ETHERNET SWITCHES, ROUTERS, & EXTENDERS
THAT EXTEND YOUR INDUSTRIAL NETWORK TO THE EDGE

**Introduction**

Product Overview ........................................................................................................... 82 - 83
Product Selection Guide ............................................................................................... 84 - 87

**Ethernet Routers**

Managed Industrial 2 port Ethernet Routers - ERT310 series ......................... 88 - 89

**Ethernet Switches**

Unmanaged Slim 5, 8 port Ethernet Switches - ESW100 series ......................... 90 - 91
Unmanaged Wide Temperature 5, 8 port Ethernet Switches - ESW200 series .... 92 - 93
Unmanaged Gigabit 5, 8, 10, 18 port Ethernet Switches - EIR400 series ......... 94 - 103
Unmanaged PoE 5 port Ethernet Switches - EIRP300 series ............................. 104 - 109
Unmanaged PoE & Gigabit 10 port Ethernet Switches - EIRP400 series .......... 110 - 111
Ethernet PoE Splitter - EPSG202 .............................................................................. 112 - 113
Managed PoE & Gigabit 8, 10, 18 port Ethernet Switches - EIRP600 series .... 114 - 115
Managed Gigabit 8, 10, 18 port Ethernet Switches - EIR600 series ............... 116 - 121
Managed 8, 16 port Ethernet Switches - ESW500 series ....................... 122 - 123

**Ethernet Extenders**

Industrial Copper Ethernet Extenders - EIR-EXTEND-x series ....................... 126 - 129
Commercial Copper Ethernet Extenders - EIS-EXTEND-x series .............. 130 - 131
Industrial Coaxial Ethernet Extenders - EIR-EXTEND-C .............................. 132 - 133
Commercial Coaxial Ethernet Extenders - EIS-EXTEND-C series ............... 134 - 135
Industrial PoE Copper Ethernet Extenders - EIRP-EXTEND-x series .......... 136 - 139
Managed Industrial Copper Ethernet Extenders - EIRM-EXTEND-x series ... 140 - 143
Access And Control
At The Network’s Edge

As networks get more complex and specialized, B&B Electronics works harder to make networking easier for you. Our products help customers access their data information and control equipment – whether nearby or at remote distances. We provide a broad selection of rugged and reliable Ethernet devices designed with the most demanding industrial applications and environments in mind.

Ethernet Switches

ESW100 series & ESW200 series
- Class 1 Division 2 rated
- 5 and 8 port unmanaged switches
- IEEE 802.3, 802.3u, IEC802.3x, Level 3 61000-6-2 EMC
- IEC 60668 (shock, vibration, free fall)
- Standard operating temperature: -10 to 60°C
- Fiber distances: 2km (multi-mode) and 20km (single-mode)
- Redundant power inputs: 12 to 36 VDC, 10 to 24 VAC
- 10/100M, full/half duplex, MDI/MDI-X (auto-negotiate)
- 2K MAC addresses; Broadcast storm control
- Industrial IP30 DIN rail case (6 panel mount options)
- ESW100 series:
  - Ultra compact design, less than 25mm (<1”) wide
  - LC fiber port options
- ESW200 series:
  - Class 1/Division 2 options; NEMA TS2 options
  - ST, SC single and multi-mode fiber ports options
  - Wide temperature options, -40 to 75°C (-T models)
  - 12 to 36VDC and 24VAC capable

EIR400 series
- Class 1 Division 2 rated (#EIR408-T)
- 5 to 18 port, unmanaged Gigabit (1000Base) Ethernet
- Input voltage: dual 12 to 48 VDC, reverse polarity protection
- Power connection: removable terminal block
- Fault output: relay output
- Fiber options via SFP modules
- Wide temperature: -40 to 75°C
- NEMA TS2 options

EIRP300 series & EIRP400 series
- Class 1 Division 2 rated (#EIRP305-T, #EIRP305-24V-T)
- PoE (15.4W and 25.5W options) unmanaged Ethernet switches
- Gigabit speeds for high throughput, high bandwidth
- Rugged IP30 case, DIN or panel mount
- Dual power inputs and alarm output
- Wide temperature: -40 to 75°C

EIRP600 series
- Managed PoE Gigabit switches
- Gigabit speeds for high throughput, high bandwidth
- Power-over-Ethernet (PoE), PSE ports power IEEE802.3af PD devices
- SFP ports for network flexibility
- Auto MDI/MDI-X, store-and-forward
- Dual power inputs and alarm output
- Wide temperature (-T models)
- Rugged IP30 metal DIN rail or panel mount case
- NEMA TS2 options

EIR600 series
- Gigabit (1000Base) Ethernet managed switches
- IEEE 802.3 10Base-T, IEEE 802.3u 100Base-TX
- Redundant ring recovery time: <20ms
- Redundant dual power inputs and relay alarm output
- IGMP snooping with query mode
- Port based VLAN 802.1 Q Tag VLAN
- Auto MDI/MDI-X and negotiation
- Store-and-forward switching architecture
- Secure configuration, management, operation via web, SNMP or CLI
- Wide temperature
- NEMA TS2 options

ESW500 series
- Managed 6 to 16 port Ethernet switches
- IEC 61000-6-1, IEC 60068 (shock, vibration, free fall)
- Temperature: -10 to 60°C
- Wide temperature: -40 to 75°C (-T models)
- Gigabit options with copper and SFP combination ports
- Multi-mode, single-mode SC fiber port options
- IGMP snooping with query mode
- Port based VLAN / 802.1 Q Tag VLAN
- Power inputs & relay alarm output
- 12 to 36VDC (10 to 24VAC for ESW508 & ESW516 series)
- NEMA TS2 options

Energy & Remote Powering
- Alternative Energy Sources
- Water/Wastewater Management
- Government/Defense
- Telecommunications/Enterprise IT
- Security/Camera Surveillance
- Building Control
- Instrumentation/testing
- Transportation
ETHERNET ROUTERS

ERT300 series - Spectre RT
- NEMA TS1 & TS2 rated for traffic control equipment
- VPN security - IPsec, OpenVPN, LP2T
- Firewall support
- NAT/PAT address & port translation
- SNMP management
- Wide temperature: -40 to 75°C

POE SPLITTER

EPSPG202
- UL 508
- 10/100/1000T for PoE in and data out
- Output power up to 25W at 24VDC
- Wide temperature: -40 to 75°C
- Power isolation and short circuit protection for power output
- Auto disconnect for over-power voltage input
- 3k VDC EFT power line protection
- 6k VDC ESD Ethernet protection

ETHERNET EXTENDERS

Extender Ethernet over existing copper wire or coaxial cable.

EIR-EXTEND-x series
- Class 1 Division 2 rated (#EIR-EXTEND)
- UL508, NEMA TS1/TS2, IEC61000-6-2 EMC (#EIR-EXTEND-4)
- Extender interface: RJ-11 or terminal block
- Ethernet port: 10/100Base TX RJ-45
- Wide temperature: -40 to 75°C

EIS-EXTEND-x series
- Ethernet port: 10/100Base TX (TX) RJ-45
- IEEE 802.3 10BaseT and IEEE 802.3u 100BaseTX compliant
- RJ-11 line port auto senses 1/3/5/10/15/20/25/30/40/50Mbps
- DIP switch setup as local or remote device
- Status LED’s for monitoring and connection

EIS-EXTEND-C series & EIR-EXTEND-C series
- BNC or F-Type connector line port link
- 10/100Base TX (TX) RJ-45 Ethernet port
- IEEE 802.3 10BaseT and IEEE 802.3u 100BaseTX compliant
- DIP switch setup as local or remote device
- Status LEDs for monitoring and connection

EIRP-EXTEND-x series
- EN61000-6-2 EMC heavy industrial standards
- IEC600068-2-27 (shock) and 600068-2-6 (vibration) tested
- NEMA TS1/TS2 requirements for traffic control equipment
- PoE+ ports for cameras and PoE devices
- Status LEDs for monitoring and connection
- Wide temperature: -40 to 75°C

EIRM-EXTEND-x series
- Complies with NEMA TS1 & TS2 Environmental requirements for Traffic control equipment
- Complies with IEC61000-6-2 EMC Generic standard immunity for Industrial environments
- Web, CLI, SNMP management and monitoring of connected devices
- Ethernet port: 10/100Mbps-Full/Half-duplex, Auto-Negotiation, Auto-MDI/MDIX
- Ethernet extender ports: RJ-11 and terminal block
- Ten communication speeds with speed indicator LEDs
- Link status (VDSL, Ethernet); External hardware watch dog
- -40 to 75°C (-40 to 167°F) operating range

Class 1/Division 2 Certified For Hazardous Locations

Switches (ESW100 series, ESW200 series)
Gigabit Switch (EIR408-T)
PoE Switches (EIRHP305-T, EIRP305-24V-T)
Unmanaged Extender (EIR-EXTEND)
For applications requiring Class 1/Division 2 certification, B&B Electronics has a range of connectivity and communication solutions designed to operate in hazardous environments.
- see page 470 for a complete listing of C1D2 products.

PoeSplitter

EPSPG202
- UL 508
- 10/100/1000T for PoE in and data out
- Output power up to 25W at 24VDC
- Wide temperature: -40 to 75°C
- Power isolation and short circuit protection for power output
- Auto disconnect for over-power voltage input
- 3k VDC EFT power line protection
- 6k VDC ESD Ethernet protection

POE SPLITTER

EPSPG202
- UL 508
- 10/100/1000T for PoE in and data out
- Output power up to 25W at 24VDC
- Wide temperature: -40 to 75°C
- Power isolation and short circuit protection for power output
- Auto disconnect for over-power voltage input
- 3k VDC EFT power line protection
- 6k VDC ESD Ethernet protection
## ETHERNET ROUTERS, ROUTERS, & EXTENDERS

**WHICH IS RIGHT FOR YOU?**

---

<table>
<thead>
<tr>
<th>Ethernet Routers</th>
<th>Unmanaged Ethernet Switches</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Family</strong></td>
<td><strong>Industrial Ethernet Routers</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Product Series</strong></th>
<th><strong>ERT31x Routers</strong></th>
<th><strong>ESW100 SERIES</strong></th>
<th><strong>ESW200 SERIES</strong></th>
<th><strong>EIR400 series</strong></th>
<th><strong>EIRP300 series</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Managed</td>
<td>Unmanaged</td>
<td>Unmanaged</td>
<td>Unmanaged</td>
<td>Unmanaged</td>
</tr>
<tr>
<td>10/100 Base</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Gigabit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>PoE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ports</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Port Count</td>
<td>2</td>
<td>5, 8</td>
<td>5, 8</td>
<td>5, 8, 10, 18</td>
<td>5</td>
</tr>
<tr>
<td>Built-in Fiber Option</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>SFP Fiber Option</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td><strong>Specifications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature - Low</td>
<td>-40°C</td>
<td>-10°C</td>
<td>-10°C</td>
<td>-40°C</td>
<td>-40°C</td>
</tr>
<tr>
<td>Temperature - High</td>
<td>+75°C</td>
<td>+60°C</td>
<td>+60°C</td>
<td>+75°C</td>
<td>+75°C</td>
</tr>
<tr>
<td>Wide Temperature Option</td>
<td>Standard</td>
<td>-10 to 60°C</td>
<td>-40°C to 75°C</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Power - Low</td>
<td>10 VDC</td>
<td>12 VDC</td>
<td>12 VDC</td>
<td>12 VDC</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Power - High</td>
<td>30 VDC</td>
<td>36 VDC</td>
<td>36 VDC</td>
<td>48 VDC</td>
<td>48 VDC</td>
</tr>
<tr>
<td>Dual Power Inputs</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Relay Outputs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Mounting Options</td>
<td>Standalone or Desktop (DIN rail option)</td>
<td>DIN Rail (panel mount option)</td>
<td>DIN Rail (panel mount option)</td>
<td>DIN Rail (panel mount option)</td>
<td>DIN Rail (panel mount option)</td>
</tr>
<tr>
<td>NEMA TS2 Options</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class 1 / Division 2</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>EIR408-T</td>
<td>EIRHP305, EIRP305-24V-T</td>
</tr>
</tbody>
</table>

---

**Page**: 88, 90, 92, 94 - 103, 104 - 109
<table>
<thead>
<tr>
<th>PoE &amp; GB Industrial Ethernet Switches</th>
<th>Industrial Power-over-Ethernet Splitter</th>
<th>PoE Industrial Ethernet Switches (GB, SFP)</th>
<th>Industrial Gigabit Ethernet Switches</th>
<th>Industrial Ethernet Switches</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIRP400 series</td>
<td>EPSG202</td>
<td>EIRP600 series</td>
<td>EIR600 series</td>
<td>ESW500 series</td>
</tr>
<tr>
<td>Unmanaged</td>
<td>Splitter</td>
<td>Managed</td>
<td>Managed</td>
<td>Managed</td>
</tr>
<tr>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>8, 10, 18</td>
<td>8, 10, 18</td>
<td>8, 16</td>
</tr>
<tr>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>-40°C</td>
<td>-40°C</td>
<td>-40°C</td>
<td>-10°C</td>
<td>-10°C</td>
</tr>
<tr>
<td>+75°C</td>
<td>+75°C</td>
<td>+75°C</td>
<td>+60°C</td>
<td>+60°C</td>
</tr>
<tr>
<td>Standard</td>
<td>Standard</td>
<td>Standard</td>
<td>-40°C to 75°C</td>
<td>-40°C to 75°C</td>
</tr>
<tr>
<td>48 VDC</td>
<td>24 VDC</td>
<td>12 VDC</td>
<td>12 VDC</td>
<td>12 VDC</td>
</tr>
<tr>
<td>48 VDC</td>
<td>24 VDC</td>
<td>48 VDC</td>
<td>48 VDC</td>
<td>36 VDC</td>
</tr>
<tr>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>DIN Rail (panel mount option)</td>
<td>DIN Rail (panel mount option)</td>
<td>DIN Rail (panel mount option)</td>
<td>DIN Rail (panel mount option)</td>
<td>DIN Rail (panel mount option)</td>
</tr>
<tr>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>110</td>
<td>112</td>
<td>114</td>
<td>116</td>
<td>122</td>
</tr>
</tbody>
</table>

**WWW.BB-ELEC.COM**
## ETHERNET EXTENDERS

### WHICH IS RIGHT FOR YOU?

### ETHERNET EXTENDERS

<table>
<thead>
<tr>
<th>PRODUCT FAMILY</th>
<th>Industrial Ethernet Extenders</th>
<th>Commercial Ethernet Extenders</th>
<th>Industrial Ethernet Extenders</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRODUCT SERIES</td>
<td>EIR-EXTEND-x series</td>
<td>EIS-EXTEND-x SERIES</td>
<td>EIR-EXTEND-C SERIES</td>
</tr>
<tr>
<td><strong>Function</strong></td>
<td>Industrial Grade</td>
<td>Commercial Grade</td>
<td>Industrial Grade</td>
</tr>
<tr>
<td>Unmanaged</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Managed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper Extender</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coaxial Extender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Specifications</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Distance/Resulting Speed</td>
<td>1900 m/1Mbps</td>
<td>1900 m/1Mbps</td>
<td>2600 m/1-5Mbps</td>
</tr>
<tr>
<td>Resulting Distance/Maximum Speed</td>
<td>300m/50Mbps</td>
<td>300m/50Mbps</td>
<td>200m/85Mbps</td>
</tr>
<tr>
<td>Temperature - low</td>
<td>-40°C</td>
<td>0°C</td>
<td>-40°C</td>
</tr>
<tr>
<td>Temperature - high</td>
<td>+75°C</td>
<td>+60°C</td>
<td>+75°C</td>
</tr>
<tr>
<td>Wide Temperature</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power - low</td>
<td>12 or 24 VDC</td>
<td>12 VDC (power supply included)</td>
<td>12 VDC</td>
</tr>
<tr>
<td>Power - high</td>
<td>30 or 48 VDC</td>
<td>12 VDC (power supply included)</td>
<td>32 VDC</td>
</tr>
<tr>
<td>Dual Power Inputs</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extender Port</td>
<td>RJ-11, Terminal Block</td>
<td>RJ-11</td>
<td>BNC or F Style</td>
</tr>
<tr>
<td>Extender Port Count</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ethernet Ports</td>
<td>1 or 4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>PoE Ports</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting Options</td>
<td>DIN or Panel Mount</td>
<td>Desktop or Rack Mount</td>
<td>DIN or Panel Mount</td>
</tr>
<tr>
<td>Class 1 / Division 2</td>
<td>✔ (EIR-EXTEND)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEMA TS2 Options</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Page: 126 - 129 130 132
<table>
<thead>
<tr>
<th>Commercial Ethernet Extenders</th>
<th>Industrial PoE+ Ethernet Extenders</th>
<th>Industrial Managed Ethernet Extenders</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EIS-EXTEND-C</strong> series</td>
<td><strong>EIRP-EXTEND-x</strong> series</td>
<td><strong>EIRM-EXTEND-x</strong> series</td>
</tr>
<tr>
<td><strong>Commercial Grade</strong></td>
<td><strong>Industrial Grade</strong></td>
<td><strong>Industrial Grade</strong></td>
</tr>
<tr>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td><strong>Copper Extender</strong></td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td><strong>Coaxial Extender</strong></td>
<td>✗</td>
<td>✗</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Commercial Grade</th>
<th>Industrial Grade</th>
<th>Industrial Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum Distance/Resulting Speed</strong></td>
<td>1900 m/1Mbps</td>
<td>1900 m/1Mbps</td>
<td>2600 m/1-5Mbps</td>
</tr>
<tr>
<td><strong>Resulting Distance/Maximum Speed</strong></td>
<td>300m/50Mbps</td>
<td>300m/50Mbps</td>
<td>200m/85Mbps</td>
</tr>
<tr>
<td><strong>Temperature - low</strong></td>
<td>-40°C</td>
<td>0°C</td>
<td>-40°C</td>
</tr>
<tr>
<td><strong>Temperature - high</strong></td>
<td>+75°C</td>
<td>+60°C</td>
<td>+75°C</td>
</tr>
<tr>
<td><strong>Wide Temperature</strong></td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td><strong>Power - low</strong></td>
<td>12 or 24 VDC</td>
<td>12 VDC</td>
<td>12 VDC</td>
</tr>
<tr>
<td><strong>Power - high</strong></td>
<td>30 or 48 VDC</td>
<td>32 VDC</td>
<td>48 VDC</td>
</tr>
<tr>
<td><strong>Dual Power Inputs</strong></td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td><strong>Extender Port</strong></td>
<td>RJ-11, Terminal Block</td>
<td>RJ-11, Terminal Block</td>
<td>RJ-11, Terminal Block</td>
</tr>
<tr>
<td><strong>Extender Port Count</strong></td>
<td>1</td>
<td>1</td>
<td>1 or 2</td>
</tr>
<tr>
<td><strong>Ethernet Ports</strong></td>
<td>1 or 4</td>
<td>1</td>
<td>1 or 2</td>
</tr>
<tr>
<td><strong>PoE Ports</strong></td>
<td>1 or 2</td>
<td>1</td>
<td>1 or 8</td>
</tr>
<tr>
<td><strong>Mounting Options</strong></td>
<td>DIN or Panel Mount</td>
<td>DIN or Panel Mount</td>
<td>DIN or Panel Mount</td>
</tr>
</tbody>
</table>

- **EIR-EXTEND**
- **NEMA TS2 Options**
The Spectre RT industrial router connects Ethernet equipment in tough environments where office-grade equipment can’t handle the job. With Ethernet, USB, I/O and auxiliary ports it’s a flexible device with the built-in ability to handle multiple data communications protocols and to fit into virtually any network topology.

