                                    |                |
| EMC                  | FCC Part 15, Subpart B, Class A<br>EN 55032, EN61000-6-4, EN 61000-3-2, EN 61000-3-3, EN 55024, EN61000-6-2 |                                               |                                                                                    |                |
| EMS Test             | Item                                                                                                        |                                               | Value                                                                              | Level          |
| IEC 61000-4-2        | ESD                                                                                                         | Contact Discharge<br>Air Discharge            | ±6KV<br>±8KV                                                                       | 4<br>4         |
| IEC 61000-4-3        | RS                                                                                                          | 80-1000MHz                                    | 10(V/m), 80-1000MHz                                                                | 3              |
| IEC 61000-4-4        | EFT                                                                                                         | AC Power Port<br>Signal Port                  | ±2.0 KV<br>±2.0 KV                                                                 | 3<br>4         |
| IEC 61000-4-5        | Surge                                                                                                       | AC Power Port<br>AC Power Port<br>Signal Port | Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV                   | 3<br>3<br>3    |
| IEC 61000-4-6        | CS                                                                                                          | 0.15-80MHz                                    | 10 V rms                                                                           | 3              |
| IEC 61000-4-8        | PFMF                                                                                                        | Enclosure                                     | 10 A/m                                                                             | 3              |
| IEC 61000-4-11       | DIP                                                                                                         | AC Power Port                                 | >95%,Reduction,0.5 period<br>30%, Reduction,25 period<br>>95%,Reduction,250 period | -              |
| Shock                | IEC 60068-2-27                                                                                              |                                               |                                                                                    |                |
| Drop                 | IEC 60068-2-32                                                                                              |                                               |                                                                                    |                |
| Vibration            | IEC 60068-2-64                                                                                              |                                               |                                                                                    |                |
| RoHS                 | Yes                                                                                                         |                                               |                                                                                    |                |
| Warranty             | 5 Years                                                                                                     |                                               |                                                                                    |                |



# Industrial Networking Solutions

## Protocol Gateways



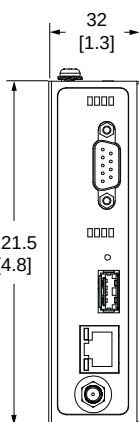
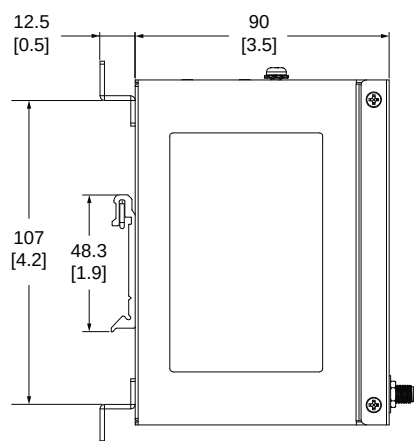
Wireless/Cellular Protocol Gateways | EU Version | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



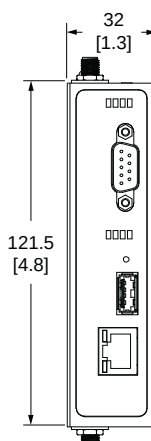
Industrial M2M Cellular Protocol Gateways, EU

| Part Number            | Band | RS-232<br>RS-485<br>TB14 | RS-232<br>RS-485<br>DB9 | 10/100<br>/1000<br>RJ45<br>Ports | Digital<br>Input/<br>Output | GPS/<br>Battery Function |
|------------------------|------|--------------------------|-------------------------|----------------------------------|-----------------------------|--------------------------|
| PG5901B-D3G-EU         | 3G   | N/A                      | 1                       | 1                                | N/A                         | N/A                      |
| PG5901B-IO-D3G-EU      | 3G   | 1+1*                     | N/A                     | 1                                | 2/2                         | N/A                      |
| PG5901B-IO-D3G-GPS-EU  | 3G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS                      |
| PG5901B-4G-EU          | 4G   | N/A                      | 1                       | 1                                | N/A                         | N/A                      |
| PG5901B-IO-4G-EU       | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | N/A                      |
| PG5901B-IO-4G-GPS-EU   | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS                      |
| PG5901B-4G-B-EU        | 4G   | N/A                      | 1                       | 1                                | N/A                         | Battery Function         |
| PG5901B-IO-4G-B-EU     | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | Battery Function         |
| PG5901B-IO-4G-GPS-B-EU | 4G   | 1+1*                     | N/A                     | 1                                | 2/2                         | GPS/Battery Function     |

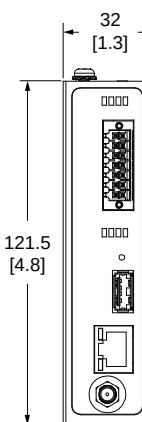
\* one TB sw-selectable RS485/RS232 and one TB RS232.



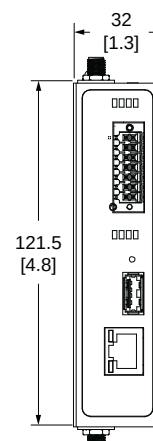
3G DB9 Type



4G DB9 Type



3G IO Type



4G IO Type

### Feature Highlights:

- Supports Modbus TCP/RTU/ASCII, DNP3, IEC61850, IEC60870-5-101/104, and Ethernet/Serial in client/server master/slave modes.
- GPRS/3G/4G Cellular Protocol Gateway with extensive LTE Band support, including:
  - EU Model: 2100/1800/850/2600/900/800MHz (B1/B3/B5/B7/B8/B20)
- Industrial-grade hardware for operating in harsh environments
- 1 x 10/100/1000Mbps Ethernet port
- 1 x RS-232/485 port – baud rate up to 921.6 Kbps
- 2 x High speed USB 2.0 ports
- Configuration via Web Browser and Windows Utility
- VPN over IPSec or OpenVPN for secure communications



# Industrial Networking Solutions

## Specifications & Approvals



Wireless/Cellular Protocol Gateways | EU Version | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface                              |                                                                                                  |
|------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Ethernet Port                                  | 1x 10/100/1000BASE-TX RJ-45                                                                      |
| Compliance                                     | IEEE 802.3 10BASE-T<br>IEEE 802.3u for 100BASE-T(X)<br>IEEE 802.3ab for 1000BASE-T               |
| Serial Interface                               |                                                                                                  |
| Connector                                      | 14-Pin 5.08mm Terminal Block (integrated with DI/DOs) or D-Sub9 connector                        |
| Port                                           | 1 or 2 (IO model only)                                                                           |
| Mode                                           | 1 port RS-232/485 (2-wire) software selectable<br>1 port RS-232 (IO model only)                  |
| Baud Rate                                      | 1,200~921,600 bps                                                                                |
| Parity                                         | None, Odd, Even, Space, Mark                                                                     |
| Data Bits                                      | 7, 8                                                                                             |
| Stop Bits                                      | 1, 2                                                                                             |
| Flow Control                                   | None, Xon/Xoff, RTS/CTS (RS-232 only)                                                            |
| USB Interface                                  |                                                                                                  |
| Speed                                          | USB 2.0                                                                                          |
| Connector                                      | USB A Type x 2                                                                                   |
| Digital Inputs/Outputs (IO Models)             |                                                                                                  |
| Digital Inputs (DIs)                           | 2 channels photo coupler isolated digital input                                                  |
| Digital Outputs (DOs)                          | 2 channels digital output. N.O. (2A@24VDC)                                                       |
| Internal Battery function (Battery model only) |                                                                                                  |
| Battery function                               | Provide normal operation at least 10 seconds after power failure function<br>*No need to replace |
| Power Management                               |                                                                                                  |
| Connector                                      | 3-Pin 5.08mm Lockable Terminal Block                                                             |
| Input Voltage                                  | 9-48 VDC                                                                                         |
| Power Consumption                              | 0.6A @ 12VDC                                                                                     |
| Power Redundancy                               | USB DC 5V Power Input                                                                            |
| Reverse Polarity Protection                    | Yes                                                                                              |
| Environmental limits                           |                                                                                                  |
| Operating Temperature                          | -40°C~70°C (-40°F~158°F)                                                                         |
| Storage Temperature                            | -40°C~85°C (-40°F~185°F)                                                                         |
| Ambient Relative Humidity                      | 5%~95%, (Non-condensing)                                                                         |
| Mechanicals                                    |                                                                                                  |
| Reset Button                                   | Yes                                                                                              |

| Software             |                                                                                                             |                                                    |                                                                                    |               |
|----------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------|------------------------------------------------------------------------------------|---------------|
| Protocols            | IPv4, ICMP, TCP, UDP, DHCP Client, SNMPv1/v2c/v3, HTTP, HTTPS, RFC2217, RSTP                                |                                                    |                                                                                    |               |
| Additional features  | Remote SMS monitoring                                                                                       |                                                    |                                                                                    |               |
| Security             | VPN through IPsec tunneling (max 10 tunnels) and OpenVPN on cellular or LAN                                 |                                                    |                                                                                    |               |
| Network              | NAT                                                                                                         |                                                    |                                                                                    |               |
| Features             | IPsec, OpenVPN, RSTP, PPTP                                                                                  |                                                    |                                                                                    |               |
| Wireless Interface   |                                                                                                             |                                                    |                                                                                    |               |
| Standard             | GSM/ GPRS/ EDGE/ UMTS/ HSPA+/ SCDDMA/ LTE                                                                   |                                                    |                                                                                    |               |
| Band Options         | Band                                                                                                        | Bands                                              |                                                                                    |               |
|                      | FDD LTE                                                                                                     | 2100/1800/850/2600/900/800MHz (B1/B3/B5/B7/B8/B20) |                                                                                    |               |
|                      | TDD LTE                                                                                                     | 2600/2300/2500MHz (B38/B40/B41)                    |                                                                                    |               |
|                      | WCDMA                                                                                                       | 2100/850/900MHz (B1/B5/B8)                         |                                                                                    |               |
|                      | GSM                                                                                                         | 900/1800                                           |                                                                                    |               |
| Data Rate            | Band                                                                                                        | Downlink Speed                                     |                                                                                    | Uplink Speed  |
|                      | LTE-FDD                                                                                                     | Max 150 Mbps                                       |                                                                                    | Max 50 Mbps   |
|                      | LTE-TDD                                                                                                     | Max 130 Mbps                                       |                                                                                    | Max 35 Mbps   |
|                      | DC-HSPA+                                                                                                    | Max 42 Mbps                                        |                                                                                    | Max 5.76 Mbps |
|                      | UMTS                                                                                                        | Max 384 Kbps                                       |                                                                                    | Max 384 Kbps  |
|                      | TD-SCDMA                                                                                                    | Max 4.2 Mbps                                       |                                                                                    | Max 2.2 Mbps  |
| EDGE                 | Max 236.8 Kbps                                                                                              |                                                    | Max 236.8 Kbps                                                                     |               |
| GPRS                 | Max 85.6 Kbps                                                                                               |                                                    | Max 85.6 Kbps                                                                      |               |
| Regulatory Approvals |                                                                                                             |                                                    |                                                                                    |               |
| Safety               | EN 60950-1, UL60950                                                                                         |                                                    |                                                                                    |               |
| EMC                  | FCC Part 15, Subpart B, Class A<br>EN 55032, EN61000-6-4, EN 61000-3-2, EN 61000-3-3, EN 55024, EN61000-6-2 |                                                    |                                                                                    |               |
| EMS Test             | Item                                                                                                        |                                                    | Value                                                                              | Level         |
| IEC 61000-4-2        | ESD                                                                                                         | Contact Discharge<br>Air Discharge                 | ±6KV<br>±8KV                                                                       | 4<br>4        |
| IEC 61000-4-3        | RS                                                                                                          | 80-1000MHz                                         | 10(V/m), 80-1000MHz                                                                | 3             |
| IEC 61000-4-4        | EFT                                                                                                         | AC Power Port<br>Signal Port                       | ±2.0 KV<br>±2.0 KV                                                                 | 3<br>4        |
| IEC 61000-4-5        | Surge                                                                                                       | AC Power Port<br>AC Power Port<br>Signal Port      | Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV                   | 3<br>3<br>3   |
| IEC 61000-4-6        | CS                                                                                                          | 0.15-80MHz                                         | 10 V rms                                                                           | 3             |
| IEC 61000-4-8        | PFMF                                                                                                        | Enclosure                                          | 10 A/m                                                                             | 3             |
| IEC 61000-4-11       | DIP                                                                                                         | AC Power Port                                      | >95%,Reduction,0.5 period<br>30%, Reduction,25 period<br>>95%,Reduction,250 period | -             |
| Shock                | IEC 60068-2-27                                                                                              |                                                    |                                                                                    |               |
| Drop                 | IEC 60068-2-32                                                                                              |                                                    |                                                                                    |               |
| Vibration            | IEC 60068-2-64                                                                                              |                                                    |                                                                                    |               |
| RoHS                 | Yes                                                                                                         |                                                    |                                                                                    |               |
| Warranty             | 5 Years                                                                                                     |                                                    |                                                                                    |               |



# Industrial Networking Solutions

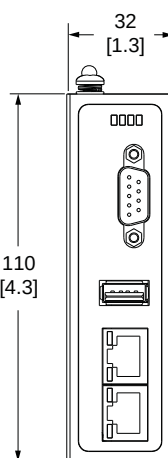
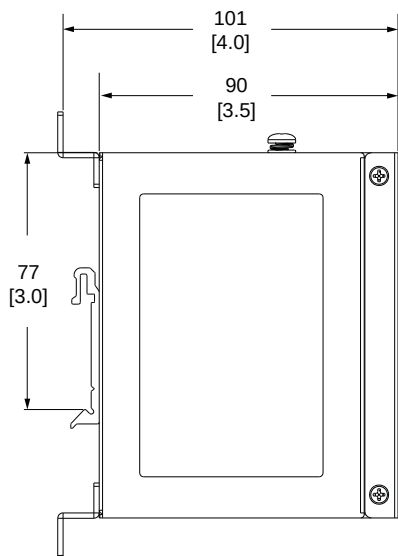
## Protocol Gateways



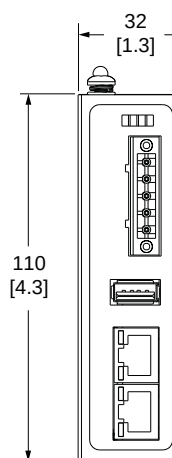
Advanced Protocol Gateways | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating



| 1-Port RS232/485/422 and 2-Port Ethernet DNP3, Modbus, IEC 60870, IEC 61850 Protocol Gateways |                            |              |                           |
|-----------------------------------------------------------------------------------------------|----------------------------|--------------|---------------------------|
| Part Number                                                                                   | 10/100 RJ45 Ethernet Ports | Serial Ports | Features                  |
| PG5901-DB                                                                                     | 2                          | 1 (DB9)      | Industrial EMC Protection |
| PG5901-TB                                                                                     | 2                          | 1 (TB5)      |                           |
| PG5901-POE-DB                                                                                 | 2 with PoE                 | 1 (DB9)      |                           |
| PG5901-POE-TB                                                                                 | 2 with PoE                 | 1 (TB5)      |                           |



**PG5901-DB  
PG5901-PoE-DB**



**PG5901-TB  
PG5901-PoE-TB**

### Feature Highlights:

- Dual 10/100 Mbps Ethernet port, PoE PD
- 1-port RS-232/422/485, baud rate up to 921.6 Kbps
- IP30 Metal housing with Aluminum heat sink
- Strong EMC protection, works in environments from -40 to 85 °C
- Same hardware platform for different protocol conversion (Modbus TCP/RTU/ASCII, DNP3.0 TCP or serial, IEC 60870-5-101, IEC 60870-5-103, IEC 60870-5-104, IEC 61850)
- User friendly configuration with a Java-Based Windows utility
- Embedded IPsec VPN for enhanced security



# Industrial Networking Solutions

## Specifications & Approvals



Advanced Protocol Gateways | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                 |
|-----------------------------|-------------------------------------------------|
| Ethernet Port               | 2x RJ-45                                        |
| LAN Mode                    | Dual Subnets or LAN Redundancy                  |
| Compliance                  | IEEE 802.3 10BASE-T<br>IEEE 802.3u 100BASE-TX   |
| Serial Interface            |                                                 |
| Connector                   | 5-Pin 5.08mm Terminal Block or D-Sub9 connector |
| Port(s)                     | 1                                               |
| Mode                        | RS-232/422/485, software selectable             |
| Baud rate                   | 1,200~921,600 bps                               |
| Parity                      | Parity None, Odd, Even, Space, Mark             |
| Data bits                   | 7, 8                                            |
| Stop Bit                    | 1, 2                                            |
| Flow Control                | None, Xon/Xoff, RTS/CTS (RS-232 only)           |
| USB Interface               |                                                 |
| Speed                       | USB 2.0                                         |
| Connector                   | USB A Type x 1                                  |
| Power Management            |                                                 |
| Connector                   | 3-Pin 5.08mm Lockable Terminal Block            |
| Input Voltage               | 9-48 VDC, or 48 VDC (supplied by PoE)           |
| Power Consumption           | 0.65A @ 9VDC                                    |
| Power Redundancy            | No                                              |
| Reverse Polarity Protection | Yes                                             |
| Mechanicals                 |                                                 |
| Reset Button                | Yes                                             |
| Environmental Limits        |                                                 |
| Operating Temperature       | -40°C ~ 85°C (-40°F ~ 185°F)                    |
| Storage Temperature         | -40°~85°C (-40°~185°F)                          |
| Ambient Relative Humidity   | 5 ~ 95% RH (non-condensing)                     |

| Software             |  |                                                                                                                                                                                        |                                                  |                                                                                              |             |
|----------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------|-------------|
| Protocols            |  | IPv4, ARP, ICMP, TCP, UDP, DHCP Client, DNS Client, Telnet, HTTP, HTTPS, SNMP v1/v2c/v3, Syslog, IPsec VPN peer-to-peer and peer-to-side, with a maximum VPN throughput of 37.9Mbps(*) |                                                  |                                                                                              |             |
| Features             |  | IPsec, OpenVPN, RSTP, PPTP                                                                                                                                                             |                                                  |                                                                                              |             |
| Regulatory Approvals |  |                                                                                                                                                                                        |                                                  |                                                                                              |             |
| Safety               |  | EN60950-1                                                                                                                                                                              |                                                  |                                                                                              |             |
| EMC                  |  | FCC Part 15, Subpart B, Class A<br>EN 55032, EN 61000-3-2, EN 61000-3-3, EN 55024                                                                                                      |                                                  |                                                                                              |             |
| EMS Test             |  | Item                                                                                                                                                                                   |                                                  | Value                                                                                        | Level       |
| IEC 61000-4-2        |  | ESD                                                                                                                                                                                    | Contact Discharge<br>Air Discharge               | ±8 kV<br>±15 kV                                                                              | 4<br>4      |
| IEC 61000-4-3        |  | RS                                                                                                                                                                                     | 80-1000MHz                                       | 10 V/m                                                                                       | 3           |
| IEC 61000-4-4        |  | EFT                                                                                                                                                                                    | AC Power Ports<br>Signal Ports                   | ±2.0 KV<br>±2.0 KV                                                                           | 3<br>4      |
| IEC 61000-4-5        |  | Surge                                                                                                                                                                                  | AC Power Ports<br>AC Power Ports<br>Signal Ports | Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV                             | 3<br>3<br>3 |
| IEC 61000-4-6        |  | CS                                                                                                                                                                                     | 0.15-80MHz                                       | 10 Vrms                                                                                      | 3           |
| IEC 61000-4-8        |  | PFMF                                                                                                                                                                                   | Enclosure                                        | 10 A/m                                                                                       | 3           |
| IEC 61000-4-11       |  | DIP                                                                                                                                                                                    | AC Power Ports                                   | 1. >95%, Reduction, 0.5 period<br>2. 30%, Reduction, 25 period<br>>95%,Reduction, 250 period | -           |
| Shock                |  | IEC 60068-2-27                                                                                                                                                                         |                                                  |                                                                                              |             |
| Drop                 |  | IEC 60068-2-32                                                                                                                                                                         |                                                  |                                                                                              |             |
| Vibration            |  | IEC 60068-2-64                                                                                                                                                                         |                                                  |                                                                                              |             |
| RoHS II              |  | Yes                                                                                                                                                                                    |                                                  |                                                                                              |             |
| Warranty             |  | 5 Years                                                                                                                                                                                |                                                  |                                                                                              |             |

\* Testing conditions may affect the VPN throughput





# Industrial Networking Solutions

## Protocol Gateways

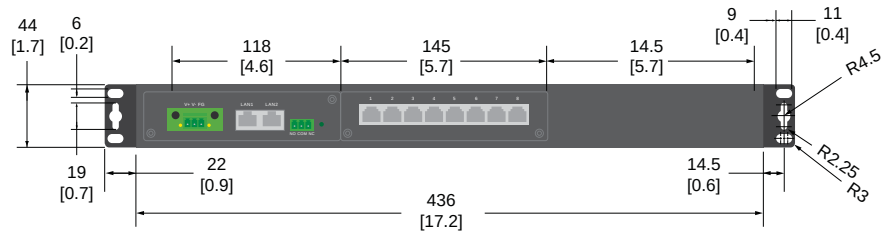


Advanced Protocol Gateways | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating

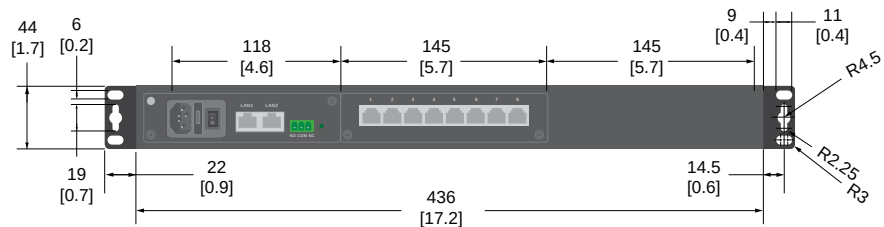


| 8-Port RS232/485/422 and 2-Port Ethernet DNP3, Modbus, IEC 60870, IEC 61850 Protocol Gateways |                                          |                      |                    |                           |
|-----------------------------------------------------------------------------------------------|------------------------------------------|----------------------|--------------------|---------------------------|
| Part Number                                                                                   | RS-232<br>RS-422<br>RS-485<br>RJ45 Ports | 10/100<br>RJ45 Ports | Power<br>Connector | Features                  |
| PG5908-DC                                                                                     | 8                                        | 2                    | DC TB3             | Industrial EMC Protection |
| PG5908-US                                                                                     | 8                                        | 2                    | AC Inlet (US)      |                           |
| PG5908-EU                                                                                     | 8                                        | 2                    | AC Inlet (EU)      |                           |

**DC Terminal Block**



**AC Inlet**



### Feature Highlights:

- Dual 10/100Mbps Ethernet ports, Embedded IPsec VPN for enhanced security
- Remotely monitor, manage, and control industrial field devices
- Relay out indicator for Network link-status
- LCM display with 4-key touch pad for configuration
- Same hardware platform for different protocol conversion (Modbus TCP/RTU/ASCII, DNP3.0 TCP or serial, IEC 60870-5-101, IEC 60870-5-103, IEC 60870-5-104, IEC 61850)
- User friendly configuration with a Java-Based Windows utility



# Industrial Networking Solutions

## Specifications & Approvals



Advanced Protocol Gateways | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                 |                                      |
|-----------------------------|-------------------------------------------------|--------------------------------------|
| Ethernet Port               | 2 x RJ-45                                       |                                      |
| LAN Mode                    | Dual Subnets or LAN Redundancy                  |                                      |
| Compliance                  | IEEE 802.3 10BASE-T<br>IEEE 802.3u 100BASE-T(X) |                                      |
| Serial Interface            |                                                 |                                      |
| Connector                   | RJ45                                            |                                      |
| Mode                        | RS-232/422/485, software selectable             |                                      |
| Port(s)                     | 8                                               |                                      |
| Baud rate                   | 1,200~921,600 bps                               |                                      |
| Parity                      | None, Odd, Even, Space, Mark                    |                                      |
| Data bits                   | 5, 6, 7, 8                                      |                                      |
| Stop Bit                    | 1, 2                                            |                                      |
| Flow Control                | None, Xon/Xoff, RTS/CTS (RS-232 only)           |                                      |
| Power Management            |                                                 |                                      |
| Connector                   | AC                                              | IEC 60320-1 C14 AC Power Inlet       |
|                             | DC                                              | 5.08mm 3-pin Lockable Terminal Block |
| Input Voltage               | AC                                              | 100~240 VAC                          |
|                             | DC                                              | 24-48 VDC                            |
| Power Consumption           | AC                                              | 0.21A @100 VAC                       |
|                             | DC                                              | 0.54A @24 VDC                        |
| Reverse Polarity Protection | Yes (DC input only)                             |                                      |
| Redundancy                  | No                                              |                                      |
| Mechanicals                 |                                                 |                                      |
| Reset Button                | Yes                                             |                                      |
| Environmental Limits        |                                                 |                                      |
| Operating Temperature       | -20°C ~ 70°C (-4°F ~ 158°F)                     |                                      |
| Storage Temperature         | -40°~85°C (-40°~185°F)                          |                                      |
| Ambient Relative Humidity   | 5 ~ 95%RH, (non-condensing)                     |                                      |

| Software             |                                                                                                                                                                                        |                   |                     |       |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|-------|
| Protocols            | IPv4, ARP, ICMP, TCP, UDP, DHCP Client, DNS Client, Telnet, HTTP, HTTPS, SNMP v1/v2c/v3, Syslog, IPsec VPN peer-to-peer and peer-to-side, with a maximum VPN throughput of 37.9Mbps(*) |                   |                     |       |
| Features             | IPsec, OpenVPN, RSTP, PPTP                                                                                                                                                             |                   |                     |       |
| Regulatory Approvals |                                                                                                                                                                                        |                   |                     |       |
| Safety               | EN 60950-1/IEC60950-1 LVD                                                                                                                                                              |                   |                     |       |
| EMC                  | FCC Part 15, Subpart B, Class B<br>EN 55022, Class B<br>EN 61000-3-2<br>EN 61000-3-3<br>EN 55024                                                                                       |                   |                     |       |
| EMS Test             | Item                                                                                                                                                                                   |                   | Value               | Level |
| IEC 61000-4-2        | ESD                                                                                                                                                                                    | Contact Discharge | ±8 kV               | 4     |
|                      |                                                                                                                                                                                        | Air Discharge     | ±15 kV              | 4     |
| IEC 61000-4-3        | RS                                                                                                                                                                                     | Enclosure         | 10 V/m              | 3     |
| IEC 61000-4-4        | EFT                                                                                                                                                                                    | AC Power Port     | ±4.0KV              | 4     |
|                      |                                                                                                                                                                                        | DC Power Port     | ±4.0KV              | 4     |
|                      |                                                                                                                                                                                        | Signal Port       | ±2.0KV              | 3     |
| IEC 61000-4-5        | Surge                                                                                                                                                                                  | AC Power Port     | Line-to Line±2.0KV  | 4     |
|                      |                                                                                                                                                                                        | AC Power Port     | Line-to Earth±4.0KV | 4     |
|                      |                                                                                                                                                                                        | DC Power Ports    | Line-to Line±1.0KV  | 3     |
|                      |                                                                                                                                                                                        | DC Power Ports    | Line-to Earth±2.0KV | 3     |
|                      |                                                                                                                                                                                        | Signal Port       | Line-to Line±2.0KV  | 4     |
| IEC 61000-4-6        | CS                                                                                                                                                                                     | AC Power Port     | 10 Vrms             | 3     |
|                      |                                                                                                                                                                                        | DC Power Port     | 10 Vrms             | 3     |
|                      |                                                                                                                                                                                        | Signal Port       | 10 Vrms             | 3     |
| IEC 61000-4-8        | PFMF                                                                                                                                                                                   | Enclosure         | 1 A/m               | 3     |
| IEC 61000-4-11       | DIP                                                                                                                                                                                    | AC Power Port     | -                   | -     |
| Shock                | IEC 60068-2-27                                                                                                                                                                         |                   |                     |       |
| Drop                 | ISTA Test Procedure 2A                                                                                                                                                                 |                   |                     |       |
| Vibration            | IEC 60068-2-64                                                                                                                                                                         |                   |                     |       |
| RoHS                 | Yes                                                                                                                                                                                    |                   |                     |       |
| Warranty             | 5 Years                                                                                                                                                                                |                   |                     |       |

\* Testing conditions may affect the VPN throughput



# Industrial Networking Solutions

## Protocol Gateways



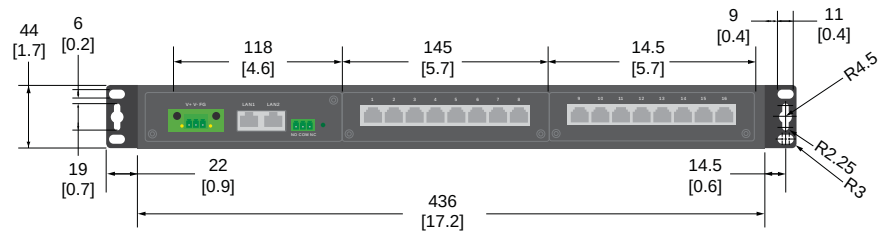
Advanced Protocol Gateways | 16-Port | 19" Rack Mount | Metal Housing | IP30 Rating



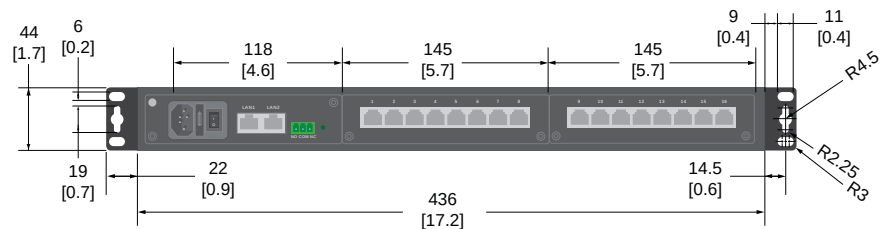
**16-Port RS232/485/422 and 2-Port Ethernet DNP3, Modbus, IEC 60870, IEC 61850 Protocol Gateways**

| Part Number | RS-232<br>RS-422<br>RS-485<br>RJ45 Ports | 10/100<br>RJ45 Ports | Power<br>Connector | Features                  |
|-------------|------------------------------------------|----------------------|--------------------|---------------------------|
| PG5916-DC   | 16                                       | 2                    | DC TB3             | Industrial EMC Protection |
| PG5916-US   | 16                                       | 2                    | AC Inlet (US)      |                           |
| PG5916-EU   | 16                                       | 2                    | AC Inlet (EU)      |                           |

**DC Terminal Block**



**AC Inlet**



### Feature Highlights:

- Dual 10/100Mbps Ethernet ports, Embedded IPsec VPN for enhanced security
- Remotely monitor, manage, and control industrial field devices
- Relay out indicator for Network link-status
- LCM display with 4-key touch pad for configuration
- Same hardware platform for different protocol conversion (Modbus TCP/RTU/ASCII, DNP3.0 TCP or serial, IEC 60870-5-101, IEC 60870-5-103, IEC 60870-5-104, IEC 61850)
- User friendly configuration with a Java-Based Windows utility



# Industrial Networking Solutions

## Specifications & Approvals



Advanced Protocol Gateways | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                 |                                      |
|-----------------------------|-------------------------------------------------|--------------------------------------|
| Ethernet Port               | 2 x RJ-45                                       |                                      |
| LAN Mode                    | Dual Subnets or LAN Redundancy                  |                                      |
| Compliance                  | IEEE 802.3 10BASE-T<br>IEEE 802.3u 100BASE-T(X) |                                      |
| Serial Interface            |                                                 |                                      |
| Connector                   | RJ45                                            |                                      |
| Mode                        | RS-232/422/485, software selectable             |                                      |
| Port(s)                     | 16                                              |                                      |
| Baud rate                   | 1,200~921,600 bps                               |                                      |
| Parity                      | None, Odd, Even, Space, Mark                    |                                      |
| Data bits                   | 5, 6, 7, 8                                      |                                      |
| Stop Bit                    | 1, 2                                            |                                      |
| Flow Control                | None, Xon/Xoff, RTS/CTS (RS-232 only)           |                                      |
| Power Management            |                                                 |                                      |
| Connector                   | AC                                              | IEC 60320-1 C14 AC Power Inlet       |
|                             | DC                                              | 5.08mm 3-pin Lockable Terminal Block |
| Input Voltage               | AC                                              | 100~240 VAC                          |
|                             | DC                                              | 24-48 VDC                            |
| Power Consumption           | AC                                              | 0.21A @100 VAC                       |
|                             | DC                                              | 0.54A @24 VDC                        |
| Reverse Polarity Protection | Yes (DC input only)                             |                                      |
| Redundancy                  | No                                              |                                      |
| Mechanicals                 |                                                 |                                      |
| Reset Button                | Yes                                             |                                      |
| Environmental Limits        |                                                 |                                      |
| Operating Temperature       | -20°C ~ 70°C (-4°F ~ 158°F)                     |                                      |
| Storage Temperature         | -40°~85°C (-40°~185°F)                          |                                      |
| Ambient Relative Humidity   | 5 ~ 95%RH, (non-condensing)                     |                                      |

| Software             |                                                                                                                                                                                        |                   |                     |       |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|-------|
| Protocols            | IPv4, ARP, ICMP, TCP, UDP, DHCP Client, DNS Client, Telnet, HTTP, HTTPS, SNMP v1/v2c/v3, Syslog, IPsec VPN peer-to-peer and peer-to-side, with a maximum VPN throughput of 37.9Mbps(*) |                   |                     |       |
| Features             | IPsec, OpenVPN, RSTP, PPTP                                                                                                                                                             |                   |                     |       |
| Regulatory Approvals |                                                                                                                                                                                        |                   |                     |       |
| Safety               | EN 60950-1/IEC60950-1 LVD                                                                                                                                                              |                   |                     |       |
| EMC                  | FCC Part 15, Subpart B, Class B<br>EN 55022, Class B<br>EN 61000-3-2<br>EN 61000-3-3<br>EN 55024                                                                                       |                   |                     |       |
| EMS Test             | Item                                                                                                                                                                                   |                   | Value               | Level |
| IEC 61000-4-2        | ESD                                                                                                                                                                                    | Contact Discharge | ±8 kV               | 4     |
|                      |                                                                                                                                                                                        | Air Discharge     | ±15 kV              | 4     |
| IEC 61000-4-3        | RS                                                                                                                                                                                     | Enclosure         | 10 V/m              | 3     |
| IEC 61000-4-4        | EFT                                                                                                                                                                                    | AC Power Port     | ±4.0KV              | 4     |
|                      |                                                                                                                                                                                        | DC Power Port     | ±4.0KV              | 4     |
|                      |                                                                                                                                                                                        | Signal Port       | ±2.0KV              | 3     |
| IEC 61000-4-5        | Surge                                                                                                                                                                                  | AC Power Port     | Line-to Line±2.0KV  | 4     |
|                      |                                                                                                                                                                                        | AC Power Port     | Line-to Earth±4.0KV | 4     |
|                      |                                                                                                                                                                                        | DC Power Ports    | Line-to Line±1.0KV  | 3     |
|                      |                                                                                                                                                                                        | DC Power Ports    | Line-to Earth±2.0KV | 3     |
|                      |                                                                                                                                                                                        | Signal Port       | Line-to Line±2.0KV  | 4     |
| IEC 61000-4-6        | CS                                                                                                                                                                                     | AC Power Port     | 10 Vrms             | 3     |
|                      |                                                                                                                                                                                        | DC Power Port     | 10 Vrms             | 3     |
|                      |                                                                                                                                                                                        | Signal Port       | 10 Vrms             | 3     |
| IEC 61000-4-8        | PFMF                                                                                                                                                                                   | Enclosure         | 1 A/m               | 3     |
| IEC 61000-4-11       | DIP                                                                                                                                                                                    | AC Power Port     | -                   | -     |
| Shock                | IEC 60068-2-27                                                                                                                                                                         |                   |                     |       |
| Drop                 | ISTA Test Procedure 2A                                                                                                                                                                 |                   |                     |       |
| Vibration            | IEC 60068-2-64                                                                                                                                                                         |                   |                     |       |
| RoHS                 | Yes                                                                                                                                                                                    |                   |                     |       |
| Warranty             | 5 Years                                                                                                                                                                                |                   |                     |       |