The Spectre RT supports the creation of VPN tunnels using IPsec, OpenVPN and L2TP. It supports DHCP, NAT, NAT-T, DynDNS, NTP, VRRP, control by SMS, and numerous other functions, as well as additional software. A password-protected Web interface allows users to configure and manage the Spectre RT from remote locations. The router can automatically upgrade its configuration and firmware from the operator’s central server, allowing for simultaneous mass reconfiguration of every router on the network.

Users may insert Linux scripts and they can create up to four different configurations for the same router. Examples would include binary input configurations. Users may switch from one configuration to another at any time.

### PRODUCT FEATURES
- VPN security
- Firewall support
- NAT/PAT address & port translation
- SNMP management
- Wide temperature range -40 to 75°C
- Complies with NEMA TS1 & TS2

### ORDERING INFORMATION

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERT310</td>
<td>1 WAN, 1 LAN</td>
</tr>
<tr>
<td>ERT312</td>
<td>1 WAN, 1 LAN (RS-232)</td>
</tr>
</tbody>
</table>

### ACCESSORIES

- C5UMB7FBG - Category 5e, 7 ft. (2.1 M), Grey
- MDR-20-24 - DIN rail mount power supply 24VDC, 1.0 A output power
- MDR-40-24 - DIN rail mount power supply 24VDC, 1.7 A output power
**Spectre RT Industrial Routers**

**ERT31x Series**

---

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>INTERFACES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>Ethernet 10/100 Mb</td>
</tr>
<tr>
<td>USB</td>
<td>USB Type A Host</td>
</tr>
<tr>
<td>Binary I/O</td>
<td>1 input/1 output</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Port Options</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Port 1</td>
<td>Ethernet 10/100, RS-232, RS-422/485, Modbus, CNT (I/O)</td>
</tr>
<tr>
<td>Port 2</td>
<td>RS-232, RS-422/485, Modbus, CNT (I/O)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I/O CNT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 Binary inputs, 1 Binary output (2 inputs maybe configured as counters)</td>
</tr>
<tr>
<td></td>
<td>2 Analog inputs, 1 Binary output</td>
</tr>
</tbody>
</table>

**INTERNAL**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>32b ARM microprocessor</td>
</tr>
<tr>
<td></td>
<td>512 Mb DDR SDRAM</td>
</tr>
<tr>
<td></td>
<td>128 Mb Flash</td>
</tr>
<tr>
<td></td>
<td>1 Mb MRAM</td>
</tr>
</tbody>
</table>

**POWER**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>10 – 30 VDC</td>
</tr>
<tr>
<td>Consumption</td>
<td>Max. 200 mA (12 VDC)</td>
</tr>
</tbody>
</table>

**MECHANICAL**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>11.4 x 9.5 x 4.2 cm (4.49 x 3.74 x 1.65 in)</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Metal</td>
</tr>
<tr>
<td>Weight</td>
<td>150 g</td>
</tr>
</tbody>
</table>

**ENVIRONMENTAL**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating</td>
<td>-40 to 75°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40 to 85°C</td>
</tr>
</tbody>
</table>

---

**FEATURES**

- **Networking**
  - DHCP – automatic IP addressing in LAN network
  - NAT – IP address and ports translation between inside/outside network
  - Firewall: filtering of addresses, ports, protocols
  - VRRP – virtual backup router function
  - DynDNS client – access to the router with a dynamic IP address
  - VLAN 802.11Q: virtual LAN
  - QoS: quality of service
  - Dial-in – Communicate via CSD call
  - NTP client, NTP Server: time synchronization
  - PPPoE Bridge – PPP frames encapsulation inside ETH frames

- **VPN Tunneling**
  - IPsec, OpenVPN, L2TP – secure encrypted tunnels
  - GRE tunnel – simple tunnel without security measures

- **Configuration and Diagnostics**
  - HTTP server – configuration via web server
  - Telnet – configuration and access to the file system
  - SNMP – router diagnostics, communication with I/O and M-BUS
  - Remote router group configuration change, switching among configuration profiles
  - SSH – encrypted configuration and access to the file system

- **Additional Functions**
  - Linux based: program your own applications
  - AT commands on RS232, Ethernet and I/O
  - M-RAM memory inside – router statistic saved into memory

**APPROVALS / CERTIFICATIONS**

- CE, FCC, NEMA TS2
- EN 301 511, v9.0.2
- EN 301 908-1&2, v3.2.1
- ETSI EN 301 489-1 V1.8.1
- EN 60950-1:06 ed.2 + A11:09 + A1:10
- IEC60068-2-27, Shock 50G peak, 11ms, 3 axes
- IEC60068-2-6, Vibration 10-500Hz, 4G, 3 axes

---

**MECHANICAL DIAGRAM**

![Mechanical Diagram](image)
Designs to fit many applications, the ESW105 and ESW108 series are more than just an Ethernet switch with low pricing. They are plug-and-play industrial Ethernet Switches with an ultra compact IP30 DIN rail case, 6 way mountable panel brackets, LEDs for Power, (Link / Speed / Activity for each port), 12 to 36 VDC and 10 to 24 VAC power inputs with removable terminal blocks. These switches are perfect for any applications that require special protection from harsh environments.

Choose a switch with five or eight copper ports, or a combination of copper and fiber ports. Multi-mode fiber models extend range up to 2 km. Single-mode fiber models extend range up to 20 km. All models require an external power supply (sold separately).

The switch ships with 4 panel mount clips giving the user 6 different ways to panel mount the unit.

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>10/100 COPPER</th>
<th>MULTI-MODE FIBER</th>
<th>SINGLE-MODE FIBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESW105</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESW105-ML</td>
<td>4</td>
<td>1 (LC)</td>
<td></td>
</tr>
<tr>
<td>ESW105-SL</td>
<td>4</td>
<td></td>
<td>1 (LC)</td>
</tr>
<tr>
<td>ESW108</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESW108-ML</td>
<td>7</td>
<td>1 (LC)</td>
<td></td>
</tr>
<tr>
<td>ESW108-SL</td>
<td>7</td>
<td></td>
<td>1 (LC)</td>
</tr>
</tbody>
</table>

ACCESSORIES
DFMM-SCSC-1M - Multi-Mode Duplex Fiber Cable, SC to SC, 1 Meter
MDR-20-24 - DIN rail mount power supply 24VDC, 1.0 A output power
MDR-40-24 - DIN rail mount power supply 24VDC, 1.7 A output power
EIRSP1 - Industrial DIN rail mount Ethernet Surge Suppressor
5 & 8 Port, Ultra Compact Industrial
Ethernet Switches
ESW105 & ESW108 Series

SPECIFICATIONS

TECHNOLOGY
Standards: IEEE802.3, 802.3u, 802.3x
Processing Type: Store and forward with IEEE802.3x full duplex, non-blocking flow control
Flow Control: IEEE802.3x flow control, back pressure flow control
Packet Buffer Memory: 64K bytes
Address Table Size: 2K MAC Addresses

INTERFACE
RJ45 Ports: 10/100BaseT(X) auto negotiation, Full/Half duplex, auto MDI/MD-X
Fiber Ports: 100BaseFX, (multi-mode or single-mode with LC connectors)
LED Indicators: Power, (Link / Speed / Activity for each port)

POWER
Input Voltage: 12 to 36 VDC and 10 to 24 VAC
Power Consumption: 4.00 W Max
Input Connection: Removable Terminal Block
Protection: Reverse Polarity Protection

ENVIRONMENTAL
Operating Temperature: -10 to 60°C (14 to 140°F)
Storage Temperature: -40 to 80°C (-40 to 176°F)
Humidity: 10 to 95% Non-condensing
MTBF: 200,000 hours
MTBF Calculation: Parts count reliability prediction

MECHANICAL
Enclosure: IP30 DIN mount metal case
Dimensions (5 ports): H 10.0 x W 2.5 x D 7.5 mm (3.94 x 0.98 x 2.95in)
Dimensions (8 ports): H 145 x W 24 x D 75mm (5.71 X 0.94 x 2.95in)
Installation: 35 mm DIN or 6 way panel mount

MECHANICAL DIAGRAM
5 PORT MODEL

MECHANICAL DIAGRAM
8 PORT MODEL

FIBER OPTICS
Fiber Type: Multi-mode, Single-mode
Distance: 2 km, 20 km
Wavelength: 1310 nm
Transmit Power: -2.35 to -1.14 dBm, -1.5 to -8 dBm
Receive Sensitivity: ≤ -35 dBm

REGULATORY APPROVALS
CE, FCC, RoHS

HAZARDOUS LOCATIONS
UL/cUL Class I Div 2 Groups A,B,C, and D

SPECIFICATIONS – LEVEL 3, EN 61000-6-2:
2006 GENERIC STANDARDS FOR (HEAVY) INDUSTRIAL ENVIRONMENTS

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Test Level</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Contact</td>
<td>6kV</td>
<td>3</td>
</tr>
<tr>
<td>Enclosure Air</td>
<td>8kV</td>
<td>3</td>
</tr>
<tr>
<td>Radiated Field Immunity (RFI)</td>
<td>10kV/m</td>
<td>3</td>
</tr>
<tr>
<td>Signal Ports</td>
<td><a href="mailto:1kV@2.5KHz">1kV@2.5KHz</a></td>
<td>3</td>
</tr>
<tr>
<td>Signal Ports</td>
<td>2kV</td>
<td>3</td>
</tr>
<tr>
<td>Surge</td>
<td>1kV</td>
<td>3</td>
</tr>
<tr>
<td>Surge</td>
<td>2kV</td>
<td>3</td>
</tr>
<tr>
<td>Induced (Conductive) RFI</td>
<td>10 V RMS</td>
<td>3</td>
</tr>
<tr>
<td>Induced (Conductive) RFI</td>
<td>10 V RMS</td>
<td>3</td>
</tr>
</tbody>
</table>

ENVIRONMENTAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>TEST</th>
<th>DESCRIPTION</th>
<th>TEST LEVEL</th>
<th>LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEC60068-2-6</td>
<td>Vibration</td>
<td>Test Fc</td>
<td>2G</td>
</tr>
<tr>
<td>IEC60068-2-27</td>
<td>Shock</td>
<td>Test Ea</td>
<td>30G</td>
</tr>
<tr>
<td>IEC 60068-2-32</td>
<td>Free Fall</td>
<td>-----</td>
<td>-----</td>
</tr>
</tbody>
</table>
Designed to fit many applications, the ESW205 and ESW208 series are more than just an Ethernet switch with low pricing. They are plug-and-play industrial Ethernet Switches with a compact IP30 DIN rail case, 6 way mountable panel brackets, LEDs for Power, (Link / Speed / Activity for each port), 12 to 36 VDC and 10 to 24 VAC power inputs with removable terminal blocks. These switches are perfect for any applications that require special protection from harsh environments.

Choose a switch with five or eight copper ports, or a combination of copper and fiber ports. Multi-mode fiber models extend range up to 2 km. Single-mode fiber models extend range up to 20 km. All models require an external power supply (sold separately).

The switch ships with 4 panel mount clips giving the user 6 different ways to panel mount the unit.

**ACCESSORIES**
- DFMM-SCSC-1M - Multi-Mode Duplex Fiber Cable, SC to SC, 1 Meter
- MDR-20-24 - DIN rail mount power supply 24VDC, 1.0 A output power
- MDR-40-24 - DIN rail mount power supply 24VDC, 1.7 A output power
- EIRSP1 - Industrial DIN rail mount Ethernet Surge Suppressor

**PRODUCT FEATURES**
- UL/cUL Class I Division 2 Groups A,B,C, and D
- EN61000-6-2 - Generic standard for (heavy) industrial environments
- NEMA TS2 options
- Shock, vibration, tested
- Operating temperature
  - -10° to 60°C (Standard)
  - -40° to 75°C (-T models)
- 10/100M, full/half duplex, MDI/MDI-X (Auto-negotiate)
- Supports IEEE 802.3, 802.3u, and 802.3x standards
- Industrial IP30 rated DIN rail case with 6 way panel mount options
- Dual power inputs, 12 to 36 VDC and 10 to 24 VAC
- 2K MAC addresses

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>10/100 COPPER</th>
<th>MULTI-MODE FIBER</th>
<th>SINGLE-MODE FIBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESW205</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESW205-MT</td>
<td>4</td>
<td>1 (ST)</td>
<td></td>
</tr>
<tr>
<td>ESW205-MC</td>
<td>4</td>
<td>1 (SC)</td>
<td></td>
</tr>
<tr>
<td>ESW205-ST</td>
<td>4</td>
<td>1 (ST)</td>
<td></td>
</tr>
<tr>
<td>ESW205-SC</td>
<td>4</td>
<td>1 (SC)</td>
<td></td>
</tr>
<tr>
<td>ESW205-T*</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESW205-MT-T*</td>
<td>4</td>
<td>1 (ST)</td>
<td></td>
</tr>
<tr>
<td>ESW205-MC-T*</td>
<td>4</td>
<td>1 (SC)</td>
<td></td>
</tr>
<tr>
<td>ESW205-ST-T</td>
<td>4</td>
<td>1 (ST)</td>
<td></td>
</tr>
<tr>
<td>ESW205-SC-T*</td>
<td>4</td>
<td>1 (SC)</td>
<td></td>
</tr>
<tr>
<td>ESW208</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESW208-2MT</td>
<td>6</td>
<td>2 (ST)</td>
<td></td>
</tr>
<tr>
<td>ESW208-2MC</td>
<td>6</td>
<td>2 (SC)</td>
<td></td>
</tr>
<tr>
<td>ESW208-2ST</td>
<td>6</td>
<td>2 (ST)</td>
<td></td>
</tr>
<tr>
<td>ESW208-2SC</td>
<td>6</td>
<td>2 (SC)</td>
<td></td>
</tr>
<tr>
<td>ESW208-T*</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESW208-2MT-T*</td>
<td>6</td>
<td>2 (ST)</td>
<td></td>
</tr>
<tr>
<td>ESW208-2MC-T</td>
<td>6</td>
<td>2 (SC)</td>
<td></td>
</tr>
<tr>
<td>ESW208-2ST-T*</td>
<td>6</td>
<td>2 (ST)</td>
<td></td>
</tr>
<tr>
<td>ESW208-2SC-T*</td>
<td>6</td>
<td>2 (SC)</td>
<td></td>
</tr>
<tr>
<td>ESW208-4MT-T*</td>
<td>4</td>
<td>4 (ST)</td>
<td></td>
</tr>
<tr>
<td>ESW208-4MC-T*</td>
<td>4</td>
<td>4 (SC)</td>
<td></td>
</tr>
<tr>
<td>ESW208-4ST-T*</td>
<td>4</td>
<td>4 (ST)</td>
<td></td>
</tr>
<tr>
<td>ESW208-4SC-T*</td>
<td>4</td>
<td>4 (SC)</td>
<td></td>
</tr>
</tbody>
</table>

-T Models available in wide temperature
* NEMA TS2 models
**SPECIFICATIONS**

**TECHNOLOGY**

- Standards: IEEE802.3, 802.3u, 802.3x
- Processing Type: Store and forward with IEEE802.3x full duplex, non-blocking flow control
- Flow Control: IEEE802.3x flow control, back pressure flow control
- Packet buffer memory: 64K bytes
- Address Table Size: 2K MAC Addresses

**INTERFACE**

- RJ45 Ports: 10/100BaseT(X) auto negation, Full/Half duplex, auto MDI/MD-X
- Fiber Ports: 100BaseFX, (multi-mode or single-mode with LC connectors)
- LED Indicators: Power, (Link / Speed / Activity for each port)

**POWER**

- Input Voltage: 12 to 36 VDC and 10 to 24 VAC
- Power Consumption: 4.00 W Max
- Input Connection: Removable Terminal Block
- Protection: Reverse Polarity Protection

**ENVIRONMENTAL**

- Operating Temperature: -10 to 60°C (14 to 140°F)
- Wide Temperature: -40 to 75°C (-40 to 167°F)
- Storage Temperature: -40 to 80°C (-40 to 176°F)
- Humidity: 10 to 95% non-condensing
- MTBF: 200,000 hours
- MTBF Calculation: Parts count reliability prediction

**MECHANICAL**

- Enclosure: IP30 DIN mount metal case
- Dimensions (5 ports): H 112mm x W 30mm x D 75.2 mm (4.41 in x 1.18 in x 2.96 in)
- Dimensions (8 ports): H 130mm x W 44mm x D 105mm
- 8 copper, 6 copper/2 fiber ports: H 130mm x W 44mm x D 105mm (5.1 in x 1.73 in x 4.13 in)
- Dimensions (8 ports): H 130mm x W 44mm x D 105mm
- 4 copper/4 fiber ports: H 130mm x W 44mm x D 105mm (5.1 in x 1.73 in x 4.13 in)
- Installation: 35 mm DIN or 6 way panel mount

**FIBER OPTICS**

<table>
<thead>
<tr>
<th>Fiber Type</th>
<th>Distance</th>
<th>Wavelength</th>
<th>Transmit Power</th>
<th>Receive Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-mode</td>
<td>2 km</td>
<td>1310 nm</td>
<td>Neg. 23.5 to Neg. 14 dBm</td>
<td>≤ Neg. 35 dBm</td>
</tr>
<tr>
<td>Single-mode</td>
<td>20 km</td>
<td>1310 nm</td>
<td>Neg. 15 to Neg. 8 dBm</td>
<td>≤ Neg. 35 dBm</td>
</tr>
</tbody>
</table>

**REGULATORY APPROVALS**

- CE, FCC, RoHS

**HAZARDOUS LOCATIONS**

- UL/cUL Class I Div 2 Groups A,B,C, and D

**SPECIFICATIONS – LEVEL 3, EN 61000-6-2: 2006 GENERIC STANDARDS FOR (HEAVY) INDUSTRIAL ENVIRONMENTS**

<table>
<thead>
<tr>
<th>Test</th>
<th>Description</th>
<th>Test Level</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 61000-4-2: 2009</td>
<td>Electro-Static Discharge (ESD)</td>
<td>6kV</td>
<td>3</td>
</tr>
<tr>
<td>EN61000-4-3:2006+A1:2008</td>
<td>Radiated Field Immunity (RFI)</td>
<td>10V/m</td>
<td>3</td>
</tr>
<tr>
<td>EN61000-4-4:2004</td>
<td>Burst (Fast Transient)</td>
<td><a href="mailto:1kV@2.5Khz">1kV@2.5Khz</a></td>
<td>3</td>
</tr>
<tr>
<td>EN61000-4-5:2006</td>
<td>Surge</td>
<td>DC Ports</td>
<td>2kV</td>
</tr>
<tr>
<td>EN61000-4-6: 2009</td>
<td>Induced (Conductive) RFI</td>
<td>10 V RMS</td>
<td>3</td>
</tr>
</tbody>
</table>

**ENVIRONMENTAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>TEST</th>
<th>DESCRIPTION</th>
<th>TEST LEVEL</th>
<th>LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEC60068-2-6</td>
<td>Vibration</td>
<td>Test Fc</td>
<td>2G</td>
</tr>
<tr>
<td>IEC60068-2-27</td>
<td>Shock</td>
<td>Test Ea</td>
<td>30G</td>
</tr>
<tr>
<td>IEC 60068-2-32</td>
<td>Free Fall</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MECHANICAL DIAGRAM - ESW205 MODEL**

![Mechanical Diagram - ESW205 Model]

**MECHANICAL DIAGRAM - ESW208 MODEL**

![Mechanical Diagram - ESW208 Model]
The EIR405-T is a 5 Port Unmanaged Industrial Gigabit Ethernet Switch. Packed full of rugged features, this switch is perfect for your high speed industrial network.

**High-Speed Transmissions:** The EIR405-T includes a switch controller that automatically senses transmission speed (10/100/1000 Mbps). The RJ-45 interface also auto-detects MDI or MDI-X, eliminating the requirement for a crossover cable. Each port is buffered and supports store-and-forward protocol.