\* Testing conditions may affect the VPN throughput



# Industrial Networking Solutions

## Protocol Gateways

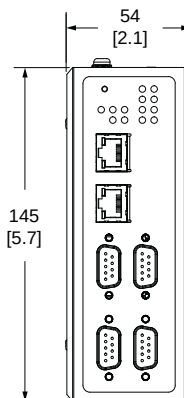
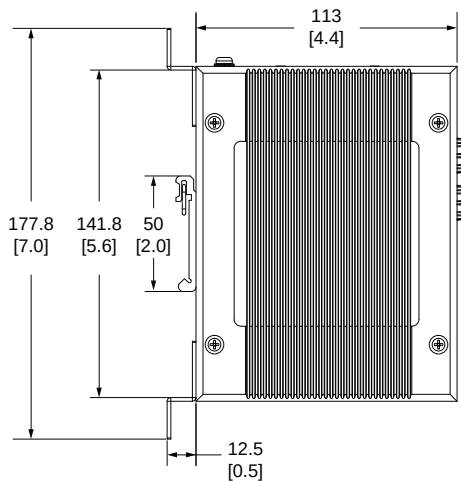


Industrial Protocol Gateways | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

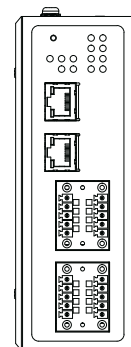


### 4-Port RS232/485/422 and 2-Port Ethernet DNP3, Modbus, IEC 60870, IEC 61850 Protocol Gateways

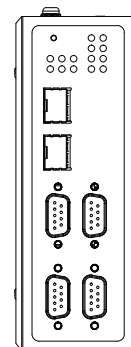
| Part Number          | RS-232<br>RS-422<br>RS-485<br>TB5 | RS-232<br>RS-422<br>RS-485<br>DB9 | 10/100<br>RJ45 Ports | 100/1000<br>SFP Slots | Isolation | Features                  |
|----------------------|-----------------------------------|-----------------------------------|----------------------|-----------------------|-----------|---------------------------|
| PG5904D-4P-DB        | N/A                               | 4                                 | 2                    | N/A                   | N/A       | Industrial EMC Protection |
| PG5904D-4P-TB        | 4                                 | N/A                               | 2                    | N/A                   | N/A       |                           |
| PG5904D-4P-SIS       | 4                                 | N/A                               | 2                    | N/A                   | 3 KV      |                           |
| PG5904D-4P-POE-DB    | N/A                               | 4                                 | 2 with PoE           | N/A                   | N/A       |                           |
| PG5904D-4P-POE-TB    | 4                                 | N/A                               | 2 with PoE           | N/A                   | N/A       |                           |
| PG5904D-4P-POE-SIS   | 4                                 | N/A                               | 2 with PoE           | N/A                   | 3 KV      |                           |
| PG5904D-4P-G-DB-SFP  | N/A                               | 4                                 | N/A                  | 2                     | N/A       |                           |
| PG5904D-4P-G-TB-SFP  | 4                                 | N/A                               | N/A                  | 2                     | N/A       |                           |
| PG5904D-4P-G-SIS-SFP | 4                                 | N/A                               | N/A                  | 2                     | 3 KV      |                           |



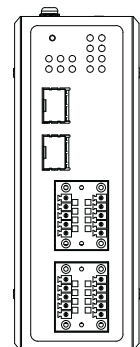
RJ45 DB9 Type



RJ45 TB5 Type



SFP DB9 Type



SFP TB5 Type

#### Feature Highlights:

- Dual 10/100 Mbps Ethernet port, with optional PoE PD or 100/1000 Mbps SFP Slot
- 4-port RS-232/422/485, baud rate up to 921.6 Kbps
- IP30 Metal housing with Aluminum heat sink
- Strong EMC protection, works in environments from -40 to 85 °C
- Same hardware platform for different protocol conversion  
(Modbus TCP/RTU/ASCII, DNP3.0 TCP or serial, IEC 60870-5-101, IEC 60870-5-103, IEC 60870-5-104, IEC 61850)
- User friendly configuration with a Java-Based Windows utility
- Embedded IPsec VPN for enhanced security



# Industrial Networking Solutions

## Specifications & Approvals



Industrial Protocol Gateways | DIN-Rail/Wall Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                                                                                                                                                                                           |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet Port               | 2x 10/100BASE-T(X) RJ-45 or<br>2x 100/1000 SFP Slots                                                                                                                                                                      |
| LAN-port Mode               | Dual Subnets or LAN Redundancy                                                                                                                                                                                            |
| Compliance                  | IEEE 802.3 for 10BASE-T<br>IEEE 802.3u for 100BASE-T(X)<br>IEEE 802.3af for Power over Ethernet PD<br>(PoE version only)<br>IEEE 802.3u for 100BASE-X (SFP version only)<br>IEEE 802.3z for 1000BASE-X (SFP version only) |
| USB Interface               |                                                                                                                                                                                                                           |
| Speed                       | USB 2.0                                                                                                                                                                                                                   |
| Connector                   | USB A Type x 1                                                                                                                                                                                                            |
| Power Management            |                                                                                                                                                                                                                           |
| Connector                   | Terminal Block                                                                                                                                                                                                            |
| Input Voltage               | 12-48 VDC, or 48 VDC (supplied by PoE)                                                                                                                                                                                    |
| Power Consumption           | 0.65A @12 VDC (max.)                                                                                                                                                                                                      |
| Power Redundancy            | Yes                                                                                                                                                                                                                       |
| Reverse Polarity Protection | Yes                                                                                                                                                                                                                       |
| Relay Output                | 1A @ 30 VDC (normal open)                                                                                                                                                                                                 |
| Physical Characteristics    |                                                                                                                                                                                                                           |
| Reset Button                | Yes                                                                                                                                                                                                                       |
| Environment Limits          |                                                                                                                                                                                                                           |
| Operating                   | -40°C~85°C (-40°F~185°F)                                                                                                                                                                                                  |
| Storage                     | -40°C~85°C (-40°F~185°F)                                                                                                                                                                                                  |
| Humidity                    | 5%~95% RH, (non-condensing)                                                                                                                                                                                               |
| Software                    |                                                                                                                                                                                                                           |
| Protocols                   | IPv4, ARP, ICMP, TCP, UDP, DHCP Client,<br>DNS Client, Telnet, HTTP, HTTPS,<br>SNMP v1/v2c/v3, Syslog,<br>IPsec VPN peer-to-peer and peer-to-side,<br>with a maximum VPN throughput of 37.9Mbps(*)                        |
| Configuration               | Web interface, Telnet, Device Management Utility<br>(basic device settings)<br><br>eNode Designer windows Utility<br>(protocol conversion related settings)                                                               |
| Features                    | IPsec, OpenVPN, RSTP, PPTP                                                                                                                                                                                                |

| Serial Interface     |                                                                                   |                                               |                                                                                                        |             |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------|
| Connector            | 1x2 5 pin 3.81mm Terminal Block, or D-sub9 connector                              |                                               |                                                                                                        |             |
| Ports                | 4                                                                                 |                                               |                                                                                                        |             |
| Mode                 | RS-232/422/485, software selectable                                               |                                               |                                                                                                        |             |
| Baud Rate            | 1,200~921,600 bps                                                                 |                                               |                                                                                                        |             |
| Parity               | None, Odd, Even, Space, Mark                                                      |                                               |                                                                                                        |             |
| Data Bits            | 7,8                                                                               |                                               |                                                                                                        |             |
| Stop Bits            | 1, 2                                                                              |                                               |                                                                                                        |             |
| Flow Control         | None, Xon/Xoff, RTS/CTS                                                           |                                               |                                                                                                        |             |
| Isolation            | 3 kV                                                                              |                                               |                                                                                                        |             |
| Regulatory Approvals |                                                                                   |                                               |                                                                                                        |             |
| Safety               | UL61010-2-201                                                                     |                                               |                                                                                                        |             |
| EMC                  | FCC Part 15, Subpart B, Class A<br>EN 55032, EN 61000-3-2, EN 61000-3-3, EN 55024 |                                               |                                                                                                        |             |
| EMS Test             | Item                                                                              |                                               | Value                                                                                                  | Level       |
| IEC 61000-4-2        | ESD                                                                               | Contact Discharge<br>Air Discharge            | ±8kV<br>±15kV                                                                                          | 4<br>4      |
| IEC 61000-4-3        | RS                                                                                | 80-1000MHz                                    | 10 V/m                                                                                                 | 3           |
| IEC 61000-4-4        | EFT                                                                               | AC Power Port<br>Signal Port                  | ±2.0KV<br>±2.0KV                                                                                       | 3<br>4      |
| IEC 61000-4-5        | Surge                                                                             | AC Power Port<br>AC Power Port<br>Signal Port | Line-to Line±1.0KV<br>Line-to Earth±2.0KV<br>Line-to Earth±2.0KV                                       | 3<br>3<br>3 |
| IEC 61000-4-6        | CS                                                                                | 0.15-80MHz                                    | 10 Vrms                                                                                                | 3           |
| IEC 61000-4-8        | PFMF                                                                              | Enclosure                                     | 10 A/m                                                                                                 | 3           |
| IEC 61000-4-11       | DIP                                                                               | AC Power Port                                 | 1. >95%,Reduction,<br>0.5period<br>2. 30%, Reduction,<br>25 period<br>3. >95%,Reduction,<br>250 period | -           |
| Shock                | IEC 60068-2-27                                                                    |                                               |                                                                                                        |             |
| Drop                 | IEC 60068-2-32                                                                    |                                               |                                                                                                        |             |
| Vibration            | IEC 60068-2-64                                                                    |                                               |                                                                                                        |             |
| RoHS II              | Yes                                                                               |                                               |                                                                                                        |             |
| Warranty             | 5 Years                                                                           |                                               |                                                                                                        |             |

\* Testing conditions may affect the VPN throughput



# Industrial Networking Solutions

## Protocol Gateways

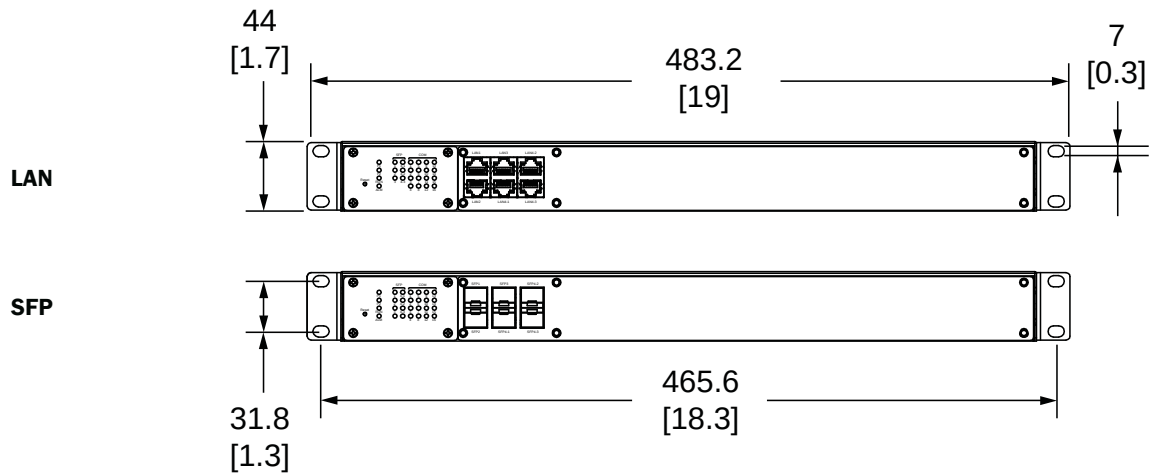


Industrial Protocol Gateways | 6-Port | 19" Rack Mount | Metal Housing | IP30 Rating



6-Port (SFP or RJ45) DNP3, Modbus, IEC 60870, IEC 61850 Protocol Gateways

| Part Number     | Input Voltage             | Fast Ethernet Ports | Serial Ports | Features                                           |
|-----------------|---------------------------|---------------------|--------------|----------------------------------------------------|
| PG5900A         | 24-48 VDC                 | 6 (RJ45)            | N/A          | Industrial EMC Protection<br>IEC 61850-3 Certified |
| PG5900A-6SFP    |                           | 6 (SFP Slot)        | N/A          |                                                    |
| PG5900A-HV      | 100-240VAC/<br>100-370VDC | 6 (RJ45)            | N/A          |                                                    |
| PG5900A-6SFP-HV |                           | 6 (SFP Slot)        | N/A          |                                                    |



### Feature Highlights:

- Compliant with IEC 61850-3 and IEEE 1613 Power Substation Standards
- Isolated redundant power inputs with 24-48 VDC ,100-240 VAC, 100-370 VDC
- Extreme EMC protection according to IEC61850-3. Works in environments from -40 to 85 °C
- Same hardware platform for different protocol conversion (Modbus TCP, DNP3.0 over Ethernet, IEC 60870-5-104, IEC 61850)
- User friendly configuration with a Java-Based Windows utility
- Embedded IPsec VPN for enhanced security





# Industrial Networking Solutions

## Specifications & Approvals



Industrial Protocol Gateways | 6-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                                                                                                                                                         |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet Port               | 6 x RJ-45 or 6 x SFP slot                                                                                                                                                               |
| LAN Mode                    | Dual Subnets or LAN Redundancy*                                                                                                                                                         |
| Compliance                  | IEEE 802.3 10BASE-T<br>IEEE 802.3u 100BASE-T(X) and 100BASE-FX                                                                                                                          |
| Power Management            |                                                                                                                                                                                         |
| Connector                   | 10-Pin Terminal Block                                                                                                                                                                   |
| Input Voltage               | 24-48 VDC<br>100-240 VAC/ 100-370 VDC for HV Series                                                                                                                                     |
| Power Consumption           | 0.73A @ 24 VDC<br>0.35A @ 100 VAC<br>0.2A @ 100 VDC                                                                                                                                     |
| Reverse Polarity Protection | Yes (Two Modules)                                                                                                                                                                       |
| Redundancy                  | Yes                                                                                                                                                                                     |
| Mechanicals                 |                                                                                                                                                                                         |
| Reset Button                | Yes                                                                                                                                                                                     |
| Environmental Limits        |                                                                                                                                                                                         |
| Operating Temperature       | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                                                                                            |
| Storage Temperature         | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                                                                                            |
| Ambient Relative Humidity   | 5 ~ 95% RH, (non-condensing)                                                                                                                                                            |
| Software                    |                                                                                                                                                                                         |
| Protocols                   | IPv4, ARP, ICMP, TCP, UDP, DHCP Client, DNS Client, Telnet, HTTP, HTTPS, SNMP v1/v2c/v3, Syslog, IPsec VPN peer-to-peer and peer-to-side, with a maximum VPN throughput of 37.9Mbps(**) |
| Features                    | IPsec, OpenVPN, RSTP, PPTP                                                                                                                                                              |

\* 4 ports can operate in 4 subnets or redundancy more. Port 4-5-6 work as Unmanaged switch.

\*\* Testing conditions may affect the VPN throughput.

| Regulatory Approvals |                                                                                                                                                                      |                                               |                                     |             |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------|-------------|
| Safety               | EN 61010-2-201                                                                                                                                                       |                                               |                                     |             |
| EMC                  | FCC Part 15, Subpart B, Class B<br>EN 55032, Class B<br>EN 61000-6-2, Class B<br>EN 61000-3-2<br>EN 61000-3-3<br>EN 55024<br>EN 61000-6-4<br>IEC 61850-3 / IEEE 1613 |                                               |                                     |             |
| EMS Test             | Item                                                                                                                                                                 |                                               | Value                               | Level       |
| IEC 61000-4-2        | ESD                                                                                                                                                                  | Contact Discharge<br>Air Discharge            | ±8 kV<br>±15 kV                     | 4<br>4      |
| IEC 61000-4-3        | RS                                                                                                                                                                   | Enclosure                                     | 10 V/m                              | 3           |
| IEC 61000-4-4        | EFT                                                                                                                                                                  | AC Power Port<br>DC Power Port<br>Signal Port | ±4.0KV<br>±4.0KV<br>±4.0KV          | 4<br>4<br>4 |
| IEC 61000-4-5        | Surge                                                                                                                                                                | AC Power Port                                 | Line-to Line±2.0KV                  | 4           |
|                      |                                                                                                                                                                      | AC Power Port                                 | Line-to Earth±4.0KV                 | 4           |
|                      |                                                                                                                                                                      | DC Power Port                                 | Line-to Line±1.0KV                  | 3           |
|                      |                                                                                                                                                                      | DC Power Port                                 | Line-to Earth±2.0KV                 | 3           |
|                      |                                                                                                                                                                      | Signal Port                                   | Line-to Line±2.0KV                  | 4           |
| IEC 61000-4-6        | CS                                                                                                                                                                   | AC Power Port<br>DC Power Port<br>Signal Port | 10 Vrms<br>10 Vrms<br>10 Vrms       | 3<br>3<br>3 |
| IEC 61000-4-8        | PFMF                                                                                                                                                                 | Enclosure                                     | 100 A/m                             | 5           |
| IEC 61000-4-10       | Damped Oscillatory Magnetic Field                                                                                                                                    | Enclosure                                     | 100 A/m                             | 5           |
| IEC 61000-4-11       | DIP                                                                                                                                                                  | AC Power Port                                 | -                                   | -           |
| IEC 61000-4-12       | Damped Oscillatory                                                                                                                                                   | AC Power Port                                 | 2.5 KV common,<br>1 KV differential | 3           |
|                      |                                                                                                                                                                      | Signal Port                                   | 2.5 KV common,<br>1 KV differential | 3           |
| Shock                | MIL-STD-810F Method 516.5                                                                                                                                            |                                               |                                     |             |
| Drop                 | MIL-STD-810F Method 516.5                                                                                                                                            |                                               |                                     |             |
| Vibration            | MIL-STD-810F Method 514.5 C-1 & C-2                                                                                                                                  |                                               |                                     |             |
| RoHS                 | Yes                                                                                                                                                                  |                                               |                                     |             |
| Warranty             | 5 Years                                                                                                                                                              |                                               |                                     |             |



# Industrial Networking Solutions

## Protocol Gateways

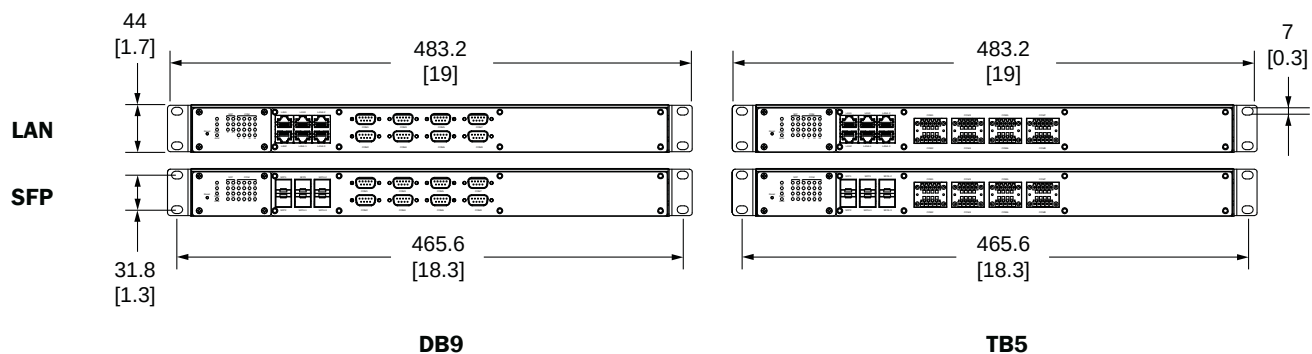


Industrial Protocol Gateways | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating



### 8-Serial and 6-Ethernet DNP3, Modbus, IEC60870, IEC61850 Protocol Converters

| Part Number         | Input Voltage               | Fast Ethernet Ports | Serial Ports | Isolation | Features                                           |
|---------------------|-----------------------------|---------------------|--------------|-----------|----------------------------------------------------|
| PG5908A             | 24-48 VDC                   | 6 (RJ45)            | 8 x DB9      | N/A       | Industrial EMC Protection<br>IEC 61850-3 Certified |
| PG5908A-TB          |                             | 6 (RJ45)            | 8 x TB5      | N/A       |                                                    |
| PG5908A-8P-SIS      |                             | 6 (RJ45)            | 8 x TB5      | 2.5KV     |                                                    |
| PG5908A-6SFP        |                             | 6 (SFP Slot)        | 8 x DB9      | N/A       |                                                    |
| PG5908A-6SFP-TB     |                             | 6 (SFP Slot)        | 8 x TB5      | N/A       |                                                    |
| PG5908A-6SFP-SIS    |                             | 6 (SFP Slot)        | 8 x TB5      | 2.5KV     |                                                    |
| PG5908A-HV          | 100-240 VAC/<br>100-370 VDC | 6 (RJ45)            | 8 x DB9      | N/A       |                                                    |
| PG5908A-TB-HV       |                             | 6 (RJ45)            | 8 x TB5      | N/A       |                                                    |
| PG5908A-SIS-HV      |                             | 6 (RJ45)            | 8 x TB5      | 2.5KV     |                                                    |
| PG5908A-6SFP-HV     |                             | 6 (SFP Slot)        | 8 x DB9      | N/A       |                                                    |
| PG5908A-6SFP-TB-HV  |                             | 6 (SFP Slot)        | 8 x TB5      | N/A       |                                                    |
| PG5908A-6SFP-SIS-HV |                             | 6 (SFP Slot)        | 8 x TB5      | 2.5KV     |                                                    |



### Feature Highlights:

- Compliant with IEC 61850-3 and IEEE 1613 Power Substation Standards
- 8 or 16-port RS-232/422/485, baud rate up to 921.6 Kbps
- Isolated redundant power inputs with 24-48 VDC ,100-240 VAC, 100-370 VDC variations
- Works in environments from -40 to 85 °C
- Same hardware platform for different protocol conversion (Modbus TCP/RTU/ASCII, DNP3.0 TCP or serial, IEC 60870-5-101, IEC 60870-5-103, IEC 60870-5-104, IEC 61850)
- User friendly configuration with a Java-Based Windows utility
- Embedded IPsec VPN for enhanced security



# Industrial Networking Solutions

## Specifications & Approvals



Industrial Protocol Gateways | 8-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                                                                                                                                                         |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet Port               | 6 x RJ-45 or 6 x SFP slot                                                                                                                                                               |
| LAN Mode                    | Dual Subnets or LAN Redundancy*                                                                                                                                                         |
| Compliance                  | IEEE 802.3 10BASE-T<br>IEEE 802.3u 100BASE-T(X) and 100BASE-FX                                                                                                                          |
| Serial Interface            |                                                                                                                                                                                         |
| Connector                   | 5-Pin 5.08mm Terminal Block or D-Sub9 connector                                                                                                                                         |
| Port(s)                     | 8                                                                                                                                                                                       |
| Mode                        | RS-232/422/485, software selectable                                                                                                                                                     |
| Baud rate                   | 50~921,600 bps                                                                                                                                                                          |
| Parity                      | None, Odd, Even, Space, Mark                                                                                                                                                            |
| Data bits                   | 5,6,7,8                                                                                                                                                                                 |
| Stop Bit                    | 1,2                                                                                                                                                                                     |
| Flow Control                | None, Xon/Xoff, RTS/CTS (RS-232 only)                                                                                                                                                   |
| Power Management            |                                                                                                                                                                                         |
| Connector                   | 10-Pin Terminal Block                                                                                                                                                                   |
| Input Voltage               | 24-48 VDC<br>100-240 VAC/ 100-370 VDC for HV Series                                                                                                                                     |
| Power Consumption           | 0.73A @ 24 VDC<br>0.35A @ 100 VAC<br>0.2A @ 100 VDC                                                                                                                                     |
| Reverse Polarity Protection | Yes (Two Modules)                                                                                                                                                                       |
| Redundancy                  | Yes                                                                                                                                                                                     |
| Mechanicals                 |                                                                                                                                                                                         |
| Reset Button                | Yes                                                                                                                                                                                     |
| Environmental Limits        |                                                                                                                                                                                         |
| Operating Temperature       | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                                                                                            |
| Storage Temperature         | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                                                                                            |
| Ambient Relative Humidity   | 5 ~ 95% RH, (non-condensing)                                                                                                                                                            |
| Software                    |                                                                                                                                                                                         |
| Protocols                   | IPv4, ARP, ICMP, TCP, UDP, DHCP Client, DNS Client, Telnet, HTTP, HTTPS, SNMP v1/v2c/v3, Syslog, IPsec VPN peer-to-peer and peer-to-side, with a maximum VPN throughput of 37.9Mbps(**) |
| Features                    | IPsec, OpenVPN, RSTP, PPTP                                                                                                                                                              |

\* 4 ports can operate in 4 subnets or redundancy more. Port 4-5-6 work as Unmanaged switch.

\*\* Testing conditions may affect the VPN throughput.

| Regulatory Approvals |                                                                                                                                                                      |                                               |                                  |             |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|----------------------------------|-------------|
| Safety               | EN 61010-2-201                                                                                                                                                       |                                               |                                  |             |
| EMC                  | FCC Part 15, Subpart B, Class B<br>EN 55032, Class B<br>EN 61000-6-2, Class B<br>EN 61000-3-2<br>EN 61000-3-3<br>EN 55024<br>EN 61000-6-4<br>IEC 61850-3 / IEEE 1613 |                                               |                                  |             |
| EMS Test             | Item                                                                                                                                                                 |                                               | Value                            | Level       |
| IEC 61000-4-2        | ESD                                                                                                                                                                  | Contact Discharge<br>Air Discharge            | ±8 kV<br>±15 kV                  | 4<br>4      |
| IEC 61000-4-3        | RS                                                                                                                                                                   | Enclosure Ports                               | 10 V/m                           | 3           |
| IEC 61000-4-4        | EFT                                                                                                                                                                  | AC Power Port<br>DC Power Port<br>Signal Port | ±4.0KV<br>±4.0KV<br>±4.0KV       | 4<br>4<br>4 |
| IEC 61000-4-5        | Surge                                                                                                                                                                | AC Power Port                                 | Line-to Line±2.0KV               | 4           |
|                      |                                                                                                                                                                      | AC Power Port                                 | Line-to Earth±4.0KV              | 4           |
|                      |                                                                                                                                                                      | DC Power Port                                 | Line-to Line±1.0KV               | 3           |
|                      |                                                                                                                                                                      | DC Power Port                                 | Line-to Earth±2.0KV              | 3           |
| IEC 61000-4-6        | CS                                                                                                                                                                   | Signal Port                                   | Line-to Line±2.0KV               | 4           |
|                      |                                                                                                                                                                      | AC Power Port                                 | 10 Vrms                          | 3           |
|                      |                                                                                                                                                                      | DC Power Port                                 | 10 Vrms                          | 3           |
|                      |                                                                                                                                                                      | Signal Port                                   | 10 Vrms                          | 3           |
| IEC 61000-4-8        | PfMF                                                                                                                                                                 | Enclosure                                     | 100 A/m                          | 5           |
| IEC 61000-4-10       | Damped Oscillatory Magnetic Field                                                                                                                                    | Enclosure                                     | 100 A/m                          | 5           |
| IEC 61000-4-11       | DIP                                                                                                                                                                  | AC Power Port                                 | -                                | -           |
| IEC 61000-4-12       | Damped Oscillatory                                                                                                                                                   | AC Power Port                                 | 2.5 KV common, 1 KV differential | 3           |
|                      |                                                                                                                                                                      | Signal Port                                   | 2.5 KV common, 1 KV differential | 3           |
| Shock                | MIL-STD-810F Method 516.5                                                                                                                                            |                                               |                                  |             |
| Drop                 | MIL-STD-810F Method 516.5                                                                                                                                            |                                               |                                  |             |
| Vibration            | MIL-STD-810F Method 514.5 C-1 & C-2                                                                                                                                  |                                               |                                  |             |
| RoHS                 | Yes                                                                                                                                                                  |                                               |                                  |             |
| Warranty             | 5 Years                                                                                                                                                              |                                               |                                  |             |



# Industrial Networking Solutions

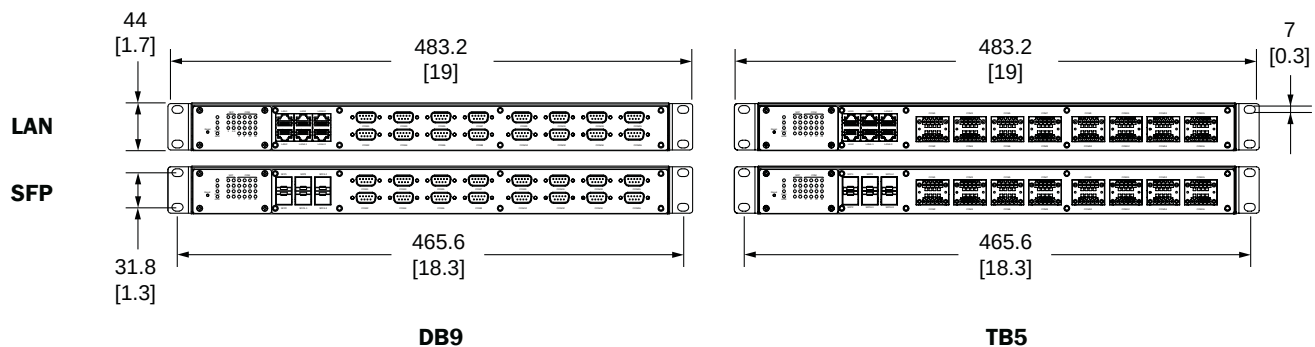
## Modbus Gateways



Industrial Protocol Gateways | 16-Port | 19" Rack Mount | Metal Housing | IP30 Rating



| 16-Serial and 6-Ethernet DNP3, Modbus, IEC60870, IEC61850 Protocol Converters |                             |                     |              |           |                                                                                         |
|-------------------------------------------------------------------------------|-----------------------------|---------------------|--------------|-----------|-----------------------------------------------------------------------------------------|
| Part Number                                                                   | Input Voltage               | Fast Ethernet Ports | Serial Ports | Isolation | Features                                                                                |
| PG5916A                                                                       | 24-48 VDC                   | 6 (RJ45)            | 16 x DB9     | N/A       | Industrial EMC Protection<br>IEC 61850-3 Certified<br>Concentrator<br>Device Redundancy |
| PG5916A-TB                                                                    |                             | 6 (RJ45)            | 16 x TB5     | N/A       |                                                                                         |
| PG5916A-8P-SIS                                                                |                             | 6 (RJ45)            | 16 x TB5     | 2.5KV     |                                                                                         |
| PG5916A-6SFP                                                                  |                             | 6 (SFP Slot)        | 16 x DB9     | N/A       |                                                                                         |
| PG5916A-6SFP-TB                                                               |                             | 6 (SFP Slot)        | 16 x TB5     | N/A       |                                                                                         |
| PG5916A-6SFP-SIS                                                              |                             | 6 (SFP Slot)        | 16 x TB5     | 2.5KV     |                                                                                         |
| PG 5916A-HV                                                                   | 100-240 VAC/<br>100-370 VDC | 6 (RJ45)            | 16 x DB9     | N/A       |                                                                                         |
| PG 5916A-TB-HV                                                                |                             | 6 (RJ45)            | 16 x TB5     | N/A       |                                                                                         |
| PG 5916A-SIS-HV                                                               |                             | 6 (RJ45)            | 16 x TB5     | 2.5KV     |                                                                                         |
| PG5916A-6SFP-HV                                                               |                             | 6 (SFP Slot)        | 16 x DB9     | N/A       |                                                                                         |
| PG5916A-6SFP-TB-HV                                                            |                             | 6 (SFP Slot)        | 16 x TB5     | N/A       |                                                                                         |
| PG5916A-6SFP-SIS-HV                                                           |                             | 6 (SFP Slot)        | 16 x TB5     | 2.5KV     |                                                                                         |



### Feature Highlights:

- Compliant with IEC 61850-3 and IEEE 1613 Power Substation Standards
- 8 or 16-port RS-232/422/485, baud rate up to 921.6 Kbps
- Isolated redundant power inputs with 24-48 VDC ,100-240 VAC, 100-370 VDC variations
- Works in environments from -40 to 85 °C
- Same hardware platform for different protocol conversion (Modbus TCP/RTU/ASCII, DNP3.0 TCP or serial, IEC 60870-5-101, IEC 60870-5-103, IEC 60870-5-104, IEC 61850)
- User friendly configuration with a Java-Based Windows utility
- Embedded IPsec VPN for enhanced security