**Dual Power Input:** To reduce the risk of power failure, the EIR405-T provides two 12 to 48 VDC power inputs. If the power fails, the switch will automatically use the secondary power input. Also, if the power goes out the corresponding P1 or P2 LED will go out and the Fault LED will light. The contacts for the alarm output will also open.

**Flexible Mounting:** The switch features a space saving IP30 metal enclosure that can be DIN or Panel mounted.

**Transient Protection:** The power line input on the EIR405-T offers protection from up to 3,000 V EFT. The Ethernet ports offer up to 6,000 V ESD protection. These features make the switch reliable and suitable for use in harsh electrical environments.

**Wide Operating Temperature:** With an operating temperature of -40 to 75°C (-40 to 167°F), this switch can be used in harsh industrial environments.

**Easy Troubleshooting:** There are two LED indicators for each port that display the link status and transmission speed. Three LED indicators for power (P1, P2 and Fault) show power status. These indicators allow you to quickly diagnose and correct problems and ensure your network remains reliable.
5 Port Gigabit Industrial Ethernet Switch
EIR405-T

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>INTERFACE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RJ-45 Ports</td>
<td>5 x 10/100/1000BaseT, Auto MDI/MDI-X</td>
</tr>
<tr>
<td>ESD Protection</td>
<td>6000V ESD Protection</td>
</tr>
<tr>
<td>LED Indicators</td>
<td>P1 (Power 1), P2 (Power 2), Fault (Power Fault), RJ-45 Ports have 2 LED’s to indicate LINK and ACTIVITY</td>
</tr>
</tbody>
</table>

**POWER**

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>Dual 12 to 48 VDC Inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Connection</td>
<td>Removable Terminal Block</td>
</tr>
<tr>
<td>Wire Size</td>
<td>12 to 24 AWG</td>
</tr>
<tr>
<td>Power Use</td>
<td>4.6 Watts</td>
</tr>
<tr>
<td>Fault Output</td>
<td>1 Relay Output – Normally Closed</td>
</tr>
<tr>
<td>EFT Protection</td>
<td>3000 V EFT Protection</td>
</tr>
</tbody>
</table>

**ENVIRONMENTAL**

| Operating Temperature | -40 to 75°C (-40 to 167°F) |
| Storage Temperature   | -40 to 85°C (-40 to 185°F) |
| Operating Humidity    | 0 to 95% |

**MECHANICAL**

| Enclosure           | IP30 Metal Enclosure |
| Mounting            | 35mm DIN Rail or Panel Mount Attachments |
| Dimensions          | 3.0 x 9.7 x 14.0 cm (1.2 x 3.8 x 5.5 in) |

**REGULATORY**

| Approvals           | FCC, CE, UL, NEMA TS2 |
| UL File Number      | E173795 |
| Free Fall           | IEC60068-2-32 |
| Shock               | IEC60068-2-27 |
| Vibration           | IEC60068-2-6 |

**IEEE STANDARDS**

| IEEE 802.3          | 802.3, 10Base-T Ethernet |
| IEEE 802.3u         | 100Base-TX and 100Base-FX Fast Ethernet |
| IEEE 802.3ab        | 1000Base-T |
| IEEE 802.3x         | Flow Control and Back Pressure |

**NETWORK SPECIFICATIONS**

| Architecture        | Back-plane (Switching Fabric): 10Gbps |
| Transfer Rate       | 14.88Mpps@64bytes |
| Throughput          | 14.881 pps Ethernet Port |
| Buffer              | 148,800 pps Fast Ethernet Port |
| MAC Table           | 8K |
| Jumbo Frame         | 9Kbytes |
| Other               | Broadcast Storm Filtering |
| CSMA/CD             | |

**MECHANICAL DIAGRAM**

![Mechanical Diagram Image]
5 Port Industrial Ethernet Switch, with SFP Port for Gigabit Fiber

The EIR405-SFP-T is a 5 Port Unmanaged Industrial Gigabit Ethernet Switch. In addition to 4 standard copper RJ-45 ports, it has an SFP slot to accommodate Gigabit Fiber.

**Small Form-factor Pluggable (SFP) Port:** The SFP Port provides flexibility when planning a network. The slot can accept any SFP fiber module. Modules are available in multiple formats.

**High-Speed Transmissions:** The EIR405-SFP-T includes a switch controller that automatically senses transmission speed (10/100/1000 Mbps). The RJ-45 interface also auto-detects MDI or MDI-X, eliminating the requirement for a crossover cable. Each port is buffered and supports store-and-forward protocol.

**Dual Power Input:** To reduce the risk of power failure, the EIR405-SFP-T provides two 12 to 48 VDC power inputs. If the power fails, the switch will automatically use the secondary power input. Also, if the power goes out the corresponding P1 or P2 LED will go out and the Fault LED will light. The contacts for the alarm output will also open.

**Flexible Mounting:** The switch features a space saving IP30 metal enclosure that can be DIN or Panel mounted.

**Transient Protection:** The power line input on the EIR405-SFP-T offers protection from up to 3,000 V EFT. The Ethernet ports offer up to 4,000 V ESD protection. These features make the switch more reliable and suitable for use in harsh electrical environments.

**Wide Operating Temperature:** With an operating temperature of -40 to 75°C (-40 to 167°F), this switch is suitable for use in some of the harshest industrial environments that exist.

**Easy Troubleshooting:** There are two LED indicators for each port that display the link status and transmission speed. Three LED indicators for power (P1, P2 and Fault) show power status. These indicators allow you to quickly diagnose and correct problems and ensure your network remains reliable.

**PRODUCT FEATURES**
- 4 10/100/1000 Base-T Ethernet ports
- 1 SFP slot for Gigabit fiber
- 3000V EFT & 4000V ESD protection
- Dual 12 to 48 VDC power inputs
- Wide operating temperature
- NEMA TS2

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIR405-SFP-T</td>
<td>Industrial Gigabit Switch (4 Copper, 1 SFP)</td>
</tr>
</tbody>
</table>

**ACCESSORIES**

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>808-38201</td>
<td>IE-SFP/1250-ED, MM850-LC, 550M</td>
</tr>
<tr>
<td>808-38200</td>
<td>IE-SFP/1250-ED, SM1310-LC, 20KM</td>
</tr>
<tr>
<td>808-38203</td>
<td>IE-SFP-1250-ED, SM1310/PLUS-LC, 30KM</td>
</tr>
<tr>
<td>MDR-20-24</td>
<td>DIN rail mount power supply 24VDC, 1.0 A output power</td>
</tr>
<tr>
<td>MDR-40-24</td>
<td>DIN rail mount power supply 24VDC, 1.7 A output power</td>
</tr>
</tbody>
</table>
# 5 Port Industrial Ethernet Switch, with SFP Port for Gigabit Fiber

## EIR405-SFP-T

### SPECIFICATIONS

<table>
<thead>
<tr>
<th>INTERFACE</th>
<th>4 Port 10/100/1000BaseT, Auto MDI/MDI-X</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESD Protection</td>
<td>4000V ESD Protection</td>
</tr>
<tr>
<td>SFP</td>
<td>1 x Mini-GBIC SFP Socket</td>
</tr>
<tr>
<td>LED Indicators</td>
<td>P1 (Power 1), P2 (Power 2), Fault (Power Fault), LINK/ACT (SFP Port)</td>
</tr>
<tr>
<td>RJ-45 Ports have 2 LED’s to indicate LINK and activity</td>
<td></td>
</tr>
</tbody>
</table>

### POWER

| Input Voltage | Dual 12 to 48 VDC Inputs |
| Power Connection | Removable Terminal Block |
| Wire Size | 12 to 24 AWG |
| Power Use | 5.5 Watts |
| Fault Output | 1 Relay Output – Normally Closed |
| EFT Protection | 3000 V EFT Protection |

### ENVIRONMENTAL

| Operating Temperature | - 40 to 75°C (-40 to 167°F) |
| Storage Temperature | - 40 to 85°C (-40 to 185°F) |
| Operating Humidity | 0 to 95% |

### MECHANICAL

| Enclosure | IP30 Metal Enclosure |
| Mounting | 35 mm DIN Rail or Panel Mount Attachments |
| Dimensions | 3.0 x 9.7 x 14.0 cm (1.2 x 3.8 x 5.5 in) |

### REGULATORY

<table>
<thead>
<tr>
<th>Approvals</th>
<th>FCC, CE, UL, NEMA TS2</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL File Number</td>
<td>E173795</td>
</tr>
<tr>
<td>Free Fall</td>
<td>IEC60068-2-32</td>
</tr>
<tr>
<td>Shock</td>
<td>IEC60068-2-27</td>
</tr>
<tr>
<td>Vibration</td>
<td>IEC60068-2-6</td>
</tr>
</tbody>
</table>

### IEEE Standards

| IEEE 802.3 | 802.3, 10Base-T Ethernet |
| IEEE 802.3u | 100Base-TX and 100Base-FX Fast Ethernet |
| IEEE 802.3ab | 1000Base-T |
| IEEE 802.3x | Flow Control and Back Pressure |

### NETWORK SPECIFICATIONS

| Architecture | Back-plane (Switching Fabric): 10Gbps |
| Throughput (Full-duplex): | 14,880 Mpps@64bytes |
| Transfer Rate | 14,880 pps Ethernet Port |
| Buffer | 136 Kbits |
| MAC Table | 8K |
| Jumbo Frame | 9Kbytes |
| Other | Broadcast Storm Filtering |
| | CSMA/CD |

---

**Mechanical Diagram**

![Mechanical Diagram](image-url)
8 Port Gigabit Industrial Ethernet Switch

**EIR408-T**

The EIR408-T is an 8 Port Unmanaged Industrial Gigabit Ethernet Switch. Packed full of rugged features, this switch is perfect for your high speed industrial network.

**High-Speed Transmissions:** The EIR408-T includes a switch controller that automatically senses transmission speed (10/100/1000 Mbps). The RJ-45 interface also auto-detects MDI or MDI-X, eliminating the requirement for a crossover cable. Each port is buffered and supports store-and-forward protocol.

**Dual Power Input:** To reduce the risk of power failure, the EIR408-T provides two 12 to 48 VDC power inputs. If the power fails, the switch will automatically use the secondary power input. Also, if the power goes out the corresponding P1 or P2 LED will go out and the Fault LED will light. The contacts for the alarm output will also open.

**Flexible Mounting:** The switch features a space saving IP30 metal enclosure that can be DIN or Panel mounted.

**Wide Operating Temperature:** With an operating temperature of -40 to 75°C (-40 to 167°F), this switch can be used in harsh industrial environments.

**Easy Troubleshooting:** There are two LED indicators for each port that display the link status and transmission speed. Three LED indicators for power (P1, P2 and Fault) show power status. These indicators allow you to quickly diagnose and correct problems and ensure your network remains reliable.

**PRODUCT FEATURES**
- 8 10/100/1000 Base-T Ethernet ports
- UL Class 1/Division 2
- NEMA TS2
- Dual 12 to 48 VDC power inputs
- Wide operating temperature (-40 to 75°C)

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIR408-T</td>
<td>8 Port Industrial Gigabit Switch</td>
</tr>
</tbody>
</table>

**ACCESSORIES**

- CSUMB7FBG - Category 5e, 7 ft. (2.1 M), Grey
- EIRSP1 - Industrial Ethernet Surge Suppressor
- MDR-20-24 - DIN rail mount power supply 24VDC, 1.0 A output power
- MDR-40-24 - DIN rail mount power supply 24VDC, 1.7 A output power
- MDR-60-24 - DIN rail mount power supply 24VDC, 2.5 A output power
8 Port Gigabit Industrial Ethernet Switch

EIR408-T

**SPECIFICATIONS**

**IEEE STANDARDS**
- IEEE 802.3: 802.3.10Base-T Ethernet
- IEEE 802.3u: 100Base-TX and 100Base-FX Fast Ethernet
- IEEE 802.3ab: 1000Base-T
- IEEE 802.3x: Flow Control and Back Pressure

**NETWORK SPECIFICATIONS**
- Architecture: Back-plane (Switching Fabric): 10Gbps
- Throughput (Full-duplex): 14.88Mpps@64bytes
- Transmission Speed: Up to 1000 Mbps
- Buffer: 136 Kbits
- MAC Table: 8K
- Jumbo Frame: 9.6Kbytes
- Other: Broadcast Storm Protection

**INTERFACE**
- RJ-45 Ports: 8 x 10/100/1000BaseT, Auto MDI/MDI-X
- LED Indicators: P1 (Power 1), P2 (Power 2), Fault (Power Fault), RJ-45 Ports have 2 LED’s to indicate LINK and activity

**POWER**
- Input Voltage: Dual 12 to 48 VDC Inputs
- Power Connection: Reverse Polarity Protection
- Wire Size: 12 to 24 AWG
- Power Use: 7.788 Watts
- Fault Output: 1 Relay Output – Normally Closed
- EFT Protection: 3000 V EFT Protection

**ENVIRONMENTAL**
- Operating Temperature: -40 to 75°C (-40 to 167°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Operating Humidity: 0 to 95%

**MECHANICAL**
- Enclosure: IP30 Metal Enclosure
- Mounting: 35mm DIN Rail or Panel Mount Attachments
- Dimensions: 3.0 x 14.0 x 9.5 cm (1.18 x 5.51 x 3.74 in)

**CERTIFICATIONS**
- Safety: CE EN60950-1
- Hazardous Location: UL/cUL Class I, Division 2, Groups A, B, C and D
- FCC Class A
- CE EN61000-4-2 (ESD)
- CE EN61000-4-3 (RS)
- CE EN61000-4-4 (EFT)
- CE EN61000-4-5 (Surge)
- CE EN61000-4-6 (CS)
- CE EN61000-4-8
- CE EN61000-6-2
- CE EN61000-6-4
- Free Fall: IEC60068-2-32
- Shock: IEC60068-2-27
- Vibration: IEC60068-2-6
- NEMA TS2

**MECHANICAL DIAGRAM**
10 Port Industrial Ethernet Switch, with GB, 2 RJ-45/SFP Ports
EIR410-2SFP-T

The EIR410-2SFP-T is a 10 Port Unmanaged Industrial Gigabit Ethernet Switch. In addition to 8 standard copper RJ-45 ports, it has 2 CU/SFP Combo slots to accommodate Gigabit Fiber.

Small Form-factor Pluggable (SFP) Port: The SFP Port provides flexibility when planning a network. The slot can accept any SFP fiber module. Modules are available in multiple formats. If an SFP module is not inserted, the associated combo port can be used with standard RJ-45 copper.

High-Speed Transmissions: The EIR410-2SFP-T includes a switch controller that automatically senses transmission speed (10/100/1000 Mbps). The RJ-45 interface also auto-detects MDI or MDI-X, eliminating the requirement for a crossover cable. Each port is buffered and supports store-and-forward protocol.

Dual Power Input: To reduce the risk of power failure, the EIR410-2SFP-T provides 12 to 48 VDC power inputs. If the power fails, the switch will automatically use the secondary power input. Also, if the power goes out the corresponding P1 or P2 LED will go out and the Fault LED will light. The contacts for the alarm output will also open.

Flexible Mounting: The switch features an IP30 metal enclosure that can be DIN or Panel mounted.

Transient Protection: The power input on the EIR410-2SFP-T offers protection up to 3,000 V EFT. The Ethernet ports offer up to 6,000 V ESD protection. These features make the switch reliable and suitable for use in harsh electrical environments.

Wide Operating Temperature: With an operating temperature of -40 to 75°C (-40 to 167°F), this switch is suitable for use in some of the harshest industrial environments that exist.

Easy Troubleshooting: There are two LED indicators for each port that display the link status and transmission speed. Three LED indicators for power (P1, P2 and Fault) show power status. These indicators allow you to quickly diagnose and correct problems and ensure your network remains reliable.

PRODUCT FEATURES
- 8 10/100 Base-T Ethernet ports
- 2 RJ-45/SFP combo ports for Gigabit Ethernet
- 3000V EFT & 6000V ESD protection
- Dual 12 to 48 VDC power inputs
- Wide operating temperature
- DIN Rail or Panel Mount

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIR410-2SFP-T</td>
<td>Industrial Gigabit Switch (8 CU, 2 CU/SFP)</td>
</tr>
</tbody>
</table>

ACCESSORIES

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDR-60-48</td>
<td>DIN Rail Power supply 48VDC, 60W</td>
</tr>
<tr>
<td>CSUMB3FBL</td>
<td>3 ft. (1 M) - Blue - Category 5e UTP Patch Cord</td>
</tr>
<tr>
<td>DFMM-LCLC-1M</td>
<td>Multi-Mode Duplex Fiber Cable, LC To LC, 1 Meter</td>
</tr>
<tr>
<td>DFSM-LCLC-1M</td>
<td>Single-Mode Duplex Fiber Cable, LC To LC, 1 Meter</td>
</tr>
<tr>
<td>SFP-1000SX-M-550M-T</td>
<td>SFP Module, 1000Base-SX, Multi-mode 550m, LC Connector (-40 to 85°C)</td>
</tr>
<tr>
<td>SFP-100FX-M-2KM-T</td>
<td>SFP Module, 100Base-FX, Multi-mode 2km, LC Connector (-40 to 85°C)</td>
</tr>
<tr>
<td>SFP-1000LX-S-10KM-T</td>
<td>SFP Module, 1000Base-LX, Single-mode 10km, LC Connector (-40 to 85°C)</td>
</tr>
<tr>
<td>SFP-1000LX-S-20KM-T</td>
<td>SFP Module, 1000Base-LX, Single-mode 20km, LC Connector (-40 to 85°C)</td>
</tr>
<tr>
<td>SFP-100FX-S-30KM-T</td>
<td>SFP Module, 100Base-FX, Single-mode 30km, LC Connector (-40 to 85°C)</td>
</tr>
</tbody>
</table>
## 10 Port Industrial Ethernet Switch, with GB, 2 RJ-45/SFP Ports

### EIR410-2SFP-T

#### SPECIFICATIONS

<table>
<thead>
<tr>
<th>REGULATORY</th>
<th>FCC, CE, UL UL File Number: E173795</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approvals</td>
<td></td>
</tr>
<tr>
<td>Free Fall</td>
<td>IEC60068-2-32</td>
</tr>
<tr>
<td>Shock</td>
<td>IEC60068-2-27</td>
</tr>
<tr>
<td>Vibration</td>
<td>IEC60068-2-6</td>
</tr>
</tbody>
</table>

#### SPECIFICATIONS

<table>
<thead>
<tr>
<th>IEEE Standards</th>
<th>802.3. 10Base-T Ethernet</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEEE 802.3u</td>
<td>100Base-TX and 100Base-FX Fast Ethernet</td>
</tr>
<tr>
<td>IEEE 802.3ab</td>
<td>100Base-T</td>
</tr>
<tr>
<td>IEEE 802.3x</td>
<td>Flow Control and Back Pressure</td>
</tr>
</tbody>
</table>

#### NETWORK SPECIFICATIONS

<table>
<thead>
<tr>
<th>Architecture</th>
<th>Back-plane (Switching Fabric): 5.6Gbps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throughput</td>
<td>8.3Mpps@64bytes</td>
</tr>
<tr>
<td>Transfer Rate</td>
<td>14,880 pps Ethernet Port</td>
</tr>
<tr>
<td>Buffer</td>
<td>1 MB</td>
</tr>
<tr>
<td>MAC Table</td>
<td>8K</td>
</tr>
<tr>
<td>Other</td>
<td>Broadcast Storm Filtering CSMA/CD</td>
</tr>
</tbody>
</table>

#### INTERFACE

| RJ-45 Ports               | 8 x 10/100 Base T, Auto MDI/MDI-X |
| ESD Protection            | 6000V ESD Protection               |
| CU/SFP                    | 2 x Mini-Gbic SFP Combo Ports      |
| LED Indicators            | P1 (Power 1), P2 (Power 2), Fault (Power Fault), LINK/ACT (SFP Ports) |
| RJ-45 Ports have 2 LED’s to indicate LINK and activity |

#### POWER

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>Dual 12 to 48 VDC Inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse Polarity Protection</td>
<td></td>
</tr>
<tr>
<td>Power Connection</td>
<td>Removable Terminal Block</td>
</tr>
<tr>
<td>Wire Size</td>
<td>12 to 24 AWG</td>
</tr>
<tr>
<td>Power Use</td>
<td>6.76 Watts</td>
</tr>
<tr>
<td>Fault Output</td>
<td>1 Relay Output – Normally Closed</td>
</tr>
<tr>
<td>EFT Protection</td>
<td>3000 V EFT Protection</td>
</tr>
</tbody>
</table>

#### ENVIRONMENTAL

| Operating Temperature     | - 40 to 75°C (-40 to 167°F)         |
| Storage Temperature       | - 40 to 85°C (-40 to 185°F)         |
| Operating Humidity        | 0 to 95%                            |

#### MECHANICAL

| Enclosure                 | IP30 Metal Enclosure                |
| Mounting                  | 35mm DIN Rail or Panel Mount Attachments |
| Dimensions                | 7.26 x 10.64 x 15.39 cm (2.86 x 4.19 x 6.06 in) |

#### MECHANICAL DIAGRAM

![Mechanical Diagram]
18 Port Industrial Ethernet Switch with 2 RJ-45/SFP Combo Ports for Gigabit Ethernet

EIR418-2SFP-T

The EIR418-2SFP-T is an 18 Port Unmanaged Industrial Gigabit Ethernet Switch. In addition to 16 standard copper RJ-45 ports, it has 2 CU/SFP Combo slots to accommodate Gigabit Fiber.