# Industrial Networking Solutions

## Specifications & Approvals



Industrial Protocol Gateways | 16-Port | 19" Rack Mount | Metal Housing | IP30 Rating

| Network Interface           |                                                                                                                                                                                         |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet Port               | 6 x RJ-45 or 6 x SFP slot                                                                                                                                                               |
| LAN Mode                    | Dual Subnets or LAN Redundancy*                                                                                                                                                         |
| Compliance                  | IEEE 802.3 10BASE-T<br>IEEE 802.3u 100BASE-T(X) and 100BASE-FX                                                                                                                          |
| Serial Interface            |                                                                                                                                                                                         |
| Connector                   | 5-Pin 5.08mm Terminal Block or D-Sub9 connector                                                                                                                                         |
| Port(s)                     | 16                                                                                                                                                                                      |
| Mode                        | RS-232/422/485, software selectable                                                                                                                                                     |
| Baud rate                   | 50~921,600 bps                                                                                                                                                                          |
| Parity                      | None, Odd, Even, Space, Mark                                                                                                                                                            |
| Data bits                   | 5,6,7,8                                                                                                                                                                                 |
| Stop Bit                    | 1,2                                                                                                                                                                                     |
| Flow Control                | None, Xon/Xoff, RTS/CTS (RS-232 only)                                                                                                                                                   |
| Power Management            |                                                                                                                                                                                         |
| Connector                   | 10-Pin Terminal Block                                                                                                                                                                   |
| Input Voltage               | 24-48 VDC<br>100-240 VAC/ 100-370 VDC for HV Series                                                                                                                                     |
| Power Consumption           | 0.73A @ 24 VDC<br>0.35A @ 100 VAC<br>0.2A @ 100 VDC                                                                                                                                     |
| Reverse Polarity Protection | Yes (Two Modules)                                                                                                                                                                       |
| Redundancy                  | Yes                                                                                                                                                                                     |
| Mechanicals                 |                                                                                                                                                                                         |
| Reset Button                | Yes                                                                                                                                                                                     |
| Environmental Limits        |                                                                                                                                                                                         |
| Operating Temperature       | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                                                                                            |
| Storage Temperature         | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                                                                                            |
| Ambient Relative Humidity   | 5 ~ 95% RH, (non-condensing)                                                                                                                                                            |
| Software                    |                                                                                                                                                                                         |
| Protocols                   | IPv4, ARP, ICMP, TCP, UDP, DHCP Client, DNS Client, Telnet, HTTP, HTTPS, SNMP v1/v2c/v3, Syslog, IPsec VPN peer-to-peer and peer-to-side, with a maximum VPN throughput of 37.9Mbps(**) |
| Features                    | IPsec, OpenVPN, RSTP, PPTP                                                                                                                                                              |

| Regulatory Approvals |                                                                                                                                                                      |                                               |                                     |             |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------|-------------|
| Safety               | EN 61010-2-201                                                                                                                                                       |                                               |                                     |             |
| EMC                  | FCC Part 15, Subpart B, Class B<br>EN 55032, Class B<br>EN 61000-6-2, Class B<br>EN 61000-3-2<br>EN 61000-3-3<br>EN 55024<br>EN 61000-6-4<br>IEC 61850-3 / IEEE 1613 |                                               |                                     |             |
| EMS Test             | Item                                                                                                                                                                 |                                               | Value                               | Level       |
| IEC 61000-4-2        | ESD                                                                                                                                                                  | Contact Discharge<br>Air Discharge            | ±8 kV<br>±15 kV                     | 4<br>4      |
| IEC 61000-4-3        | RS                                                                                                                                                                   | Enclosure Ports                               | 10 V/m                              | 3           |
| IEC 61000-4-4        | EFT                                                                                                                                                                  | AC Power Port<br>DC Power Port<br>Signal Port | ±4.0KV<br>±4.0KV<br>±4.0KV          | 4<br>4<br>4 |
| IEC 61000-4-5        | Surge                                                                                                                                                                | AC Power Port                                 | Line-to Line±2.0KV                  | 4           |
|                      |                                                                                                                                                                      | AC Power Port                                 | Line-to Earth±4.0KV                 | 4           |
|                      |                                                                                                                                                                      | DC Power Port                                 | Line-to Line±1.0KV                  | 3           |
|                      |                                                                                                                                                                      | DC Power Port                                 | Line-to Earth±2.0KV                 | 3           |
|                      |                                                                                                                                                                      | Signal Port                                   | Line-to Line±2.0KV                  | 4           |
| IEC 61000-4-6        | CS                                                                                                                                                                   | AC Power Port<br>DC Power Port<br>Signal Port | 10 Vrms<br>10 Vrms<br>10 Vrms       | 3<br>3<br>3 |
| IEC 61000-4-8        | PfMF                                                                                                                                                                 | Enclosure                                     | 100 A/m                             | 5           |
| IEC 61000-4-10       | Damped Oscillatory Magnetic Field                                                                                                                                    | Enclosure                                     | 100 A/m                             | 5           |
| IEC 61000-4-11       | DIP                                                                                                                                                                  | AC Power Port                                 | -                                   | -           |
| IEC 61000-4-12       | Damped Oscillatory                                                                                                                                                   | AC Power Port                                 | 2.5 KV common,<br>1 KV differential | 3           |
|                      |                                                                                                                                                                      | Signal Port                                   | 2.5 KV common,<br>1 KV differential | 3           |
| Shock                | MIL-STD-810F Method 516.5                                                                                                                                            |                                               |                                     |             |
| Drop                 | MIL-STD-810F Method 516.5                                                                                                                                            |                                               |                                     |             |
| Vibration            | MIL-STD-810F Method 514.5 C-1 & C-2                                                                                                                                  |                                               |                                     |             |
| RoHS                 | Yes                                                                                                                                                                  |                                               |                                     |             |
| Warranty             | 5 Years                                                                                                                                                              |                                               |                                     |             |

\* 4 ports can operate in 4 subnets or redundancy more. Port 4-5-6 work as Unmanaged switch.

\*\* Testing conditions may affect the VPN throughput.



# Industrial Networking Solutions

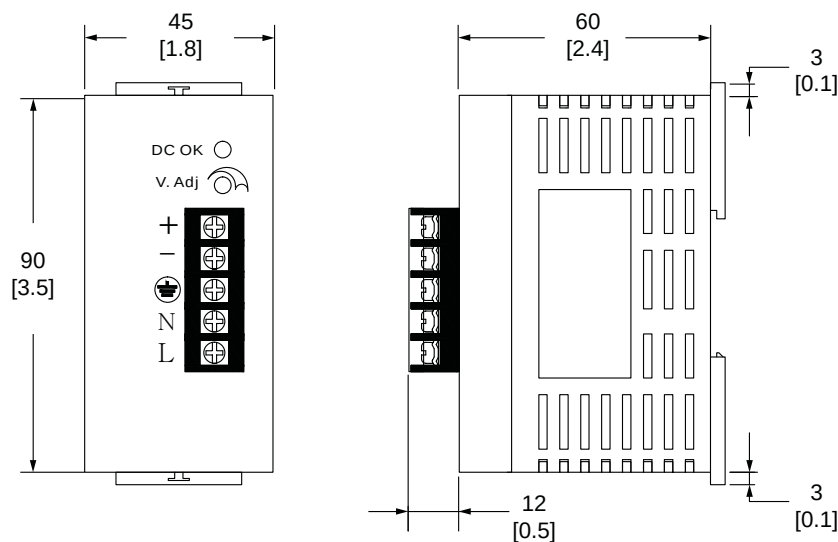
## Power Supplies



24 VDC Power Supplies | DIN-Rail/Wall Mount | Plastic Housing | IP20 Rating



| Part Number<br>[MFG #]              | Output<br>Power             | O/P Current<br>Loading<br>Rated | O/P<br>Current<br>Max. | Ripple<br>Noise | Efficiency | Over<br>Voltage<br>Protection | MTBF                                |
|-------------------------------------|-----------------------------|---------------------------------|------------------------|-----------------|------------|-------------------------------|-------------------------------------|
| <b>PS1024-24F</b><br>[AD1024-24F]   | DC 24V 24W<br>Single Output | 1A                              | 1A                     | 150mVp-p        | 83%        | 40VDC Max                     | Exceed 100,000 hrs<br>(11.42 years) |
| <b>PS1048-24FS</b><br>[AD1048-24FS] | DC 24V 48W<br>Single Output | 2A                              | 2A                     | 150mVp-p        | 83%        | 40VDC Max                     | Exceed 100,000 hrs<br>(11.42 years) |



### Feature Highlights:

- High power density
- Universal input range
- Convection cooled
- RoHS compliance
- 3 year warranty
- Great reliability
- DIN Rail / Wall bracket mounting solution
- Optional alarm signal / Redundant function
- Over voltage protection
- Overload protection
- Short circuit protection



# Industrial Networking Solutions

## Specifications & Approvals



24 VDC Power Supplies | DIN-Rail/Wall Mount | Plastic Housing | IP20 Rating

| General                        |              |                                                                      | Input                    |                   |                                                               |
|--------------------------------|--------------|----------------------------------------------------------------------|--------------------------|-------------------|---------------------------------------------------------------|
| Switching Frequency            |              | 66kHz                                                                | Input Voltage            |                   | 100~240VAC/120~370VDC                                         |
| Input Frequency                | Input-Output | 3000 VAC/4242 VDC                                                    | Input Frequency          |                   | 47~63 Hz                                                      |
|                                | Input-FG     | 1500 VAC/2121 VDC                                                    | Inrush Current           |                   | 11A/115VAC<br>Cold Start: 22A/230VAC                          |
|                                | Output-FG    | 500 VAC/710 VDC                                                      | Rated Input Current      |                   | 1A Max., Vi=100~240VAC                                        |
| Isolation Resistance           |              | 100MΩ when Input-Output @500VDC                                      | Leakage Current          |                   | Input-output 0.25mA, Input-FG 3.5mA                           |
| Operating Temperature          |              | -20°C ~ 50°C ambient (-4°F ~ 122°F)                                  | Output                   |                   |                                                               |
| Derating                       |              | 2.5% per degree from 50°C to 70°C                                    | Output Voltage accuracy  |                   | ±1%                                                           |
| Storage Temperature            |              | -40°C ~ 85°C (-40°F ~ 185°F)                                         | Minimum Load             |                   | 0%                                                            |
| Relative Humidity              |              | 5%~95% RH, Non-condensing                                            | Line Regulation          |                   | ±1%, measuring from low line to high line at rated load       |
| Temperature Coefficient        |              | ±0.04% of output voltage per °C                                      | Load Regulation          |                   | ±1%, measuring from 20% to 100% of rated load at 230VAC input |
| Altitude During Operation      |              | 2000m                                                                | Voltage Trim Range       |                   | ±10% (Min.)                                                   |
| Installation position          |              | Vertical                                                             | Rated Continuous Loading | PS1024-24F        | 4A@5VDC, 2A@12VDC, 1A@24VDC                                   |
| Vibration                      |              | Random vibration, 10~500Hz, 3 axise                                  |                          | PS1048-24FS       | 4A@12VDC, 3A@15VDC, 2A@24VDC, 1A@48VDC                        |
| Protection                     |              |                                                                      | Hold Up Time             |                   | 30mS Min., Full load@230VAC.                                  |
| Input Fuse                     |              | 2A/250V                                                              | Turn On Time             |                   | 300mS                                                         |
| Internal Surge Load Protection |              | Varistor, IEC6100-4-5                                                | Rise Time                |                   | 10ms                                                          |
| Short Circuit Protection       |              | Autorecovery                                                         | Fall Time                |                   | 35mS                                                          |
| Over Voltage Protection        |              | Autorecovery                                                         | Transient Response       | Recovery Time     | 2mS, Load change 50% to 100%                                  |
| Rated Over Load Protection     |              | 150~250 %                                                            |                          | Voltage Deviation | 5%, Load change 50% to 100%                                   |
| Overload protection            |              | Power limited                                                        | Regulatory Approvals     |                   |                                                               |
| Safety                         |              | UL 508 (Certificate)<br>CSA 22.2 (Certificate)<br>EN 60950 (Marking) | EMC Standards            |                   |                                                               |
| EMC Standards                  |              | EN55011                                                              |                          |                   |                                                               |
|                                |              | EN55022                                                              |                          |                   |                                                               |
|                                |              | EN61000-4-2                                                          |                          |                   |                                                               |
|                                |              | EN61000-4-3                                                          |                          |                   |                                                               |
|                                |              | EN61000-4-4                                                          |                          |                   |                                                               |
|                                |              | EN61000-4-5                                                          |                          |                   |                                                               |
|                                |              | EN61000-4-6                                                          |                          |                   |                                                               |
|                                |              | EN61000-4-8                                                          |                          |                   |                                                               |
| Warranty                       |              | 3 years                                                              |                          |                   |                                                               |





# Industrial Networking Solutions

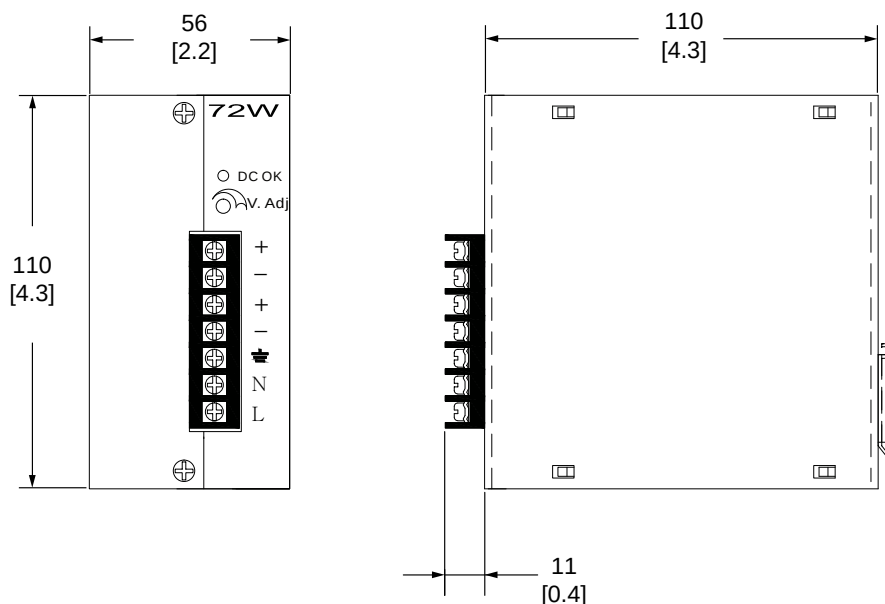
## Power Supplies



24 VDC Power Supplies | DIN-Rail/Wall Mount | Metal Housing | IP20 Rating



| Part Number<br>[MFG #]            | Output Power                 | O/P Current Loading Rated | O/P Current Max. | Ripple Noise | Efficiency | Over Voltage Protection | MTBF                              |
|-----------------------------------|------------------------------|---------------------------|------------------|--------------|------------|-------------------------|-----------------------------------|
| <b>PS1072-24F</b><br>[AD1072-24F] | DC 24V 72W<br>Single Output  | 3A                        | 3A               | 150mVp-p     | 81%        | 27~30VDC                | Exceed 60,000 hrs<br>(6.85 years) |
| <b>PS1100-24F</b><br>[AD1100-24F] | DC 24V 100W<br>Single Output | 4A                        | 4A               | 150mVp-p     | 81%        | 27~30VDC                | Exceed 60,000 hrs<br>(6.85 years) |



### Feature Highlights:

- High power density
- Universal input range
- Convection cooled
- RoHS compliance
- 3 year warranty
- Great reliability
- DIN Rail / Wall bracket mounting solution
- Optional alarm signal / Redundant function
- Over voltage protection
- Overload protection
- Short circuit protection



# Industrial Networking Solutions

## Specifications & Approvals



24 VDC Power Supplies | DIN-Rail/Wall Mount | Metal Housing | IP20 Rating

| General                        |              |                                                                                                                                                                                                      | Input                    |                   |                                                               |
|--------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------|---------------------------------------------------------------|
| Switching Frequency            |              | 85kHz                                                                                                                                                                                                | Input Voltage            |                   | 100~240VAC/120~370VDC                                         |
| Input Frequency                | Input-Output | 3000 VAC/4242 VDC                                                                                                                                                                                    | Input Frequency          |                   | 47~63 Hz                                                      |
|                                | Input-FG     | 1500 VAC/2121 VDC                                                                                                                                                                                    | Inrush Current           |                   | 22A/115VAC<br>Cold Start: 44A/230VAC                          |
|                                | Output-FG    | 500 VAC/710 VDC                                                                                                                                                                                      | Rated Input Current      |                   | 1.5A Max., Vi=100~240VAC                                      |
| Isolation Resistance           |              | 100MΩ when Input-Output @500VDC                                                                                                                                                                      | Leakage Current          |                   | Input-output 0.25mA, Inout-FG 3.5mA, Vi=250VAC                |
| Operating Temperature          |              | -20 °C ~ 50°C ambient (-4°F ~ 122°F)                                                                                                                                                                 | Output                   |                   |                                                               |
| Derating                       |              | 2.5% per degree from 50°C to 70°C                                                                                                                                                                    | Output Voltage accuracy  |                   | ±1%                                                           |
| Storage Temperature            |              | -40°C ~ 85°C (-40°F ~ 185°F)                                                                                                                                                                         | Minimum Load             |                   | 0%                                                            |
| Relative Humidity              |              | 5%~95% RH, Non-condensing                                                                                                                                                                            | Line Regulation          |                   | ±1%, measuring from low line to high line at rated load       |
| Temperature Coefficient        |              | ±0.04% of output voltage per °C                                                                                                                                                                      | Load Regulation          |                   | ±1%, measuring from 20% to 100% of rated load at 230VAC input |
| Altitude During Operation      |              | 2000m                                                                                                                                                                                                | Voltage Trim Range       |                   | ±10% (Min.)                                                   |
| Installation position          |              | Vertical                                                                                                                                                                                             | Rated Continuous Loading | PS1072-24F        | 6A@12VDC, 3A@24VDC, 1.5A@48VDC                                |
| Vibration                      |              | Random vibration, 10~500Hz, 3 axise                                                                                                                                                                  |                          | PS1100-24F        | 8A@12VDC, 4A@24VDC, 2A@48VDC                                  |
| Protection                     |              |                                                                                                                                                                                                      | Hold Up Time             | PS1072-24F        | 25mS Min., Full load@230VAC                                   |
| Input Fuse                     |              | 3.15A/250V                                                                                                                                                                                           |                          | PS1100-24F        | 20mS Min., Full load@230VAC                                   |
| Internal Surge Load Protection |              | Varistor, IEC6100-4-5                                                                                                                                                                                | Turn On Time             |                   | 1300mS                                                        |
| Short Circuit Protection       |              | Autorecovery                                                                                                                                                                                         | Rise Time                | PS1072-24F        | 10ms                                                          |
| Over Voltage Protection        |              | Autorecovery                                                                                                                                                                                         |                          | PS1100-24F        | 13ms                                                          |
| Rated Over Load Protection     |              | 160~200%                                                                                                                                                                                             | Fall Time                | PS1072-24F        | 35mS                                                          |
| Overload protection            |              | Power limited                                                                                                                                                                                        |                          | PS1100-24F        | 25mS                                                          |
| Regulatory Approvals           |              |                                                                                                                                                                                                      | Transient Response       | Recovery Time     | 2mS, Load change 50% to 100%                                  |
| Safety                         |              | UL 508 (Certificate)<br>CSA 22.2 (Certificate)<br>EN 60950 (Marking)                                                                                                                                 |                          | Voltage Deviation | 5%, Load change 50% to 100%                                   |
| EMC Standards                  |              | EN55011 Class B<br>EN55022 Class B<br>EN61000-4-2 Level 3<br>EN61000-4-3 Level 3<br>EN61000-4-4 Level 3<br>EN61000-4-5 Level 3<br>EN61000-4-6 Level 3<br>EN61000-4-8 Level 3<br>EN61000-4-11 Level 3 |                          |                   |                                                               |
| Warranty                       |              | 3 years                                                                                                                                                                                              |                          |                   |                                                               |



# Industrial Networking Solutions

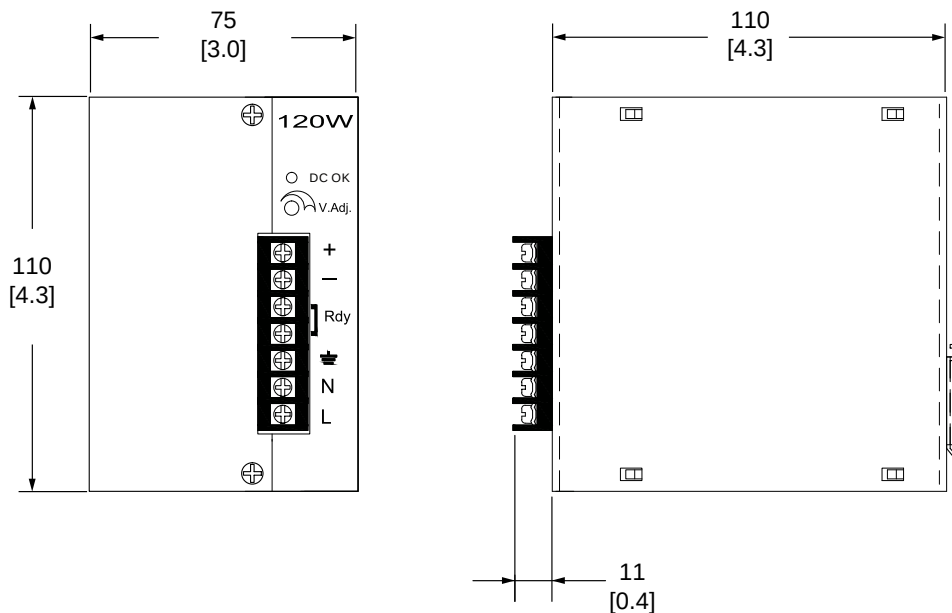
## Power Supplies



24/48 VDC Power Supplies | DIN-Rail/Wall Mount | Metal Housing | IP20 Rating



| Part Number<br>[MFG #]            | Output Power                 | O/P Current Loading Rated | O/P Current Max. | Ripple Noise | Efficiency | Over Voltage Protection | MTBF                              |
|-----------------------------------|------------------------------|---------------------------|------------------|--------------|------------|-------------------------|-----------------------------------|
| <b>PS1120-24F</b><br>[AD1120-24F] | DC 24V 120W<br>Single Output | 5A                        | 5A               | 150mVp-p     | 81%        | 27~30VDC                | Exceed 60,000 hrs<br>(6.85 years) |
| <b>PS1120-48F</b><br>[AD1120-48F] | DC 48V 120W<br>Single Output | 2.5A                      | 2.5A             | 250mVp-p     | 83%        | 52~56VDC                | Exceed 60,000 hrs<br>(6.85 years) |



### Feature Highlights:

- High power density
- Universal input range
- Convection cooled
- RoHS compliance
- 3 year warranty
- Great reliability
- DIN Rail / Wall bracket mounting solution
- Optional alarm signal / Redundant function
- Over voltage protection
- Overload protection
- Short circuit protection



# Industrial Networking Solutions

## Specifications & Approvals



24/48 VDC Power Supplies | DIN-Rail/Wall Mount | Metal Housing | IP20 Rating

| General                        |              |                                     | Input                    |                   |                                                                      |
|--------------------------------|--------------|-------------------------------------|--------------------------|-------------------|----------------------------------------------------------------------|
| Switching Frequency            |              | 85kHz                               | Input Voltage            |                   | 100~240VAC/120~370VDC                                                |
| Input Frequency                | Input-Output | 3000 VAC/4242 VDC                   | Input Frequency          |                   | 47~63 Hz                                                             |
|                                | Input-FG     | 1500 VAC/2121 VDC                   | Inrush Current           |                   | 22A/115VAC<br>Cold Start: 44A/230VAC                                 |
|                                | Output-FG    | 500 VAC/710 VDC                     | Rated Input Current      |                   | 2.5A Max., Vi=100~240VAC                                             |
| Isolation Resistance           |              | 100MΩ when Input-Output @500VDC     | Leakage Current          |                   | Input-output 0.25mA, Inout-FG 3.5mA, Vi=250VAC                       |
| Operating Temperature          |              | -20°C ~ 50°C ambient (-4°F ~ 122°F) | Output                   |                   |                                                                      |
| Derating                       |              | 2.5% per degree from 40°C to 60°C   | Output Voltage accuracy  |                   | ±1%                                                                  |
| Storage Temperature            |              | -40°C ~ 85°C (-40°F ~ 185°F)        | Minimum Load             |                   | 0%                                                                   |
| Relative Humidity              |              | 5%~95% RH, Non-condensing           | Line Regulation          |                   | ±1%, measuring from low line to high line at rated load              |
| Temperature Coefficient        |              | ±0.04% of output voltage per °C     | Load Regulation          |                   | ±1%, measuring from 20% to 100% of rated load at 230VAC input        |
| Altitude During Operation      |              | 2000m                               | Voltage Trim Range       |                   | ±10% (Min.)                                                          |
| Installation position          |              | Vertical                            | Rated Continuous Loading |                   | 10A@12VDC, 5A@24VDC, 2.5A@48VDC                                      |
| Vibration                      |              | Random vibration, 10~500Hz, 3 axise | Hold Up Time             |                   | 35mS Min., Full load@230VAC                                          |
| Protection                     |              |                                     | Turn On Time             |                   | 1300mS                                                               |
| Input Fuse                     |              | 3.15A/250V                          | Rise Time                |                   | 13ms                                                                 |
| Internal Surge Load Protection |              | Varistor, IEC6100-4-5               | Fall Time                |                   | 25mS                                                                 |
| Short Circuit Protection       |              | Autorecovery                        | Transient Response       | Recovery Time     | 2mS, Load change 50% to 100%                                         |
| Over Voltage Protection        |              | Autorecovery                        |                          | Voltage Deviation | 5%, Load change 50% to 100%                                          |
| Rated Over Load Protection     |              | 160~200%                            | Regulatory Approvals     |                   |                                                                      |
| Overload protection            |              | Power limited                       | Safety                   |                   | UL 508 (Certificate)<br>CSA 22.2 (Certificate)<br>EN 60950 (Marking) |
| EMC Standards                  |              | EN55011                             | Class B                  |                   |                                                                      |
|                                |              | EN55022                             | Class B                  |                   |                                                                      |
|                                |              | EN61000-4-2                         | Level 3                  |                   |                                                                      |
|                                |              | EN61000-4-3                         | Level 3                  |                   |                                                                      |
|                                |              | EN61000-4-4                         | Level 3                  |                   |                                                                      |
|                                |              | EN61000-4-5                         | Level 3                  |                   |                                                                      |
|                                |              | EN61000-4-6                         | Level 3                  |                   |                                                                      |
|                                |              | EN61000-4-8                         | Level 3                  |                   |                                                                      |
| Warranty                       |              | 3 years                             |                          |                   |                                                                      |



# Industrial Networking Solutions

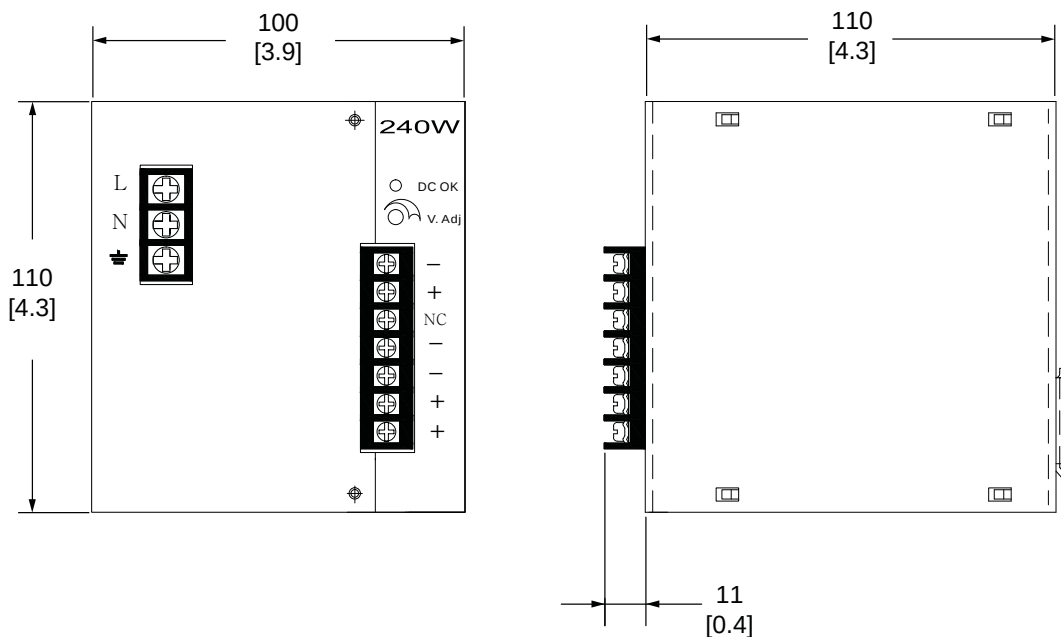
## Power Supplies



48 VDC Power Supplies | Active PFC | DIN-Rail/Wall Mount | Metal Housing | IP20 Rating



| Part Number<br>[MFG #]            | Output Power                 | O/P Current Loading Rated | O/P Current Max. | Ripple Noise | Efficiency | Over Voltage Protection | MTBF                              |
|-----------------------------------|------------------------------|---------------------------|------------------|--------------|------------|-------------------------|-----------------------------------|
| <b>PS1240-48C</b><br>[AD1240-48C] | DC 48V 240W<br>Single Output | 5A                        | 5A               | 250mVp-p     | 83%        | 52~56VDC                | Exceed 60,000 hrs<br>(6.85 years) |



### Feature Highlights:

- High power density
- Universal input range
- Convection cooled
- RoHS compliance
- 3 year warranty
- Great reliability
- DIN Rail / Wall bracket mounting solution
- Optional alarm signal / Redundant function
- Over voltage protection
- Overload protection
- Short circuit protection
- Active PFC to meet EN61000-3-2



# Industrial Networking Solutions

## Specifications & Approvals



48 VDC Power Supplies | Active PFC | DIN-Rail/Wall Mount | Metal Housing | IP20 Rating

| General                        |              |                                     | Input                    |                   |                                                                      |
|--------------------------------|--------------|-------------------------------------|--------------------------|-------------------|----------------------------------------------------------------------|
| Switching Frequency            |              | 132kHz                              | Input Voltage            |                   | 100~240VAC/120~370VDC                                                |
| Input Frequency                | Input-Output | 3000 VAC/4242 VDC                   | Input Frequency          |                   | 47~63 Hz                                                             |
|                                | Input-FG     | 1500 VAC/2121 VDC                   | Inrush Current           |                   | 22A/115VAC<br>Cold Start: 44A/230VAC                                 |
|                                | Output-FG    | 500 VAC/710 VDC                     | Rated Input Current      |                   | 5A Max., Vi=100~240VAC                                               |
| Isolation Resistance           |              | 100MΩ when Input-Output @500VDC     | Leakage Current          |                   | Input-output 0.25mA, Inout-FG 3.5mA, Vi=250VAC                       |
| Operating Temperature          |              | -20°C ~ 50°C ambient (-4°F ~ 122°F) | Output                   |                   |                                                                      |
| Derating                       |              | 2.5% per degree from 40°C to 60°C   | Output Voltage accuracy  |                   | ±1%                                                                  |
| Storage Temperature            |              | -40°C ~ 85°C (-40°F ~ 185°F)        | Minimum Load             |                   | 0%                                                                   |
| Relative Humidity              |              | 5%~95% RH, Non-condensing           | Line Regulation          |                   | ±1%, measuring from low line to high line at rated load              |
| Temperature Coefficient        |              | ±0.04% of output voltage per °C     | Load Regulation          |                   | ±1%, measuring from 20% to 100% of rated load at 230VAC input        |
| Altitude During Operation      |              | 2000m                               | Voltage Trim Range       |                   | ±10% (Min.)                                                          |
| Installation position          |              | Vertical                            | Rated Continuous Loading |                   | 20A@12VDC, 10A@24VDC, 5A@48VDC                                       |
| Vibration                      |              | Random vibration, 10~500Hz, 3 axise | Hold Up Time             |                   | 40mS Min., Full load@230VAC                                          |
| Protection                     |              |                                     | Turn On Time             |                   | 1200mS                                                               |
| Input Fuse                     |              | 5A/250V                             | Rise Time                |                   | 15ms                                                                 |
| Internal Surge Load Protection |              | Varistor, IEC6100-4-5               | Fall Time                |                   | 30mS                                                                 |
| Short Circuit Protection       |              | Autorecovery                        | Transient Response       | Recovery Time     | 2mS, Load change 50% to 100%                                         |
| Over Voltage Protection        |              | Autorecovery                        |                          | Voltage Deviation | 5%, Load change 50% to 100%                                          |
| Rated Over Load Protection     |              | 130~150%                            | Regulatory Approvals     |                   |                                                                      |
| Overload protection            |              | Power limited                       | Safety                   |                   | UL 508 (Certificate)<br>CSA 22.2 (Certificate)<br>EN 60950 (Marking) |
| EMC Standards                  |              | EN55011                             |                          |                   | Class B                                                              |
|                                |              | EN55022                             |                          |                   | Class B                                                              |
|                                |              | EN61000-4-2                         |                          |                   | Level 3                                                              |
|                                |              | EN61000-4-3                         |                          |                   | Level 3                                                              |
|                                |              | EN61000-4-4                         |                          |                   | Level 3                                                              |
|                                |              | EN61000-4-5                         |                          |                   | Level 3                                                              |
|                                |              | EN61000-4-6                         |                          |                   | Level 3                                                              |
|                                |              | EN61000-4-8                         |                          |                   | Level 3                                                              |
| Warranty                       |              | EN61000-4-11                        |                          |                   | Level 3                                                              |
|                                |              | 3 years                             |                          |                   |                                                                      |



# Industrial Networking Solutions

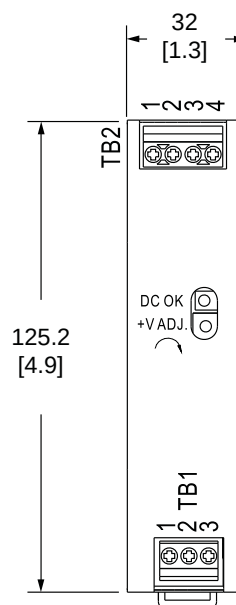
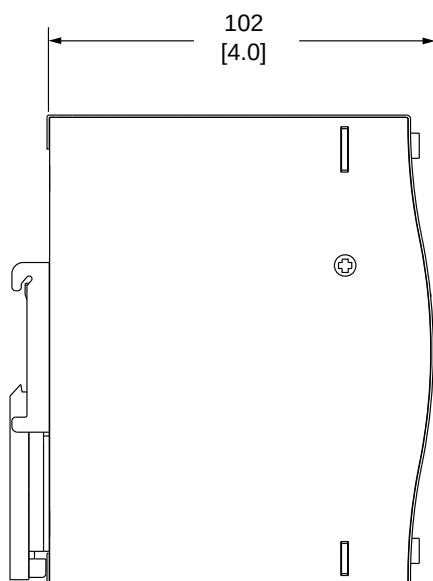
## Power Supplies



24 VDC Industrial Power Supply | DIN-Rail Mount | Metal Housing



| Part Number<br>[MFG #]           | Output<br>Power            | O/P Current<br>Loading<br>Rated | O/P<br>Current<br>Max. | Ripple<br>Noise | Efficiency | Over<br>Voltage<br>Protection | MTBF                                |
|----------------------------------|----------------------------|---------------------------------|------------------------|-----------------|------------|-------------------------------|-------------------------------------|
| <b>PSDR-75-24</b><br>[SDR-75-24] | 24VDC 75W<br>Single Output | 3.2A                            | 3.2A                   | 100mVp-p        | 89%        | 29-33VDC                      | Exceed 481,900 hrs<br>(55.77 years) |



### Feature Highlights:

- High Efficiency 90% and low power dissipation
- 150% peak load capability
- Protections: Short circuit/Overload/Over voltage/ Over temperature
- Cooling by free air convection
- Can be installed on DIN rail TS-35/7.5 or 15
- UL 508 (Industrial control equipment) approved
- EN61000-6-2(EN50082-2) industrial immunity level
- 100% full load bum-in test
- 3 years warranty





# Industrial Networking Solutions

## Specifications & Approvals



24 VDC Industrial Power Supply | DIN-Rail Mount | Metal Housing

| Output                |                                                                                                                                                                      |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Peak Current          | 4.69A                                                                                                                                                                |
| Peak Power            | 112.5W (3sec.)                                                                                                                                                       |
| Voltage Adj. Range    | 24 ~ 28V                                                                                                                                                             |
| Voltage Tolerance     | ±1.0%                                                                                                                                                                |
| Line Regulation       | ±0.5%                                                                                                                                                                |
| Load Regulation       | ±1.0%                                                                                                                                                                |
| Setup, Rise Time      | 1500ms, 60ms/230VAC<br>3000ms, 60ms/115VAC at full load                                                                                                              |
| Hold Up Time (Typ.)   | 80ms/230VAC<br>20ms/115VAC at full load                                                                                                                              |
| Input                 |                                                                                                                                                                      |
| Voltage Range         | 88 ~ 264VAC<br>124 ~ 370VDC<br>DC input operation possible by<br>connecting AC/L(+), AC/N(-)                                                                         |
| Frequency Range       | 47 ~ 63Hz                                                                                                                                                            |
| Efficiency (Typ.)     | 89%                                                                                                                                                                  |
| Ac Current (Typ.)     | 1.4A/115VAC<br>0.85A/230VAC                                                                                                                                          |
| Inrush Current (Typ.) | 30A/115VAC<br>50A/230VAC                                                                                                                                             |
| Leakage Current       | <1mA / 240VAC                                                                                                                                                        |
| Protection            |                                                                                                                                                                      |
| Overload              | Normally works within 110 ~ 150% rated output<br>power for more than 3 seconds and then shut down<br>o/p voltage, re-powr on to recover                              |
|                       | 150%~170% rated power, constant current limiting<br>with auto-recovery within 3 seconds, and then shut<br>down o/p voltage after 3 seconds, re-powr on to<br>recover |
| Over Voltage          | 29 ~ 33V                                                                                                                                                             |
|                       | Protection type Shut down o/p voltage,<br>re-powr on to recover                                                                                                      |
| Over Temperature      | 100°C ±10°C                                                                                                                                                          |
|                       | Protection type Shut down o/p voltage,<br>re-powr on to recover after<br>temperature goes down                                                                       |

| Environmental Limits    |           |                                                                                                                                     |
|-------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|
| Working Temp.           |           | -30°C ~ 70°C (-22°F ~ 158°F)                                                                                                        |
| Working Humidity        |           | 20 ~ 95% RH non-condensing                                                                                                          |
| Storage Temp., Humidity |           | -40°C ~ 85°C (-40°F ~ 185°F),<br>10 ~ 95% RH                                                                                        |
| Temp. Coefficient       |           | ±0.03%/°C (0 ~ 50°C)                                                                                                                |
| Regulatory Approvals    |           |                                                                                                                                     |
| Safety Standards        |           | UL508, TUV EN60950-1 approved,<br>design refer to GL                                                                                |
| Withstand Voltage       | I/P-O/P   | 3KVAC                                                                                                                               |
|                         | I/P-Fg    | 2KVAC                                                                                                                               |
|                         | O/P-Fg    | 0.5KVAC                                                                                                                             |
| Isolation Resistance    |           | I/P-O/P, I/P-FG, O/P-FG:>100M Ohms /<br>500VDC / 25°C/ 70% RH                                                                       |
| EMC Emission            |           | EN55022 (CISPR22)<br>EN61204-3 Class B<br>EN61000-3-2,-3                                                                            |
| EMC Immunity            |           | EN61000-4-2,3,4,5,6,8,11<br>EN55024<br>EN61000-6-2 (EN50082-2)<br>EN61204-3, heavy industry level,<br>criteria A, SEMI F47 approved |
| Vibration               | Component | 10 ~ 500Hz, 2G 10min./1cycle, 60min.<br>each along X, Y, Z axes                                                                     |
|                         | Mounting  | IEC60068-2-6                                                                                                                        |
| MTBF                    |           | 481.9K hrs min. MIL-HDBK-217F (25°C)                                                                                                |
| Warranty                |           | 3 years                                                                                                                             |



# Industrial Networking Solutions

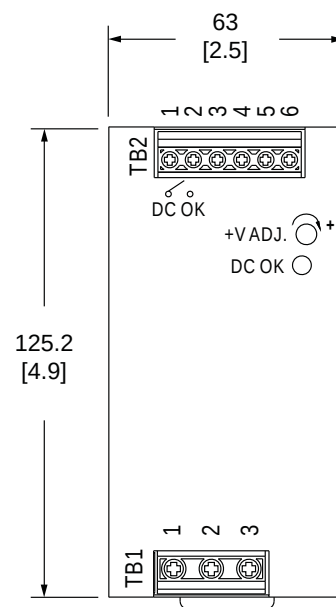
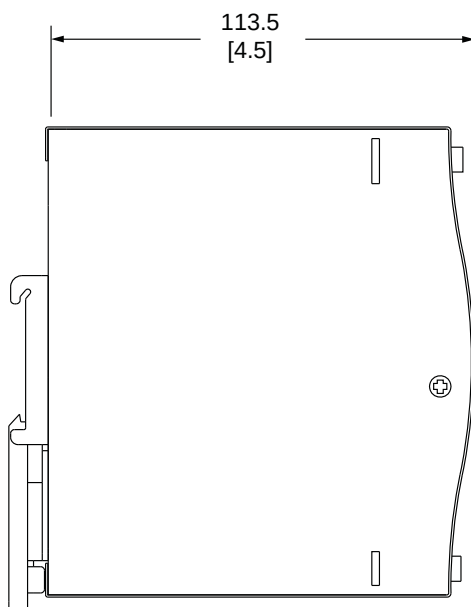
## Power Supplies



48 VDC Industrial Power Supply | Active PFC | DIN-Rail Mount | Metal Housing



| Part Number<br>[MFG #]             | Output Power                | O/P Current Loading Rated | O/P Current Max. | Ripple Noise | Efficiency | Over Voltage Protection | MTBF                                |
|------------------------------------|-----------------------------|---------------------------|------------------|--------------|------------|-------------------------|-------------------------------------|
| <b>PSDR-240-48</b><br>[SDR-240-48] | 48VDC 240W<br>Single Output | 5A                        | 5A               | 120mVp-p     | 94%        | 56-65VDC                | Exceed 169,300 hrs<br>(19.59 years) |



### Feature Highlights:

- High Efficiency 94% and low power dissipation
- 150% peak load capability
- Built-in active PFC function, PF>0.93
- Protections: Short circuit/Overload/Over voltage/ Over temperature
- Cooling by free air convection
- Can be installed on DIN rail TS-35/7.5 or 15
- UL 508 (Industrial control equipment) approved
- EN61000-6-2(EN50082-2) industrial immunity level
- Built-in DC OK relay contact
- 100% full load burn-in test
- 3 years warranty



# Industrial Networking Solutions

## Specifications & Approvals



48 VDC Industrial Power Supply | Active PFC | DIN-Rail Mount | Metal Housing

| Output                            |                                                                                                                               |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Peak Current                      | 7.5A                                                                                                                          |
| Peak Power                        | 360W (3sec.)                                                                                                                  |
| Voltage Adj. Range                | 48 ~ 55V                                                                                                                      |
| Voltage Tolerance                 | ±1.0%                                                                                                                         |
| Line Regulation                   | ±0.5%                                                                                                                         |
| Load Regulation                   | ±1.0%                                                                                                                         |
| Setup, Rise Time                  | 1500ms, 60ms/230VAC 3000ms<br>60ms/115VAC at full load                                                                        |
| Hold Up Time (Typ.)               | 20ms/230VAC<br>20ms/115VAC at full load                                                                                       |
| Input                             |                                                                                                                               |
| Voltage Range                     | 88 ~ 264VAC<br>124 ~ 370VDC                                                                                                   |
| Frequency Range                   | 47 ~ 63Hz                                                                                                                     |
| Power Factor (Typ.)               | 0.93/230VAC<br>0.99/115VAC at full load                                                                                       |
| Efficiency (Typ.)                 | 94%                                                                                                                           |
| Ac Current (Typ.)                 | 2.6A/115VAC<br>1.3A/230VAC                                                                                                    |
| Inrush Current (Typ.)             | 33A/115VAC<br>65A/230VAC                                                                                                      |
| Leakage Current                   | <1mA / 240VAC                                                                                                                 |
| Protection                        |                                                                                                                               |
| Overload                          | Normally works within 110 ~ 150% rated output power for more than 3 seconds and then shut down o/p voltage with auto-recovery |
|                                   | >150% rated power, constant current limiting with auto-recovery within 2 seconds and may cause to shut down if over 2 seconds |
| Over Voltage                      | 56 ~ 65V                                                                                                                      |
|                                   | Protection type Shut down o/p voltage with auto-recovery                                                                      |
| Over Temperature                  | 95°C ±5°C<br>(TSW : detect on heatsink of power switch)                                                                       |
|                                   | Protection type Shut down o/p voltage, recovers automatically after temperature goes down                                     |
| Function                          |                                                                                                                               |
| Dc Ok RealyContact Ratings (Max.) | 60Vdc/0.3A, 30Vdc/1A, 30Vac/0.5A resistive load                                                                               |

| Environmental Limits    |           |                                                                                                                                         |
|-------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Working Temp.           |           | -25°C ~ 70°C (-13°F ~ 158°F)                                                                                                            |
| Working Humidity        |           | 20 ~ 95% RH non-condensing                                                                                                              |
| Storage Temp., Humidity |           | -40°C ~ 85°C (-40°F ~ 185°F),<br>10 ~ 95% RH                                                                                            |
| Temp. Coefficient       |           | ±0.03%/°C (0 ~ 50°C)                                                                                                                    |
| Regulatory Approvals    |           |                                                                                                                                         |
| Safety Standards        |           | UL508, TUV EN60950-1 approved;<br>(meet EN60204-1)                                                                                      |
| Withstand Voltage       | I/P-O/P   | 3KVAC                                                                                                                                   |
|                         | I/P-Fg    | 2KVAC                                                                                                                                   |
|                         | O/P-Fg    | 0.5KVAC                                                                                                                                 |
|                         | O/P-Dc Ok | 0.5KVAC                                                                                                                                 |
| Isolation Resistance    |           | I/P-O/P, I/P-FG, O/P-FG:>100M Ohms /<br>500VDC / 25°C/ 70% RH                                                                           |
| Emc Emission            |           | EN55011<br>EN55022 (CISPR22)<br>EN61204-3 Class B<br>EN61000-3-2, -3                                                                    |
| Emc Immunity            |           | EN61000-4-2,3,4,5,6,8,11<br>EN55024<br>EN61000-6-2 (EN50082-2)<br>EN61204-3, heavy industry level,<br>criteria A, SEMI F47, GL approved |
| Vibration               | Component | 10 ~ 500Hz, 2G 10min./1cycle, 60min.<br>each along X, Y, Z axes                                                                         |
|                         | Mounting  | IEC60068-2-6                                                                                                                            |
| MTBF                    |           | 169.3K hrs min. MIL-HDBK-217F (25°C)                                                                                                    |
| Warranty                |           | 3 years                                                                                                                                 |



# Industrial Networking Solutions

## Accessories



Fiber Optic Transceivers | Fast Ethernet Series | Gigabit Ethernet Series | Extended Temperature



### Fast Ethernet Series

| Part Number           | LM38-A3S-TI-N                      | LS38-A3S-TI-N                  | AFBR-5715ALZ             |
|-----------------------|------------------------------------|--------------------------------|--------------------------|
| Data Rate (Mbps)      | 155                                | 155                            | 850                      |
| Wavelength (nm)       | 1310                               | 1310                           | 1310                     |
| Light Source          | LED                                | FP                             | VCSEL                    |
| Media Type            | Multi-Mode                         | Single-Mode                    | Multi-Mode               |
| Tx Power (dBm)        | -20 ~ -14 @ 62.5/125 $\mu$ m fiber | -15 ~ -8 @ 9/125 $\mu$ m fiber | -9.5~-3                  |
| Rx Sensitivity (dBm)  | -31                                | -34                            | -17 Max                  |
| Linkbudget (dBm)      | 11                                 | 19                             | 7.5                      |
| Saturation (dBm)      | -8                                 | 0                              | -3                       |
| Distance              | 2km                                | 30km                           | 10km                     |
| Operating Temperature | -40°C~85°C (-40°F~185°F)           | -40°C~85°C (-40°F~185°F)       | -40°C~85°C (-40°F~185°F) |
| Safety                | UL/TUV                             | UL/TUV                         | UL/TUV                   |

### Gigabit Ethernet Series

| Part Number           | LM28-C3S-TI-N                           | LM38-C3S-TI-N                        | LS38-C3S-TI-N              | LS38-C3L-TI-N                | AFCT-5715ALZ             |
|-----------------------|-----------------------------------------|--------------------------------------|----------------------------|------------------------------|--------------------------|
| Data Rate (Mbps)      | 1250                                    | 1250                                 | 1250                       | 1250                         | 1250                     |
| Wavelength (nm)       | 850                                     | 1310                                 | 1310                       | 1310                         | 1310                     |
| Light Source          | VCSEL                                   | FP                                   | FP                         | DFB                          |                          |
| Media Type            | Multi-Mode                              | Multi-Mode                           | Single-Mode                | Single-Mode                  | Single-Mode              |
| Tx Power (dBm)        | - 9.5 ~ - 4 @50/125 or 62.5/125 $\mu$ m | - 9 ~ - 1@50/125 or 62.5/125 $\mu$ m | --9.5 ~ -3 @ 9/125 $\mu$ m | -4 ~ +1@ 9/125 $\mu$ m fiber | -9.5 ~ -3                |
| Rx Sensitivity (dBm)  | -18 Max                                 | -19 Max                              | -20 Max                    | -24 Max                      | -19 Max                  |
| Linkbudget (dBm)      | 8.5                                     | 10                                   | 10.5                       | 20                           | 9.5                      |
| Saturation (dBm)      | 0                                       | -1                                   | -3                         | -3                           | -3                       |
| Distance              | 550m                                    | 2km                                  | 10km                       | 30km                         | 10Km                     |
| Operating Temperature | -20°C~85°C (-4°F~185°F)                 | -40°C~85°C (-40°F~185°F)             | -40°C~85°C (-40°F~185°F)   | -40°C~85°C (-40°F~185°F)     | -40°C~85°C (-40°F~185°F) |
| Safety                | UL/TUV                                  | UL/TUV                               | UL/TUV                     | UL/TUV                       | UL/TUV                   |



# Industrial Networking Solutions

## Accessories



10 Gigabit Ethernet Series | Copper to Fiber Optic Transceivers | Extended Temperature



| 10 Gigabit Ethernet Series |                                                        |                          |                          |                          |
|----------------------------|--------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| Part Number                | LM28-H3S-TI-N                                          | LS38-H3S-TI-N-EX         | LS48-H3L-TI-N            | LS48-H3U-TI-N            |
| Data Rate (Mbps)           | 10000                                                  | 10000                    | 10000                    | 10000                    |
| Wavelength (nm)            | 850                                                    | 1310                     | 1550                     | 1550                     |
| Light Source               | VCSEL                                                  | FP                       | EML                      | EML                      |
| Media Type                 | Multi-Mode                                             | Single-Mode              | Single-Mode              | Single-Mode              |
| Tx Power (dBm)             | - 7.1 ~ - 1 @50/125 or 62.5/125µm fiber                | 0.5 ~ -6                 | -4.7 ~ 4                 | 0 ~ 4                    |
| Rx Sensitivity (dBm)       | -9.9 Max                                               | -14.4 Max                | -15.8 Max                | -23 Max                  |
| Linkbudget (dBm)           | 2.8                                                    | 8.4                      | 11.1                     | 23                       |
| Saturation (dBm)           | -1                                                     | 0.5                      | 4                        | 4                        |
| Distance                   | 33m (OM1 Fiber)<br>82m (OM2 Fiber)<br>300m (OM3 Fiber) | 10km                     | 40km                     | 80km                     |
| Operating Temperature      | -10°C~85°C (14°F~185°F)                                | -40°C~85°C (-40°F~185°F) | -40°C~85°C (-40°F~185°F) | -40°C~85°C (-40°F~185°F) |
| Safety                     | UL/TUV                                                 | UL/TUV                   | UL/TUV                   | UL/TUV                   |

| Copper to Fiber Optic Transceivers |                          |                          |
|------------------------------------|--------------------------|--------------------------|
| Part Number                        | ASFPT-T3-I               | ASFPT-T1-I               |
| Data Rate (Mbps)                   | 10/100/1000 (Auto-neg.)  | 1000                     |
| Interface                          | SGMII                    |                          |
| Power Supply                       | 3.3V                     | 3.3V                     |
| Lan Cable Category                 | Over Cat5                | Over Cat5                |
| Operating Temp.                    | -40°C~85°C (-40°F~185°F) | -40°C~85°C (-40°F~185°F) |
| Safety                             | UL/TUV                   | UL/TUV                   |



# Industrial Networking Solutions

## Accessories



Power Adapters | US/EU/UK/AU Plugs | DC Jack Connectors



| Part Number<br>[MFG #]     | UV305-0510-DC-LV6<br>[UV305-0510(US-DC) LV6] | UNE305-0510-DC-LV6<br>[UNE305-0510(EU-DC) LV6] | UNUK305-0510-DC-LV6<br>[UNE305-0510(UK-DC) LV6] | UNAU305-0510-DC-LV6<br>[UNE305-0510(AU-DC) LV6] |
|----------------------------|----------------------------------------------|------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| Plug Type                  | US                                           | EU                                             | UK                                              | AU                                              |
| Input Voltage              | 100-240 VAC                                  |                                                |                                                 |                                                 |
| Output Voltage             | 5 VDC                                        |                                                |                                                 |                                                 |
| Connector Type             | DC Jack                                      |                                                |                                                 |                                                 |
| Physical Characteristics   |                                              |                                                |                                                 |                                                 |
| Jack Outer Diameter (mm)   | 3.5 mm                                       |                                                |                                                 |                                                 |
| Jack Inner Diameter (mm)   | 1.35 mm                                      |                                                |                                                 |                                                 |
| Jack/Plug Length (mm)      | 7.5 mm                                       |                                                |                                                 |                                                 |
| Dimension w/o cord (LxWxH) | 58.8 x 28 x 37.6 mm                          |                                                | -                                               | -                                               |
| Cord Length(mm)            | 1500 ±100 mm                                 |                                                |                                                 |                                                 |
| Operating Temperature      | 0 ~ 40°C (32 ~ 104°F)                        |                                                |                                                 |                                                 |
| Regulatory Approvals       |                                              |                                                |                                                 |                                                 |
| Safety                     | TUV/PSE/CE/FCC                               | CE/FCC                                         | UL/PSE/FCC                                      | CE/FCC                                          |
| CEC Level                  | 6                                            | 6                                              | 6                                               | 6                                               |



# Industrial Networking Solutions

## Accessories



Power Adapters | US/EU Plugs | Lockable DC Jack/Y-Type Connectors



| Part Number<br>[MFG #]     | UN315-1212-LDC-LV6<br>[UN315-1212(US-LDC) LV6] | UNE315-1212-LDC-LV6<br>[UNE315-1212(EU-LDC) LV6] | US315-12-Y-LV6<br>[US315-12 (US-Y) LV6]  | USE315-12-Y-LV6<br>[USE315-12(EU-Y) LV6] |
|----------------------------|------------------------------------------------|--------------------------------------------------|------------------------------------------|------------------------------------------|
| Plug Type                  | US                                             | EU                                               | US                                       | EU                                       |
| Input Voltage              | 100-240 VAC                                    |                                                  | 100-240 VAC                              |                                          |
| Output Voltage             | 12 VDC                                         |                                                  | 12 VDC                                   |                                          |
| Connector Type             | Lockable DC Jack                               |                                                  | Y-Type (BT1-10V), include Terminal Block |                                          |
| Physical Characteristics   |                                                |                                                  |                                          |                                          |
| Jack Outer Diameter (mm)   | 5.5 mm                                         |                                                  | -                                        |                                          |
| Jack Inner Diameter (mm)   | 2.1 mm                                         |                                                  | -                                        |                                          |
| Jack/Plug Length (mm)      | 9.5 mm                                         |                                                  | 10.5 mm                                  |                                          |
| Dimension w/o cord (LxWxH) | 64.5 x 50.2 x 29.8 mm                          |                                                  | 64.5 x 50.2 x 29.8 mm                    |                                          |
| Cord Length(mm)            | 1500 ±100 mm                                   |                                                  | 1500 ±100 mm                             |                                          |
| Operating Temperature      | 0 ~ 40°C (32 ~ 104°F)                          |                                                  | 0 ~ 40°C (32 ~ 104°F)                    |                                          |
| Regulatory Approvals       |                                                |                                                  |                                          |                                          |
| Safety                     | UL/PSE/FCC                                     | CE/FCC                                           | UL/PSE/CE/FCC                            | CE/FCC                                   |
| CEC Level                  | 6                                              | 6                                                | 6                                        | 6                                        |





# Industrial Networking Solutions

## Accessories



Power Adapters | US/EU Plugs | Y-Type



| Part Number<br>[MFG #]     | US315-2465-Y-LV6<br>[UN315-2465 (US) LV6] | UNE315-2465-Y-LV6<br>[UNE315-2465(EU) LV6] | APU10-108-Y<br>[APU10-108 (US-Y)] | APU11E-108-Y<br>[APU11-108 (EU-Y)] |
|----------------------------|-------------------------------------------|--------------------------------------------|-----------------------------------|------------------------------------|
| Plug Type                  | US                                        | EU                                         | US                                | EU                                 |
| Input Voltage              | 100-240 VAC                               |                                            | 100-240 VAC                       |                                    |
| Output Voltage             | 24 VDC                                    |                                            | 24 VDC                            |                                    |
| Connector Type             | Y-Type (BT1-10V)                          |                                            | Y-Type (BT1-10V)                  |                                    |
| Physical Characteristics   |                                           |                                            |                                   |                                    |
| Jack/Plug Length (mm)      | 10.5 mm                                   |                                            | 10.5 mm                           |                                    |
| Dimension w/o cord (LxWxH) | 64.5 x 50.2 x 29.8 mm                     |                                            | 56 x 44 x 27.5mm                  |                                    |
| Cord Length(mm)            | 1500 ±100 mm                              |                                            | 1220 ±150mm                       |                                    |
| Operating Temperature      | 0 ~ 40°C (32 ~ 104°F)                     |                                            | -40 ~ 70°C (-40 ~ 158°F)          |                                    |
| Regulatory Approvals       |                                           |                                            |                                   |                                    |
| Safety                     | UL/PSE/CE/FCC                             | UL/PSE/CE/FCC                              | UL/PSE/CE/FCC/CB                  | UL/PSE/CE/FCC/CB                   |
| CEC Level                  | 6                                         | 6                                          | 6                                 | 6                                  |



# Industrial Networking Solutions

## Accessories



IEEE 802.11 Antennas | Single/Dual Band | Omni-Directional



| Part Number           | ANT-WD-A-RF-0305       | ANT-WS-AB-RM-05-180                       | ANT-WS-AB-RM-05-200                       | ANT-WS-A-NF-09         | ANT-WS-A-NF-09-150               |
|-----------------------|------------------------|-------------------------------------------|-------------------------------------------|------------------------|----------------------------------|
| Frequency Range       | 2.4/5 GHz              | 2.4 GHz                                   | 2.4 GHz                                   | 2.4~2.5 GHz            | 2.4~2.5 GHz                      |
| Radiation             | Omni-directional       | Omni-directional                          | Omni-directional                          | Omni-directional       | Omni-directional                 |
| Typical Antenna Gain  | 3/5 dBi                | 5 dBi                                     | 5 dBi                                     | 9 dBi                  | 9 dBi                            |
| Impedance             | 50 Ohm                 | 50 Ohm                                    | 50 Ohm                                    | 50±5 Ohm               | 50±5 Ohm                         |
| Polarization Linear   | Vertical               | Vertical                                  | Vertical                                  | Linear                 | Linear                           |
| Cable Type            | -                      | RG-316                                    | RG-174                                    | -                      | RG-58/U                          |
| HPBW / Horizontal     | 360°                   | 360°                                      | 360°                                      | 360°                   | 360°                             |
| HPBW / Vertical       | -                      | -                                         | -                                         | 10°                    | 10°                              |
| V.S.W.R               | ≤ 2                    | ≤ 2                                       | ≤ 2                                       | 1:1.3 Max              | 1:1.3 Max                        |
| Power Handling        | -                      | -                                         | -                                         | 15W max                | 15W max                          |
| Antenna Connector*    | RP-SMA(Female)         | RP-SMA(Male)                              | RP-SMA(Male)                              | N-type(Female)         | N-type(Female)                   |
| Cable Connector*      | -                      | RP-SMA(Female) to RP-SMA(Male)            | RP-SMA(Female) to RP-SMA(Male)            | -                      | N-type(Male) to RP-SMA(Male)     |
| Operating Temperature | -20~65°C<br>(-4~149°F) | -20~65°C<br>(-4~149°F)                    | -30~85°C<br>(-22~185°F)                   | -20~60°C<br>(-4~140°F) | -20~60°C<br>(-4~140°F)           |
| Antenna Profile       | 160mm length           | 236.4mm length<br>with 180cm cable & base | 196.6mm length<br>with 200cm cable & base | 420mm length           | 420mm length<br>with 150cm cable |

### \* Connector Types

| N Type (Male) | N Type (Female) | RP-SMA Type (Male) | RP-SMA Type (Female) | SMA Type (Male) | SMA Type (Female) |
|---------------|-----------------|--------------------|----------------------|-----------------|-------------------|
|               |                 |                    |                      |                 |                   |



# Industrial Networking Solutions

## Accessories



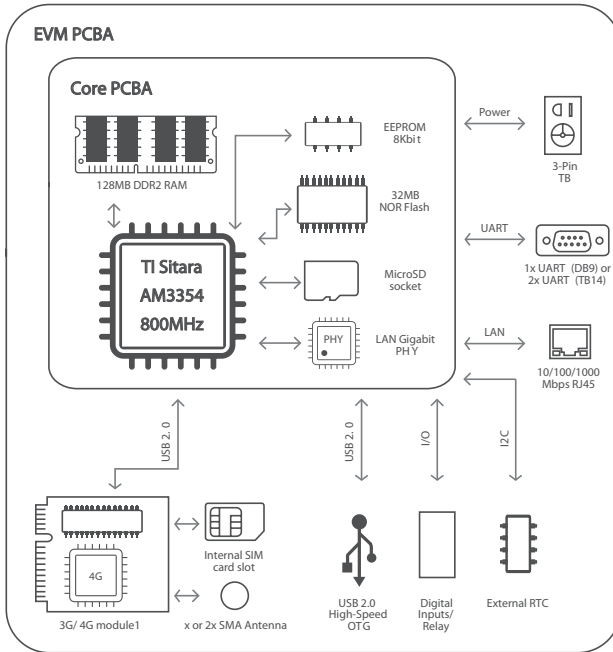
DIN-Rail Kit | Wall Mount Kit

| DIN-Rail Kit                |                                       |                                                                        |
|-----------------------------|---------------------------------------|------------------------------------------------------------------------|
| Part Number<br>[MFG #]      | Description                           | Applicable Network Devices                                             |
| CDK-459<br>[CDK-459-Silver] | Conductive Metal DIN-Rail Kit, Silver | EN50155 Railway Unmanaged Switches<br>Advanced Serial Device Servers   |
| DK-25                       | Plastic DIN-Rail Kit                  | Entry Level Serial Device Servers (DB9)                                |
|                             |                                       | Entry Level Serial Device Servers                                      |
| Metal Wall Mount Kit        |                                       |                                                                        |
| WMK-450<br>[WMK-450-Black]  | Aluminum Wall Mount Kit, Black        | Layer-2 Managed DIN-Rail Switches<br>Layer-3 Managed DIN-Rail Switches |
| WMK-UM<br>[WMK-454-Black]   | Aluminum Wall Mount Kit, Black        | Unmanaged Switches                                                     |
| WMK-459<br>[WMK-459-Black]  | Aluminum Wall Mount Kit, Black        | Unmanaged Gigabit PoE Switches<br>EN50155 Railway Unmanaged Switches   |



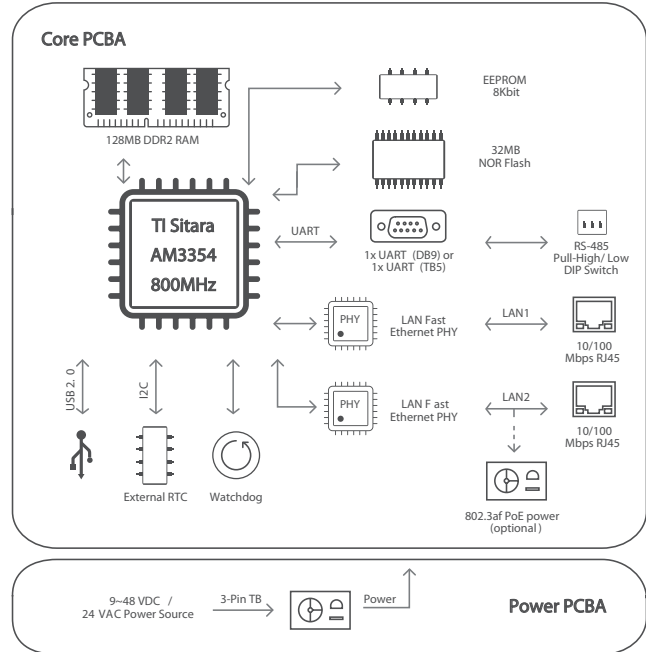
### SE5901B Series

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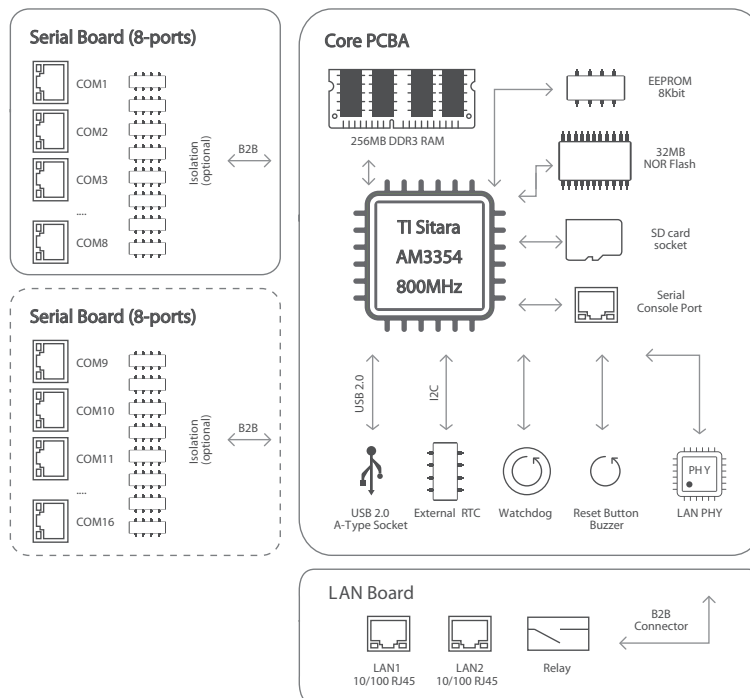
### SE5901 Series

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### SE5908/5916 Series

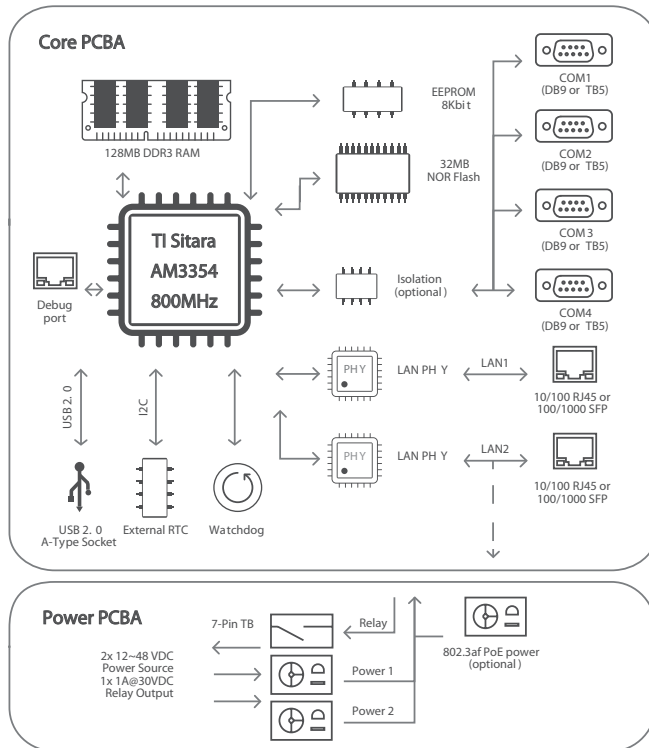
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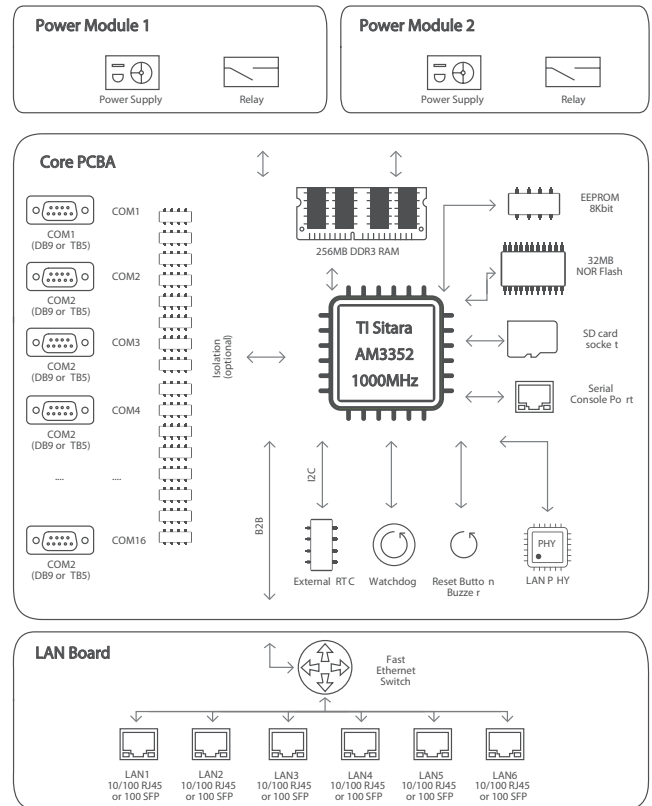
#### SE5904D Series

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#### SE5908A/5916A Series

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# Industrial Networking Solutions

*Etherplug (M12) A & D-Code Connectors, RJ45, Etherlink V3, Conduit Adapters*

Over-Molded Cordsets | Armored Cordsets | Receptacles | Field Wireables | Accessories

UL File #:  
**E149111**



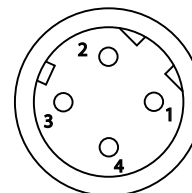
Industrial network systems allow for real-time distributed control of many connection points from a single controller. These “network bus” systems reduce the total amount of cable required and can simplify the overall design. Mencom offers a broad range of industrial network connectivity products to streamline your installation.