Small Form-factor Pluggable (SFP) Port: The SFP Port provides flexibility when planning a network. Modules are available in multiple fiber formats. If an SFP module is not inserted, the associated combo port can be used with standard RJ-45 copper.

High-Speed Transmissions: The EIR418-2SFP-T includes a switch controller that automatically senses transmission speed (10/100/1000 Mbps). The RJ-45 interface also auto-detects MDI or MDI-X, eliminating the requirement for a crossover cable. Each port is buffered and supports store-and-forward protocol.

Dual Power Input: To reduce the risk of power failure, the EIR418-2SFP-T provides two 12 to 48 VDC power inputs. If the power fails, the switch will automatically use the secondary power input. Also, if the power goes out the corresponding P1 or P2 LED will go out and the Fault LED will light. The contacts for the alarm output will also open.

Flexible Mounting: The switch features an IP30 metal enclosure that can be DIN or Panel mounted.

Transient Protection: The power line input on the EIR418-2SFP-T offers protection from up to 3,000 V EFT. The Ethernet ports offer up to 6,000 V ESD protection. These features make the switch reliable and suitable for use in harsh electrical environments.

Wide Operating Temperature: With an operating temperature of -40 to 75°C (-40 to 167°F), this switch is suitable for use in harsh industrial environments.

Easy Troubleshooting: There are two LED indicators for each port that display the link status and transmission speed. Three LED indicators for power (P1, P2 and Fault) show power status. These indicators allow you to quickly diagnose and correct problems and ensure your network remains reliable.

PRODUCT FEATURES
- 16 10/100 Base-T Ethernet ports
- 2 RJ-45/SFP combo ports for Gigabit Ethernet
- 3000V EFT & 6000V ESD protection
- Dual 12 to 48 VDC power inputs
- Wide operating temperature
- DIN Rail or Panel Mount

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIR418-2SFP-T</td>
<td>Industrial Gigabit Switch (16 CU, 2 CU/SFP)</td>
</tr>
</tbody>
</table>

ACCESSORIES

- MDR-60-24 - DIN Rail Power supply 24VDC, 2.5A, 60W
- CSUMBS3FL - 3 ft. (1 M) - Blue - Category 5e UTP Patch Cord
- DFMM-LCLC-1M - Multi-Mode Duplex Fiber Cable, LC To LC, 1 Meter
- DFSM-LCLC-1M - Single-Mode Duplex Fiber Cable, LC To LC, 1 Meter
- SFP-1000SX-M-550M-T - SFP Module, 1000Base-SX, Multi-mode 550m, LC Connector (-40 to 85°C)
- SFP-100FX-M-2KM-T - SFP Module, 100Base-FX, Multi-mode 2km, LC Connector (-40 to 85°C)
- SFP-1000LX-S-10KM-T - SFP Module, 1000Base-LX, Single-mode 10km, LC Connector (-40 to 85°C)
- SFP-1000LX-S-20KM-T - SFP Module, 1000Base-LX, Single-mode 20km, LC Connector (-40 to 85°C)
- SFP-100FX-S-30KM-T - SFP Module, 100Base-FX, Single-mode 30km, LC Connector (-40 to 85°C)
18 Port Industrial Ethernet Switch with 2 RJ-45/SFP Combo Ports for Gigabit Ethernet
EIR418-2SFP-T

SPECIFICATIONS

INTERFACE
- RJ-45 Ports: 16 x 10/100 BaseT, Auto MDI/MDI-X
- ESD Protection: 6000V ESD Protection
- CU/SFP: 2 x Mini-GBIC SFP Combo Ports (or 2 RJ-45 10/100/1000 BaseT)
- LED Indicators: Fault (Power Fault), LINK/ACT (SFP Ports), RJ-45 Ports have 2 LED’s to indicate LINK and activity

POWER
- Input Voltage: Dual 12 to 48 VDC Inputs
- Power Connection: Reverse Polarity Protection
- Wire Size: 12 to 24 AWG
- Power Use: 9.0 Watts
- Fault Output: 1 Relay Output – Normally Closed
- EFT Protection: 3000 V EFT Protection

ENVIRONMENTAL
- Operating Temperature: - 40 to 75°C (-40 to 167°F)
- Storage Temperature: - 40 to 85°C (-40 to 185°F)
- Operating Humidity: 0 to 95%

MECHANICAL
- Enclosure: IP30 Metal Enclosure
- Mounting: 35 mm DIN Rail or Panel Mount Attachments
- Dimensions: 7.26 x 10.64 x 15.39 cm (2.86 x 4.19 x 6.06 in)

REGULATORY
- Approvals: FCC, CE, UL
- UL File Number: E173795
- Free Fall: IEC60068-2-32
- Shock: IEC60068-2-27
- Vibration: IEC60068-2-6

IEEE Standards
- IEEE 802.3: 802.3. 10Base-T Ethernet
- IEEE 802.3u: 100Base-TX and 100Base-FX Fast Ethernet
- IEEE 802.3ab: 1000Base-T
- IEEE 802.3x: Flow Control and Back Pressure

NETWORK SPECIFICATIONS
- Architecture: Back-plane (Switching Fabric): 7.2 Gbps
- Throughput (Full-dux): 10.7 Mpps@64 bytes
- Transfer Rate: 14,880 pps Ethernet Port
- 148,800 pps Fast Ethernet Port
- 1,488,000 pps Gigabit Fiber Ethernet
- Buffer: 1 MB
- MAC Table: 8K
- Other: Broadcast Storm Filtering CSMA/CD

MECHANICAL DIAGRAM
The EIRP305-T is a five Port Unmanaged Industrial Ethernet Switch with four 802.3af (Alternative A) end-point Power-Over-Ethernet injector ports. As power sourcing equipment (PSE), these ports can be used to power 802.3af compliant powered devices (PD). This eliminates the need for a separate power line to each end device.

High-Speed Transmissions: The EIRP305-T includes a switch controller that automatically senses transmission speed (10/100 Mbps). The RJ-45 interface also auto-detects MDI or MDI-X, eliminating the requirement for a crossover cable. Each port is buffered and supports store-and-forward protocol.

Dual Power Input: To reduce the risk of power failure, the EIRP305-T provides two 48 VDC power inputs. If the power fails, the switch will automatically use the secondary power input. Also, if the power goes out the corresponding P1 or P2 LED will go out and the Fault LED will light. The contacts for the alarm output will also open.

Flexible Mounting: The switch features a space saving IP30 metal enclosure that can be DIN or Panel mounted.

Transient Protection: The power line input on the EIRP305-T offers protection from up to 3,000 V EFT. The Ethernet ports offer up to 6,000 V ESD protection. These features make the switch reliable and suitable for use in harsh electrical environments.

Wide Operating Temperature: With an operating temperature of -40 to 75°C (-40 to 167°F), this switch is suitable for use in some of the harshest industrial environments that exist.

Easy Troubleshooting: There are two LED indicators for each port that display the link status and transmission speed. Three LED indicators for power (P1, P2 and Fault) show power status. FWD LED’s for each PoE port indicate if the switch is providing power to the end-point device. These indicators allow you to quickly diagnose and correct problems and ensure your network remains reliable.
5 Port Industrial Ethernet Switch with 4 PoE Injector Ports
EIRP305-T

SPECIFICATIONS

INTERFACE
- RJ-45 Ports: 5 x 10/100BaseT, Auto MDI/MDI-X
- ESD Protection: 6000V ESD Protection
- PoE: 802.3af End-point Alternative A (4 Ports)
  - Positive (VCC+): Pins 1 and 2
  - Negative (VCC-): Pins 3 and 6
  - Data: Pins 1, 2, 3, and 6
- LED Indicators: P1 (Power 1), P2 (Power 2), Fault (Power Fault), RJ-45 Ports have 2 LED’s to indicate LINK and activity. FWD LEDs for PoE status.

POWER
- Input Voltage: Dual 48 VDC Inputs
- Power Connection: Reverse Polarity Protection
- Wire Size: 12 to 24 AWG
- Power Use: 3.4 Watts (without PoE)
  - 67 Watts (full load PoE)
- Fault Output: 1 Relay Output – Normally Closed
- EFT Protection: 3000 V EFT Protection

ENVIRONMENTAL
- Operating Temperature: -40 to 75°C (-40 to 167°F)
- Storage Temperature: -40 to 85°C (-40 to 185°F)
- Operating Humidity: 0 to 95%

MECHANICAL
- Enclosure: IP30 Metal Enclosure
- Mounting: 35 mm DIN Rail or Panel Mount Attachments
- Dimensions: 3.0 x 9.7 x 14.0 cm (1.2 x 3.8 x 5.5 in)

REGULATORY
- Approvals: FCC, CE, UL
  - UL File Number: E173795
- Free Fall: IEC60068-2-32
- Shock: IEC60068-2-27
- Vibration: IEC60068-2-6

IEEE STANDARDS
- IEEE 802.3: 10Base-T Ethernet
- IEEE 802.3u: 100Base-TX and 100Base-FX Fast Ethernet
- IEEE 802.3x: Flow Control and Back Pressure
- IEEE802.3af: Power over Ethernet

NETWORK SPECIFICATIONS
- Architecture: Back-plane (Switching Fabric): 1.0 Gbps
  - Throughput (Full-duplex): 1.488 Mpps@64bytes
- Transfer Rate: 14,880 pps Ethernet Port
  - 148,800 pps Fast Ethernet Port
- Buffer: 448 Kbits
- MAC Table: 2K
- Other: Broadcast Storm Filtering CSMA/CD

MECHANICAL DIAGRAM
5 Port Industrial Ethernet Switch with 4 PoE Ports
EIRP305-24V-T

The EIRP305-24-T is a five Port Unmanaged Industrial Ethernet Switch with four 802.3af (Alternative A) end-point Power-Over-Ethernet ports. As power sourcing equipment (PSE), these ports can be used to power 802.3af compliant powered devices (PD). This eliminates the need for a separate power line to each end device.

**High-Speed Transmissions:** The EIRP305-24-T includes a switch controller that automatically senses transmission speed (10/100 Mbps). The RJ-45 interface also auto-detects MDI or MDI-X, eliminating the requirement for a crossover cable. Each port is buffered and supports store-and-forward protocol.

**Dual Power Input:** To reduce the risk of power failure, the EIRP305-24-T provides two 24 or 48 VDC power inputs. If the power fails, the switch will automatically use the secondary power input. Also, if the power goes out the corresponding P1 or P2 LED will go out and the Fault LED will light. The contacts for the alarm output will also open.

**Flexible Mounting:** The switch features a space saving IP30 metal enclosure that can be DIN or Panel mounted.

**Transient Protection:** The power line input on the EIRP305-24-T offers protection from up to 3,000 V EFT. The Ethernet ports offer up to 6,000 V ESD protection. These features make the switch reliable and suitable for use in harsh electrical environments.

**Wide Operating Temperature:** With an operating temperature of -40 to 75°C (-40 to 167°F), this switch is suitable for use in some of the harshest industrial environments that exist.

**Easy Troubleshooting:** There are two LED indicators for each port that display the link status and transmission speed. Three LED indicators for power (P1, P2 and Fault) show power status. FWD LED’s for each PoE port indicate if the switch is providing power to the end-point device. These indicators allow you to quickly diagnose and correct problems and ensure your network remains reliable.

**PRODUCT FEATURES**
- Five 10/100 Base-T Ethernet ports
- Four 802.3af end-point PoE injector ports
- Class 1/Division 2
- Wide operating temperature (-40 to 75°C)
- 3000V EFT & 6000V ESD protection
- Dual 24 or 48 VDC power inputs
- DIN Rail or Panel Mount

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIRP305-24V-T</td>
<td>5 Port Industrial Switch (4 PoE Ports)</td>
</tr>
</tbody>
</table>

**ACCESSORIES**
- SDR-240-24 - DIN Rail Power Supply, 10A, 240W, 24V
- ERS35 - DIN Rail 1 Meter 35 mm Steel
- CSUMB3FBL - 3 ft. (1 M) - Blue - Category 5e UTP Patch Cord
# 5 Port Industrial Ethernet Switch with 4 PoE Ports

**EIRP305-24V-T**

## Specifications

<table>
<thead>
<tr>
<th>Interface</th>
<th>5 x 10/100BaseT, Auto MDI/MDI-X</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESD Protection</td>
<td>6000V ESD Protection</td>
</tr>
<tr>
<td>PoE</td>
<td>802.3af End-point Alternative A (4 Ports) Positive (VCC+): Pins 1 and 2 Negative (VCC-): Pins 3 and 6 Data: Pins 1, 2, 3, and 6 Fault (Power Fault), RJ-45 Ports have 2 LED’s to indicate LINK and activity, FWD LEDs for PoE status.</td>
</tr>
<tr>
<td>LED Indicators</td>
<td>P1 (Power 1), P2 (Power 2),</td>
</tr>
</tbody>
</table>

## Regulatory

<table>
<thead>
<tr>
<th>Safety/Hazardous Location</th>
<th>UL/cUL Class I, Division 2, Groups A, B, C and D</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMC</td>
<td>FCC Class A, CE EN61000-6-2, CE EN61000-6-4, CE EN61000-4-2 (ESD), CE EN61000-4-3 (RS), CE EN61000-4-4 (EFT), CE EN61000-4-5 (Surge), CE EN61000-4-6 (CS), CE EN61000-4-8 (Magnetic Field)</td>
</tr>
<tr>
<td>Free Fall</td>
<td>IEC60068-2-32</td>
</tr>
<tr>
<td>Shock</td>
<td>IEC60068-2-27</td>
</tr>
<tr>
<td>Vibration</td>
<td>IEC60068-2-6</td>
</tr>
<tr>
<td>IEEE Standards</td>
<td>IEEE 802.3 802.3. 10Base-T Ethernet, IEEE 802.3u 100Base-TX and 100Base-FX Fast Ethernet, IEEE 802.3x Flow Control and Back Pressure, IEEE802.3af Power Over Ethernet</td>
</tr>
</tbody>
</table>

## Network Specifications

| Architecture | Back-plane (Switching Fabric); 1.0 Gbps |
| Transfer Rate | 14,880 pps Ethernet Port, 148,800 pps Fast Ethernet Port |
| Buffer | 448 Kbits |
| MAC Table | 2K |
| Other | Broadcast Storm Filtering, CSMA/CD |

## Interface

<table>
<thead>
<tr>
<th>Interface Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RJ-45 Ports</td>
<td>5 x 10/100BaseT, Auto MDI/MDI-X</td>
</tr>
</tbody>
</table>

## Power

| Power Connection | Removable Terminal Block |
| Input Voltage | Dual 24 / 48 VDC Inputs, Reverse Polarity Protection |
| Wire Size | 12 to 24 AWG |
| Power Use | 3.4 Watts (without PoE), 67 Watts (full load PoE) |
| Fault Output | 1 Relay Output – Normally Closed |
| EFT Protection | 3000 V EFT Protection |

## Environmental

| Operating Temperature | - 40 to 75°C (-40 to 167°F) |
| Storage Temperature | - 40 to 85°C (-40 to 185°F) |
| Operating Humidity | 0 to 95% |

## Mechanical

| Enclosure | IP30 Metal Enclosure |
| Mounting | 35 mm DIN Rail or Panel Mount Attachments |
| Dimensions | 4.86 x 14 x 9.5 cm (1.91 x 5.51 x 3.74 in) |
The EIRHP305-T is a five Port Unmanaged Industrial Ethernet Switch with four 802.3af (Alternative A) end-point Power-Over-Ethernet injector ports. As power sourcing equipment (PSE), these ports can be used to power 802.3af compliant powered devices (PD). This eliminates the need for a separate power line to each end device.

High-Speed Transmissions: The EIRHP305-T includes a switch controller that automatically senses transmission speed (10/100 Mbps). The RJ-45 interface also auto-detects MDI or MDI-X, eliminating the requirement for a crossover cable. Each port is buffered and supports store-and-forward protocol.

Dual Power Input: To reduce the risk of power failure, the EIRHP305-T provides two 48 VDC power inputs. If the power fails, the switch will automatically use the secondary power input. Also, if the power goes out the corresponding P1 or P2 LED will go out and the Fault LED will light. The contacts for the alarm output will also open.

Flexible Mounting: The switch features a space saving IP30 metal enclosure that can be DIN or Panel mounted.

Wide Operating Temperature: With an operating temperature of -40 to 75°C (-40 to 167°F), this switch is suitable for use in some of the harshest industrial environments that exist.

Easy Troubleshooting: There are two LED indicators for each port that display the link status and transmission speed. Three LED indicators for power (P1, P2 and Fault) show power status. FWD LED's for each PoE port indicate if the switch is providing power to the end-point device. These indicators allow you to quickly diagnose and correct problems and ensure your network remains reliable.
## SPECIFICATIONS

<table>
<thead>
<tr>
<th>Interface</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>RJ-45 Ports</td>
<td>5 x 10/100BaseT, Auto MDI/MDI-X</td>
</tr>
<tr>
<td>ESD Protection</td>
<td>6000V ESD Protection</td>
</tr>
<tr>
<td>PoE</td>
<td>802.3af End-point Alternative A (4 Ports)</td>
</tr>
<tr>
<td></td>
<td>Positive (VCC+): Pins 1 and 2</td>
</tr>
<tr>
<td></td>
<td>Negative (VCC-): Pins 3 and 6</td>
</tr>
<tr>
<td></td>
<td>Data: Pins 1, 2, 3, and 6</td>
</tr>
<tr>
<td>LED Indicators</td>
<td>P1: (Power 1 Green)</td>
</tr>
<tr>
<td></td>
<td>P2: (Power 2 Green)</td>
</tr>
<tr>
<td></td>
<td>P-Fail: (Red)</td>
</tr>
<tr>
<td></td>
<td>RJ-45: Ports have 2 LED’s to indicate LINK / Activity (Green), Full duplex/collision (Amber) PoE: Feeding Power (Green)</td>
</tr>
<tr>
<td>Power</td>
<td>Input Voltage: Dual 48 VDC Inputs</td>
</tr>
<tr>
<td></td>
<td>Reverse Polarity Protection</td>
</tr>
<tr>
<td></td>
<td>Power Connection: Removable Terminal Block</td>
</tr>
<tr>
<td></td>
<td>Wire Size: 12 to 24 AWG</td>
</tr>
<tr>
<td></td>
<td>Power Use: 110 Watts (full load PoE)</td>
</tr>
<tr>
<td></td>
<td>Fault Output: 1 Relay Output – Normally Closed</td>
</tr>
<tr>
<td></td>
<td>EFT Protection: 3000 V EFT Protection</td>
</tr>
<tr>
<td>Environmental</td>
<td>Operating Temperature: - 40 to 75°C (-40 to 167°F)</td>
</tr>
<tr>
<td></td>
<td>Storage Temperature: - 40 to 85°C (-40 to 185°F)</td>
</tr>
<tr>
<td></td>
<td>Operating Humidity: 0 to 95%</td>
</tr>
<tr>
<td>Mechanical</td>
<td>Enclosure: IP30 Metal Enclosure</td>
</tr>
<tr>
<td></td>
<td>Mounting: 35 mm DIN Rail or Panel Mount Attachments</td>
</tr>
<tr>
<td></td>
<td>Dimensions: 48.6 x 95 x 140 mm (1.91 x 3.74 x 5.51 in)</td>
</tr>
</tbody>
</table>

### REGULATORY

<table>
<thead>
<tr>
<th>Approvals</th>
<th>FCC, CE, UL</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL File Number</td>
<td>E173795</td>
</tr>
<tr>
<td>Hazardous Locations</td>
<td>UL/cUL Class I, Division 2, Groups A, B, C and D</td>
</tr>
<tr>
<td>Free Fall</td>
<td>IEC60068-2-32</td>
</tr>
<tr>
<td>Shock</td>
<td>IEC60068-2-27</td>
</tr>
<tr>
<td>Vibration</td>
<td>IEC60068-2-6</td>
</tr>
</tbody>
</table>

### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Standards</th>
<th>802.3 10Base-T Ethernet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>802.3u 100Base-TX and 100Base-FX Fast Ethernet</td>
</tr>
<tr>
<td>IEEE 802.3x</td>
<td>Flow Control and Back Pressure</td>
</tr>
<tr>
<td>IEEE 802.3af</td>
<td>Power Over Ethernet</td>
</tr>
</tbody>
</table>

### NETWORK SPECIFICATIONS

<table>
<thead>
<tr>
<th>Architecture</th>
<th>Back-plane (Switching Fabric): 1.0 Gbps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer Rate</td>
<td>14,880 pps Ethernet Port</td>
</tr>
<tr>
<td></td>
<td>148,800 pps Fast Ethernet Port</td>
</tr>
<tr>
<td>Buffer</td>
<td>56 K bytes</td>
</tr>
<tr>
<td>MAC Table</td>
<td>2K</td>
</tr>
<tr>
<td>Other</td>
<td>Broadcast Storm Filtering</td>
</tr>
</tbody>
</table>
10 Port Industrial Ethernet Switch with 2 RJ-45/SFP Combo Ports for Gigabit Ethernet

**EIRP410-2SFP-T**

The EIRP410-2SFP-T is a 10 Port unmanaged Industrial Ethernet Switch. In addition to 8 PoE copper RJ-45 ports, it has 2 RJ-45/SFP Combo ports to accommodate Gigabit Ethernet.

**Small Form-factor Pluggable (SFP) Port:** The SFP Ports provide flexibility when planning a network. Modules are available in multiple fiber formats. If an SFP module is not inserted, the associated combo port can be used with standard RJ-45 copper.

**High-Speed Transmissions:** The switch includes a switch controller that automatically senses transmission speed (10/100/1000 Mbps). The RJ-45 interface also auto-detects MDI or MDI-X, eliminating the requirement for a crossover cable. Each port is buffered and supports store-and-forward protocol.

**Dual Power Input:** To reduce the risk of power failure, the switch has two 48 VDC power inputs. If the power fails, the switch will automatically use the secondary power input. Also, if the power goes out the corresponding P1 or P2 LED will go out and the Fault LED will light. The contacts for the alarm output will also open.

**Flexible Mounting:** IP30 metal enclosure - DIN or Panel mounted. Power Over Ethernet (PoE): The eight 10/100 ports are classified as power sourcing equipment (PSE). These ports can be used to power IEEE 802.3af compliant powered devices (PD), eliminating the need for a separate power supply for each device. (15.4W per port)

**Wide Operating Temperature:** With an operating temperature of -40 to 75°C (-40 to 167°F), this switch is suitable for use in harsh industrial environments.

**Easy Troubleshooting:** There are two LED indicators for each port that display the link status and transmission speed. Three LED indicators for power (P1, P2 and Fault) show power status. FWD LEDs on each PoE port indicate when a powered device is connected. These indicators allow you to quickly diagnose and correct problems and ensure your network remains reliable.

**Product Features**
- Eight 10/100 BaseT 802.3af End Point PoE Ports
- Two RJ-45/SFP 100/1000 Combo Slots for Gigabit Ethernet
- UL, cUL CE/EN 60950
- Wide Operating Temperature (-40 to 75°C)
- DIN Rail or Panel Mount

**Ordering Information**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIRP410-2SFP-T</td>
<td>Industrial Gigabit Switch (8 PoE, 2 CU/SFP) Power Over Ethernet Sourcing</td>
</tr>
</tbody>
</table>

**Accessories**

- CSUMB3FBL - 3 ft. (1 M)- Blue - Category 5e UTP Patch Cord
- DFMM-LCLC-1M - Multi-Mode Duplex Fiber Cable, LC To LC, 1 Meter
- DFSM-LCLC-1M - Single-Mode Duplex Fiber Cable, LC To LC, 1 Meter
- SFP-1000SX-M-550M-T - SFP Module, 1000Base-SX, Multi-mode 550m, LC Connector (-40 to 85°C)
- SFP-100FX-M-2KM-T - SFP Module, 100Base-FX, Multi-mode 2km, LC Connector (-40 to 85°C)
- SFP-1000LX-S-10KM-T - SFP Module, 1000Base-LX, Single-mode 10km, LC Connector (-40 to 85°C)
- SFP-1000LX-S-20KM-T - SFP Module, 1000Base-LX, Single-mode 20km, LC Connector (-40 to 85°C)
- SFP-100FX-S-30KM-T - SFP Module, 100Base-FX, Single-mode 30km, LC Connector (-40 to 85°C)
## 10 Port Industrial Ethernet Switch with 2 RJ-45/SFP Combo Ports for Gigabit Ethernet

### EIRP410-2SFP-T

### Specifications

#### Regulatory

<table>
<thead>
<tr>
<th>Category</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>UL, cUL CE/EN60950-1</td>
</tr>
<tr>
<td></td>
<td>FCC Class A</td>
</tr>
<tr>
<td></td>
<td>CE EN61000-6-2</td>
</tr>
<tr>
<td></td>
<td>CE EN61000-6-4</td>
</tr>
<tr>
<td></td>
<td>CE EN61000-4-2 (ESD)</td>
</tr>
<tr>
<td></td>
<td>CE EN61000-4-3 (ESD)</td>
</tr>
<tr>
<td></td>
<td>CE EN61000-4-4 (ESD)</td>
</tr>
<tr>
<td></td>
<td>CE EN61000-4-5 (Surge)</td>
</tr>
<tr>
<td></td>
<td>CE EN61000-4-6 (CS)</td>
</tr>
<tr>
<td></td>
<td>CE EN61000-4-8 (Magnetic Field)</td>
</tr>
<tr>
<td>Free Fall</td>
<td>IEC60068-2-32</td>
</tr>
<tr>
<td>Shock</td>
<td>IEC60068-2-27</td>
</tr>
<tr>
<td>Vibration</td>
<td>IEC60068-2-6</td>
</tr>
</tbody>
</table>

#### EMC

<table>
<thead>
<tr>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCC Class A</td>
</tr>
<tr>
<td>CE EN61000-6-2</td>
</tr>
<tr>
<td>CE EN61000-6-4</td>
</tr>
<tr>
<td>CE EN61000-4-2 (ESD)</td>
</tr>
<tr>
<td>CE EN61000-4-3 (ESD)</td>
</tr>
<tr>
<td>CE EN61000-4-4 (ESD)</td>
</tr>
<tr>
<td>CE EN61000-4-5 (Surge)</td>
</tr>
<tr>
<td>CE EN61000-4-6 (CS)</td>
</tr>
<tr>
<td>CE EN61000-4-8 (Magnetic Field)</td>
</tr>
<tr>
<td>Free Fall</td>
</tr>
<tr>
<td>Shock</td>
</tr>
<tr>
<td>Vibration</td>
</tr>
</tbody>
</table>

#### IEEE Standards

<table>
<thead>
<tr>
<th>Standard</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEEE 802.3</td>
<td>802.3 10Base-T Ethernet</td>
</tr>
<tr>
<td>IEEE 802.3u</td>
<td>100Base-TX and 100Base-FX Fast Ethernet</td>
</tr>
<tr>
<td>IEEE 802.3ab</td>
<td>1000Base-T</td>
</tr>
<tr>
<td>IEEE 802.3z</td>
<td>Gigabit Fiber</td>
</tr>
<tr>
<td>IEEE 802.3x</td>
<td>Flow Control and Back Pressure</td>
</tr>
<tr>
<td>IEEE802.3af</td>
<td>Power over Ethernet</td>
</tr>
</tbody>
</table>

#### Network Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td>Back-plane (Switching Fabric): 5.6Gbps</td>
</tr>
<tr>
<td>Throughput (Full-duplex)</td>
<td>8.3Mpps@64bytes</td>
</tr>
<tr>
<td>Transfer Rate</td>
<td>14,880 pps Ethernet Port</td>
</tr>
<tr>
<td></td>
<td>1,488,000 pps Gigabit Fiber Ethernet</td>
</tr>
<tr>
<td>Buffer</td>
<td>1 MB</td>
</tr>
<tr>
<td>MAC Table</td>
<td>8K</td>
</tr>
<tr>
<td>Misc</td>
<td>Broadcast Storm Filtering</td>
</tr>
<tr>
<td></td>
<td>CSMA/CD</td>
</tr>
</tbody>
</table>

#### Interface

<table>
<thead>
<tr>
<th>Ports</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>RJ-45</td>
<td>8 x 10/100Base-T, 2 x 10/100/1000, Auto MDI/MDI-X</td>
</tr>
<tr>
<td>SFP</td>
<td>2 x Mini-GBIC SFP Combo Ports</td>
</tr>
</tbody>
</table>

#### LED

<table>
<thead>
<tr>
<th>Feature</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per unit</td>
<td>Power (Green), Power 1 (Green), Power 2 (Green), Fault (Red), 8 port 10/100: Link/Activity (Green), Full duplex/ Collision (Amber), Power Feeding (Green)</td>
</tr>
<tr>
<td>Gigabit port</td>
<td>Link/Activity</td>
</tr>
</tbody>
</table>

### Power

<table>
<thead>
<tr>
<th>Feature</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ports</td>
<td>1 through 8</td>
</tr>
<tr>
<td>Standard</td>
<td>802.3af End Point Alternative A</td>
</tr>
<tr>
<td>Capacity</td>
<td>15.4W per port</td>
</tr>
<tr>
<td>Pin Assignment</td>
<td>1 &amp; 2 – VCC(+), 3 &amp; 6 – VCC(-)</td>
</tr>
</tbody>
</table>

#### Environmental

<table>
<thead>
<tr>
<th>Feature</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-40 to 75°C (-40 to 167°F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40 to 85°C (-40 to 185°F)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0 to 95%</td>
</tr>
</tbody>
</table>

#### Mechanical

<table>
<thead>
<tr>
<th>Feature</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>IP30 Metal Enclosure</td>
</tr>
<tr>
<td>Mounting</td>
<td>35mm DIN Rail or Panel Mount Attachments</td>
</tr>
<tr>
<td>Dimensions</td>
<td>(72mm (W) x 105mm (D) x 152mm (H))</td>
</tr>
<tr>
<td></td>
<td>2.84 x 4.13 x 5.98 inch</td>
</tr>
</tbody>
</table>
The Industrial Power over Ethernet Splitter receives a unified PoE signal (data and power) via UTP/STP cable, and then separates the data from the power. The power is applied to two different outputs for non PoE devices which are not compliant with the IEEE802.3af standard.

**PRODUCT FEATURES**

- Supports 10/100/1000T for PoE in and data out
- Power isolation and short circuit protection for power output
- Auto disconnection for over power voltage input
- Supports Output power up to 25W at 24VDC
- Temperature -40°C to 75°C
- IP-30 protection
- DIN rail or panel mount
- Provides EFT protection 3,000VDC for power line
- Supports 6,000 VDC Ethernet ESD protection

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPSG202</td>
<td>Industrial PoE Splitter for 10/100/1000T High Power PoE</td>
</tr>
</tbody>
</table>

**ACCESSORIES**

- MDR-60-48 - DIN Rail Power supply 48VDC, 60W
- ERS35 - DIN Rail 1 Meter 35 mm Steel
- CSUMB3FBL - 3 ft. (1 M) - Blue - Category 5e UTP Patch Cord
Industrial High Power PoE Splitter
for 10/100/1000T
EPSG202

SPECIFICATIONS

IEEE STANDARD COMPLIANCE
IEEE 802.3 802.3. 10Base-T Ethernet
IEEE 802.3u 100Base-TX and 100Base-FX Fast Ethernet
IEEE 802.3x Flow Control and Back Pressure
IEEE 802.3af Power Over Ethernet

INTERFACE
Data and power in: 1 x RJ-45.
Data pin 1, 2, 3, 6, 4, 5, 7, 8
Power pin: 4,5(V+), 7,8(V-) or 1,2(V+), 3,6(V-)
Data out: 1 x RJ-45, Data pin 1, 2, 3, 6, 4, 5, 7, 8
Power out: 1 x 6 pin Terminal Block
ESD Protection 6000V ESD Protection
LED Indicators System Power (Green)

REGULATORY
Safety UL / cUL 508 / CE/EN60950-1
CE EN61000-6-2
CE EN61000-6-4
CE EN61000-4-2 (ESD)
EC EN61000-4-3 (RS)
CE EN61000-4-4 (EFT)
CE EN61000-4-6 (CS)
CE EN61000-4-8 (Magnetic Field)
Free Fall IEC60068-2-32
Shock IEC60068-2-27
Vibration IEC60068-2-6

POWER
Input Voltage 17.6 W @ 48 VDC
Power Output Protection Power Isolation, Short Circuit Protection
Power Connection Removable Terminal Block (output power)
Wire Size 12 to 24 AWG
Power Use 30.8 Watts
EFT Protection 3000 V EFT Protection

ENVIRONMENTAL
Operating Temperature - 40 to 75°C (-40 to 167°F)
Storage Temperature - 40 to 85°C (-40 to 185°F)
Operating Humidity 5 to 95% (Non-condensing)

MECHANICAL
Enclosure IP30 Metal Enclosure
Mounting 35 mm DIN Rail or Panel Mount Attachments
Dimensions 3 cm (W) x 9.5 cm (D) x 14 cm (H)
1.18 x 3.74 x 5.51 inches

MECHANICAL DIAGRAM

- Dimensions: 3 cm (W) x 9.5 cm (D) x 14 cm (H)
- Enclosure: IP30 Metal Enclosure
- Mounting Options: 35 mm DIN Rail or Panel Mount Attachments
- Power Specifications:
  - Input Voltage: 17.6 W @ 48 VDC
  - Power Output Protection: Power Isolation, Short Circuit Protection
  - Power Connection: Removable Terminal Block (output power)
- Connection Options:
  - Data and power in: 1 x RJ-45
  - Data and power out: 1 x RJ-45
- ESD Protection: 6000V ESD Protection
- LED Indicators: System Power (Green)
- Regulatory Compliance:
  - Safety: UL / cUL 508 / CE/EN60950-1
  - EMC: CE EN61000-6-2, CE EN61000-6-4, CE EN61000-4-2 (ESD), CE EN61000-4-3 (RS), CE EN61000-4-4 (EFT), CE EN61000-4-6 (CS), CE EN61000-4-8 (Magnetic Field)
  - Free Fall: IEC60068-2-32
  - Shock: IEC60068-2-27
  - Vibration: IEC60068-2-6
- Operating Environment:
  - Temperature: -40 to 75°C (-40 to 167°F)
  - Humidity: 5 to 95% (Non-condensing)

www.BB-ELEC.COM
The EIRP610-2SFP-T is a 10 Port Managed Industrial Gigabit Ethernet Switch. In addition to 8 PoE copper RJ-45 ports, it has 2 RJ-45/SFP Combo ports to accommodate Gigabit Ethernet.

**Small Form-factor Pluggable (SFP) Port:** The SFP Ports provide flexibility when planning a network. Modules are available in multiple fiber formats. If an SFP module is not inserted, the associated combo port can be used with standard RJ-45 copper.

**High-Speed Transmissions:** The switch includes a switch controller that automatically senses transmission speed (10/100/1000 Mbps on two RJ45/SFP combo ports; 10/100 on eight PoE RJ45 copper ports). The RJ-45 interface also auto-detects MDI or MDI-X, eliminating the requirement for a crossover cable. Each port is buffered and supports store-and-forward protocol.

**Dual Power Input:** To reduce the risk of power failure, the switch has two 48 VDC power inputs. If the power fails, the switch will automatically use the secondary power input. Also, if the power goes out the corresponding P1 or P2 LED will go out and the Fault LED will light. The contacts for the alarm output will also open.

**Flexible Mounting:** IP30 metal enclosure – DIN or Panel mounted.

**Managed:** Powerful management functions including SNMP, LACP, VLAN, Port Trunking, Port Mirroring, Redundant Ring Technology, and Spanning Tree/Rapid Spanning Tree Protocol.

**Power Over Ethernet (PoE):** The eight 10/100 BaseT 802.3af end point PoE injector ports

**Wide Operating Temperature:** With an operating temperature of -40 to 75°C (-40 to 167°F), this switch is suitable for use in harsh industrial environments.

**Easy Troubleshooting:** There are two LED indicators for each port that display the link status and transmission speed. Three LED indicators for power (P1, P2 and Fault) show power status. FWD LEDs on each PoE port indicate when a powered device is connected. These indicators allow you to quickly diagnose and correct problems and ensure your network remains reliable.