## Industrial Ethernet

Using Ethernet in industrial applications is becoming more prevalent. This has increased the need for Ethernet product that is built to handle harsh environments. Mencom has addressed this need with a series of rugged Ethernet products. Our E45V3 series connectors allow for an IP67 rating while using standard RJ45 connectors.

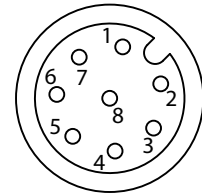
Mencom offers M12 threaded connectors. We refer to this series with a MDE45 prefix. Our MDE45 series utilizes M12 4 wire (D-Coded) connectors with 2 pair Cat 5e cables or M12 8 wire (A-Coded) connectors with 4 pair Cat 5e cable. The MDE45 is specifically used in Industrial Ethernet applications, and has teal cable using twisted pairs of wires inside. This connector has a unique keyway that is known as D-coded.

**4 Pole**

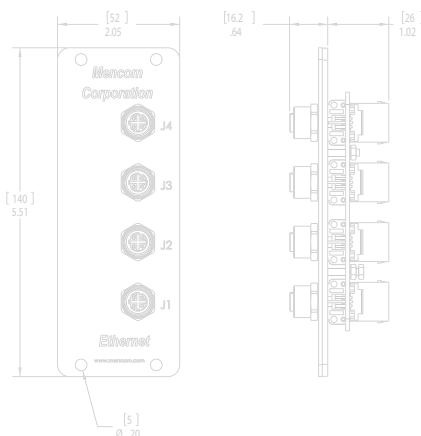


**D-coded**

**8 Pole**



**A-coded**





## Notes:





# Ethernet (M12) Series Etherplug Cordsets

## Ethernet Series Cordset Part Number Matrix



Not all options available with all cordsets, please consult factory.

MDE45 [ ] - [ ] [ ] - [ ] [ ] - [ ] [ ] - [ ] [ ] - [ ] [ ] - [ ] [ ]

### Cable Type

Blank = PVC  
P = PUR  
PB = PUR / Braided Shield  
M = Mylar Shield  
WB = Continuous Flex. TPE / Braided

### Number of Conductors

4  
8

### Connector Configuration

MP = Male Plug  
FP = Female Plug  
MFP = Male / Female Extension  
MFRP = Male Straight / Female Right Angle  
MRFP = Male Right Angle / Female Straight  
MMP = Male/Male Extension  
FFP = Female/Female Extension  
MSP = Male-Shielded to Coupling Nut  
FSP = Female-Shielded to Coupling Nut  
MFPS = Male & Female-Shielded to Coupling Nut  
MSFP = Male Shielded to Coupling Nut / Female Not  
MFSP = Female Shielded to Coupling Nut / Male Not  
MMSP = Male/Male Shielded to Coupling Nut  
FFSP = Female/Female Shielded to Coupling Nut

### Length in Meters

1M  
2M  
4M  
5M  
6M  
10M  
15M

Other lengths are available by request.

### RJ45

RJ45 = RJ45 Male on Second End

### Armor (See P.171 for more details)

Blank = No Armor  
A01 = SS w/ Cable Inside  
A03 = PVC Covered SS w/ Cable Inside  
A50 = Silicone (Stops at Overmold)  
A51 = Silicone (Covers Overmold)

### Coupling Nut

Blank = Nickel plated brass  
SS = Stainless Steel

### Cable Jacket Color

Blank = Teal  
RD = Red

### R/A or Straight

Blank = Straight \*  
R = Right Angle \*\*

\* Unless the Connector Configuration is MFRP or MRFP  
\*\* If single ended cable, right angle connector to flying leads  
If double ended cable, right angle on both connectors



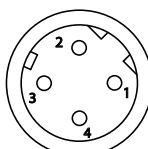
# Ethernet (M12) Series Etherplug Cordsets

4 Conductor Ethernet Series Cordsets, 24AWG



Straight Male Cordsets | 300 Volt, 4 amps | CAT5e | D-Coded | Twisted Pairs | IP67 Rating



| Connector Body Style                                                                | Part Number                                               | Cables                                                                                                | Features                                                                                                                  | Color Code                                                 | Faceview                                                                                         |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
|  | MDE45-4MP-**-                                             | Teal PVC<br>AWM<br>4 X 24 AWG<br>300V, 4A<br>-20°C to +80°C<br>6.1mm OD                               | Industry Standard PVC                                                                                                     | 1. White/Orange<br>2. White/Green<br>3. Orange<br>4. Green | <br>M12 x 1 |
|                                                                                     | MDE45B-4MP-**-                                            | Teal PVC<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-20°C to +80°C<br>6.6mm OD | Industry Standard PVC<br>Foil & Braided Shield                                                                            |                                                            |                                                                                                  |
|                                                                                     | MDE45B-4MSP-**-                                           | Teal PVC<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-20°C to +80°C<br>6.6mm OD | Industry Standard PVC<br>Foil & Braided Shield<br>to Coupling Nut                                                         |                                                            |                                                                                                  |
|                                                                                     | MDE45P-4MP-**-                                            | Teal PUR<br>AWM<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>5.6mm OD                               | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR                                             |                                                            |                                                                                                  |
|                                                                                     | MDE45PB-4MP-**-                                           | Teal PUR<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>6.4mm OD | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield                    |                                                            |                                                                                                  |
|                                                                                     | MDE45PB-4MSP-**-                                          | Teal PUR<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>6.4mm OD | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield<br>to Coupling Nut |                                                            |                                                                                                  |
|                                                                                     | MDE45WB-4MP-**-<br>(Teal)<br>MDE45WB-4MP-**-RD<br>(Red)   | TPE<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>6.6mm OD      | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield                                                    |                                                            |                                                                                                  |
|                                                                                     | MDE45WB-4MSP-**-<br>(Teal)<br>MDE45WB-4MSP-**-RD<br>(Red) | TPE<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>6.6mm OD      | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield<br>to Coupling Nut                                 |                                                            |                                                                                                  |

\*\* Lengths in meters. Standard cable lengths are 1, 2, 4, 5, 6, 10 & 15 meters. Consult factory for other lengths.

Standard coupling nut is nickel plated brass, for stainless steel coupling nut add a "-SS" suffix. (e.g. MDE45-4MP-1M becomes MDE45-4MP-1M-SS)



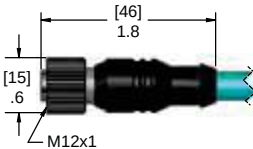
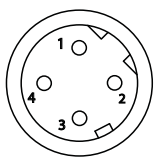
# Ethernet (M12) Series Etherplug Cordsets

## 4 Conductor Ethernet Series Cordsets, 24AWG



Straight Female Cordsets | 300 Volt, 4 amps | CAT5e | D-Coded | Twisted Pairs | IP67 Rating



| Connector Body Style                                                                | Part Number                                              | Cables                                                                                                | Features                                                                                                                  | Color Code                                                 | Faceview                                                                                         |
|-------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
|  | MDE45-4FP-**                                             | Teal PVC<br>AWM<br>4 X 24 AWG<br>300V, 4A<br>-20°C to +80°C<br>6.1mm OD                               | Industry Standard PVC                                                                                                     | 1. White/Orange<br>2. White/Green<br>3. Orange<br>4. Green | <br>M12 x 1 |
|                                                                                     | MDE45B-4FP-**                                            | Teal PVC<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-20°C to +80°C<br>6.6mm OD | Industry Standard PVC<br>Foil & Braided Shield                                                                            |                                                            |                                                                                                  |
|                                                                                     | MDE45B-4FSP-**                                           | Teal PVC<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-20°C to +80°C<br>6.6mm OD | Industry Standard PVC<br>Foil & Braided Shield<br>to Coupling Nut                                                         |                                                            |                                                                                                  |
|                                                                                     | MDE45P-4FP-**                                            | Teal PUR<br>AWM<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>5.6mm OD                               | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR                                             |                                                            |                                                                                                  |
|                                                                                     | MDE45PB-4FP-**                                           | Teal PUR<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>6.4mm OD | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield                    |                                                            |                                                                                                  |
|                                                                                     | MDE45PB-4FSP-**                                          | Teal PUR<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>6.4mm OD | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield<br>to Coupling Nut |                                                            |                                                                                                  |
|                                                                                     | MDE45WB-4FP-**<br>MDE45WB-4FP-**-RD<br>(Red)             | TPE<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>6.6mm OD      | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield                                                    |                                                            |                                                                                                  |
|                                                                                     | MDE45WB-4FSP-**<br>(Teal)<br>MDE45WB-4FSP-**-RD<br>(Red) | TPE<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>6.6mm OD      | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield<br>to Coupling Nut                                 |                                                            |                                                                                                  |

\*\* Lengths in meters. Standard cable lengths are 1, 2, 4, 5, 6, 10 & 15 meters. Consult factory for other lengths.

Standard coupling nut is nickel plated brass, for stainless steel coupling nut add a "-SS" suffix. (e.g. MDE45-4FP-1M becomes MDE45-4FP-1M-SS)



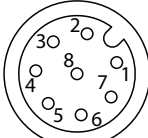
# Ethernet (M12) Series Etherplug Cordsets

8 Conductor Ethernet Series Cordsets, 24/26AWG



Straight Male Cordsets | 60 Volt, 2 amps | CAT5e | A-Coded | Twisted Pairs | IP67 Rating



| Connector Body Style                                                                | Part Number      | Cables                                                                                               | Features                                                                                               | Color Code                                                                                                           | Faceview                                                                                         |
|-------------------------------------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
|  | MDE45-8MP-**-    | Teal PVC<br>AWM<br>8 X 24 AWG<br>60V, 2A<br>-20°C to +80°C<br>6.4mm OD                               | Industry Standard PVC                                                                                  | 1. White/Blue<br>2. White/Brown<br>3. Brown<br>4. Orange<br>5. White/Green<br>6. White/Orange<br>7. Blue<br>8. Green | <br>M12 x 1 |
|                                                                                     | MDE45B-8MP-**-   | Teal PVC<br>AWM<br>With Foil & Braided Shield<br>8 X 24 AWG<br>60V, 2A<br>-20°C to +80°C<br>7.6mm OD | Industry Standard PVC<br>Foil & Braided Shield                                                         |                                                                                                                      |                                                                                                  |
|                                                                                     | MDE45P-8MP-**-   | Teal PUR<br>AWM<br>8 X 24 AWG<br>60V, 2A<br>-40°C to +80°C<br>6.3 mm OD                              | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR                          |                                                                                                                      |                                                                                                  |
|                                                                                     | MDE45PB-8MP-**-  | Teal PUR<br>With Foil & Braided Shield<br>8 X 26 AWG<br>60V, 2A<br>-40°C to +75°C<br>6mm OD          | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield |                                                                                                                      |                                                                                                  |
|                                                                                     | MDE45PB-8MSP-**- | Teal PUR<br>With Foil & Braided Shield<br>8 X 26 AWG<br>60V, 2A<br>-40°C to +75°C<br>6mm OD          | Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield<br>to Coupling Nut |                                                                                                                      |                                                                                                  |
|                                                                                     | MDE45WB-8MP-**-  | Teal TPE<br>AWM<br>With Foil & Braided Shield<br>8 X 24 AWG<br>60V, 2A<br>-40°C to +80°C<br>7.6mm OD | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield                                 |                                                                                                                      |                                                                                                  |
|                                                                                     | MDE45WB-8MSP-**- | Teal TPE<br>AWM<br>With Foil & Braided Shield<br>8 X 24 AWG<br>60V, 2A<br>-40°C to +80°C<br>7.6mm OD | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield<br>to Coupling Nut              |                                                                                                                      |                                                                                                  |

\*\* Lengths in meters. Standard cable lengths are 1, 2, 4, 5, 6, 10 & 15 meters. Consult factory for other lengths.

Standard coupling nut is nickel plated brass, for stainless steel coupling nut add a "-SS" suffix. (e.g. MDE45-8MP-1M becomes MDE45-8MP-1M-SS)



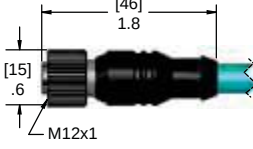
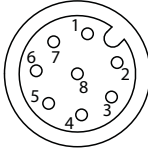
# Ethernet (M12) Series Etherplug Cordsets

8 Conductor Ethernet Series Cordsets, 24/26AWG



Straight Female Cordsets | 60 Volt, 2 amps | CAT5e | A-Coded | Twisted Pairs | IP67 Rating



| Connector Body Style                                                                | Part Number     | Cables                                                                                               | Features                                                                                               | Color Code                                                                                                                                                                                              | Faceview                                                                                         |
|-------------------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
|  | MDE45-8FP-**    | Teal PVC<br>AWM<br>8 X 24 AWG<br>60V, 2A<br>-20°C to +80°C<br>6.4mm OD                               | Industry Standard PVC                                                                                  | <ol style="list-style-type: none"><li>1. White/Blue</li><li>2. White/Brown</li><li>3. Brown</li><li>4. Orange</li><li>5. White/Green</li><li>6. White/Orange</li><li>7. Blue</li><li>8. Green</li></ol> | <br>M12 x 1 |
|                                                                                     | MDE45B-8FP-**   | Teal PVC<br>AWM<br>With Foil & Braided Shield<br>8 X 24 AWG<br>60V, 2A<br>-20°C to +80°C<br>7.6mm OD | Industry Standard PVC<br>Foil & Braided Shield                                                         |                                                                                                                                                                                                         |                                                                                                  |
|                                                                                     | MDE45P-8FP-**   | Teal PUR<br>AWM<br>8 X 24 AWG<br>60V, 2A<br>-40°C to +80°C<br>6.3 mm OD                              | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR                          |                                                                                                                                                                                                         |                                                                                                  |
|                                                                                     | MDE45PB-8FP-**  | Teal PUR<br>With Foil & Braided Shield<br>8 X 26 AWG<br>60V, 2A<br>-40°C to +75°C<br>6mm OD          | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield |                                                                                                                                                                                                         |                                                                                                  |
|                                                                                     | MDE45PB-8FSP-** | Teal PUR<br>With Foil & Braided Shield<br>8 X 26 AWG<br>60V, 2A<br>-40°C to +75°C<br>6mm OD          | Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield<br>to Coupling Nut |                                                                                                                                                                                                         |                                                                                                  |
|                                                                                     | MDE45WB-8FP-**  | Teal TPE<br>AWM<br>With Foil & Braided Shield<br>8 X 24 AWG<br>60V, 2A<br>-40°C to +80°C<br>7.6mm OD | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield                                 |                                                                                                                                                                                                         |                                                                                                  |
|                                                                                     | MDE45WB-8FSP-** | Teal TPE<br>AWM<br>With Foil & Braided Shield<br>8 X 24 AWG<br>60V, 2A<br>-40°C to +80°C<br>7.6mm OD | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield<br>to Coupling Nut              |                                                                                                                                                                                                         |                                                                                                  |

\*\* Lengths in meters. Standard cable lengths are 1, 2, 4, 5, 6, 10 & 15 meters. Consult factory for other lengths.

Standard coupling nut is nickel plated brass, for stainless steel coupling nut add a "-SS" suffix. (e.g. MDE45-8FP-1M becomes MDE45-8FP-1M-SS)



# Ethernet (M12) Series Etherplug Cordsets

4 Conductor Ethernet Series Cordsets, 24AWG



Right Angle Male Cordsets | 300 Volt, 4 amps | CAT5e | D-Coded | Twisted Pairs | IP67 Rating



| Connector Body Style | Part Number                                                | Cables                                                                                                | Features                                                                                               | Color Code                                                 | Faceview    |
|----------------------|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-------------|
|                      | MDE45-4MP-**-R                                             | Teal PVC<br>AWM<br>4 X 24 AWG<br>300V, 4A<br>-20°C to +80°C<br>6.1mm OD                               | Industry Standard PVC                                                                                  | 1. White/Orange<br>2. White/Green<br>3. Orange<br>4. Green | <br>M12 x 1 |
|                      | MDE45B-4MP-**-R                                            | Teal PVC<br>AWM<br>With Foil & Braided Shield<br>4 X 26 AWG<br>300V, 4A<br>-20°C to +80°C<br>6.6mm OD | Industry Standard PVC<br>Foil & Braided Shield                                                         |                                                            |             |
|                      | MDE45P-4MP-**-R                                            | Teal PUR<br>AWM<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>5.6mm OD                               | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR                          |                                                            |             |
|                      | MDE45PB-4MP-**-R                                           | Teal PUR<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>6.4mm OD | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield |                                                            |             |
|                      | MDE45WB-4MP-**-R<br>(Teal)<br>MDE45WB-4MP-**-R-RD<br>(Red) | TPE<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>6.6mm OD      | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield                                 |                                                            |             |

\*\* Lengths in meters. Standard cable lengths are 1, 2, 4, 5, 6, 10 & 15 meters. Consult factory for other lengths.

Standard coupling nut is nickel plated brass, for stainless steel coupling nut add a "-SS" suffix. (e.g. MDE45-4MP-1M-R becomes MDE45-4MP-1M-R-SS)



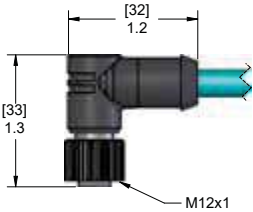
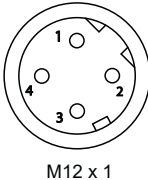
# Ethernet (M12) Series Etherplug Cordsets

4 Conductor Ethernet Series Cordsets, 24AWG



Right Angle Female Cordsets | 300 Volt, 4 amps | CAT5e | D-Coded | Twisted Pairs | IP67 Rating



| Connector Body Style                                                               | Part Number                                                | Cables                                                                                                | Features                                                                                               | Color Code                                                 | Faceview                                                                                        |
|------------------------------------------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
|  | MDE45-4FP-**-R                                             | Teal PVC<br>AWM<br>4 X 24 AWG<br>300V, 4A<br>-20°C to +80°C<br>6.1mm OD                               | Industry Standard PVC                                                                                  | 1. White/Orange<br>2. White/Green<br>3. Orange<br>4. Green | <br>M12 x 1 |
|                                                                                    | MDE45B-4FP-**-R                                            | Teal PVC<br>AWM<br>With Foil & Braided Shield<br>4 X 26 AWG<br>300V, 4A<br>-20°C to +80°C<br>6.6mm OD | Industry Standard PVC<br>Foil & Braided Shield                                                         |                                                            |                                                                                                 |
|                                                                                    | MDE45P-4FP-**-R                                            | Teal PUR<br>AWM<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>5.6mm OD                               | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR                          |                                                            |                                                                                                 |
|                                                                                    | MDE45PB-4FP-**-R                                           | Teal PUR<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>6.4mm OD | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield |                                                            |                                                                                                 |
|                                                                                    | MDE45WB-4FP-**-R<br>(Teal)<br>MDE45WB-4FP-**-R-RD<br>(Red) | TPE<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>6.6mm OD      | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield                                 |                                                            |                                                                                                 |

\*\* Lengths in meters. Standard cable lengths are 1, 2, 4, 5, 6, 10 & 15 meters. Consult factory for other lengths.

Standard coupling nut is nickel plated brass, for stainless steel coupling nut add a "-SS" suffix. (e.g. MDE45-4FP-1M-R becomes MDE45-4FP-1M-R-SS)





# Ethernet (M12) Series Etherplug Cordsets

8 Conductor Ethernet Series Cordsets, 24/26AWG



Right Angle Male Cordsets | 60 Volt, 2 amps | CAT5e | A-Coded | Twisted Pairs | IP67 Rating



| Connector Body Style | Part Number      | Cables                                                                                               | Features                                                                            | Color Code                                                                                                           | Faceview    |
|----------------------|------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-------------|
|                      | MDE45-8MP-**-R   | Teal PVC<br>AWM<br>8 X 24 AWG<br>60V, 2A<br>-20°C to +80°C<br>6.4mm OD                               | Industry Standard PVC                                                               | 1. White/Blue<br>2. White/Brown<br>3. Brown<br>4. Orange<br>5. White/Green<br>6. White/Orange<br>7. Blue<br>8. Green | <br>M12 x 1 |
|                      | MDE45B-8MP-**-R  | Teal PVC<br>AWM<br>With Foil & Braided Shield<br>8 X 24 AWG<br>60V, 2A<br>-20°C to +80°C<br>7.6mm OD | Industry Standard PVC<br>Foil & Braided Shield                                      |                                                                                                                      |             |
|                      | MDE45P-8MP-**-R  | Teal PUR<br>AWM<br>8 X 24 AWG<br>60V, 2A<br>-40°C to +80°C<br>6.3 mm OD                              | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR       |                                                                                                                      |             |
|                      | MDE45PB-8MP-**-R | Teal PUR<br>With Foil & Braided Shield<br>8 X 26 AWG<br>60V, 2A<br>-40°C to +75°C<br>6mm OD          | Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield |                                                                                                                      |             |
|                      | MDE45WB-8MP-**-R | Teal TPE<br>AWM<br>With Foil & Braided Shield<br>8 X 24 AWG<br>60V, 2A<br>-40°C to +80°C<br>7.6mm OD | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield              |                                                                                                                      |             |

\*\* Lengths in meters. Standard cable lengths are 1, 2, 4, 5, 6, 10 & 15 meters. Consult factory for other lengths.

Standard coupling nut is nickel plated brass, for stainless steel coupling nut add a "-SS" suffix. (e.g. MDE45-8MP-1M-R becomes MDE45-8MP-1M-R-SS)

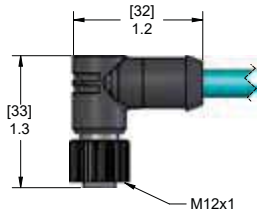


# Ethernet (M12) Series Etherplug Cordsets

8 Conductor Ethernet Series Cordsets, 24/26AWG



Right Angle Female Cordsets | 60 Volt, 2 amps | CAT5e | A-Coded | Twisted Pairs | IP67 Rating



| Connector Body Style | Part Number      | Cables                                                                                               | Features                                                                            | Color Code                                                                                                                                                                                              | Faceview    |
|----------------------|------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|                      | MDE45-8FP-**-R   | Teal PVC<br>AWM<br>8 X 24 AWG<br>60V, 2A<br>-20°C to +80°C<br>6.4mm OD                               | Industry Standard PVC                                                               | <ol style="list-style-type: none"><li>1. White/Blue</li><li>2. White/Brown</li><li>3. Brown</li><li>4. Orange</li><li>5. White/Green</li><li>6. White/Orange</li><li>7. Blue</li><li>8. Green</li></ol> | <br>M12 x 1 |
|                      | MDE45B-8FP-**-R  | Teal PVC<br>AWM<br>With Foil & Braided Shield<br>8 X 24 AWG<br>60V, 2A<br>-20°C to +80°C<br>7.6mm OD | Industry Standard PVC<br>Foil & Braided Shield                                      |                                                                                                                                                                                                         |             |
|                      | MDE45P-8FP-**-R  | Teal PUR<br>AWM<br>8 X 24 AWG<br>60V, 2A<br>-40°C to +80°C<br>6.3 mm OD                              | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR       |                                                                                                                                                                                                         |             |
|                      | MDE45PB-8FP-**-R | Teal PUR<br>With Foil & Braided Shield<br>8 X 26 AWG<br>60V, 2A<br>-40°C to +75°C<br>6mm OD          | Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield |                                                                                                                                                                                                         |             |
|                      | MDE45WB-8FP-**-R | Teal TPE<br>AWM<br>With Foil & Braided Shield<br>8 X 24 AWG<br>60V, 2A<br>-40°C to +80°C<br>7.6mm OD | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield              |                                                                                                                                                                                                         |             |

\*\* Lengths in meters. Standard cable lengths are 1, 2, 4, 5, 6, 10 & 15 meters. Consult factory for other lengths.

Standard coupling nut is nickel plated brass, for stainless steel coupling nut add a "-SS" suffix. (e.g. MDE45-8FP-1M-R becomes MDE45-8FP-1M-R-SS)



# Ethernet (M12) Series Etherplug Cordsets

4 Conductor Ethernet Series Cordsets, 24AWG

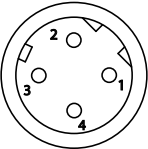


Double Ended Cordsets | 300V, 4A | CAT5e | D-Coded | Twisted Pairs | IP67 Rating



Only Male to Female versions are UL listed for safety concerns



| Male Faceview                                                                                      | Cables                                                                                                | Features                                                                                                                  | Male to Female                                             | Male to Male                                               | Female to Female                                           |
|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|
|  <p>M12 x 1</p> | Teal PVC<br>AWM<br>4 X 24 AWG<br>300V, 4A<br>-20°C to +80°C<br>6.1mm OD                               | Industry Standard PVC                                                                                                     | MDE45-4MFP-**                                              | MDE45-4MMP-**                                              | MDE45-4FFP-**                                              |
|                                                                                                    | Teal PVC<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-20°C to +80°C<br>6.1mm OD | Industry Standard PVC<br>Foil & Braided Shield                                                                            | MDE45B-4MFP-**                                             | MDE45B-4MMP-**                                             | MDE45B-4FFP-**                                             |
|                                                                                                    | Teal PUR<br>AWM<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>5.6mm OD                               | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR                                             | MDE45P-4MFP-**                                             | MDE45P-4MMP-**                                             | MDE45P-4FFP-**                                             |
|                                                                                                    | Teal PUR<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>6.4mm OD | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield                    | MDE45PB-4MFP-**                                            | MDE45PB-4MMP-**                                            | MDE45PB-4FFP-**                                            |
|                                                                                                    | Teal PUR<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>6.4mm OD | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield<br>to Coupling Nut | MDE45PB-4MFPS-**                                           | MDE45PB-4MMPS-**                                           | MDE45PB-4FFPS-**                                           |
|                                                                                                    | TPE<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>6.6mm OD      | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield                                                    | MDE45WB-4MFP-**<br>(Teal)<br>MDE45WB-4MFP-**-RD<br>(Red)   | MDE45WB-4MMP-**<br>(Teal)<br>MDE45WB-4MMP-**-RD<br>(Red)   | MDE45WB-4FFP-**<br>(Teal)<br>MDE45WB-4FFP-**-RD<br>(Red)   |
|                                                                                                    | TPE<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-40°C to +80°C<br>6.6mm OD      | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield<br>to Coupling Nut                                 | MDE45WB-4MFPS-**<br>(Teal)<br>MDE45WB-4MFPS-**-RD<br>(Red) | MDE45WB-4MMPS-**<br>(Teal)<br>MDE45WB-4MMPS-**-RD<br>(Red) | MDE45WB-4FFPS-**<br>(Teal)<br>MDE45WB-4FFPS-**-RD<br>(Red) |

\*\* Lengths in meters. Standard cable lengths are 1, 2, 4, 5, 6, 10 & 15 meters. Consult factory for other lengths.

Standard coupling nut is nickel plated brass, for stainless steel coupling nut add a "SS" suffix. (e.g. MDE45-4MFP-1M becomes MDE45-4MFP-1M-SS)



Male Plug



Female Plug



# Ethernet (M12) Series Etherplug Cordsets

8 Conductor Ethernet Series Cordsets, 24/26AWG

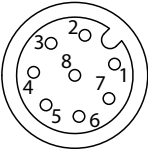


Double Ended Cordsets | 60V, 2A | CAT5e | Twisted Pairs | IP67 Rating



Only Male to Female versions are UL listed for safety concerns



| Male Faceview                                                                                  | Cables                                                                                               | Features                                                                                                                  | Male to Female   | Male to Male     | Female to Female |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------|------------------|------------------|
| <br>M12 x 1 | Teal PVC<br>AWM<br>8 X 24 AWG<br>60V, 2A<br>-20°C to +80°C<br>6.4mm OD                               | Industry Standard PVC                                                                                                     | MDE45-8MFP-**    | MDE45-8MMP-**    | MDE45-8FFP-**    |
|                                                                                                | Teal PVC<br>AWM<br>With Foil & Braided Shield<br>8 X 24 AWG<br>60V, 2A<br>-20°C to +80°C<br>7.6mm OD | Industry Standard PVC<br>Foil & Braided Shield                                                                            | MDE45B-8MFP-**   | MDE45B-8MMP-**   | MDE45B-8FFP-**   |
|                                                                                                | Teal PUR<br>AWM<br>8 X 24 AWG<br>60V, 2A<br>-40°C to +80°C<br>6.3 mm OD                              | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR                                             | MDE45P-8MFP-**   | MDE45P-8MMP-**   | MDE45P-8FFP-**   |
|                                                                                                | Teal PUR<br>With Foil & Braided Shield<br>8 X 26 AWG<br>60V, 2A<br>-40°C to +75°C<br>6.3mm OD        | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield                    | MDE45PB-8MFP-**  | MDE45PB-8MMP-**  | MDE45PB-8FFP-**  |
|                                                                                                | Teal PUR<br>With Foil & Braided Shield<br>8 X 26 AWG<br>60V, 2A<br>-40°C to +75°C<br>6.3mm OD        | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield<br>to Coupling Nut | MDE45PB-8MFPS-** | MDE45PB-8MMPS-** | MDE45PB-8FFPS-** |
|                                                                                                | Teal TPE<br>AWM<br>With Foil & Braided Shield<br>8 X 24 AWG<br>60V, 2A<br>-40°C to +80°C<br>7.6mm OD | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield                                                    | MDE45WB-8MFP-**  | MDE45WB-8MMP-**  | MDE45WB-8FFP-**  |
|                                                                                                | Teal TPE<br>AWM<br>With Foil & Braided Shield<br>8 X 24 AWG<br>60V, 2A<br>-40°C to +80°C<br>7.6mm OD | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield<br>to Coupling Nut                                 | MDE45WB-8MFPS-** | MDE45WB-8MMPS-** | MDE45WB-8FFPS-** |

\*\* Lengths in meters. Standard cable lengths are 1, 2, 4, 5, 6, 10 & 15 meters. Consult factory for other lengths.

Standard coupling nut is nickel plated brass, for stainless steel coupling nut add a "-SS" suffix. (e.g. MDE45-8MFP-1M becomes MDE45-8MFP-1M-SS)



Male Plug



Female Plug



# Ethernet (M12) Series Etherplug Cordsets

4 Conductor Ethernet Series Cordsets, 24AWG



Double Ended Cordsets | 42 VDC, 1.5 amps | CAT5e | D-Coded | Twisted Pairs | IP20 Rating



| Male Faceview | Cables                                                                                                   | Features                                                                                               | Shield Type           | Male to RJ45                                                     | Female to RJ45                                                   |
|---------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------|------------------------------------------------------------------|------------------------------------------------------------------|
| <br>M12 x 1   | Teal PVC<br>AWM<br>4 X 24 AWG<br>42VDC, 1.5A<br>-20°C to +80°C<br>6.1mm OD                               | Industry Standard PVC                                                                                  | Shield not Terminated | MDE45-4MP-RJ45-**                                                | MDE45-4FP-RJ45-**                                                |
|               | Teal PVC<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>42VDC, 1.5A<br>-20°C to +80°C<br>6.6mm OD | Industry Standard PVC<br>Foil & Braided Shield                                                         | Shield not Terminated | MDE45B-4MP-RJ45-**                                               | MDE45B-4FP-RJ45-**                                               |
|               | Teal PUR<br>AWM<br>4 X 24 AWG<br>42VDC, 1.5A<br>-40°C to +80°C<br>5.6mm OD                               | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR                          | Shield not Terminated | MDE45P-4MP-RJ45-**                                               | MDE45P-4FP-RJ45-**                                               |
|               | Teal PUR<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>42VDC, 1.5A<br>-40°C to +80°C<br>6.4mm OD | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield | Shield not Terminated | MDE45PB-4MP-RJ45-**                                              | MDE45PB-4FP-RJ45-**                                              |
|               | TPE<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>42VDC, 1.5A<br>-40°C to +80°C<br>6.6mm OD      | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield                                 | Shield not Terminated | MDE45WB-4MP-RJ45-**<br>(Teal)<br>MDE45WB-4MP-RJ45-**-RD<br>(Red) | MDE45WB-4FP-RJ45-**<br>(Teal)<br>MDE45WB-4FP-RJ45-**-RD<br>(Red) |

\*\* Lengths in meters. Standard cable lengths are 1, 2, 4, 5, 6, 10 & 15 meters. Consult factory for other lengths.

Standard coupling nut is nickel plated brass, for stainless steel coupling nut add a "-SS" suffix. (e.g. MDE45-4MP-RJ45-1M becomes MDE45-4MP-RJ45-1M-SS)

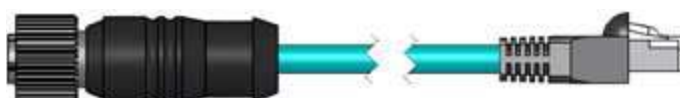
Red cable jacket is available only for TPE, for red cable jacket add a "-RD" suffix. (e.g. MDE45WB-4MSP-RJ45-1M becomes MDE45WB-4MSP-RJ45-1M-RD)

## Mencom Standard Cable Color Code

| MDE45 |  | Color        |  | RJ45 |
|-------|--|--------------|--|------|
| 1     |  | White/Orange |  | 1    |
| 3     |  | Orange       |  | 2    |
| 2     |  | White/Green  |  | 3    |
| 4     |  | Green        |  | 6    |



Male - RJ45 Extension



Female - RJ45 Extension



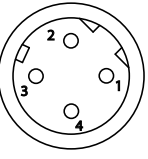
# Ethernet (M12) Series Etherplug Cordsets

4 Conductor Ethernet Series Cordsets, 24AWG



Double Ended Cordsets | 42 VDC, 1.5 amps | CAT5e | D-Coded | Twisted Pairs | IP20 Rating



| Male Faceview                                                                                | Cables                                                                                                   | Features                                                                                               | Shield Type                   | Male to RJ45          | Female to RJ45        |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------|-----------------------|
| <br>M12 x 1 | Teal PVC<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>300V, 4A<br>-20°C to +80°C<br>6.1mm OD    | Industry Standard PVC<br>Foil & Braided Shield                                                         | Shield to Coupling Nut        | MDE45B-4MSP-RJ45-**   | MDE45B-4FSP-RJ45-**   |
|                                                                                              |                                                                                                          |                                                                                                        | Shield to RJ45                | MDE45B-4MP-RJ45S-**   | MDE45B-4FP-RJ45S-**   |
|                                                                                              |                                                                                                          |                                                                                                        | Shield to Coupling Nut & RJ45 | MDE45B-4MSP-RJ45S-**  | MDE45B-4FSP-RJ45S-**  |
|                                                                                              | Teal PUR<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>42VDC, 1.5A<br>-40°C to +80°C<br>6.4mm OD | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield | Shield to Coupling Nut        | MDE45PB-4MSP-RJ45-**  | MDE45PB-4FSP-RJ45-**  |
|                                                                                              |                                                                                                          |                                                                                                        | Shield to RJ45                | MDE45PB-4MP-RJ45S-**  | MDE45PB-4FP-RJ45S-**  |
|                                                                                              |                                                                                                          |                                                                                                        | Shield to Coupling Nut & RJ45 | MDE45PB-4MSP-RJ45S-** | MDE45PB-4FSP-RJ45S-** |
|                                                                                              | TPE<br>AWM<br>With Foil & Braided Shield<br>4 X 24 AWG<br>42VDC, 1.5A<br>-40°C to +80°C<br>6.6mm OD      | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield                                 | Shield to Coupling Nut        | MDE45WB-4MSP-RJ45-**  | MDE45WB-4FSP-RJ45-**  |
|                                                                                              |                                                                                                          |                                                                                                        | Shield to RJ45                | MDE45WB-4MP-RJ45S-**  | MDE45WB-4FP-RJ45S-**  |
|                                                                                              |                                                                                                          |                                                                                                        | Shield to Coupling Nut & RJ45 | MDE45WB-4MSP-RJ45S-** | MDE45WB-4FSP-RJ45S-** |

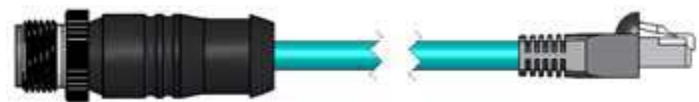
\*\* Lengths in meters. Standard cable lengths are 1, 2, 4, 5, 6, 10 & 15 meters. Consult factory for other lengths.

Standard coupling nut is nickel plated brass, for stainless steel coupling nut add a "SS" suffix. (e.g. MDE45-4MP-RJ45-1M becomes MDE45-4MP-RJ45-1M-SS)

Red cable jacket is available only for TPE, for red cable jacket add a "RD" suffix. (e.g. MDE45WB-4MSP-RJ45-1M becomes MDE45WB-4MSP-RJ45-1M-RD)

## Mencom Standard Cable Color Code

| MDE45 |  | Color        |  | RJ45 |
|-------|--|--------------|--|------|
| 1     |  | White/Orange |  | 1    |
| 3     |  | Orange       |  | 2    |
| 2     |  | White/Green  |  | 3    |
| 4     |  | Green        |  | 6    |



Male - RJ45 Extension



Female - RJ45 Extension





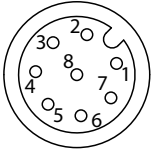
# Ethernet (M12) Series Etherplug Cordsets

8 Conductor Ethernet Series Cordsets, 24/26AWG



Double Ended Cordsets | 42 VDC, 1.5 amps | CAT5e | A-Coded | Twisted Pairs | IP20 Rating

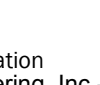


| Male Faceview                                                                                | Cables                                                                                                   | Features                                                                                               | Shield Type           | Male to RJ45        | Female to RJ45      |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------|---------------------|---------------------|
| <br>M12 x 1 | Teal PVC<br>AWM<br>8 X 24 AWG<br>42VDC, 1.5A<br>-20°C to +80°C<br>6.4mm OD                               | Industry Standard PVC                                                                                  | Shield not Terminated | MDE45-8MP-RJ45-**   | MDE45-8FP-RJ45-**   |
|                                                                                              | Teal PVC<br>AWM<br>With Foil & Braided Shield<br>8 X 24 AWG<br>42VDC, 1.5A<br>-20°C to +80°C<br>7.6mm OD | Industry Standard PVC<br>Foil & Braided Shield                                                         | Shield not Terminated | MDE45B-8MP-RJ45-**  | MDE45B-8FP-RJ45-**  |
|                                                                                              | Teal PUR<br>AWM<br>8 X 24 AWG<br>42VDC, 1.5A<br>-40°C to +80°C<br>6.3 mm OD                              | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR                          | Shield not Terminated | MDE45P-8MP-RJ45-**  | MDE45P-8FP-RJ45-**  |
|                                                                                              | Teal PUR<br>With Foil & Braided Shield<br>8 X 26 AWG<br>42VDC, 1.5A<br>-40°C to +75°C<br>6mm OD          | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield | Shield not Terminated | MDE45PB-8MP-RJ45-** | MDE45PB-8FP-RJ45-** |
|                                                                                              | Teal TPE<br>AWM<br>With Foil & Braided Shield<br>8 X 24 AWG<br>42VDC, 1.5A<br>-40°C to +80°C<br>7.6mm OD | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield                                 | Shield not Terminated | MDE45WB-8MP-RJ45-** | MDE45WB-8FP-RJ45-** |

\*\* Lengths in meters. Standard cable lengths are 1, 2, 4, 5, 6, 10 & 15 meters. Consult factory for other lengths.

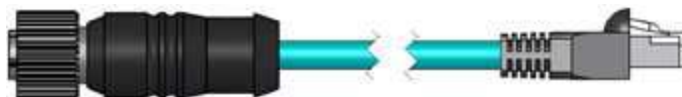
Standard coupling nut is nickel plated brass, for stainless steel coupling nut add a "-SS" suffix. (e.g. MDE45-8MP-RJ45-1M becomes MDE45-8MP-RJ45-1M-SS)

## Mencom Standard Cable Color Code

| M12 |                                                                                     | Color        |                                                                                     | RJ45 |
|-----|-------------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------|------|
| 6   |  | White/Orange |  | 1    |
| 4   |  | Orange       |  | 2    |
| 1   |  | White/Blue   |  | 5    |
| 7   |  | Blue         |  | 4    |
| 5   |  | White/Green  |  | 3    |
| 8   |  | Green        |  | 6    |
| 2   |  | White/Brown  |  | 7    |
| 3   |  | Brown        |  | 8    |



Male - RJ45 Extension



Female - RJ45 Extension





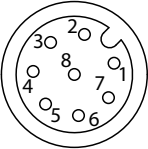
# Ethernet (M12) Series Etherplug Cordsets

8 Conductor Ethernet Series Cordsets, 24/26AWG



Double Ended Cordsets | 42 VDC, 1.5 amps | CAT5e | A-Coded | Twisted Pairs | IP20 Rating



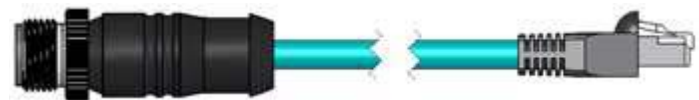
| Male Faceview                                                                                | Cables                                                                                                   | Features                                                                                               | Shield Type                   | Male to RJ45          | Female to RJ45        |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------|-----------------------|
| <br>M12 x 1 | Teal PUR<br>With Foil & Braided Shield<br>8 X 26 AWG<br>42VDC, 1.5A<br>-40°C to +75°C<br>6mm OD          | Continuous-Flex<br>Oil and Cutting Fluid<br>Resistant<br>Cut Resistant<br>PUR<br>Foil & Braided Shield | Shield to Coupling Nut        | MDE45PB-8MSP-RJ45-**  | MDE45PB-8FSP-RJ45-**  |
|                                                                                              |                                                                                                          |                                                                                                        | Shield to RJ45                | MDE45PB-8MP-RJ45S-**  | MDE45PB-8FP-RJ45S-**  |
|                                                                                              |                                                                                                          |                                                                                                        | Shield to Coupling Nut & RJ45 | MDE45PB-8MSP-RJ45S-** | MDE45PB-8FSP-RJ45S-** |
|                                                                                              | Teal TPE<br>AWM<br>With Foil & Braided Shield<br>8 X 24 AWG<br>42VDC, 1.5A<br>-40°C to +80°C<br>7.6mm OD | Continuous-Flex<br>Weld Slag<br>Resistant TPE<br>Foil & Braided Shield                                 | Shield to Coupling Nut        | MDE45WB-8MSP-RJ45-**  | MDE45WB-8FSP-RJ45-**  |
|                                                                                              |                                                                                                          |                                                                                                        | Shield to RJ45                | MDE45WB-8MP-RJ45S-**  | MDE45WB-8FP-RJ45S-**  |
|                                                                                              |                                                                                                          |                                                                                                        | Shield to Coupling Nut & RJ45 | MDE45WB-8MSP-RJ45S-** | MDE45WB-8FSP-RJ45S-** |

\*\* Lengths in meters. Standard cable lengths are 1, 2, 4, 5, 6, 10 & 15 meters. Consult factory for other lengths.

Standard coupling nut is nickel plated brass, for stainless steel coupling nut add a "-SS" suffix. (e.g. MDE45-8FP-RJ45-1M becomes MDE45-8FP-RJ45-1M-SS)

## Mencom Standard Cable Color Code

| M12 |                                                                                     | Color        |                                                                                     | RJ45 |
|-----|-------------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------|------|
| 6   |  | White/Orange |  | 1    |
| 4   |  | Orange       |  | 2    |
| 1   |  | White/Blue   |  | 5    |
| 7   |  | Blue         |  | 4    |
| 5   |  | White/Green  |  | 3    |
| 8   |  | Green        |  | 6    |
| 2   |  | White/Brown  |  | 7    |
| 3   |  | Brown        |  | 8    |



Male - RJ45 Extension



Female - RJ45 Extension



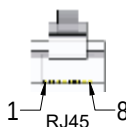
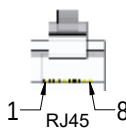
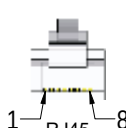
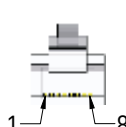
# Ethernet Series Etherlink RJ45 Cordsets

8 Conductor Ethernet Series RJ45 Cordsets



Double Ended Cordsets | 42 VDC, 1.5 amps | CAT5e/CAT6a | Strain Relief | IP20 Rating

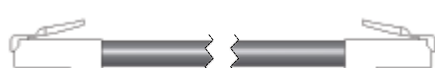


| RJ45 Male to Male Plug with No Strain Relief          |                                                                                     |                           |                    |                    |                                             |                |                 |
|-------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------|--------------------|--------------------|---------------------------------------------|----------------|-----------------|
| # of Poles                                            | Front View                                                                          | Wire AWG Rating           | Cable Standard     | Cables             | Shield Type                                 | Jacket Color   | Part Number     |
| 8                                                     |    | 24 AWG                    | CAT5e              | PVC                | N/A                                         | Gray           | RJ45-*          |
|                                                       |                                                                                     | 42 VDC<br>1.5 A           |                    | PUR                | N/A                                         | Gray           | RJ45P-**        |
| RJ45 Male to Male Plug with Over-Molded Strain Relief |                                                                                     |                           |                    |                    |                                             |                |                 |
| 8                                                     |    | 24 AWG<br>42 VDC<br>1.5 A | CAT5e              | PVC<br>Over-Molded | N/A                                         | Blue           | RJ45-IC-*-BU    |
|                                                       |                                                                                     |                           |                    |                    |                                             | Red            | RJ45-IC-*-RD    |
|                                                       |                                                                                     |                           |                    |                    |                                             | Black          | RJ45-IC-*-BK    |
|                                                       |                                                                                     |                           |                    |                    | Foil Shield<br>to RJ45 Connectors           | Gray           | RJ45S-IC-*-GY   |
|                                                       |                                                                                     |                           |                    |                    |                                             | Blue           | RJ45S-IC-*-BU   |
|                                                       |                                                                                     | CAT6a                     | PVC<br>Over-Molded | N/A                | Blue                                        | RJ45C6-IC-*-BU |                 |
| RJ45 Male to Male Plug with Strain Relief             |                                                                                     |                           |                    |                    |                                             |                |                 |
| 4                                                     |  | 24 AWG<br>42 VDC<br>1.5 A | CAT5e              | PVC                | N/A                                         | Teal           | RJ45-4MMP-**    |
|                                                       |                                                                                     |                           |                    | PVC                | Foil Shield<br>to RJ45 Connectors           | Teal           | RJ45S-4MMP-**   |
|                                                       |                                                                                     |                           |                    | PUR                | Foil & Braided Shield<br>to RJ45 Connectors | Teal           | RJ45SP-4MMP-**  |
|                                                       |                                                                                     |                           |                    | TPE                | Foil & Braided Shield<br>to RJ45 Connectors | Teal           | RJ45SW-4MMP-**  |
| 8                                                     |  | 24 AWG<br>42 VDC<br>1.5 A | CAT5e              | PVC                | N/A                                         | Teal           | RJ45-8MMP-**    |
|                                                       |                                                                                     |                           |                    | PUR                | N/A                                         | Teal           | RJ45P-8MMP-**   |
|                                                       |                                                                                     |                           |                    | PUR                | Foil & Braided Shield<br>to RJ45 Connectors | Teal           | RJ45SP -8MMP-** |
|                                                       |                                                                                     |                           |                    | TPE                | Foil & Braided Shield<br>to RJ45 Connectors | Teal           | RJ45SW-8MMP-**  |
|                                                       |                                                                                     | 26 AWG<br>42 VDC<br>1.5 A | CAT5e              | PVC                | Foil Shield<br>to RJ45 Connectors           | Blue           | RJ45S-8MMP-**   |
|                                                       |                                                                                     |                           | CAT6a              | PVC                | Foil Shield<br>to RJ45 Connectors           | Blue           | RJ45C6-8MMPS-** |

\* Lengths in feet. Standard cable lengths are 1, 3, 7, 10, 15, 20, 25 & 50 feet. Consult factory for other lengths.

\*\* Lengths in meters. Standard cable lengths are 1, 2, 4, 5, 6, 10 & 15 meters. Consult factory for other lengths.

Cable specifications on Page 174~175 apply to only 24 AWG 4MMP & 8MMP cables in the table.



RJ45 Male to Male Plug



Over-Molded RJ45 Male to Male Plug



RJ45 Male to Male Plug with Strain Relief



# Ethernet (M12) Series Armored Cordsets

Connectivity Solutions for Harsh & Rugged Environments



Stainless Steel Armor | PVC Covered Jacket | Silicone Tube



| Connector Body Style | Suffix Number | Description                                   | Features                                                     |
|----------------------|---------------|-----------------------------------------------|--------------------------------------------------------------|
|                      | A01           | Stainless Steel with Cable Inside             | Crush, Corrosion and Abrasion Resistant                      |
|                      | A03           | PVC Covered Stainless Steel with Cable Inside | Water Tight<br>Crush, Corrosion and Abrasion Resistant       |
|                      | A50           | Silicone Tube (Stops at Overmold)             | Chemical and Weld Slag Resistant<br>Hi-Temperature Resistant |
|                      | A51           | Silicone Tube (Covers Overmold)               | Chemical and Weld Slag Resistant<br>Hi-Temperature Resistant |

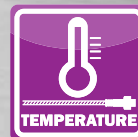
To specify Armored Cable, add the suffix number shown in the table above to the end of the part number (e.g. MDE45-4FP-1M becomes MDE45-4FP-1M-A03).

## Why do I need this product?

- To extend the life of existing assemblies in potentially destructive environments.
- Connectorize to make faster installation and future repairs.

## Where are these products used?

Harsh & Rugged Environments exposed to Chemicals, Abrasions, High Temperature, Wash Down, Welding, Cutting, Marine Applications...





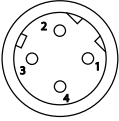
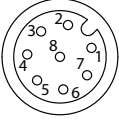
# Ethernet (M12) Series Etherplug Field Wireable Plugs

4 Conductor Ethernet Series Field Wireable Plugs, 18-24AWG



Field Wireable Plugs | 4 Pole D-Coded | 8 Pole A-Coded | IP67 Rating



| # of Poles | Male Faceview                                                                                | Wire AWG Rating         | Cable O.D. Range | Male plugs     |                  | Female Plugs   |                  |
|------------|----------------------------------------------------------------------------------------------|-------------------------|------------------|----------------|------------------|----------------|------------------|
|            |                                                                                              |                         |                  | Straight       | Right Angle      | Straight       | Right Angle      |
| 4          | <br>M12 x 1 | 18-24 AWG<br>250V<br>4A | 3-6.5 mm         | MDE45-4MP-FW07 | MDE45-4MP-FW07-R | MDE45-4FP-FW07 | MDE45-4FP-FW07-R |
|            |                                                                                              |                         | 4-8 mm           | MDE45-4MP-FW09 | MDE45-4MP-FW09-R | MDE45-4FP-FW09 | MDE45-4FP-FW09-R |
| 8          | <br>M12 x 1 | 18-24 AWG<br>250V<br>4A | 3-6.5 mm         | MDC-8MP-FW07   | MDC-8MP-FW07-R   | MDC-8FP-FW07   | MDC-8FP-FW07-R   |
|            |                                                                                              |                         | 4-8 mm           | MDC-8MP-FW09   | MDC-8MP-FW09-R   | MDC-8FP-FW09   | MDC-8FP-FW09-R   |

These connectors are easily wired by inserting the individual wires into the screw terminal contacts.  
The Connectors are water tight to IP67 and are fully mateable with other D-Coded M12 connectors.

## Straight Field Wireable Plugs



Male Plugs



Female Plugs

## Right Angle Field Wireable Plugs



Male Plugs



Female Plugs

## Specifications:

Body: Black Polyamide  
Insulator: Black Polyamide  
Contacts: Copper Alloy with Gold Plating  
Coupling Nut: Nickel Plated Brass  
Seal: NBR  
Temperature: -25°C to +85°C (-13°F to +185°F)



# Ethernet (M12) Series Etherplug Field Wireable Plugs

4 & 8 Conductor Ethernet Series Field Wireable Plugs, 18-24/20-24AWG



Straight Field Wireable Plugs | Shielded | 4 Pole D-Coded | 8 Pole A-Coded | IP67 Rating

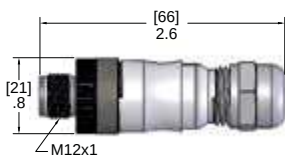


| # of Poles | Male Faceview | Rating     | Wire AWG  | Cable O.D. Range | Part Number   |               |
|------------|---------------|------------|-----------|------------------|---------------|---------------|
|            |               |            |           |                  | Male Plugs    | Female Plugs  |
| 4          | <br>M12 x 1   | 250V<br>4A | 18-24 AWG | 3-9 mm           | MDE45M-4MP-FW | MDE45M-4FP-FW |
| 8          | <br>M12 x 1   | 50V<br>4A  | 20-24AWG  | 6-8 mm           | MDCM-8MP-FW   | MDCM-8FP-FW   |

These connectors are easily wired by inserting the individual wires into the screw terminal contacts. The Connectors are water tight to IP 67 and are fully mateable with other D-Coded M12 connectors.

## 4 Pole Version

## 8 Pole Version



Male Straight



Female Straight



Male Straight



Female Straight



## Specifications:

Body: Nickel Plated Brass  
Insulator: Black Polyamide  
Contacts: Copper Alloy with Gold Plating

Coupling Nut: Nickel Plated Brass  
Seal: NBR  
Temperature: -25°C to +85°C (-13°F to +185°F)



# Ethernet Series Accessories

## 4 Conductor Ethernet Series Accessory Cables



100' Cables | Raw Cable Spools | CAT5e | Twisted Pairs

| # of Conductors | Color Code                                     | Wire AWG Rating      | Features                                                                                        | DC Resistance | Continuous Flex | Part Number       |           |
|-----------------|------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------|---------------|-----------------|-------------------|-----------|
|                 |                                                |                      |                                                                                                 |               |                 | 100' Cable        | Spool     |
| 4               | White/Orange<br>White/Green<br>Orange<br>Green | 24 AWG Stranded 600V | Teal PVC<br>AWM<br>CMX/CMR<br>-20°C to +80°C<br>6.1mm OD (0.24" OD)                             | ≤ 89 Ω/Km     | No              | MDE45-4CBL-C      | 60C0001-* |
|                 |                                                | 24 AWG Stranded 600V | Teal PVC<br>AWM<br>CMX/CMR<br>With Foil/Braided Shield<br>-20°C to +80°C<br>6.6mm OD (0.26" OD) | ≤ 89 Ω/Km     | No              | MDE45B-4CBL-C     | 60CS001-* |
|                 |                                                | 24 AWG Stranded 300V | Teal PUR<br>AWM<br>-40°C to +80°C<br>5.6mm OD (0.22" OD)                                        | ≤ 91 Ω/Km     | Yes             | MDE45P-4CBL-C     | 60CP001-* |
|                 |                                                | 24 AWG Stranded 300V | Teal PUR<br>AWM<br>With Foil/Braided Shield<br>-40°C to +80°C<br>6.4mm OD (0.25" OD)            | ≤ 91 Ω/Km     | Yes             | MDE45PB-4CBL-C    | 60CSP01-* |
|                 |                                                | 24 AWG Stranded 600V | Teal TPE<br>AWM<br>CMX/CMR<br>With Foil/Braided Shield<br>-40°C to +80°C<br>6.6mm OD (0.26" OD) | ≤ 140 Ω/Km    | Yes             | MDE45WB-4CBL-C    | 60CSW01-* |
|                 |                                                | 24 AWG Stranded 600V | Red TPE<br>AWM<br>CMX/CMR<br>With Foil/Braided Shield<br>-40°C to +80°C<br>6.6mm OD (0.26" OD)  | ≤ 140 Ω/Km    | Yes             | MDE45WB-4CBL-C-RD | 60CSWR1-* |

\* Standard raw spool lengths are 0250, 0500, 0750 & 1000 feet. Consult factory for other lengths.

All testing is conducted off the reel and without connectors attached.  
Cable Construction subject to change without notice.



# Ethernet Series Accessories

## 8 Conductor Ethernet Series Accessory Cables



100' Cables | Raw Cable Spools | CAT5e | Twisted Pairs

| # of Conductors | Color Code                                                                                   | Wire AWG Rating      | Features                                                                         | DC Resistance | Continuous Flex | Part Number    |           |
|-----------------|----------------------------------------------------------------------------------------------|----------------------|----------------------------------------------------------------------------------|---------------|-----------------|----------------|-----------|
|                 |                                                                                              |                      |                                                                                  |               |                 | 100' Cable     | Spool     |
| 8               | White/Blue<br>White/Brown<br>Brown<br>Orange<br>White/Green<br>White/Orange<br>Blue<br>Green | 24 AWG Stranded 600V | Teal PVC AWM CMX/CMR -20°C to +80°C 6.4mm OD (0.25" OD)                          | ≤ 89 Ω/Km     | No              | MDE45-8CBL-C   | 60G0001-* |
|                 |                                                                                              | 24 AWG Stranded 600V | Teal PVC AWM With Foil/Braided Shield -20°C to +80°C 7.6mm OD (0.30" OD)         | ≤ 89 Ω/Km     | No              | MDE45B-8CBL-C  | 60GS001-* |
|                 |                                                                                              | 24 AWG Stranded 300V | Teal PUR AWM -40°C to +80°C 6.3mm OD (0.25" OD)                                  | ≤ 91 Ω/Km     | Yes             | MDE45P-8CBL-C  | 60GP001-* |
|                 |                                                                                              | 26 AWG Stranded 300V | Teal PUR CMX With Foil/Braided Shield -40°C to +75°C 6mm OD (0.24" OD)           | ≤ 140 Ω/Km    | Yes             | MDE45PB-8CBL-C | 60GSP02-* |
|                 |                                                                                              | 24 AWG Stranded 600V | Teal TPE AWM CMX/CMR With Foil/Braided Shield -40°C to +80°C 7.6mm OD (0.30" OD) | ≤ 86 Ω/Km     | Yes             | MDE45WB-8CBL-C | 60GSW01-* |

\* Standard raw spool lengths are 0250, 0500, 0750 & 1000 feet. Consult factory for other lengths.

All testing is conducted off the reel and without connectors attached.

Cable Construction subject to change without notice.





## Notes:



# Ethernet (M12) Series Etherplug Receptacles

## Ethernet Series Receptacle Part Number Matrix



Not all options available with all receptacles, please consult factory.

MDE45 -  -  -  -  -  -  -  -

### Number of Conductors

4  
8

### Connector Configuration

MR = Male Receptacle  
FR = Female Receptacle

### RJ45

Blank = No RJ45  
RJ45 = RJ45 Male on Second End  
RJ45S = RJ45 Shielded Male on Second End

### Mounting Style

2 = Front Mount 1/2"-14 NPT  
4 = Front Mount 1/4"-18 NPT  
PG9 = Front Mount PG 9 Threads  
M16 = Front Mount Metric 16 Threads  
M20 = Front Mount Metric 20 Threads  
BM = Back Mount  
TM = Through Panel Mount

### Shell Material

Blank = Aluminum or Nickel plated brass  
SS = Stainless Steel

### Color Code

Blank = Standard Color Code w/ Cable  
E45 = Discrete Wire Ethernet Color Code  
CC = Cross-Over Color Code

### Length in Meters

### Termination Type

Blank = Pre-Wired  
PCB = PCB Mount  
PCB-R = PCB Right Angle



# Ethernet (M12) Series Etherplug Receptacles

## Ethernet Series Receptacle Index



### Front Mount

|                                                             |                                                               |
|-------------------------------------------------------------|---------------------------------------------------------------|
| <b>Front Mount, Male, 1/4"-18NPT, 12" Leads</b><br>Page 183 | <b>Front Mount, Female, 1/4"-18NPT, 12" Leads</b><br>Page 183 |
|                                                             |                                                               |
| <b>Front Mount, Male, 1/2"-14NPT, 12" Leads</b><br>Page 183 | <b>Front Mount, Female, 1/2"-14NPT, 12" Leads</b><br>Page 183 |
|                                                             |                                                               |
| <b>Front Mount, Male, PG 9, 12" Leads</b><br>Page 183       | <b>Front Mount, Female, PG 9, 12" Leads</b><br>Page 183       |
|                                                             |                                                               |
| <b>Front Mount, Male, M20, 12" Leads</b><br>Page 183        | <b>Front Mount, Female, M20, 12" Leads</b><br>Page 183        |
|                                                             |                                                               |

|                                                   |          |                                                     |          |
|---------------------------------------------------|----------|-----------------------------------------------------|----------|
| <b>Front Mount, Male, 1/4"-18NPT, CAT5e Cable</b> | Page 184 | <b>Front Mount, Female, 1/4"-18NPT, CAT5e Cable</b> | Page 184 |
|                                                   |          |                                                     |          |
| <b>Front Mount, Male, 1/2"-14NPT, CAT5e Cable</b> | Page 184 | <b>Front Mount, Female, 1/2"-14NPT, CAT5e Cable</b> | Page 184 |
|                                                   |          |                                                     |          |
| <b>Front Mount, Male, PG 9, CAT5e Cable</b>       | Page 184 | <b>Front Mount, Female, PG 9, CAT5e Cable</b>       | Page 184 |
|                                                   |          |                                                     |          |
| <b>Front Mount, Male, M20, CAT5e Cable</b>        | Page 184 | <b>Front Mount, Female, M20, CAT5e Cable</b>        | Page 184 |
|                                                   |          |                                                     |          |



# Ethernet (M12) Series Etherplug Receptacles

Ethernet Series Receptacle Index



Front Mount | Back Mount

|                                                            |                                                              |
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| <b>Front Mount, Male, 1/2"-14NPT to Male RJ45</b> Page 185 | <b>Front Mount, Female, 1/2"-14NPT to Male RJ45</b> Page 185 |
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| <b>Back Mount, Male, 12" Leads</b> Page 186                | <b>Back Mount, Female, 12" Leads</b> Page 186                |
|                                                            |                                                              |
| <b>Back Mount, Male, CAT5e Cable</b> Page 186              | <b>Back Mount, Female, CAT5e Cable</b> Page 186              |
|                                                            |                                                              |
| <b>Male Back Mount MDE45 Male to Male RJ45</b> Page 187    | <b>Female Back Mount MDE45 Female to Male RJ45</b> Page 187  |
|                                                            |                                                              |



| PCB Mount, Male, Straight            | PCB Mount, Female, Straight            |
|--------------------------------------|----------------------------------------|
| <p>Page 188</p>                      | <p>Page 188</p>                        |
| PCB Mount, Male, Right Angle         | PCB Mount, Female, Right Angle         |
| <p>Page 188</p>                      | <p>Page 188</p>                        |
| PCB Back Mount, Male                 | PCB Back Mount, Female                 |
| <p>Page 188</p>                      | <p>Page 188</p>                        |
| Panel Mount, Male M12 to Female RJ45 | Panel Mount, Female M12 to Female RJ45 |
| <p>Page 189</p>                      | <p>Page 189</p>                        |





# Ethernet (M12) Series Etherplug Receptacles

## Ethernet Series Receptacle Index



Through Panel Mount | Panel Mount Adapter | Etherlink V3

| Through Panel Mount                                | Page 190 | Panel Mount Adapter, MDE45 to RJ45                | Page 192 ~ 193 |
|----------------------------------------------------|----------|---------------------------------------------------|----------------|
|                                                    |          |                                                   |                |
| RJ45 Etherlink V3 Female to Male RJ45, CAT5e Cable | Page 198 | RJ45 Etherlink V3 Female to 110 Puchdown Block    | Page 198       |
|                                                    |          |                                                   |                |
| RJ45 Etherlink V3 Female to Female RJ45 Receptacle | Page 198 | RJ45 Etherlink V3 Field Wireable, Solder to Board | Page 198       |
|                                                    |          |                                                   |                |





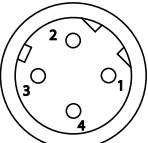
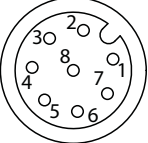
# Ethernet (M12) Series Etherplug Receptacles

## 4 & 8 Conductor Ethernet Series Receptacles, 24AWG



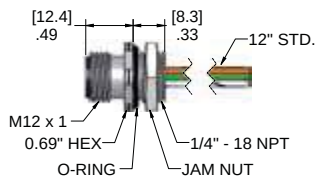
Front Mount Receptacles | NPT, PG, Metric Threads | 12" Leads | 300V, 4A | 60V, 2A | IP67 Rating



| # of Poles          | Male Faceview                                                                                | Rating     | Wire AWG | Threads    | Male Receptacles  | Female Receptacles |
|---------------------|----------------------------------------------------------------------------------------------|------------|----------|------------|-------------------|--------------------|
| <b>4</b><br>D-Coded | <br>M12 x 1 | 300V<br>4A | 22 AWG   | 1/4"-18NPT | MDE45-4MR-4-E45   | MDE45-4FR-4-E45    |
|                     |                                                                                              |            |          | 1/2"-14NPT | MDE45-4MR-2-E45   | MDE45-4FR-2-E45    |
|                     |                                                                                              |            |          | PG9        | MDE45-4MR-PG9-E45 | MDE45-4FR-PG9-E45  |
|                     |                                                                                              |            |          | Metric     | MDE45-4MR-M20-E45 | MDE45-4FR-M20-E45  |
| <b>8</b><br>A-Coded | <br>M12 x 1 | 60V<br>2A  | 24 AWG   | 1/4"-18NPT | MDC-8MR-4-E45     | MDC-8FR-4-E45      |
|                     |                                                                                              |            |          | 1/2"-14NPT | MDC-8MR-2-E45     | MDC-8FR-2-E45      |
|                     |                                                                                              |            |          | PG9        | MDC-8MR-PG9-E45   | MDC-8FR-PG9-E45    |
|                     |                                                                                              |            |          | Metric     | MDC-8MR-M20-E45   | MDC-8FR-M20-E45    |

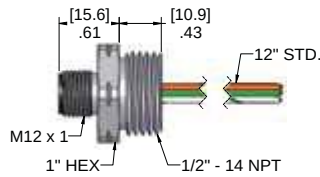
Etherplug receptacles with 12" leads or shorter come with discrete wires.  
For 1/2" receptacles with lengths of 15" or longer O-ring and lock nut are included.