**Ordering Information**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIRP610-2SFP-T</td>
<td>Industrial Gigabit Switch (8 CU, 2 CU/SFP) Power Over Ethernet Sourcing</td>
</tr>
</tbody>
</table>

**Accessories**

- C5UMB3FBL - 3 ft. - Blue - Category 5e UTP Patch Cord
- DFMM-LCLC-1M - Multi-Mode Duplex Fiber Cable, LC To LC, 1 Meter
- DFSM-LCLC-1M - Single-Mode Duplex Fiber Cable, LC To LC, 1 Meter
- SFP-1000SX-M-550M-T - SFP Module, 1000Base-SX, Multi-mode 550m, LC Connector (-40 to 85°C)
- SFP-100FX-M-2KM-T - SFP Module, 100Base-FX, Multi-mode 2km, LC Connector (-40 to 85°C)
- SFP-1000LX-S-10KM-T - SFP Module, 1000Base-LX, Single-mode 10km, LC Connector (-40 to 85°C)
- SFP-1000LX-S-20KM-T - SFP Module, 1000Base-LX, Single-mode 20km, LC Connector (-40 to 85°C)
- SFP-100FX-S-30KM-T - SFP Module, 100Base-FX, Single-mode 30km, LC Connector (-40 to 85°C)
### Managed Industrial Ethernet Switch

**2 GB RJ-45/SFP Ports, 8 PoE Ports**

EIRP610-2SFP-T

---

#### Specifications

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
</table>
| **Regulatory**    | Approvals | FCC, CE, UL, NEMA TS2  
                  |          | UL File Number: E173795  
                  | Free Fall | IEC60068-2-32  
                  | Shock     | IEC60068-2-27  
                  | Vibration | IEC60068-2-6  |
| **IEEE Standards**|          | IEEE 802.3 | 802.3. 10Base-T Ethernet  
                |          | IEEE 802.3u | 100Base-TX and 100Base-FX Fast Ethernet  
                |          | IEEE 802.3ab | 1000Base-T  
                |          | IEEE 802.3z | Gigabit Fiber  
                |          | IEEE 802.3x | Flow Control and Back Pressure  
                |          | IEEE 802.3ad | Port trunk with LACP  
                |          | IEEE 802.3f | Power over Ethernet  
                |          | IEEE 802.3d | Spanning Tree Protocol  
                |          | IEEE 802.1w | Rapid Spanning Tree Protocol  
                |          | IEEE 802.1p | Class of Service  
                |          | IEEE 802.1Q | VLAN Tag  
                |          | IEEE 802.1x | User Authentication (RADIUS)  
                |          | IEEE 802.1ab | LLDP  |
| **Network Specifications** | Architecture | Back-plane (Switching Fabric): 5.6Gbps  
                        | Transfer Rate | 148,800 pps Fast Ethernet Port  
                        |            | 1,488,000 pps Gigabit Fiber Ethernet  
                        | Buffer | 1 MB  
                        | MAC Table | 8K  
                        | Flash ROM | 4 MB  
                        | DRAM | 32 MB  
                        | Other | Broadcast Storm Filtering  
                        | **Interface** | RJ-45 Ports | 8 x 10/100BaseT, 2 x 10/100/1000, Auto MDI/MDI-X  
                        |         | CU/SFP | 2 x Mini-GBIC SFP Combo Ports  
                        |         | P1, P2 (Green) | to indicate power  
                        |         | P1, P2 (Green) | to indicate power  
                        |         | SFP LNK/ACT (Green) | 1000T LNK/ACT (Green)  
                        |         | SFP MIB | 1000M (Green)  
                        |         | SFP LNK/ACT | FWD on PoE ports to indicate if a powered device is connected  
                        | **PoE** | Ports | 1 through 8  
                        | Standard | 802.3af End Point Alternative A Power Source Equipment (PSE)  
                        | Capacity | 15.4W per port  
                        | Pin Assignment | 1 & 2 – VCC(+), 3 & 6 – VCC(-)  
                        | **Software Features** | Management | SNMP v1, v2C, v3, Web, Telnet, CLI  
                        |         | RFC 1215 Trap, RFC1213 MIB, RFC 1157 SNMP MIB, RFC 1493 Bridge MIB, RFC 2674 VLAN MIB, RFC 1643, RFC 1757, RSTP MIB, Private MIB, LLDP MIB  
                        | **VLAN** | Ports | Port Based VLAN  
                        | Standard | IEEE 802.10 Tag VLAN (256 entries)  
                        | Standard | VLAN ID (1 to 4096), GVRP (256 groups)  
                        | **Port Trunk w/LACP** | 4 trunk groups / 4 trunk members  
                        | **LLDP** | Allows the switch to advertise its Identification and capabilities on the LAN  
                        | **Spanning Tree** | 802.1d Spanning Tree  
                        | **X-Ring** | Dual Homing, Ring Coupling, Dual Ring topologies. Recovery time below 20ms  
                        | **Quality of Service** | Determined by port, tag, IPv4 type of service, and IPv4/IPv6 different service  
                        | **Power over Ethernet** | IEEE 802.3af Power over Ethernet  
                        | **Port Security** | Supports 100 static MAC entries and 100 MAC Filter entries  
                        | **Port Mirror** | Supports TX, RX, and both packet  
                        | **IGMP** | IGMP Snooping v1, v2 (256 multi-cast groups and IGMP Query)  
                        | **IP Security** | 10 IP address entries for permission to access management functions  
                        | **Login Security** | 80.1X Authentication / RADIUS  
                        | **Flow Control** | Flow control full-dex, backpressure half-dex  
                        | **System Log** | System Log and remote system log server  
                        | **SMTP** | SMPT SRV and 6 e-mail accounts for alerts  
                        | **SNMP Trap** | Cold Start, Link Down, Link Up, Authorization Fail, PD Disconnect (PoE port event)  
                        | **DHCP** | Client, Server, Port and IP Binding  
                        | **DNS** | DNS client with primary and secondary DNS server  
                        | **SNMP** | SNTP to synchronize system clock  
                        | **Firmware Update** | TFTP update, backup and restore  
                        | **Power** | Input Voltage | Dual 48 VDC Inputs  
                        |         | Reverse Polarity Protection  
                        | **Power Connection** | Removable Terminal Block  
                        | **Wire Size** | 12 to 24 AWG  
                        | **Power Use** | 9.6 Watts (Without PoE Load)  
                        |         | 116 Watts (Full PoE Load)  
                        | **Fault Output** | 1 Relay Output – Normally Closed  
                        | **Environmental** | Operating Temperature | -40 to 75°C (-40 to 167°F)  
                        |         | Storage Temperature | -40 to 85°C (-40 to 185°F)  
                        |         | Operating Humidity | 0 to 95%  
                        | **Mechanical** | Enclosure | IP30 Metal Enclosure  
                        | Mounting | 35 mm DIN Rail or Panel Mount Attachments  
                        | Dimensions | 6.2 x 8.4 x 13.1 cm (2.44 x 3.31 x 5.16 in)  

---

### Technical Specifications

- **Architecture**: Back-plane (Switching Fabric): 5.6Gbps
- **Transfer Rate**: 148,800 pps Fast Ethernet Port
- **Buffer**: 1 MB
- **MAC Table**: 8K
- **Flash ROM**: 4 MB
- **DRAM**: 32 MB
- **Other**: Broadcast Storm Filtering
- **Interface**: RJ-45 Ports
- **CU/SFP**: 2 x Mini-GBIC SFP Combo Ports
- **LED**: P1, P2 (Green) to indicate power
- **POE**: Ports 1 through 8
- **Software Features**: SNMP v1, v2C, v3, Web, Telnet, CLI
- **Power**: Input Voltage
- **Flow Control**: Flow control full-dex, backpressure half-dex
- **System Log**: System Log and remote system log server
- **SMTP**: SMPT SRV and 6 e-mail accounts for alerts
- **SNMP Trap**: Cold Start, Link Down, Link Up, Authorization Fail, PD Disconnect (PoE port event)
- **DHCP**: Client, Server, Port and IP Binding
- **DNS**: DNS client with primary and secondary DNS server
- **SNTP**: SNTP to synchronize system clock
- **Firmware Update**: TFTP update, backup and restore
- **Power**: Input Voltage, Reversed Polarity Protection
- **Power Connection**: Removable Terminal Block
- **Wire Size**: 12 to 24 AWG
- **Power Use**: 9.6 Watts (Without PoE Load), 116 Watts (Full PoE Load)
- **Fault Output**: 1 Relay Output – Normally Closed
- **Environmental**: Operating Temperature, Storage Temperature, Operating Humidity
- **Mechanical**: Enclosure, Mounting, Dimensions
- **Dimensions**: 6.2 x 8.4 x 13.1 cm (2.44 x 3.31 x 5.16 in)
The Elinx™ EIR608-xSFP series Industrial Gigabit Managed Ethernet Switches provide powerful functionality in a small package. Designed for industrial applications, these switches contain all the standard features of other switches, such as IGMP Snooping, Port Based VLAN, 802.1Q Tag VLAN, RJ-45 automatic MDI/MDI-X, auto negotiation, store and forward switching, STP, RSTP, Web Based Management, Ingress Packet Filtering, and Egress Rate Control.

These managed switches also come with important industrial features to ensure reliability in an industrial application. X-Ring technology with coupling ring and dual homing allows automatic recovery in less than 300 MS. Dual power inputs ensure reliability. A relay alarm output for port failure notification. DIN Rail and Panel Mounting options on the same IP30 case. Another important feature is automatic e-mail notification for system events such as a cold start, change in network topology, power status or SNMP authentication failure. The EIR608-xSFP is also Gigabit capable and comes with 2 or 4 SFP ports which allow the addition of fiber optic ports.

### PRODUCT FEATURES
- X-Ring automatic recovery
- Up to 8 10/100/1000TX RJ45 ports with MDI/MDI-X
- (2 or 4) 100/1000 SFP ports
- Dual 12 to 48 VDC power inputs
- Relay alarm output
- DIN Rail or Panel Mount Option Included
- Automatic e-mail notification for system events
- SNMP, CLI, or web management
- Port mirror and port trunk with LACP

### MODEL NUMBER DESCRIPTION
| EIR608-2SFP | 8 Port Gigabit Industrial Managed Switch w/ 6 copper & (2) copper or SFP Combo ports |
| EIR608-4SFP | 8 Port Gigabit Industrial Managed Switch w/ 4 copper ports and 4 SFP ports |

### ACCESSORIES
- MDR-60-24 - DIN Rail Power supply 24VDC, 2.5A, 60W
- CSUMB3FBL - 3 ft. - Blue - Category 5e UTP Patch Cord
- DFMM-LCLC-1M - Multi-Mode Duplex Fiber Cable, LC To LC, 1 Meter
- DFSM-LCLC-1M - Single-Mode Duplex Fiber Cable, LC To LC, 1 Meter
- SFP-1000SX-M-550M-T - SFP Module, 1000Base-SX, Multi-mode 550m, LC Connector (-40 to 85°C)
- SFP-1000FX-M-2KM-T - SFP Module, 100Base-FX, Multi-mode 2km, LC Connector (-40 to 85°C)
- SFP-1000LX-S-10KM-T - SFP Module, 1000Base-LX, Single-mode 10km, LC Connector (-40 to 85°C)
- SFP-1000LX-S-20KM-T - SFP Module, 1000Base-LX, Single-mode 20km, LC Connector (-40 to 85°C)
- SFP-100FX-S-30KM-T - SFP Module, 100Base-FX, Single-mode 30km, LC Connector (-40 to 85°C)
8 Port Managed GB Industrial Ethernet Switches
EIR608-2SFP & EIR608-4SFP

SPECIFICATIONS

TECHNOLOGY

IEEE Standards
- 802.3 10Base-T Ethernet, 802.3u 100Base-TX and 100Base-FX Fast Ethernet, 802.3ab 1000Base-TX;
- 802.3x Flow Control and Back Pressure, 802.1d Spanning Tree, 802.1w Rapid Spanning Tree; 802.1p Class of Service, 802.1Q VLAN Tag, 802.3z Gigabit fiber, 802.3ad Port Trunk with LACP, 802.1x User Authentication

Processing Type
Store and Forward

Flow Control
Flow control on full duplex, Back Pressure on half duplex

MAC Address Table Size
8 KB

Packet Buffer
1M bit

Flash ROM
4M byte

DRAM
32M byte

Protocol
CSMA/CD

Management
SNMP (v2, v2C, V3), Web GUI, TELNET, CLI.

Management Security
Up to 10 IP addresses can have permission to manage the switch. 802.1x (RADIUS) Authentication

Transfer Rate
14.880 gbps 10BaseT, 148,800 100BaseTX/FX, 1,488,000 Gigabit

Packet throughput ability
23.8 Mbps @ 64 bytes

X-Ring
2 ports for X-Ring provide redundant backup with a recovery time below 300 MS.

Packet Filter
4 Selection Rules to filter combinations of Broadcast, Multicast, Unicast, and Unknown packets.

VLAN
Port based / Tag (256 entries) / VLAN ID (up to 4K) / GRP (256 groups) / Double Tag VLAN (Q in Q)

Private VLAN
Port Trunk
LACP Port Trunk. 4 Trunk Groups. Maximum 4 Trunk Members

Class of Service
4 priority queues per port

Quality of Service
Port based, Tag and IPv4 Type of Service, IPv4 / IPv6 Different Service

IGMP
IGMP snooping v1, v2. 256 multicast groups and IGMP query

Clock Synchronization
SNTP

Port Mirror
TX packet only or TX and RX packet

Firmware Update
TFTP

DHCP
DHCP Client Function to obtain addresses from DHCP server

Bandwidth Control
Ingress Packet Filter rules and Egress Rate Control

INTERFACE

LAN/WAN Ports
- EIR608-2SFP: (6) RJ45 10/100/1000, (2) RJ45 10/100/1000 or SPF Mini-GBIC Combo (RJ45 disabled when SPF installed), (SFP ports are 100/1000)
- EIR608-4SFP: (4) RJ45 10/100/1000, (4) SPF Mini-GBIC (SFP ports are 100/1000)

Console Port
- RS-232 RJ-45 (Adapter Cable Included)

Port Indicators (each port)
- Green LED for Link / Activity, Green LED for speed 1000M, Green LED for SPF Link Activity

System Indicators
Green LEDs for Power, Power 1, Power 2, and Master. Yellow LED for Fault.

POWER

Input Voltage
12 to 48 VDC, dual source

Power Consumption
11.2 W max

Input Connection
Terminal Block

Relay Alarm
1A @ 24V

ENVIRONMENTAL

Operating Temperature
14 to 140°F (-10 to 60°C)

Storage Temperature
-40 to 185°F (-40 to 85°C)

Operating Humidity
0 to 95% NC

MTBF
- EIR608-2SFP 220593
- EIR608-4SFP 286945

MECHANICAL

Enclosure
IP30 Aluminum Case

Mount
35 mm DIN or Panel

Dimensions
7.4 x 10.7 x 16.3 cm (2.9 x 4.2 x 6.4 in)

REGULATORY APPROVALS

EMI
FCC Class A
EN6100-4-2, -4-3, -4-4,
EN6100-4-5, -4-6

Safety
EN60950

Free Fall
IEC60068-2-32

Shock
IEC60068-2-27

Vibration
IEC60068-2-6

SNMP MIB

SNMP TRAP

RFC 1213 MIBII
Up to 3 Trap Stations

RFC 1493 Bridge MIB
Cold Start

RMON RFC 1757
Port link up

RFC 2674 VLAN MIB
Port link down

RFC 1643 Ethernet like MIB
Authentication Failure

RFC 1215 Trap MIB
Power status

RFC 1157 SNMP MIB
Port Alarm

RSTP MIB
Fault Alarm

Private MIB for switch info
X-Ring

MECHANICAL DIAGRAM
The Elinx™ EIR610-3SFP-T Industrial Managed Ethernet Switch provides powerful functionality in a small package. Designed for industrial applications, this switch contains all the standard features of other switches, such as IGMP Snooping, Port Based VLAN, 802.1Q Tag VLAN, RJ-45 automatic MDI/MDI-X, auto negotiation, store and forward switching, STP, RSTP, Web Based Management, Ingress Packet Filtering, and Egress Rate Control.

These managed switches also come with important industrial features to ensure reliability in an industrial application. X-Ring technology with coupling ring and dual homing allows automatic recovery in less than 300 MS. Dual power inputs ensure reliability. A relay alarm output for port failure notification. DIN Rail and Panel Mounting options on the same IP30 case. Another important feature is automatic e-mail notification for system events such as a cold start, change in network topology, power status or SNMP authentication failure.

**PRODUCT FEATURES**

- X-Ring automatic recovery
- 7 10/100TX RJ45 ports with MDI/MDI-X
- 3 combo ports (10/100/1000 RJ45 or 100/1000 SFP Mini-Gbic Ports)
- Dual 12 to 48 VDC power inputs
- Wide operating temperature
- Relay alarm output
- IP30 DIN rail or panel mount
- Automatic e-mail notification for system events
- SNMP, CLI, or web management
- port mirror and port trunk with LACP

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIR610-3SFP-T</td>
<td>Industrial Managed Ethernet Switch, 7 RJ45 Ports, (3) 10/100/1000 RJ45 or SFP Ports</td>
</tr>
</tbody>
</table>

**ACCESSORIES**

- **MDR-60-24** - DIN Rail Power supply 24VDC, 2.5A, 60W
- **CSUMB3FBL** - 3 ft. (1 M) - Blue - Category 5e UTP Patch Cord
- **DFMM-LCLC-1M** - Multi-Mode Duplex Fiber Cable, LC To LC, 1 Meter
- **DFSM-LCLC-1M** - Single-Mode Duplex Fiber Cable, LC To LC, 1 Meter
- **SFP-1000SX-M-550M-T** - SFP Module, 1000Base-SX, Multi-mode 550m, LC Connector (-40 to 85°C)
- **SFP-1000FX-M-2KM-T** - SFP Module, 100Base-FX, Multi-mode 2km, LC Connector (-40 to 85°C)
- **SFP-1000LX-S-10KM-T** - SFP Module, 1000Base-LX, Single-mode 10km, LC Connector (-40 to 85°C)
- **SFP-1000LX-S-20KM-T** - SFP Module, 1000Base-LX, Single-mode 20km, LC Connector (-40 to 85°C)
- **SFP-100FX-S-30KM-T** - SFP Module, 100Base-FX, Single-mode 30km, LC Connector (-40 to 85°C)
## SPECIFICATIONS

### TECHNOLOGY
- **IEEE Standards**: 802.3 10Base-T Ethernet, 802.3u 100Base-TX and 100Base-FX Fast Ethernet; 802.3x Flow Control and Back Pressure, 802.1d Spanning Tree, 802.1w Rapid Spanning Tree; 802.1p Class of Service, 802.10 VLAN Tag, 802.3ad Port Trunk with LACP, 802.1x RADIUS
- **Processing Type**: Store and Forward
- **Flow Control**: Flow control on full duplex, Back Pressure on half duplex
- **MAC Address Table Size**: 8 KB
- **Memory**: 4MB Flash ROM, 32MB DRAM
- **Protocol**: CSMA/CD
- **Management**: SNMP v1, v2c, v3, Web GUI, TELNET, CLI, Menu Driven Interface
- **Management Security**: Up to 10 IP addresses can have permission to manage the switch. 802.1x (RADIUS) Authentication
- **Transfer Rate**: 14,880 bps for 10Base-T Ethernet ports, 148,800 for 100Base-TX/FX Fast Ethernet ports
- **Packet throughput ability**: 8.3 Mbps @ 64 bytes
- **X-Ring**: 2 ports for X-Ring provide redundant backup with a recovery time below 300 MS.
- **Packet Filter**: 4 Selection Rules to filter combinations of Broadcast, Multicast, Unicast, and Unknown packets.
- **VLAN**: Port based and Tag. Up to 256 VLAN groups
- **Port Trunk**: LACP Port Trunk. 4 trunk groups / maximum of 4 trunk members.
- **Class of Service**: 4 priority queues per port
- **Quality of Service**: Port based, Tag based, or IPv4 Type of Service, IPv6 Different Service
- **IGMP**: IGMP Snooping v1, v2, and v3. 256 multicast groups and IGMP query
- **Clock Synchronization**: SNTP
- **Management Security**: IP Address
- **Port Mirror**: TX packet only, RX packet only, or TX and RX packet
- **Firmware Update**: TFTP, TFTP backup and restore
- **DHCP**: DHCP Client / DHCP Server
- **Bandwidth Control**: Ingress packet filter and Egress packet limit

### INTERFACE
- **LAN/WAN Ports**: 7 RJ45 10/100TX, 3 Combo RJ45 10/100/1000 or 100/1000 SFP Mini-Gbic Combo (On Combo ports the RJ45 is disabled when an SFP module is installed)
- **Console Port**: RS-232 RJ-45 (DB9 to RJ-45 adapter cable included)
- **Port Indicators (each port)**: 10/100: Link/Activity (Green), Full-duplex/Collision (Yellow), Giga Copper: Link/Activity (Green), Speed (1000Mbps Green), SFP: Link/Activity (Green)
- **System Indicators**: Green LEDs for Power, Power 1, Power 2, and Master. Orange LED for Fault.