### 1/4"-18NPT Threads



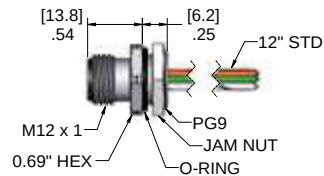
Male Receptacles

### 1/2"-14NPT Threads



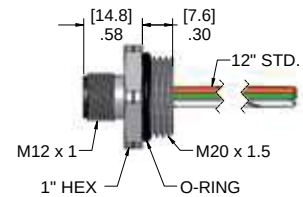
Male Receptacles

### PG9 Threads

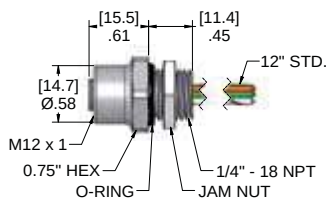


Male Receptacles

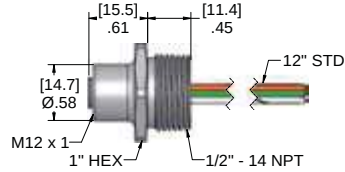
### M20 Threads



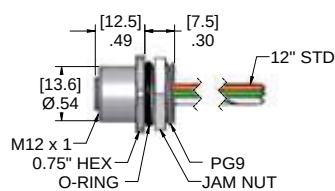
Male Receptacles



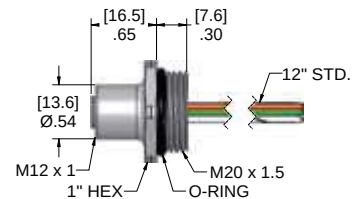
Female Receptacles



Female Receptacles



Female Receptacles



Female Receptacles

### Specifications:

Shell:  
 1/4" NPT: Nickel Plated Brass  
 1/2" NPT: Clear Anodized Aluminum  
 PG 9: Nickel Plated Brass  
 M20: Clear Anodized Aluminum  
 Insulator: Polyamide  
 Wires: 24 AWG 60V, 2A

Contacts: Copper Alloy with Gold Plating  
 O-Ring: NBR  
 Lock Nut: Zinc Plated Brass  
 Jam Nut: Nickel Plated Brass  
 Temperature: -40°C to +80°C (-40°F to +176°F)



# Ethernet (M12) Series Etherplug Receptacles

4 & 8 Conductor Ethernet Series Receptacles, 24AWG



Front Mount Receptacles | NPT, PG, Metric Threads | CAT5e Cable | 300V, 4A | 60V, 2A | IP67 Rating



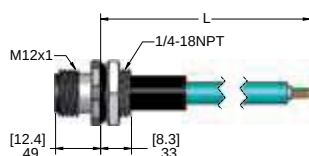
| # of Poles          | Male Faceview | Rating     | Wire AWG         | Threads    | Male Receptacles  | Female Receptacles |
|---------------------|---------------|------------|------------------|------------|-------------------|--------------------|
| <b>4</b><br>D-Coded | <br>M12 x 1   | 300V<br>4A | 2 Pair<br>22 AWG | 1/4"-18NPT | MDE45-4MR-4-**-   | MDE45-4FR-4-**-    |
|                     |               |            |                  | 1/2"-14NPT | MDE45-4MR-2-**-   | MDE45-4FR-2-**-    |
|                     |               |            |                  | PG9        | MDE45-4MR-PG9-**- | MDE45-4FR-PG9-**-  |
|                     |               |            |                  | M20        | MDE45-4MR-M20-**- | MDE45-4FR-M20-**-  |
| <b>8</b><br>A-Coded | <br>M12 x 1   | 60V<br>2A  | 4 Pair<br>24 AWG | 1/4"-18NPT | MDE45-8MR-4-**-   | MDE45-8FR-4-**-    |
|                     |               |            |                  | 1/2"-14NPT | MDE45-8MR-2-**-   | MDE45-8FR-2-**-    |
|                     |               |            |                  | PG9        | MDE45-8MR-PG9-**- | MDE45-8FR-PG9-**-  |
|                     |               |            |                  | M20        | MDE45-8MR-M20-**- | MDE45-8FR-M20-**-  |

\*\* Lengths in meters.

For 1/2" receptacles with lengths of 15" or longer O-ring and lock nut are included.

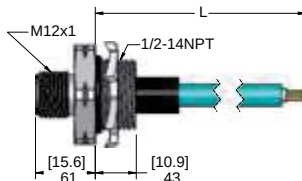
Etherplug receptacles with 12" leads or shorter come with discrete wires.

1/4"-18 NPT



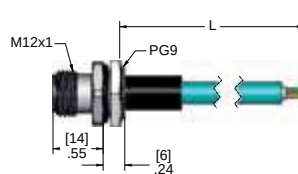
Male Receptacles

1/2"-14 NPT



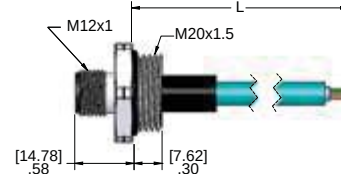
Male Receptacles

PG9 Threads

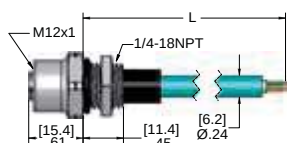


Male Receptacles

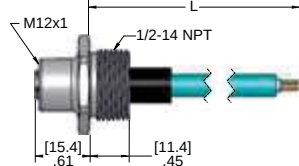
M20 Threads



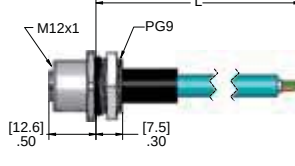
Male Receptacles



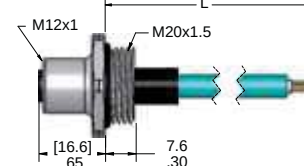
Female Receptacles



Female Receptacles



Female Receptacles



Female Receptacles

## Specifications:

|            |                                                                                                                                 |              |                                  |
|------------|---------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------|
| Shell:     | 1/4" NPT: Nickel Plated Brass<br>1/2" NPT: Clear Anodized Aluminum<br>PG 9: Nickel Plated Brass<br>M20: Clear Anodized Aluminum | Wires:       | 24 AWG 60V, 2A                   |
| Insulator: | Polyamide                                                                                                                       | Contacts:    | Copper Alloy with Gold Plating   |
| Cable:     | See PVC Cable specifications on page 174~175                                                                                    | O-Ring:      | NBR                              |
|            |                                                                                                                                 | Lock Nut:    | Zinc Plated Brass                |
|            |                                                                                                                                 | Jam Nut:     | Nickel Plated Brass              |
|            |                                                                                                                                 | Temperature: | -40°C to +80°C (-40°F to +176°F) |

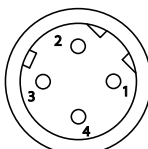
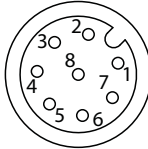


# Ethernet (M12) Series Etherplug Receptacles

4 & 8 Conductor Ethernet Series Receptacles, 24AWG



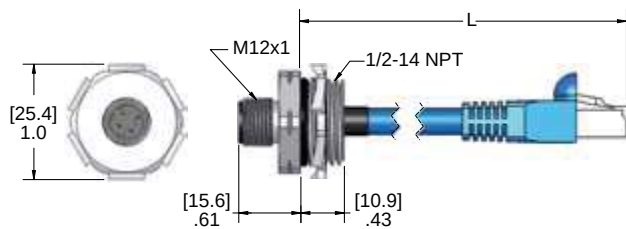
Front Mount M12 to RJ45 with CAT5e Cable | 1/2"-14NPT | 42 VDC, 1.5 amps | IP20 Rating

| # of Poles   | Male Faceview                                                                                | Rating         | Wire AWG | Wiring M12 to RJ45                                                           | Male Receptacles    | Female Receptacles  |
|--------------|----------------------------------------------------------------------------------------------|----------------|----------|------------------------------------------------------------------------------|---------------------|---------------------|
| 4<br>D-Coded | <br>M12 x 1 | 42 VDC<br>1.5A | 24 AWG   | 1 to 1<br>2 to 3<br>3 to 2<br>4 to 6                                         | MDE45-4MR-RJ45-2-** | MDE45-4FR-RJ45-2-** |
| 8<br>A-Coded | <br>M12 x 1 | 42 VDC<br>1.5A | 24 AWG   | 1 to 5<br>2 to 7<br>3 to 8<br>4 to 2<br>5 to 3<br>6 to 1<br>7 to 4<br>8 to 6 | MDE45-8MR-RJ45-2-** | MDE45-8FR-RJ45-2-** |

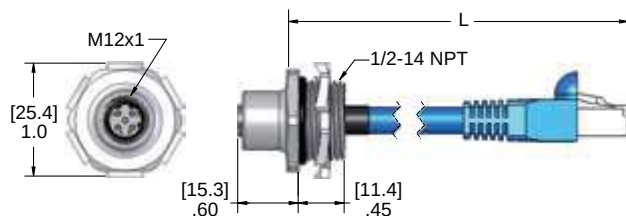
\*\* Lengths in meters.

For Cross-over color code, add a "-CC" suffix (e.g. MDE45-8MR-RJ45-BM-2M-CC).

Shielded versions are available. Please consult the factory.



Male Receptacles



Female Receptacles

## Mencom Standard Cable Color Code

| MDE45 |  | Color        |  | RJ45 |
|-------|--|--------------|--|------|
| 1     |  | White/Orange |  | 1    |
| 3     |  | Orange       |  | 2    |
| 2     |  | White/Green  |  | 3    |
| 4     |  | Green        |  | 6    |

## Mencom Standard Cable Color Code

| M12 |  | Color        |  | RJ45 |
|-----|--|--------------|--|------|
| 6   |  | White/Orange |  | 1    |
| 4   |  | Orange       |  | 2    |
| 1   |  | White/Blue   |  | 5    |
| 7   |  | Blue         |  | 4    |
| 5   |  | White/Green  |  | 3    |
| 8   |  | Green        |  | 6    |
| 2   |  | White/Brown  |  | 7    |
| 3   |  | Brown        |  | 8    |

## Specifications:

Shell: Clear Anodized Aluminum  
Insulator: Polyamide  
Cable: See specifications on page 174~175  
Contacts: Copper Alloy with Gold Plating  
O-Ring: NBR  
Lock Nut: Zinc Plated Brass  
Temperature: -40°C to +80°C (-40°F to +176°F)



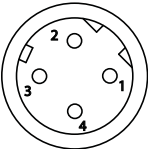
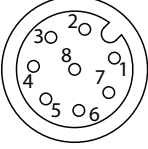
# Ethernet (M12) Series Etherplug Receptacles

4 & 8 Conductor Ethernet Series Receptacles, 24AWG



Back Mount Receptacles | 12" Leads & CAT5e Cable | 60 Volt, 2 amps | IP67 Rating

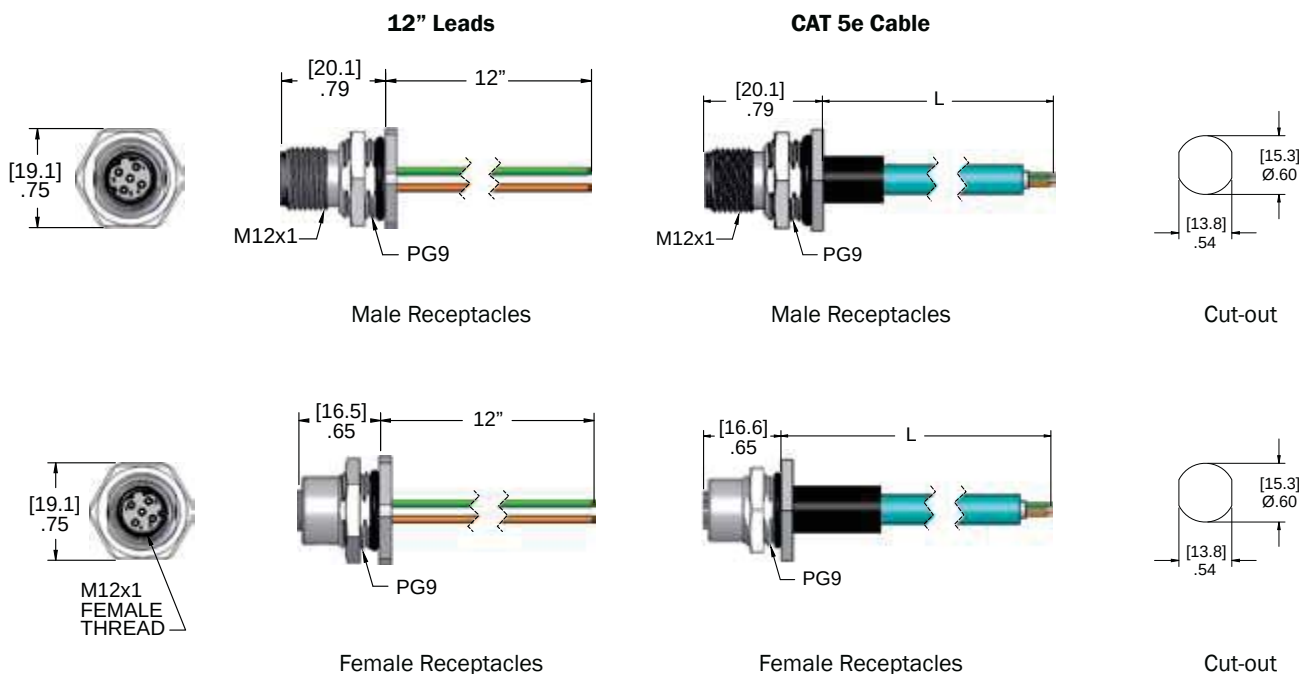


| # of Poles   | Male Faceview                                                                                | Wire AWG Rating     | 12" Leads        |                    | CAT5e Cable      |                    |
|--------------|----------------------------------------------------------------------------------------------|---------------------|------------------|--------------------|------------------|--------------------|
|              |                                                                                              |                     | Male Receptacles | Female Receptacles | Male Receptacles | Female Receptacles |
| 4<br>D-Coded | <br>M12 x 1 | 24 AWG<br>60V<br>2A | MDE45-4MR-BM-E45 | MDE45-4FR-BM-E45   | MDE45-4MR-BM-**  | MDE45-4FR-BM-**    |
| 8<br>A-Coded | <br>M12 x 1 | 24 AWG<br>60V<br>2A | MDC-8MR-BM-E45   | MDC-8FR-BM-E45     | MDE45-8MR-BM-**  | MDE45-8FR-BM-**    |

\*\* Lengths in meters.

Etherplug receptacles with 12" leads or shorter come with discrete wires.

Shielded versions are available. Please consult the factory.



## Specifications:

Shell: Nickel Plated Brass  
 Insulator: Polyamide  
 Cable: See PVC Cable specifications on page 174~175  
 Wires: 24 AWG 60V, 2A

Contacts: Copper Alloy with Gold Plating  
 O-Ring: NBR  
 Jam Nut: Nickel Plated Brass  
 Temperature: -40°C to +80°C (-40°F to +176°F)



# Ethernet (M12) Series Etherplug Receptacles

4 & 8 Conductor Ethernet Series Receptacles, 24AWG



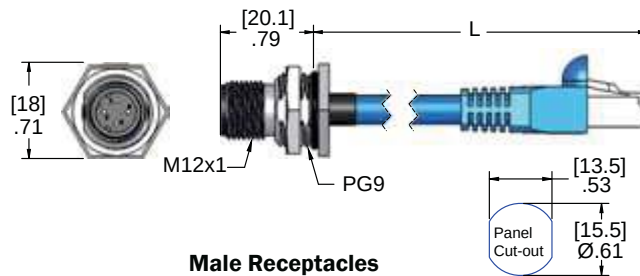
Back Mount Receptacles | CAT5e Cable | 60 Volt, 2 amps | IP20 Rating

| # of Poles   | Male Faceview | Rating         | Wire AWG | Wiring M12 to RJ45                                                           | Male Receptacles     | Female Receptacles   |
|--------------|---------------|----------------|----------|------------------------------------------------------------------------------|----------------------|----------------------|
| 4<br>D-Coded | <br>M12 x 1   | 42 VDC<br>1.5A | 24 AWG   | 1 to 1<br>2 to 3<br>3 to 2<br>4 to 6                                         | MDE45-4MR-RJ45-BM-** | MDE45-4FR-RJ45-BM-** |
| 8<br>A-Coded | <br>M12 x 1   | 42 VDC<br>1.5A | 24 AWG   | 1 to 5<br>2 to 7<br>3 to 8<br>4 to 2<br>5 to 3<br>6 to 1<br>7 to 4<br>8 to 6 | MDE45-8MR-RJ45-BM-** | MDE45-8FR-RJ45-BM-** |

\*\* Lengths in meters.

For Cross-over color code, add a "-CC" suffix (e.g. MDE45-8MR-RJ45-BM-2M-CC).

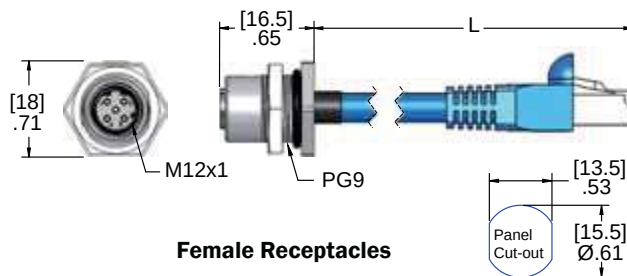
Shielded versions are available. Please consult the factory.



Male Receptacles

## Mencom Standard Cable Color Code

| MDE45 |  | Color        |  | RJ45 |
|-------|--|--------------|--|------|
| 1     |  | White/Orange |  | 1    |
| 3     |  | Orange       |  | 2    |
| 2     |  | White/Green  |  | 3    |
| 4     |  | Green        |  | 6    |



Female Receptacles

## Mencom Standard Cable Color Code

| M12 |  | Color        |  | RJ45 |
|-----|--|--------------|--|------|
| 6   |  | White/Orange |  | 1    |
| 4   |  | Orange       |  | 2    |
| 1   |  | White/Blue   |  | 5    |
| 7   |  | Blue         |  | 4    |
| 5   |  | White/Green  |  | 3    |
| 8   |  | Green        |  | 6    |
| 2   |  | White/Brown  |  | 7    |
| 3   |  | Brown        |  | 8    |

## Specifications:

Shell: Nickel Plated Brass  
Insulator: Polyamide  
Cable: See specifications on page 174~175  
Contacts: Copper Alloy with Gold Plating  
O-Ring: NBR  
Jam Nut: Nickel Plated Brass  
Temperature: -40°C to +80°C (-40°F to +176°F)



# Ethernet (M12) Series Etherplug Receptacles

## 4 & 8 Conductor Ethernet Series Receptacles

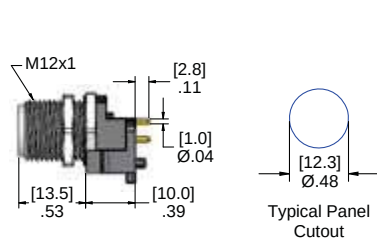


PCB Mount & PCB Back Mount Receptacles | 250V, 4A | 30V, 2A | IP67 Rating

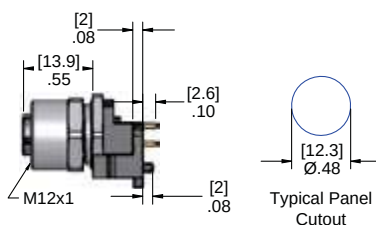


| # of Poles          | Male Faceview | Rating     | Style                   | Male Receptacles | Female Receptacles |
|---------------------|---------------|------------|-------------------------|------------------|--------------------|
| <b>4</b><br>D-Coded | <br>M12 x 1   | 250V<br>4A | Front Mount Straight    | MDE45-4MR-PCB    | MDE45-4FR-PCB      |
|                     |               |            | Front Mount Right Angle | MDE45-4MR-PCB-R  | MDE45-4FR-PCB-R    |
|                     |               |            | Back Mount              | MDE45-4MR-BM-PCB | MDE45-4FR-BM-PCB   |
| <b>8</b><br>A-Coded | <br>M12 x 1   | 30V<br>2A  | Front Mount Straight    | MDE45-8MR-PCB    | MDE45-8FR-PCB      |
|                     |               |            | Front Mount Right Angle | MDE45-8MR-PCB-R  | MDE45-8FR-PCB-R    |
|                     |               |            | Back Mount              | MDE45-8MR-BM-PCB | MDE45-8FR-BM-PCB   |

### PCB Receptacles

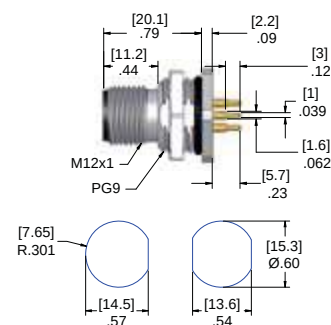


Male Receptacles



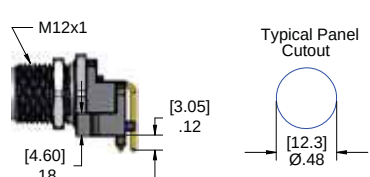
Female Receptacles

### PCB Back Mount Receptacles

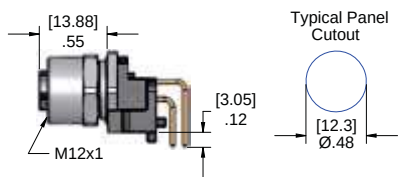


Male Receptacles

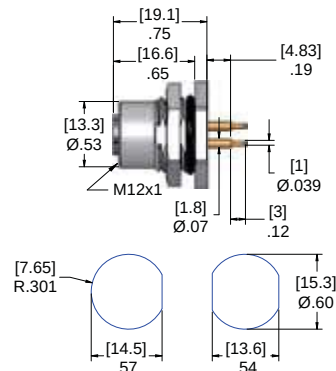
### PCB Receptacles Right Angle



Male Receptacles



Female Receptacles



Female Receptacles

### Specifications:

Body: Polyamide  
 Contacts: Copper Alloy with Gold Plating  
 Shell: Nickel Plated Brass  
 O-Ring: NBR  
 Jam Nut: Nickel Plated Brass  
 Temperature: -40°C to 105°C (-40°F to +221°F)





# Ethernet (M12) Series Etherplug Receptacles

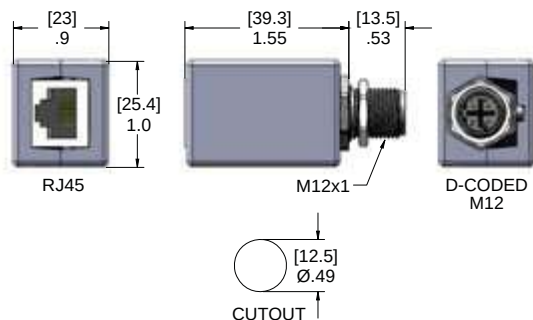
## 4 & 8 Conductor Ethernet Series Receptacles



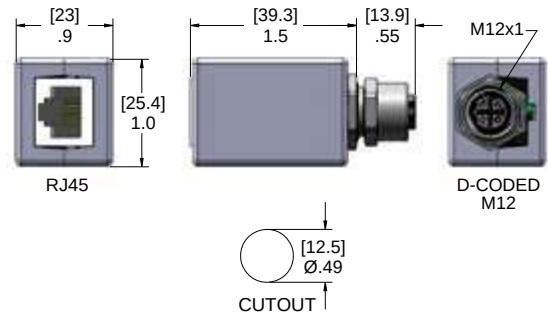
Panel Mount Receptacles | RJ45 to M12 D-Coded | IP67 Rating

| 4 Pole D-Coded MDE45 to Female RJ45 |                |                                                                                                                                              |                                                                              |                                                                                                                                               |                 |                      |
|-------------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------|
| # of Poles                          | MDE45 Faceview | MDE45 Color Code                                                                                                                             | Wiring MDE45 to RJ45                                                         | RJ45 Color Code                                                                                                                               | Part Number     | RJ45 Faceview        |
| 4<br>Male<br>D-Coded                | <br>M12 x 1    | 1. White/Orange (+TX)<br>2. White/Green (+RX)<br>3. Orange (-TX)<br>4. Green (-RX)                                                           | 1 to 1<br>2 to 3<br>3 to 2<br>4 to 6                                         | 1. White/Orange (+TX)<br>2. Orange (-TX)<br>3. White/Green (+ RX)<br>4. N/C<br>5. N/C<br>6. Green (-RX)<br>7. N/C<br>8. N/C                   | MDE45RJ-4MFR-BM | <br>87654321<br>RJ45 |
| 4<br>Female<br>D-Coded              | <br>M12 x 1    | 1. White/Orange (+TX)<br>2. White/Green (+RX)<br>3. Orange (-TX)<br>4. Green (-RX)                                                           | 1 to 1<br>2 to 3<br>3 to 2<br>4 to 6                                         | 1. White/Orange (+TX)<br>2. Orange (-TX)<br>3. White/Green (+ RX)<br>4. N/C<br>5. N/C<br>6. Green (-RX)<br>7. N/C<br>8. N/C                   | MDE45RJ-4FFR-BM | <br>87654321<br>RJ45 |
| 8 Pole A-Coded MDE45 to Female RJ45 |                |                                                                                                                                              |                                                                              |                                                                                                                                               |                 |                      |
| 8<br>Male<br>A-Coded                | <br>M12 x 1    | 1. White/Blue<br>2. White/Brown<br>3. Brown<br>4. Orange (-TX)<br>5. White/Green (+RX)<br>6. White/Orange (+TX)<br>7. Blue<br>8. Green (-RX) | 1 to 5<br>2 to 7<br>3 to 8<br>4 to 2<br>5 to 3<br>6 to 1<br>7 to 4<br>8 to 6 | 1. White/Orange (+TX)<br>2. Orange (-TX)<br>3. White/Green (+ RX)<br>4. Blue<br>5. White/Blue<br>6. Green (-RX)<br>7. White/Brown<br>8. Brown | MDE45RJ-8MFR-BM | <br>87654321<br>RJ45 |
| 8<br>Female<br>A-Coded              | <br>M12 x 1    | 1. White/Blue<br>2. White/Brown<br>3. Brown<br>4. Orange (-TX)<br>5. White/Green (+RX)<br>6. White/Orange (+TX)<br>7. Blue<br>8. Green (-RX) | 1 to 5<br>2 to 7<br>3 to 8<br>4 to 2<br>5 to 3<br>6 to 1<br>7 to 4<br>8 to 6 | 1. White/Orange (+TX)<br>2. Orange (-TX)<br>3. White/Green (+ RX)<br>4. Blue<br>5. White/Blue<br>6. Green (-RX)<br>7. White/Brown<br>8. Brown | MDE45RJ-8FFR-BM | <br>87654321<br>RJ45 |

### Male M12 to Female RJ45



### Female M12 to Female RJ45



### Specifications:

Housing: PBT  
Insulator: Polyamide  
Contacts: Copper Alloy with Gold Plating  
RJ45 Connector: CAT5e

O-Ring: NBR  
Jam Nut: Nickel Plated Brass  
Temperature: -40°C to +80°C (-40°F to +176°F)





# Ethernet (M12) Series Etherplug Receptacles

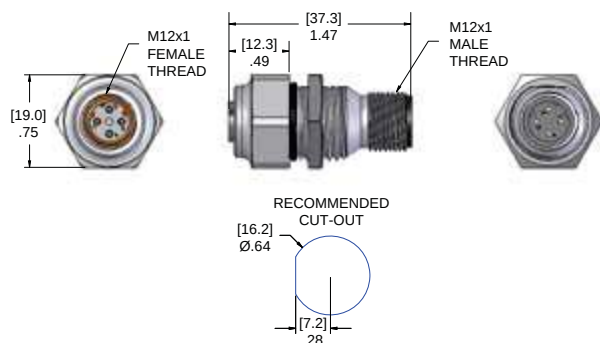
## 4 & 8 Conductor Ethernet Series Receptacles



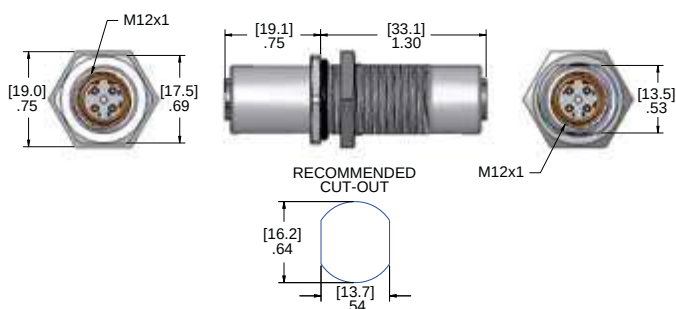
Through Panel Mount Receptacles | IP67 Rating

| # of Poles   | Rating     | Wiring                                                                       | Part Number    |                  |
|--------------|------------|------------------------------------------------------------------------------|----------------|------------------|
|              |            |                                                                              | Male to Female | Female to Female |
| 4<br>D-Coded | 300V<br>4A | 1 to 1<br>2 to 2<br>3 to 3<br>4 to 4                                         | MDE45-4MFR-TM  | MDE45-4FFR-TM    |
| 8<br>A-Coded | 60V<br>2A  | 1 to 1<br>2 to 2<br>3 to 3<br>4 to 4<br>5 to 5<br>6 to 6<br>7 to 7<br>8 to 8 | MDC-8MFR-TM    | MDC-8FFR-TM      |

### Male to Female



### Female to Female



### Specifications:

Shell: Nickel Plated Brass  
Insulator: Polyamide  
Contacts: Copper Alloy with Gold Plating

O-Ring: NBR  
Jam Nut: Nickel Plated Brass  
Temperature: -40°C to 105°C (-40°F to +221°F)

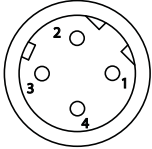
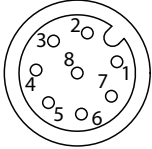


# Ethernet (M12) Series Etherplug Receptacles

## 4 & 8 Conductor Ethernet Series Solder Cup Inserts



Solder Cup Inserts | Male | 300V Max, 4A Max

| # of Poles | Male Faceview                                                                                | Rating             | Wire AWG     | Part Number     | Housing Style                                                                       |
|------------|----------------------------------------------------------------------------------------------|--------------------|--------------|-----------------|-------------------------------------------------------------------------------------|
| 4          | <br>M12 x 1 | 300V Max<br>4A Max | Up to 18 AWG | MDE45-4MR-IN-SC |  |
| 8          | <br>M12 x 1 | 60V Max<br>2A Max  | Up to 22 AWG | MDE45-8MR-IN-SC |                                                                                     |

### Specifications:

Insert: Black Polyamide  
Contacts: Copper Alloy with Gold Plating  
O-Ring: NBR  
Temperature: -40°C to 105°C (-40°F to +221°F)



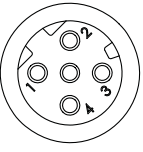
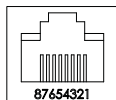
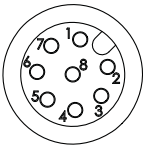
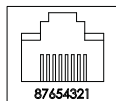
# Ethernet (M12) Series Etherplug Receptacles

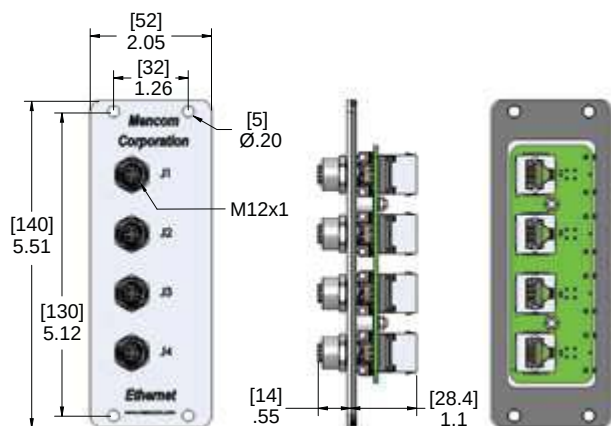
4 & 8 Conductor Ethernet Series Panel Mount Adapter



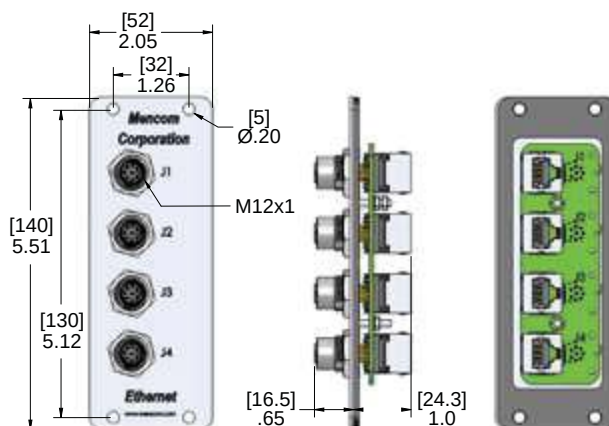
Size 24 | 4 Port | MDE45 to RJ45



| M12 4 Pole to RJ45 Panel Mount Adapters |                                                                                                                                                                                                                                                                     |                                                                                            |                     |                                                                                                                                                                                                                                                          |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| # of Poles                              | Female Faceview                                                                                                                                                                                                                                                     | Wiring MDE45                                                                               | Part Number         | RJ45 Faceview                                                                                                                                                                                                                                            |
| 4<br>D-Coded                            |  <p>1 = White/Orange (+ TX)<br/>2 = White/Green (+ RX)<br/>3 = Orange (- TX)<br/>4 = Green (- RX)</p> <p>M12 x 1</p>                                                               | <p>1 to 1<br/>2 to 3<br/>3 to 2<br/>4 to 6</p>                                             | D24-4MDE45-4FR-RJ45 |  <p>87654321</p> <p>1 = White/Orange (+ TX)<br/>2 = Orange (- TX)<br/>3 = White/Green (+ RX)<br/>4 = N/C<br/>5 = N/C<br/>6 = Green (- RX)<br/>7 = N/C<br/>8 = N/C</p> |
| M12 8 Pole to RJ45 Panel Mount Adapters |                                                                                                                                                                                                                                                                     |                                                                                            |                     |                                                                                                                                                                                                                                                          |
| 8<br>A-Coded                            |  <p>1 = White/Blue<br/>2 = White/Brown<br/>3 = Brown<br/>4 = Orange (-TX)<br/>5 = White/Green (+RX)<br/>6 = White/Orange (+TX)<br/>7 = Blue<br/>8 = Green (-RX)</p> <p>M12 x 1</p> | <p>1 to 5<br/>2 to 7<br/>3 to 8<br/>4 to 2<br/>5 to 3<br/>6 to 1<br/>7 to 4<br/>8 to 6</p> | D24-4MDE45-8FR-RJ45 |  <p>87654321</p> <p>1 = WHT/ORG (+TX)<br/>2 = ORANGE (-TX)<br/>3 = WHT/GRN (+RX)<br/>4 = BLUE<br/>5 = WHT/BLU<br/>6 = GREEN (-RX)<br/>7 = WHT/BRN<br/>8 = BROWN</p>   |



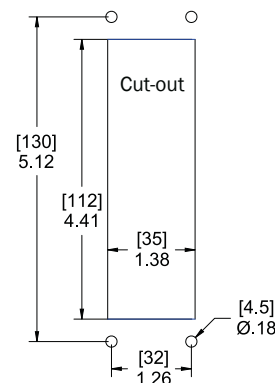
D24-4MDE45-4FR-RJ45



D24-4MDE45-8FR-RJ45

## Specifications:

|                  |                                                         |
|------------------|---------------------------------------------------------|
| Plate:           | Stainless Steel                                         |
| M12 Coupling:    | Nickel Plated Brass                                     |
| M12 Insert:      | Polyamide                                               |
| Contacts:        | Copper Alloy with Gold Plating                          |
| O-Rings:         | NBR                                                     |
| Gasket:          | PVC NBR                                                 |
| RJ45 Connector:  | CAT5e                                                   |
| Mounting Screws: | #8 or M4 Screws                                         |
| Shielding:       | Shield connected between M12 Housing and RJ45 Connector |
| Temperature:     | -40°C to +80°C (-40°F to +176°F)                        |