### POWER
- **Input Voltage**: 12 to 48 VDC, dual source
- **Current Consumption**: 0.84 A max.
- **Input Connection**: Terminal Block
- **Relay Alarm**: 1A @ 24VDC

### ENVIRONMENTAL
- **Operating Temperature**: -40 to 167°F (-40 to 75°C)
- **Storage Temperature**: -40 to 185°F (-40 to 85°C)
- **Operating Humidity**: 10 to 95% Non-condensing
- **MTBF**: 260818 hours

### MECHANICAL
- **Enclosure**: IP30 DIN mount metal case
- **Mount**: 35 mm DIN or Panel
- **Dimensions**: 7.4 x 10.7 x 16.3 cm (2.7 x 4.2 x 6.4 in)

### REGULATORY APPROVALS
- **EMI**: FCC Class A
- **FCC**: EN6100-4-2, -4-3, -4-4, -4-5, -4-6
- **Safety**: EN60950
- **Free Fall**: IEC60068-2-32
- **Shock**: IEC60068-2-27
- **Vibration**: IEC60068-2-6

### RFC STANDARDS
- **RFC1215 Trap**: Up to 3 Trap Stations
- **RFC1213 MIBII**: Cold Start
- **RFC1157 SNMP MIB**: Port link up
- **RFC1493 Bridge**: Port link down
- **RFC2674 VLAN MIB**: Authentication Failure
- **RFC1643**: Power status
- **RFC 757**: Port Alarm
- **RSTP MIB**: Fault Alarm
- **Private MIB**: X-Ring Change

### SNMP TRAP
- **RFC1215 Trap**: Up to 3 Trap Stations
- **RFC1213 MIBII**: Cold Start
- **RFC1157 SNMP MIB**: Port link up
- **RFC1493 Bridge**: Port link down
- **RFC2674 VLAN MIB**: Authentication Failure
- **RFC1643**: Power status
- **RFC 757**: Port Alarm
- **RSTP MIB**: Fault Alarm
- **Private MIB**: X-Ring Change
**18 Port Managed Industrial Ethernet Switches with SFP Gigabit Ports**

**EIR618-2SFP-T**

The Elinx™ EIR618-2SFP-T Industrial Managed Ethernet Switch provides powerful functionality in a small package. Designed for industrial applications, this switch contains all the standard features of other switches, such as IGMP Snooping, Port Based VLAN, 802.1Q Tag VLAN, RJ-45 automatic MDI/MDI-X, auto negotiation, store and forward switching, STP, RSTP, Web Based Management, Ingress Packet Filtering, and Egress Rate Control.

These managed switches also come with important industrial features to ensure reliability in an industrial application. X-Ring technology with coupling ring and dual homing allows automatic recovery in less than 300 MS. Dual power inputs ensure reliability. A relay alarm output for port failure notification, DIN Rail and Panel Mounting options on the same IP30 case. Another important feature is automatic e-mail notification for system events such as a cold start, change in network topology, power status or SNMP authentication failure.

**PRODUCT FEATURES**

- X-Ring automatic recovery
- 16 10/100 TX RJ45 ports with MDI/MDI-X
- 2 combo 10/100/1000TX RJ45 or 100/1000 SFP ports
- Dual 12 to 48 VDC power inputs
- Wide operating temperature
- Relay alarm output
- IP30 DIN rail or panel mount
- Automatic e-mail notification for system events
- SNMP, CLI, or web management
- Port mirror and port trunk with LACP

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIR618-2SFP-T</td>
<td>Industrial Managed Ethernet Switch, 16 10/100 RJ45 Ports, plus 2 Combo 10/100/1000 RJ45 or SFP Mini-GBIC Ports</td>
</tr>
</tbody>
</table>

**ACCESSORIES**

- **MDR-60-24** - DIN Rail Power supply 24VDC, 2.5A, 60W
- **C5UMB3FBL** - 3 ft. (1 M) - Blue - Category 5e UTP Patch Cord
- **DFMM-LLC-LC-1M** - Multi-Mode Duplex Fiber Cable, LC To LC, 1 Meter
- **DFSM-LLC-LC-1M** - Single-Mode Duplex Fiber Cable, LC To LC, 1 Meter
- **SFP-1000SX-M-550M-T** - SFP Module, 1000Base-SX, Multi-mode 550m, LC Connector (-40 to 85°C)
- **SFP-100FX-M-2KM-T** - SFP Module, 100Base-FX, Multi-mode 2km, LC Connector (-40 to 85°C)
- **SFP-1000LX-S-10KM-T** - SFP Module, 1000Base-LX, Single-mode 10km, LC Connector (-40 to 85°C)
- **SFP-1000LX-S-20KM-T** - SFP Module, 1000Base-LX, Single-mode 20km, LC Connector (-40 to 85°C)
- **SFP-100FX-S-30KM-T** - SFP Module, 100Base-FX, Single-mode 30km, LC Connector (-40 to 85°C)
### 18 Port Managed Industrial Ethernet Switches with SFP

**EIR618-2SFP-T**

#### SPECIFICATIONS

<table>
<thead>
<tr>
<th>TECHNOLOGY</th>
<th>EIR618-2SFP-T Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IEEE Standards</strong></td>
<td>802.3 10Base-T Ethernet, 802.3u 100Base-TX and 100Base-FX Fast Ethernet, 802.3x Flow Control and Back Pressure, 802.1d Spanning Tree, 802.1w Rapid Spanning Tree, 802.1p Class of Service, 802.1Q VLAN Tag, 802.3ad Port Trunk with LACP, 802.1x RADIUS, 802.3ab 1000BaseT, 802.3z Gigabit fiber</td>
</tr>
<tr>
<td><strong>Processing Type</strong></td>
<td>Store and Forward</td>
</tr>
<tr>
<td><strong>Flow Control</strong></td>
<td>Flow control on full duplex, Back Pressure on half duplex</td>
</tr>
<tr>
<td><strong>MAC Address Table Size</strong></td>
<td>8 KB</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>4MB Flash ROM, 32MB DRAM</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>SNMP v1, v2c, v3, Web GUI, TELNET, CLI, Menu Driven Interface</td>
</tr>
<tr>
<td><strong>Management Security</strong></td>
<td>Up to 10 IP addresses can have permission to manage the switch. 802.1x (RADIUS) Authentication</td>
</tr>
<tr>
<td><strong>Transfer Rate</strong></td>
<td>14,880 bps for 10Base-T Ethernet ports, 148,800 for 100Base-TX/FX Fast Ethernet ports, 1,488,000 bps for Gigabit Fiber Ethernet ports</td>
</tr>
<tr>
<td><strong>Packet throughput ability</strong></td>
<td>10.7 Mbps @ 64 bytes</td>
</tr>
<tr>
<td><strong>X-Ring</strong></td>
<td>2 ports for X-Ring provide redundant backup with a recovery time below 300 MS.</td>
</tr>
<tr>
<td><strong>Packet Filter</strong></td>
<td>4 Selection Rules to filter combinations of Broadcast, Multicast, Unicast, and Unknown packets.</td>
</tr>
<tr>
<td><strong>VLAN</strong></td>
<td>Port based and Tag. Up to 256 VLAN groups. GVRP (256 Groups)</td>
</tr>
<tr>
<td><strong>Port Trunk</strong></td>
<td>LACP Port Trunk. 4 trunk groups / maximum of 4 trunk members.</td>
</tr>
<tr>
<td><strong>Class of Service</strong></td>
<td>4 priority queues per port</td>
</tr>
<tr>
<td><strong>Quality of Service</strong></td>
<td>Port based, Tag based, or IPv4 Type of Service, IPv6 Different Service</td>
</tr>
<tr>
<td><strong>IGMP</strong></td>
<td>IGMP Snooping v1, v2, and v3. 256 multicast groups and IGMP query</td>
</tr>
<tr>
<td><strong>Clock Synchronization</strong></td>
<td>SNTP</td>
</tr>
<tr>
<td><strong>Management Security</strong></td>
<td>IP Address, 802.1x RADIUS</td>
</tr>
<tr>
<td><strong>Port Security</strong></td>
<td>Static MAC (100 entries) / MAC Filter (100 entries)</td>
</tr>
<tr>
<td><strong>Port Mirror</strong></td>
<td>TX port only, RX packet only, or TX and RX packet</td>
</tr>
<tr>
<td><strong>Firmware Update</strong></td>
<td>TFTP, TFTP backup and restore</td>
</tr>
<tr>
<td><strong>DHCP</strong></td>
<td>DHCP Client / DHCP Server</td>
</tr>
<tr>
<td><strong>Bandwidth Control</strong></td>
<td>Ingress packet filter and Egress packet limit</td>
</tr>
</tbody>
</table>

#### INTERFACE

| LAN/WAN Ports | 16 RJ45 10/100TX, 2 Combo RJ45 10/100/1000 or SFP ports (RJ45 ports disabled when SFP installed) |
| Console Port  | RS-232 RJ45 (D9 to RJ45 adapter cable included) |
| Port Indicators (each port) | 10/100: Link/Activity (Green), Full-duplex/Collision (Yellow). Giga Copper: Link/Activity (Green), Speed (1000Mbps Green), SFP: Link/Activity (Green) |
| System Indicators | Green LEDs for Power, Power 1, Power 2, and Master. Orange LED for Fault. |

#### POWER

| Input Voltage   | 12 to 48 VDC, dual source |
| Current Consumption | 1.1 A max. |
| Input Connection | Terminal Block |
| Relay Alarm      | 1A @ 24VDC |

#### ENVIRONMENTAL

| Operating Temperature | -40 to 167°F (-40 to 75°C) |
| Storage Temperature   | -40 to 185°F (-40 to 85°C) |
| Operating Humidity    | 0 to 95% Non-condensing |
| MTBF                  | 243301 hours |

#### MECHANICAL

| Enclosure         | IP30 DIN mount metal case |
| Mount              | 35 mm DIN or Panel |
| Dimensions         | 7.4 x 10.7 x 16.3 cm (2.9 x 4.2 x 6.4 in) |

#### REGULATORY APPROVALS

| EMI                | FCC Class A, EN6100-4-2, -4-3, -4-4, EN6100-4-5, -4-6 |
| Safety             | EN60950 |
| Free Fall          | IEC60068-2-32 |
| Shock              | IEC60068-2-27 |
| Vibration          | IEC60068-2-6 |
**Industrial Managed Ethernet Switches**

**ESW500 Series**

The Elinx™ family of Managed DIN rail mount Ethernet switches have been designed to meet light industrial and commercial communication requirements.

Switch configurations range from 8 ports to 16 ports featuring all RJ45 copper to RJ45 copper with multi mode, single mode, and or SFP Gigabit ports.

**RingOn Technology**

Two ports can be used for network redundancy by implementing RingOn technology providing a rapid recovery system for industrial networks. If any part of the ring disconnects the network communications will automatically be restored.

**Web-based Management**

Each switch has an embedded HTML web site residing in flash memory, offering advanced management features allowing users to manage the switch from anywhere on the network via a standard web browser.

**VLAN Configuration**

A Virtual LAN (VLAN) is a logical network grouping that limits the broadcast domain. This allows you to isolate network traffic so that members of a VLAN will only receive traffic from other members of the same VLAN. Creating a VLAN from a switch is the logical equivalent of reconnecting a group of network devices to another Layer 2 switch. However, since it is a virtual network, the network devices remain connected to the same switch physically. Both port-based and 802.1Q (tagged-based) VLAN are supported.

**PRODUCT FEATURES**

- Light industrial design EN61000-6-1 specifications
- NEMA TS2 (ESW508-T)
- Shock and vibration tested
- -10 to 60°C or -40 to 75°C (-T models) temperature rating
- Supports IEEE 802.3 10Base-T, 802.3u 100Base-TX
- RJ-45 port supports auto MDI/MDI-X function
- SC single mode and multi mode fiber connectors
- Gigabit options with copper and SFP combo ports
- Web browser management and configuration
- Ring On redundant rapid recovery system, 15 mS
- Rapid spanning tree protocol recover system
- IGMP with query mode for multimedia application
- Port based VLAN / 802.1 Q Tag VLAN
- Relay alarm output for system events
- Port mirroring for diagnostics
- 256K bytes packet buffer
- 8k MAC address table

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>10/100</th>
<th>10/100/1000</th>
<th>SFP 1000</th>
<th>MULTI-MODE FIBER</th>
<th>SINGLE-MODE FIBER</th>
<th>TEMPERATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESW508</td>
<td>8</td>
<td>-10 to 60°C</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-40 to 75°C</td>
</tr>
<tr>
<td>ESW516</td>
<td>16</td>
<td>-10 to 60°C</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-40 to 75°C</td>
</tr>
<tr>
<td>ESW508-T*</td>
<td>8</td>
<td>-40 to 75°C</td>
<td>2 (SC)</td>
<td>-</td>
<td>-</td>
<td>-40 to 75°C</td>
</tr>
<tr>
<td>ESW508-2MC-T</td>
<td>6</td>
<td>-40 to 75°C</td>
<td>2 (SC)</td>
<td>-</td>
<td>-</td>
<td>-40 to 75°C</td>
</tr>
<tr>
<td>ESW508-2SC-T</td>
<td>6</td>
<td>-40 to 75°C</td>
<td>2 (SC)</td>
<td>-</td>
<td>-</td>
<td>-40 to 75°C</td>
</tr>
</tbody>
</table>

* NEMA TS2

**ACCESSORIES**

- MDR-60-24 - DIN Rail Power supply 24VDC, 2.5A, 60W
- CSU MB3FBL - 3 ft. (1 M) - Blue - Category 5e UTP Patch Cord
- DFMM-STST-1M - Multi-Mode Duplex Fiber Cable, ST To ST, 1 Meter
- DFSM-SCSC-1M - Single-Mode Duplex Fiber Cable, SC To SC, 1 Meter
Industrial Managed Ethernet Switches
ESW500 Series

SPECIFICATIONS

TECHNOLOGY

 Standards and Managed Protocols
- IEEE802.3, 802.3u, 802.3ab, 802.3z, 802.3x
- IEEE802.1D STP
- IEEE802.1W RSTP
- IEEE802.1p Class of Service
- IEEE802.1Q VLAN Tagging
- IEEE802.1ad Port Trunk with LACP
- Protocols: SNMP V1/V2/V3, DHCP Server, SNTP, SMTP, IGMP Snooping/GMRP, LACP, RMON, HTTPS, Telnet, Syslog, HTTP
- Priority Queues: 4
- IGMP Groups: 64
- Maximum VLANs: 256

Processing Type
Store and forward with IEEE802.3x full duplex, non-blocking flow control

Flow Control
IEEE802.3x flow control, back pressure flow control

MAC Address Table Size
8 KB

Packet Buffer Memory
256 K bytes

Address Table Size
8K MAC Addresses

INTERFACE

RJ45 Ports
10/100BaseT(x) auto negation, Full/Half duplex, auto MDI/MDI-connection

Fiber Ports
100BaseFX ports (multi-mode or single-mode with SC connector) Mini-Gbic SFP Combo Ports

LED Indicators
Power, Link, Speed, System Status

FIBER OPTICS

Fiber Type
- Multi-mode: 2 km
- Single mode: 20 km

Distance
- 2 km
- 20 km

Wavelength
- 1310 nm

Output Power
- -20 to -14 dBm
- -15 to -14 dBm

Sensitivity
≤ -33.9 dBm
≤ -31 dBm

POWER

Input Voltage
18 to 36 VDC (All Models)
10 to 24 VAC (ESW508, ESW516 Models)

Power Consumption
20W Max

Input Connection
Terminal Block

Protection
Reverse Polarity Protection

ENVIRONMENTAL

Operating Temperature
-10 to 60°C or -40 to 75°C (Wide Temperature Models)

Storage Temperature
-40 to 80 °C

Operating Humidity
0 to 95% Non-condensing

MTBF
200,000 hours

MECHANICAL

Enclosure
IP 30 Metal

Dimensions
See drawings

Installation
DIN rail and Panel mount

REGULATORY APPROVALS

CE, FCC, RoHS - Yes, NEMA TS2 (ESW508-T)
EN61000-6-1 Shock & Vibration Tested

SPECIFICATIONS - EN 61000-6-1: 2006

GENERIC STANDARDS FOR COMMERCIAL, LIGHT INDUSTRIAL ENVIRONMENTS

<table>
<thead>
<tr>
<th>TEST</th>
<th>DESCRIPTION</th>
<th>TEST LEVEL</th>
<th>LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN61000-4-2: 2009</td>
<td>Electro-Static Discharge (ESD)</td>
<td>Enclosure Contact</td>
<td>6kV</td>
</tr>
<tr>
<td>EN61000-4-3:2006+A1:2008</td>
<td>Radiated Field Immunity (RFI)</td>
<td>Signal Ports</td>
<td><a href="mailto:0.5kV@2.5Khz">0.5kV@2.5Khz</a></td>
</tr>
<tr>
<td>EN61000-4-4:2004</td>
<td>Burst (Fast Transient)</td>
<td>DC Ports</td>
<td>1kV</td>
</tr>
<tr>
<td>EN61000-4-5:2006</td>
<td>Surge</td>
<td>Signal Ports</td>
<td>1kV</td>
</tr>
<tr>
<td>EN61000-4-6: 2009</td>
<td>Induced (Conductive) RFI</td>
<td>DC Power Ports</td>
<td>10 V RMS</td>
</tr>
<tr>
<td>IEC60068-2-6</td>
<td>Vibration</td>
<td>Test Fc</td>
<td>2G</td>
</tr>
<tr>
<td>IEC60068-2-27</td>
<td>Shock</td>
<td>Test Ea</td>
<td>30G</td>
</tr>
</tbody>
</table>

ENVIRONMENTAL

MECHANICAL DIAGRAM

13.1 cm
5.16 in

7.04 cm
2.77 in

14.91 cm
5.87 in
One easy solution is the Ethernet extender. An Ethernet extender uses DSL technology to extend range up to 1900 meters; or nearly two kilometers. And they'll work with all sorts of copper wire, which makes them very cost-effective. The labor and cabling involved in a network installation normally represent a significant part of the expense, but Ethernet extenders will make use of any legacy cable that is already in place, like Cat5 cable or even old telephone lines. The savings can be substantial.

Ethernet extenders are set up in pairs. The first extender converts the Ethernet data for transmission over DSL. The second converts it back again. Throughput may be up to 50 Mbps, depending upon the range. Data signals attenuate over copper wire, of course but, even at the full 1900 meters, Ethernet extenders can still provide throughputs of 1 Mbps. Some Ethernet extenders are also equipped to provide Power over Ethernet (PoE), which overcomes the challenge of powering remote devices placed away from a power source by providing power directly from the extended Ethernet port.

For best performance, be sure that the extender wire is free of load coils, filters and splitters.

When TCP/IP networking moves out of the home and office environment and into the real world, the 100-meter range limitation of copper Ethernet cable becomes a problem. The remote sensors along an oil pipeline, for example, are going to require a bit more range than that. Fortunately, there are ways to provide it. With conversion and extension, networks can cover distances that are measured in kilometers rather than meters.

The telephone and cable companies, with their need for great range, are more likely to use single-mode fiber optic cable. Single-mode cable transmits with a laser rather than an LED, and it lets the telcos transmit data across entire continents. Just as multi-mode fiber and its associated equipment is more expensive than copper wire, single-mode fiber optic installations are more costly than multi-mode. But many network designers still specify the more expensive single-mode fiber optics at the outset, reasoning that labor costs will represent a large part of the installation expense in any case, and that the great bandwidth and range provided by single-mode fiber ensure that the installation won’t become obsolete at any time in the foreseeable future.
Copper or fiber optic installations may not make economic sense when data has to cross barriers like rivers or highways. But advances in radio technology are letting Wi-Fi do the job.