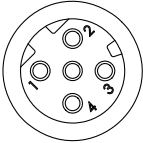
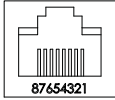
# Ethernet (M12) Series Etherplug Receptacles

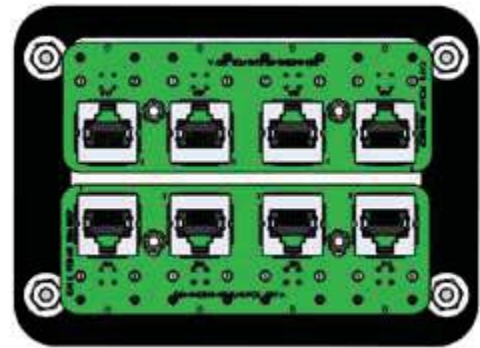
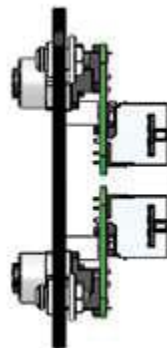
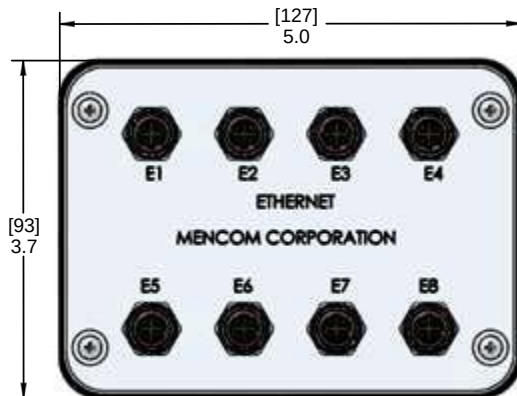
## 4 Conductor Ethernet Series Panel Mount Adapter



Size 32 | 8 Port | MDE45 to RJ45

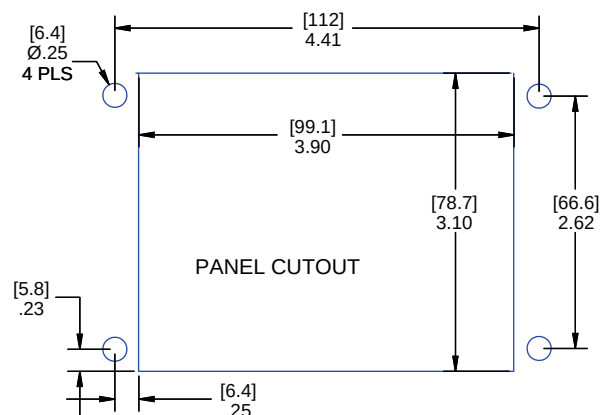


| Female Faceview                                                                            | # of Poles              | Wiring MDE45                         | Part Number         | RJ45 Faceview                                                                               |
|--------------------------------------------------------------------------------------------|-------------------------|--------------------------------------|---------------------|---------------------------------------------------------------------------------------------|
| <br>M12x1 | <b>4</b><br><br>D-Coded | 1 to 1<br>2 to 3<br>3 to 2<br>4 to 6 | D32-8MDE45-4FR-RJ45 | <br>RJ45 |



### Specifications:

|                  |                                                              |
|------------------|--------------------------------------------------------------|
| Plate:           | Stainless Steel                                              |
| M12 Coupling:    | Nickel Plated Brass                                          |
| M12 Insert:      | Polyamide                                                    |
| Contacts:        | Copper Alloy with Gold Plating                               |
| O-Rings:         | NBR                                                          |
| Gasket:          | PVC NBR                                                      |
| RJ45 Connector:  | Cat 5                                                        |
| Mounting Screws: | #8 or M4 Screws                                              |
| Shielding:       | Shield connected between<br>MDE45 Housing and RJ45 Connector |
| Temperature:     | -40°C to +80°C (-40°F to +176°F)                             |





# T35 DIN Rail Interface Modules

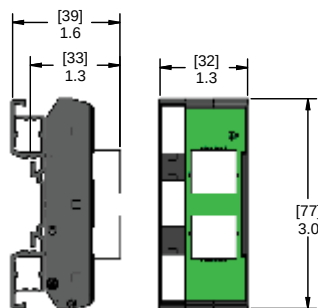
Ethernet Connector DIN Rail Modules, 30-14AWG



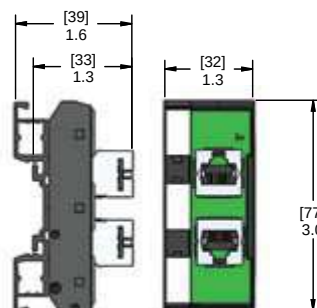
RJ45 to RJ45/Terminal Block | RJ45 to RJ45 | 250V, 1.5amps

| Connection Type A | Connection Type B           | Wire Range                                                                   | Features                                                           | Part Number        |                 |
|-------------------|-----------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------|--------------------|-----------------|
|                   |                             |                                                                              |                                                                    | Marker Tag         | No Marker Tag   |
| RJ45              | RJ45                        | 30-14AWG<br>Solid or Stranded<br>(0.05mm <sup>2</sup> - 2.5mm <sup>2</sup> ) | Shielded Sockets<br>Connected pin to pin<br>35mm DIN rail mounting | T35-RJ45-RJ45-MC   | T35-RJ45-RJ45   |
| Vertical RJ45     | Vertical RJ45               |                                                                              |                                                                    | T35-RJ45V-RJ45V-MC | T35-RJ45V-RJ45V |
| RJ45              | Spring Clamp Terminal Block |                                                                              |                                                                    | T35-RJ45-TBS-MC    | T35-RJ45-TBS    |

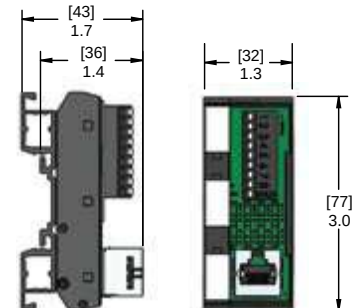
The printed circuit boards have component holes for the easy addition of LED's, resistors, or other electronic components. Other configurations are available. Please consult factory.



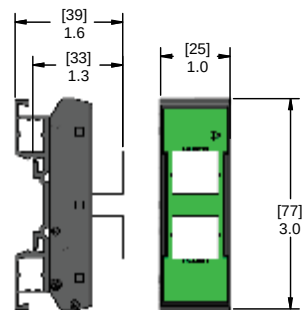
RJ45 to RJ45  
with 3 Removable Marker Tags



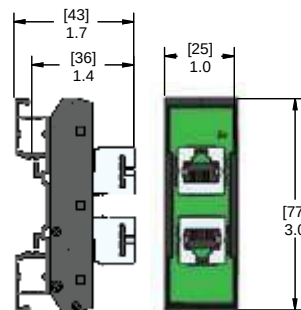
Vertical RJ45 to Vertical RJ45  
with 3 Removable Marker Tags



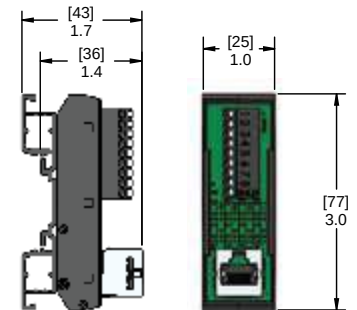
RJ45 to Spring Clamp Terminal Block  
with 3 Removable Marker Tags



RJ45 to RJ45



Vertical RJ45 to Vertical RJ45



RJ45 to Spring Clamp Terminal Block

## Specifications:

Body: Polyamide  
Screw: Galvanized Steel  
Terminal: Tin-Plated Brass  
Clamp: Nicked Brass  
Insulators: Glass-Filled Thermoplastic  
Contacts: Gold-Plated Copper Alloy

Marker Tags: Polyamide  
Wire Strip Length: 0.3in (6.7mm)  
Screw Torque: 4.4lbf-in (0.5Nm)  
Screw Size: 4-40  
Temperature: -40 °C to 105 °C



# T35 DIN Rail Interface Modules

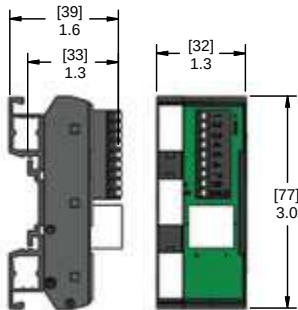
Ethernet Connector DIN Rail Modules, 30-14AWG



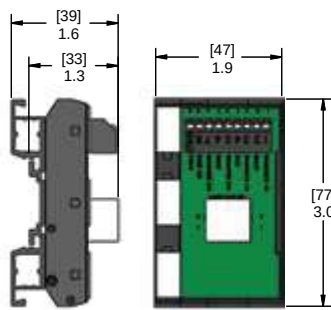
RJ45 to Terminal Block | Spring Clamp Terminal Block to Spring Clamp Terminal Block | 250V, 1.5amps

| Connection Type A                             | Connection Type B                             | Wire Range                                                                   | Features                                                                      | Part Number          |                   |
|-----------------------------------------------|-----------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------|-------------------|
|                                               |                                               |                                                                              |                                                                               | Marker Tag           | No Marker Tag     |
| Horizontal RJ45                               | Spring Clamp Terminal Block                   | 30-14AWG<br>Solid or Stranded<br>(0.05mm <sup>2</sup> - 2.5mm <sup>2</sup> ) | Shielded Sockets<br>Connected pin to pin<br>35mm DIN rail mounting            | T35-RJ45H-TBS-MC     | T35-RJ45H-TBS     |
| Horizontal RJ45                               | Horizontal Spring Clamp Terminal Block        |                                                                              |                                                                               | T35-RJ45H-TBSH-MC    | T35-RJ45H-TBSH    |
| 9 Pin Spring Clamp Terminal Block with Shield | 9 Pin Spring Clamp Terminal Block with Shield | 30-14AWG<br>Solid or Stranded<br>(0.05mm <sup>2</sup> - 2.5mm <sup>2</sup> ) | Designed for Ethernet Cable<br>Connected pin to pin<br>35mm DIN rail mounting | T35-TBS9-TBS9-E45-MC | T35-TBS9-TBS9-E45 |

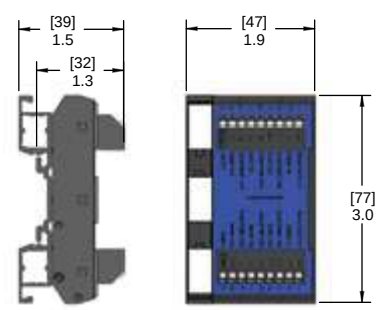
The printed circuit boards have component holes for the easy addition of LED's, resistors, or other electronic components. Other configurations are available. Please consult factory.



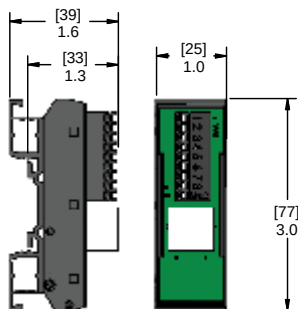
Horizontal RJ45 to  
Spring Clamp Terminal Block  
with 3 Removable Marker Tags



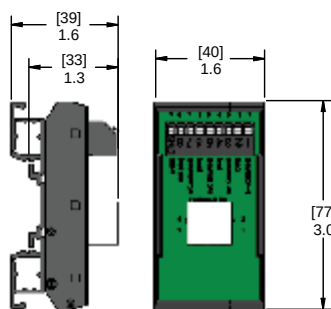
Horizontal RJ45 to  
Horizontal Spring Clamp Terminal Block  
with 3 Removable Marker Tags



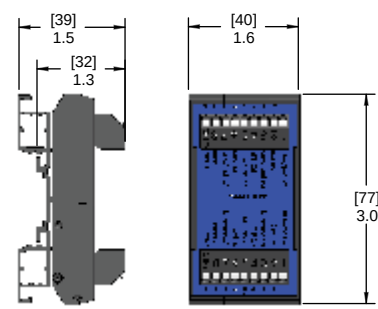
Spring Clamp Terminal Block to  
Spring Clamp Terminal Block  
with 3 Removable Marker Tags



Horizontal RJ45 to  
Spring Clamp Terminal Block



Horizontal RJ45 to  
Horizontal Spring Clamp Terminal Block



Spring Clamp Terminal Block to  
Spring Clamp Terminal Block

## Specifications:

Body: Polyamide  
Screw: Galvanized Steel  
Terminal: Tin-Plated Brass  
Clamp: Nickered Brass  
Insulators: Glass-Filled Thermoplastic  
Contacts: Gold-Plated Copper Alloy

Marker Tags: Polyamide  
Wire Strip Length: 0.3in (6.7mm)  
Screw Torque: 4.4lbf-in (0.5Nm)  
Screw Size: 4-40  
Temperature: -40°C to 105°C



# T35 DIN Rail Interface Modules

*Ethernet Connector DIN Rail Modules, 30-14AWG*



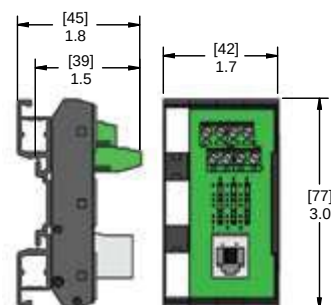
RJ12 to Terminal Block | 250V, 1.5amps

| Connection Type A | Connection Type B | Wire Range                                                                   | Features                                                           | Part Number    |               |
|-------------------|-------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------|----------------|---------------|
|                   |                   |                                                                              |                                                                    | Marker Tag     | No Marker Tag |
| RJ12              | Terminal Block    | 30-14AWG<br>Solid or Stranded<br>(0.05mm <sup>2</sup> - 2.5mm <sup>2</sup> ) | Shielded Sockets<br>Connected pin to pin<br>35mm DIN rail mounting | T35-RJ12-TB-MC | T35-RJ12-TB   |

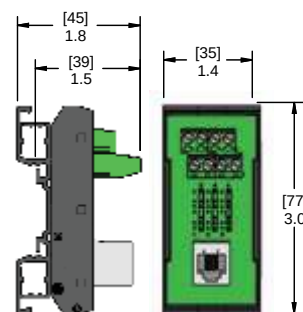
The printed circuit boards have component holes for the easy addition of LED's, resistors, or other electronic components. Other configurations are available. Please consult factory.

## Specifications:

|                    |                            |
|--------------------|----------------------------|
| Body:              | Polyamide                  |
| Screw:             | Galvanized Steel           |
| Terminal:          | Tin-Plated Brass           |
| Clamp:             | Nickel Brass               |
| Insulators:        | Glass-Filled Thermoplastic |
| Contacts:          | Gold-Plated Copper Alloy   |
| Marker Tags:       | Polyamide                  |
| Wire Strip Length: | 0.3in (6.7mm)              |
| Screw Torque:      | 4.4lbf-in (0.5Nm)          |
| Screw Size:        | 4-40                       |
| Temperature:       | -40 °C to 105 °C           |



RJ12 to Terminal Block  
with 3 Removable Marker Tags



RJ12 to Terminal Block





# Ethernet Series Etherlink V3

8 Conductor Ethernet Series V3 Cordsets & Field Wireable Plugs, 24AWG

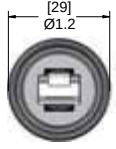


Field Wireable Plugs | Single & Double Ended Male Cordsets | UL Type 4, 6P | IP65 Rating

## Patented by Mencom Corporation

It is recommended that quality Mencom cables are used with the field wireable connectors to assure an accurate fit. However, if using another brand, the dimensions of the connector must meet the dimensions shown below.



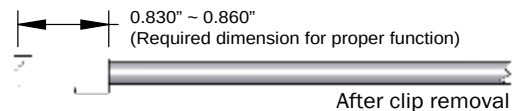
| Field Wireable Plugs                                                              | Part Number  | Housing Specifications                                                                                                                                                                                                      | Front View                                                                          |
|-----------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  | E45V3-8MP-FW | Coupling Nut :<br>Body :<br>O-Ring :<br>Grommets :<br>Tightening Torque:<br>Max. Panel Thickness:<br>Temperature :<br>Black Anodized Aluminum<br>Black Polyamide<br>NBR<br>NBR & TPE<br>4.0 N-m<br>5.5 mm<br>-20°C to +80°C |  |

## Assembly Instructions



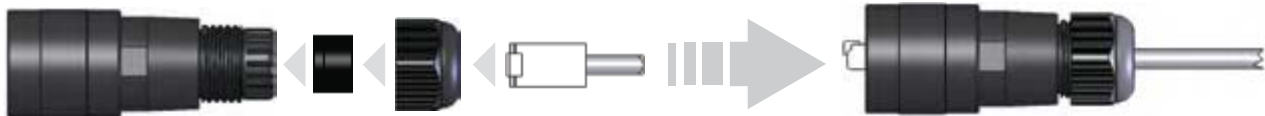
### STEP 1)

Remove clip by cutting or by bending it back and forth until it breaks.



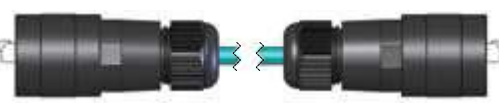
### STEP 2)

With connector unassembled, push cable through dome nut, split apart the grommet and wrap it around the cable, then push the cable through the connector body.



### STEP 3)

Push grommet back into the "fingers" of the shell. Rotate cable 90 degrees and pull it back into the connector until it stops. With slight tension on cable, tighten dome nut (3.75Nm recommended).

| E45V3 to Cable                      |                                                                                     |                   |                    |                                                                                       |
|-------------------------------------|-------------------------------------------------------------------------------------|-------------------|--------------------|---------------------------------------------------------------------------------------|
| # of Poles                          | Front View                                                                          | Part Number       |                    | Housing Style                                                                         |
|                                     |                                                                                     | PVC Male          | PUR Male           |                                                                                       |
| 8                                   |  | E45V3-8MP-**      | E45V3P-8MP-**      |  |
| E45V3 to RJ45                       |                                                                                     |                   |                    |                                                                                       |
| 8                                   |  | E45V3-8MP-RJ45-** | E45V3P-8MP-RJ45-** |  |
| E45V3 Male to Male Extension Cables |                                                                                     |                   |                    |                                                                                       |
| 8                                   |  | E45V3-8MMP-**     | E45V3P-8MMP-**     |   |

\*\* Lengths in meters. Standard cable lengths are 1, 2, 4, 5, 6, 10 & 15 meters. Consult factory for other lengths.



# T35 DIN Rail Interface Modules

8 Conductor Ethernet Series Receptacles, 24AWG

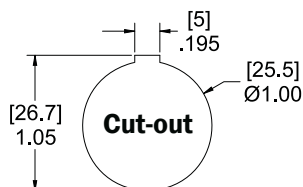


Female Front Mount Receptacles | 42 VDC, 1.5 amps | UL Type 4, 4X, 6P | IP65 Rating



| Etherlink V3 Female Receptacle to Male Plug with CAT5e Cable     |            |             |          |                 |                      |               |
|------------------------------------------------------------------|------------|-------------|----------|-----------------|----------------------|---------------|
| # of Poles                                                       | Front View | Rating      | Wire AWG | Cap (E45V3-CAP) | Part Number          | Housing Style |
| 8                                                                |            | 42V<br>1.5A | 24       | Not Included    | E45V3-8FMR-*-M25     |               |
|                                                                  |            |             |          | Included        | E45V3-8FMR-*-M25-CP  |               |
| Etherlink V3 Female Receptacle to 110 Punchdown Block            |            |             |          |                 |                      |               |
| 8                                                                |            | N/A         | 20-26    | Not Included    | E45V3-8FR-110-M25    |               |
|                                                                  |            |             |          | Included        | E45V3-8FR-110-M25-CP |               |
| Etherlink V3 Female Receptacle to Female Receptacles             |            |             |          |                 |                      |               |
| 8                                                                |            | N/A         | N/A      | Not Included    | E45V3-8FFR-M25       |               |
|                                                                  |            |             |          | Included        | E45V3-8FFR-M25-CP    |               |
| Etherlink V3 Field Wireable to Female Receptacle Solder to Board |            |             |          |                 |                      |               |
| 8                                                                |            | N/A         | N/A      | Not Included    | E45V3-8FR-FW-M25     |               |
|                                                                  |            |             |          | Included        | E45V3-8FR-FW-M25-CP  |               |

\* Length in feet. Standard cable lengths are 1, 3, 7, 10 & 15 feet. Consult factory for other lengths.



## Specifications:

|                       |                                 |
|-----------------------|---------------------------------|
| Insulator:            | Polyamide                       |
| Cable:                | CAT5e with PVC Jacket           |
| Contacts:             | Copper Alloy with Gold Plating  |
| O-Ring:               | NBR                             |
| Tightening Torque:    | 5.0 N-m                         |
| Max. Panel Thickness: | 5.5 mm                          |
| Temperature:          | -20°C to +80°C (-4°F to +176°F) |

| Etherlink V3 Accessories |                                                    |
|--------------------------|----------------------------------------------------|
| Cap                      | Part Number                                        |
|                          | E45V3-CAP                                          |
| Protective Lock Nut      |                                                    |
|                          | Protective lock nut provided with each receptacle. |



# Ethernet Series Etherlink V3

## 4 & 8 Conductor Ethernet Series Conduit Adapters

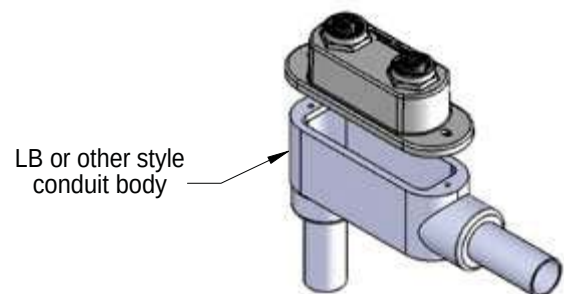


Conduit Adapters | 1 & 2 Port | M12 to RJ45 | IP67 Rating

| # of Poles   | Female Faceview                                                                                                                                                      | # of Ports | Part Number         | Top View |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------|----------|
| 4<br>D-Coded | <br>M12 x 1<br>1 = White/Orange (+ TX)<br>2 = White/Green (+ RX)<br>3 = Orange (- TX)<br>4 = Green (- RX)                                                            | 1 Port     | MDE45-1-4FR-RJ45-CA |          |
|              | <br>87654321<br>1 = White/Orange (+ TX)<br>2 = Orange (- TX)<br>3 = White/Green (+ RX)<br>4 = N/C<br>5 = N/C<br>6 = Green (- RX)<br>7 = N/C<br>8 = N/C               | 2 Port     | MDE45-2-4FR-RJ45-CA |          |
| 8<br>A-Coded | <br>M12 x 1<br>1 = White/Blue<br>2 = White/Brown<br>3 = Brown<br>4 = Orange (-TX)<br>5 = White/Green (+RX)<br>6 = White/Orange (+TX)<br>7 = Blue<br>8 = Green (-RX)  | 1 Port     | MDE45-1-8FR-RJ45-CA |          |
|              | <br>87654321<br>1 = White/Orange (+TX)<br>2 = Orange (-TX)<br>3 = White/Green (+RX)<br>4 = Blue<br>5 = White/Blue<br>6 = Green (-RX)<br>7 = White/Brown<br>8 = Brown | 2 Port     | MDE45-2-8FR-RJ45-CA |          |

### Specifications:

Housing: Glass Filled PBT  
Recp. Shell: Nickel Plated Brass  
Insert: Polyamide  
Contacts: Copper Alloy with Gold Plating  
Gasket: NBR  
Temperature: -40°C to +70°C (-40°F to +158°F)



Remove existing Conduit Body cover and replace with Mencom Conduit Adapter.

Works with all standard 3/4" NPT conduit bodies, including Form 8 and Mark 9 adapters. (screws are included with adapter)

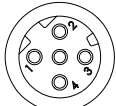
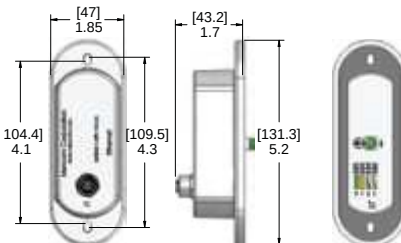
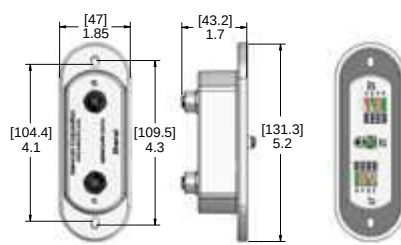
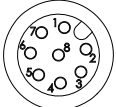
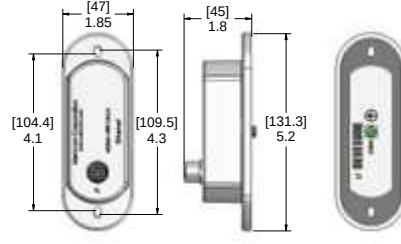
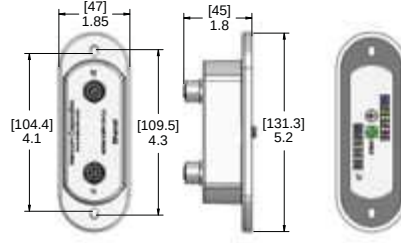


# Ethernet Series Conduit Adapters

## 4 & 8 Conductor Ethernet Series Conduit Adapters

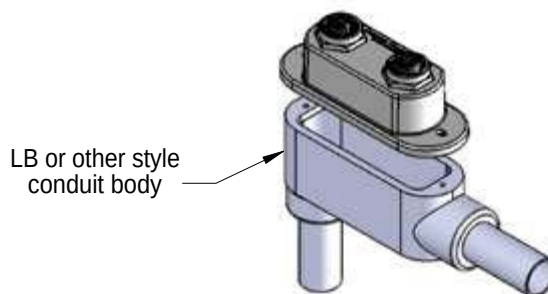


Conduit Adapters | 1 & 2 Port | M12 to 110 Punchdown | IP67 Rating

| # of Poles          | Female Faceview                                                                                                                                                                                                                                        | # of Ports | Part Number        | Top View                                                                              |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|---------------------------------------------------------------------------------------|
| <b>4</b><br>D-Coded | <br>M12 x 1<br>1 = White/Orange (+ TX)<br>2 = White/Green (+ RX)<br>3 = Orange (- TX)<br>4 = Green (- RX)                                                             | 1 Port     | MDE45-1-4FR-110-CA |    |
|                     |                                                                                                                                                                                                                                                        | 2 Port     | MDE45-2-4FR-110-CA |    |
| <b>8</b><br>A-Coded | <br>M12 x 1<br>1 = White/Blue<br>2 = White/Brown<br>3 = Brown<br>4 = Orange (-TX)<br>5 = White/Green (+RX)<br>6 = White/Orange (+TX)<br>7 = Blue<br>8 = Green (-RX) | 1 Port     | MDE45-1-8FR-110-CA |   |
|                     |                                                                                                                                                                                                                                                        | 2 Port     | MDE45-2-8FR-110-CA |  |

### Specifications:

Housing: Glass Filled PBT  
 Recp. Shell: Nickel Plated Brass  
 Insert: Polyamide  
 Contacts: Copper Alloy with Gold Plating  
 Gasket: NBR  
 Temperature: -40°C to +70°C (-40°F to +158°F)



Remove existing Conduit Body cover and replace with Mencom Conduit Adapter.

Works with all standard 3/4" NPT conduit bodies, including Form 8 and Mark 9 adapters. (screws are included with adapter)



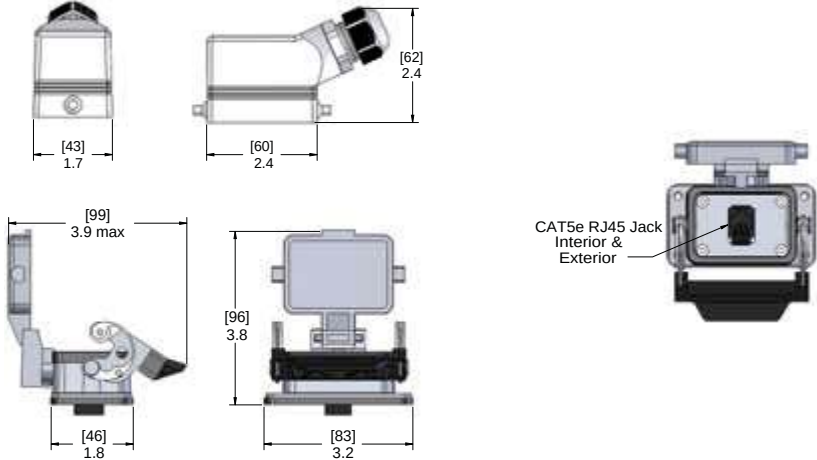
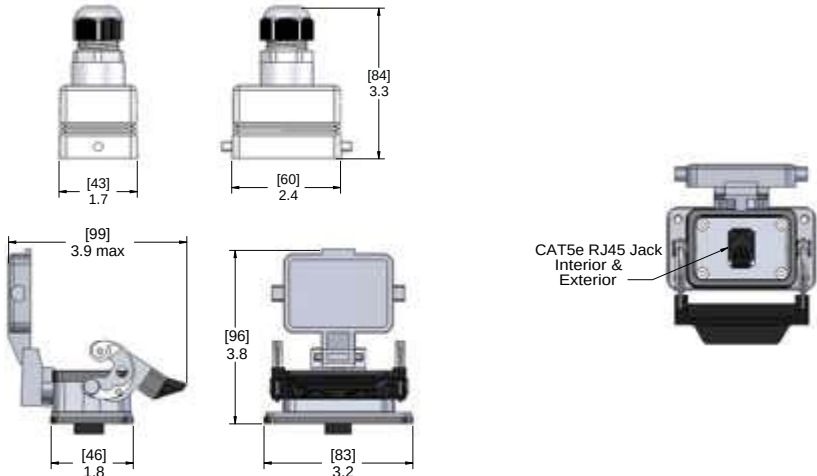
# Ethernet Series RJ45 Kits

## Heavy Duty Ethernet Connection System



RJ45 Kits | Top & Side Entry | IP66 Protection Rating



| Housing Style                                                                       | Entry      | Part Number |
|-------------------------------------------------------------------------------------|------------|-------------|
|    | Side Entry | RJ45-CKIT   |
|  | Top Entry  | RJ45-CVKIT  |

These units are designed to be used with Mencom RJ45 Patch Cords:

Part Numbers: RJ45-03 3 foot patch cord  
RJ45-07 7 foot patch cord  
RJ45-10 10 foot patch cord  
RJ45-15 15 foot patch cord

Other lengths are available, please consult the factory.

# Ethernet Series Accessories

Ethernet Series RJ45 Field Wireable Connector Accessories & Tools



RJ45 Plugs | Strain Relief | Boots | Crimp Tool



| Style                                                                               | Max Cable O.D. | Part Number    | Description                                                             | Conductors O.D Range                                                                                |
|-------------------------------------------------------------------------------------|----------------|----------------|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
|    | 6.1 mm (0.24") | RJ45-EZ5-FW    | 24 & 26 AWG<br>Cat 5/5e male RJ45 connector                             | 0.94 mm ~ 1.04 mm<br>(0.037" ~ 0.041")                                                              |
|    | 6.6 mm (0.26") | RJ45S-EZ5-FW   | Shielded Cat 5/5e/6<br>male RJ45 connector                              | 0.94 mm ~ 1.04 mm<br>(0.037" ~ 0.041")                                                              |
|    | 10.5mm (0.41") | RJ45-PN-FW     | Shielded CAT 6A<br>Straight Plug Field Wireable<br>Ethernet/Profinet    | Stranded: 0.46 mm ~ 0.76 mm<br>(0.018" ~ 0.029")<br><br>Solid: 0.40mm ~ 0.64mm<br>(0.015" ~ 0.025") |
|    |                | RJ45-PN-FW-R   | Shielded CAT 6A<br>Right Angle Plug Field Wireable<br>Ethernet/Profinet |                                                                                                     |
|   | 6.6 mm (0.26") | RJ45-EZ5-SR-CL | Clear Cat 5e cable strain relief for<br>RJ45-EZ and RJ45S-EZ            | N/A                                                                                                 |
|  | 5.5 mm (0.22") | RJ45-BT-5.5-BK | RJ45 Black Boot                                                         | N/A                                                                                                 |
|                                                                                     | 6 mm (0.24")   | RJ45-BT-6.0-BK |                                                                         |                                                                                                     |
|                                                                                     | 6.5 mm (0.26") | RJ45-BT-6.5-BK |                                                                         |                                                                                                     |
|                                                                                     | 7 mm (0.28")   | RJ45-BT-7.0-BK |                                                                         |                                                                                                     |
|                                                                                     | 8 mm (0.31")   | RJ45-BT-8.0-BK |                                                                         |                                                                                                     |
|  | N/A            | RJ45-EZ-CT     | Crimp Tool for<br>RJ45-EZ & RJ45S-EZ connectors                         | N/A                                                                                                 |

## RJ45 Crimp Instructions

- Strip off approximately two inches of outer cable jacket.
- Untwist and straighten wires. Place in the desired order for wiring.  
(see wiring chart)
- Trim wire ends so all conductors are the same length.
- Insert wires into the connector and pull connector down over the cable jacket. Cable jacket should seat snugly in rear of connector.
- Push the connector into the crimp tool, making sure it is fully seated in the crimp cavity.
- Crimp the connector and break off any remaining loose wires.



## Typical T568A / T568B Wiring Chart

| Wire | T568A        | T568B        |
|------|--------------|--------------|
| 1    | White/Green  | White/Orange |
| 2    | Green        | Orange       |
| 3    | White/Orange | White/Green  |
| 4    | Blue         | Blue         |
| 5    | White/Blue   | White/Blue   |
| 6    | Orange       | Green        |
| 7    | White/Brown  | White/Brown  |
| 8    | Brown        | Brown        |



# Mencom Corporation

*no problems, only solutions*



## Notes:





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EH2306

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\* Lengths in feet.

\*\* Lengths in meters.



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\* Lengths in feet.

\*\* Lengths in meters.



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\* Lengths in feet.

\*\* Lengths in meters.



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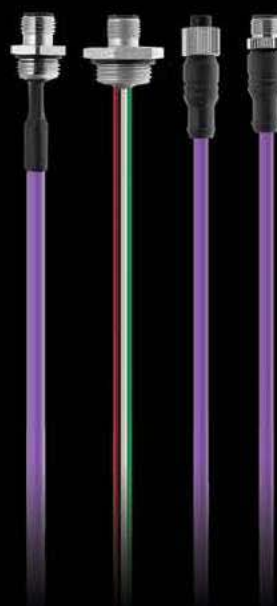
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