Radio waves can be absorbed or reflected by anything from the walls of a building to the vehicles in the parking lot. Called multi-path propagation, the phenomenon means that transmitted signals arrive at the receiver at different times and out of sequence. The higher the radio frequency; the worse the problem becomes. Low frequencies, on the other hand, provide less bandwidth and need larger antennas and more power to produce useful gain. As a result, the most popular of the unlicensed frequencies was traditionally the 2.4 GHz band, which lies somewhere in the middle. But the 2.4 GHz band is used by everything from cordless telephones to microwave ovens, and has gotten very crowded.

Wi-Fi developers have responded to these issues with the new 802.11n standard. 802.11n Wi-Fi incorporates multiple-input multiple-output (MIMO) technology that uses multiple antennas at both the transmitting and receiving sides of the wireless connection. The data is split into numerous spatial streams, which are then transmitted through separate antennas and collected by corresponding antennas in the receiving devices. Onboard software uses signal processing algorithms to correct and interpret the incoming data.

MIMO 802.11n devices also use precoding and postcoding techniques like spatial beamforming. Spatial beamforming modifies the phase and relative amplitude of the signal to create a pattern of constructive and destructive interference in the wavefront, which simplifies interpretation on the receiving side. The 802.11n standard also adds frame aggregation to the MAC layer. By grouping several data frames into a single, larger frame, the ratio of payload data to total data volume is higher, as management information is specified less frequently. This allows for improved throughput. The 802.11n standard also adds 40 MHz channels to the physical layer (PHY), twice the bandwidth that was available under the older 20 MHz standard.

Using the 802.11n standard, a wireless network bridge like the B&B Electronics Ghostbridge™ can create high-speed (up to 150Mbps) point-to-point links between two remote devices or networks over line of sight distances of up to 15 km.

Fiber optics are immune to electromagnetic interference (EMI), spikes, and ground loops. The data isn’t traveling along a copper wire; it’s carried by a beam of light. This is invaluable in industrial applications, for example, where the electric motors on the machinery can generate powerful magnetic fields. Wi-Fi and cellular networking confer similar advantages.

But remember that extending your data communications range via copper wire increases the risk for unwanted electrical events. The greater the distance between connected devices, the more likely it is that they will have different building ground references and the associated risk for ground loops. If the cable is installed in an industrial environment and passing machinery along the way, greater range also creates more opportunities for EMI.

So, copper wire network installations should be protected with surge suppression and isolation. Surge suppressors limit spikes between the signal and ground line and should be deployed as a first line of defense on power supply lines. Current models can be DIN rail mounted or connected directly to a cabinet, with surge protection ratings of up to 39 kA and less than 1 ns response time. But when the ground line rises, as it does in ground loop events, you’ll need isolation. Isolators convert data signals either to pulses of light or an electrical field, and then back again. Spikes and surges are stopped at the isolation zone. Isolators protect power lines by transforming VDC power to AC, then back again.

Ethernet cable still has an effective range of 100 meters, just as it always has. But when used in combination with the technologies described above, there’s no reason you can’t extend your network to include just about any device, just about anywhere.
Industrial DIN Rail Mount Ethernet Extender

EIR-EXTEND

The EIR-EXTEND is a point-to-point Ethernet Extender designed to operate in harsh environments. Functioning at temperatures from -40 to 75º C, it has been tested for functional operation up to 85º C. Using existing copper wire runs, it allows the extension of Ethernet signals. The EIR-EXTEND is the perfect solution for installing Ethernet connectivity on the factory floor. Used in pairs, configuration is easy. Configure one unit as the local device, and the other one as the remote device. External power supplies are required (not included).

PRODUCT FEATURES

• Redundant power inputs
• Wide operating temperature
• Extend Ethernet up to 6232 ft. (1.9 km) over standard copper wires
• Ethernet port: RJ-45 10/100Mbps
• Full/Half-duplex, Auto-negotiation / Auto-MDI/MDX
• Ethernet extend port: RJ-11 50Mbps full duplex VDSL
• UL/CUL Class 1/Division 2 Groups A, B, C, D
• NEMA TS2

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>ETHERNET PORTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIR-EXTEND</td>
<td>DIN Rail Mount Ethernet Extender</td>
</tr>
</tbody>
</table>

ACCESSORIES

MDR-40-24 - DIN Rail Power supply 24VDC 40 Watt
PS12VDC3P - Hardened AC Power Supply, 12VDC, 3A, 90-264VAC input, DC jack
C5UMB3FBL - 3 ft. (1 M) - Blue - Category 5e UTP Patch Cord

IN THE FIELD

Government Remote Site Metering
Industry: Energy and Natural Resources
Product: Ethernet Extender

Recording Wastewater Chlorine and pH Levels
Industry: Energy and Natural Resources
Product: Ethernet Extender

www.bb-elec.com/Metering
www.bb-elec.com/Wastewater

EIR-EXTEND
Carrier data charges may apply.
### SPECIFICATIONS

#### TECHNOLOGY

<table>
<thead>
<tr>
<th>Standards</th>
<th>802.3 10BaseT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>802.3u 100BaseTx</td>
</tr>
<tr>
<td></td>
<td>802.3x</td>
</tr>
<tr>
<td></td>
<td>Ethernet over VDSL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Transparent to higher level Protocols</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processing</td>
<td>Half-duplex: backpressure</td>
</tr>
<tr>
<td></td>
<td>Full-duplex: 802.3x</td>
</tr>
</tbody>
</table>

#### POWER

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>12 VDC – Power Jack</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12 – 30 VDC Terminal Block</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input Connection</th>
<th>350 mA (Power Jack)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>175 mA (Terminal Block)</td>
</tr>
</tbody>
</table>

| Power Consumption  | 4.2 W Max                              |

#### MECHANICAL

<table>
<thead>
<tr>
<th>Case</th>
<th>DIN Mount IP30 Aluminum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>5.0 x 11.12 x 13.5 cm (1.97 x 4.38 x 5.31 in)</td>
</tr>
<tr>
<td>Weight</td>
<td>0.8 kg (1.76 lbs)</td>
</tr>
</tbody>
</table>

#### ETHERNET INTERFACE

<table>
<thead>
<tr>
<th>Port</th>
<th>RJ-45, 10/100BaseTX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full/Half Duplex</td>
</tr>
<tr>
<td></td>
<td>Auto-Negotiation</td>
</tr>
<tr>
<td></td>
<td>Auto-MDI/MDX</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Speed</th>
<th>10/100 Mbps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance</td>
<td>320 ft. (100 m)</td>
</tr>
<tr>
<td>Cable</td>
<td>CAT 5</td>
</tr>
</tbody>
</table>

#### EXTENDER INTERFACE

<table>
<thead>
<tr>
<th>Port</th>
<th>RJ-11 or Terminal Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>Up to 50 Mbps</td>
</tr>
<tr>
<td>Distance</td>
<td>Up to 6,232 ft. (1.9 km)</td>
</tr>
<tr>
<td>Cable</td>
<td>24 AWG Copper Pair 100 Ohm Impedance</td>
</tr>
</tbody>
</table>

#### ENVIRONMENT

| Operating Temperature | -40 to 75°C Tested to 85°C          |
| Storage Temperature   | -40 to 85°C                         |
| Operating Humidity    | 0 to 95% Non-condensing              |

#### REGULATORY APPROVALS

<table>
<thead>
<tr>
<th>Emissions</th>
<th>FCC Part 15, Class A, NEMA TS2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE</td>
<td>EN61000-6-(2,3)</td>
</tr>
<tr>
<td></td>
<td>EN6100004-(2,3,4,5,6,8,11)</td>
</tr>
<tr>
<td></td>
<td>UL/CUL  Class 1/Division 2 Groups A, B, C, D</td>
</tr>
</tbody>
</table>

#### TOP LEDS (BNC LINE CONNECTIONS)

<table>
<thead>
<tr>
<th>LED</th>
<th>Speed</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Green</td>
<td>1 Mbps</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>3 Mbps</td>
</tr>
<tr>
<td>2</td>
<td>Green</td>
<td>5 Mbps</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>10 Mbps</td>
</tr>
<tr>
<td>3</td>
<td>Green</td>
<td>15 Mbps</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>20 Mbps</td>
</tr>
<tr>
<td>4</td>
<td>Green</td>
<td>25 Mbps</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>30 Mbps</td>
</tr>
<tr>
<td>5</td>
<td>Green</td>
<td>40 Mbps</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>50 Mbps</td>
</tr>
</tbody>
</table>
4 Port Industrial Ethernet Switch and Extender
EIR-EXTEND-4

The EIR-EXTEND-4 is a 4 port Ethernet switch and point-to-point Ethernet Extender designed to operate in harsh environments. Designed to operate at temperatures from -40 to 75° C, it has been tested for functional operation up to 85° C. Using existing copper wire runs, it allows the extension of Ethernet signals. The EIR-EXTEND-4 is the perfect solution for installing Ethernet connectivity on the factory floor. Used with a 2nd extender the configuration is easy. Configure one unit as the local device, and the other one as the remote device. External power supplies are required (not included).

**PRODUCT FEATURES**
- Complies with UL508 and NEMA TS1 & TS2 Environmental requirements for traffic control equipment
- Complies with IEC61000-6-2 EMC generic standard immunity for heavy industrial environment
- Redundant power inputs
- Wide operating temperature
- Extend Ethernet up to 6232 ft. (1.9 km) over standard copper wires
- Ethernet ports: 4 RJ-45 10/100Mbps Full/Half-duplex, Auto-negotiation / Auto-MDI/MDX
- Ethernet extend port: 1 RJ-11 and terminal block 50Mbps Full Duplex VDSL
- Port compatible with EIS-EXTEND, EIR-EXTEND, EIRM-EXTEND-x, EIRP-EXTEND

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>ETHERNET PORTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIR-EXTEND-4</td>
<td>DIN Rail Mount Ethernet Extender and switch</td>
</tr>
</tbody>
</table>

**ACCESSORIES**
- MDR-40-24 - DIN Rail Power supply 24VDC 40 Watt
- PS12VDC3P - Hardened AC Power Supply, 12VDC, 36W, 3A, 90-264VAC input, DC jack
- CSUMB3FBL - 3 ft. (1 M) - Blue - Category 5e UTP Patch Cord
4 Port Industrial Ethernet Switch and Extender
EIR-EXTEND-4

SPECIFICATIONS

TECHNOLOGY
Standards
- 802.3 10BaseT
- 802.3u 100BaseTx
- 802.3x
- Ethernet over VDSL

Protocol
- Transparent to higher level Protocols

Processing
- Half-duplex: backpressure
- Full-duplex: 802.3x

POWER
Input Voltage
- 48 VDC – Power Jack
- 24 - 48 VDC Terminal Block

Power Consumption
- 8.4 W Max., 0.18A@48VDC

MECHANICAL
Case
- DIN Mount IP30 Aluminum

Dimensions
- 50mm (W) x 110mm (D) x 135mm (H)
- (1.97" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.8 kg (1.76 lbs)

ETHERNET INTERFACE
Ports
- 4 - RJ-45, 10/100BaseTX
- Full/Half Duplex
- Auto-Negotiation
- Auto-MDI/MDX

Speed
- 10/100 Mbps

Distance
- 320 ft. (100 m)

Cable
- CAT 5

EXTENDER INTERFACE
Port
- One RJ-11 or Terminal Block

Speed
- Up to 50 Mbps

Distance
- Up to 6,232 ft. (1.9 km)

Cable
- 24 AWG Copper Pair (0.5mm diameter, 1 pair wire)
- or larger, 100 Ohm impedance

ENVIRONMENT
Operating Temperature
- -40 to 75° C (-40 to 167°F) Tested to 85° C

Storage Temperature
- -40 to 85° C

Operating Humidity
- 5% to 95% Non-condensing

REGULATORY APPROVALS
ISO
- Manufactured in an ISO9001 facility

Safety
- UL508
- FCC Part 15, Class A

EMI
- EN61000-6-2
- • EN65022
- • EN61000-3-2
- • EN61000-3-3

EMS
- EN61000-4-2 (ESD Standards)
- • Contact: + / - 4KV; Criteria B
- • Air: + / - 8KV; Criteria B
- • EN61000-4-3 (Radiated RFI Standards)
- - 10V, 80 to 1000MHz; 80% AM Criteria A
- • EN61000-4-4 (Burst Standards)
- - Signal Ports: + / - 4KV; Criteria B
- - D.C. Power Ports: + / - 4KV; Criteria B
- • EN61000-4-5 (Surge Standards)
- - Signal Ports: + / - 1KV; Line-to-Line; Criteria B
- - D.C. Power Ports: + / - 0.5KV; Line-to-earth; Criteria B
- • EN61000-4-6 (Induced RFI Standards)
- - Signal Ports: 10Vrms @ 0.15 - 80MHz; 80% AM Criteria A
- - D.C. Power Ports: 10Vrms @ 0.15 - 80MHz; 80% AM
- - Criteria A
- • EN61000-4-8 (Magnetic Field Standards)
- - 30A/m @ 50, 60Hz; Criteria A

Environmental
- IEC60068-2-6 (Vibration Resistance)
- • 5g @ 10 - 150Hz, Amplitude 0.35mm
- (Operation/Storage/Transport)
- • IEC60068-2-7 (Shock)
- • 25g @ 11ms (Half-Sine Shock Pulse; Operation)
- • 50g @ 11ms (Half-Sine Shock Pulse; Storage/Transport)

MECHANICAL DIAGRAM

LED CHART

<table>
<thead>
<tr>
<th>LED</th>
<th>Speed</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Green</td>
<td>1 Mbps</td>
<td>6.232m (1.9 km)</td>
</tr>
<tr>
<td>Amber</td>
<td>3 Mbps</td>
<td>5.904m (1.8 km)</td>
</tr>
<tr>
<td>2 Green</td>
<td>5 Mbps</td>
<td>5.249m (1.6 km)</td>
</tr>
<tr>
<td>Amber</td>
<td>10 Mbps</td>
<td>4.593m (1.4 km)</td>
</tr>
<tr>
<td>3 Green</td>
<td>15 Mbps</td>
<td>3.936m (1.2 km)</td>
</tr>
<tr>
<td>Amber</td>
<td>20 Mbps</td>
<td>3.280m (1.0 km)</td>
</tr>
<tr>
<td>4 Green</td>
<td>25 Mbps</td>
<td>2.624m (0.8 km)</td>
</tr>
<tr>
<td>Amber</td>
<td>30 Mbps</td>
<td>2.296m (0.7 km)</td>
</tr>
<tr>
<td>5 Green</td>
<td>40 Mbps</td>
<td>1.968m (0.6 km)</td>
</tr>
<tr>
<td>Amber</td>
<td>50 Mbps</td>
<td>984m (0.3 km)</td>
</tr>
</tbody>
</table>

Note: All speed selections are Symmetrical on DSL and Full-duplex on the Ethernet side.

Installation:
- DIN Rail (35mm) mount, Panel mount, or Rack mount with optional kit.

www.bb-elec.com
Industrial 10/100BASE-TX Ethernet Copper Extender
EIS-EXTEND

The model EIS-EXTEND extends your copper Ethernet connections up to 1900 meters (6200 feet) over twisted pair wire. The Ethernet Extender fully complies with IEEE 802.3 10BaseT and IEEE 802.3u 100BaseTX standards. Two EIS-EXTEND models are required for the Ethernet extension, (one at each end of your extension points). This product can be used with included power supply or in the EIS-RACK-16, 19-inch rack mount chassis used to house up to 16 EIS-EXTEND units.

PRODUCT FEATURES
- Extend Ethernet Copper up to 1900 meters (6200 feet) over existing copper wire (common copper, telephone, Cat5e)
- One 10/100Base TX (TX) Ethernet port with RJ-45 connector
- Auto negotiation of speed and duplex mode on TX port
- Auto MDIX on Ethernet port
- IEEE 802.3 10BaseT and IEEE 802.3u 100BaseTX compliant
- Line port uses common RJ-11 connector
- Line port auto senses the speed of 1/3/5/10/15/20/25/30/50Mbps
- One DIP switch for configuring local or remote mode
- Status LED’s for speed, monitoring and connection status
- External AC to DC power adapter included
- Used as a stand-alone device or with a 19-inch rack chassis
- Hot-swappable when used in 19 inch rack chassis

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
<th>POWER SUPPLY (INCLUDED)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIS-EXTEND</td>
<td>Industrial 10/100BASE-TX Ethernet Extender</td>
<td>USA</td>
</tr>
<tr>
<td>EIS-EXTEND-EU</td>
<td>Industrial 10/100BASE-TX Ethernet Extender</td>
<td>European</td>
</tr>
<tr>
<td>EIS-EXTEND-UK</td>
<td>Industrial 10/100BASE-TX Ethernet Extender</td>
<td>United Kingdom</td>
</tr>
</tbody>
</table>

ACCESSORIES
- EIS-PS-US - Replacement Power supply 12V US Plug
- EIS-PS-EU - Replacement Power supply 12V EU plug
- EIS-PS-UK - Replacement Power supply 12V UK plug
- EIS-RACK-PS - Power Supply For EIS-RACK-16, 84 Watts
- EIS-RACK-16 - Media Converter 19 Inch 2U Rack Chassis - 16 Slots
- CSUMB3FBG - 3 ft. (1 M) - Beige - Category 5e UTP Patch Cord
**SPECIFICATIONS**

**TECHNOLOGY**
- Standards: IEEE802.3 10BASE-T, IEEE802.3u 100BASE-TX, IEEE802.3x
- Protocols: Transparent to higher layer protocols
- Processing Type: Half-duplex back-pressure and IEEE802.3x Full-duplex flow control
- Forward and Fitering Rate: 14,880 pps for 10Mbps; 148,810 pps for 100Mbps

**INTERFACE**
- **Ethernet Port**
  - Port: One RJ-45 port, 10/100BASE-TX Full/Half-duplex Auto-Negotiation, Auto-MDI/MDIX
  - Speed: 10/100Mbps
  - Distance: 100 meters (328 ft.)
  - Cable: 10BASE-T: UTP CAT. 3, 4, 5 (2-pair wire)
  - 100BASE-TX: UTP CAT. 5 (4-pair wire)
- **Extender Port**
  - Port: One RJ-11
  - Speed: 1/3/5/10/15/20/25/30/40/50 Mbps
  - Distance: 1900 meters (6,232 ft.)
  - Cable: 10BASE-T: UTP CAT. 3, 4, 5 (2-pair wire)
  - 100BASE-TX: UTP CAT. 5 (4-pair wire)
  - 100 Ohm impedance

**DIP Switch**
- One DIP Switch: Local (CO) or Remote (CPE) configuration

**LED Indicators**
- Per Unit: Power Status (Power)
- Per Port: 10/100TX: Link/Activity, Full-duplex Line: Error, Link, Local, Remote

**POWER**
- Input Voltage: 12 VDC
- Power Consumption: 2.4 W Max. 0.2A @ 12VDC

**MECHANICAL**
- Enclosure: Aluminum case
- Dimensions: 8.03 cm x 10.92 cm x 2.38 cm (3.16 in x 4.30 in x 0.94 in)
- Weight: 150g (0.33 lb.)
- Installation: Desktop or 19 inch rack mount chassis system

**ENVIROMENTAL**
- Operating Temperature: 0°C to 60°C (32°F to 140°F)
- Tested Temperature: -20°C to 70°C (-4°F to 158°F)
- Storage Temperature: -25°C to 70°C (-13 to 158°F)
- Ambient Relative Humidity: 5% to 95% (non-condensing)

**REGULATORY APPROVALS**
- ISO: Manufactured in an ISO9001 facility
- Safety: UL60950-1
- CE
- EMI/EMS: FCC Part 15, Class A
- VCCI Class A
- EN55022
- EN61000-3-2, -3-3, -4-3, -4-4, -4-5, -4-6, -4-8, -6-2, -6-3
- IEC60068-2-6 Fc
- IEC60068-2-27 Ea
- FED STD 101C Method 5007.1

**PERFORMANCE**

<table>
<thead>
<tr>
<th>Maximum Extension Speed</th>
<th>Maximum Extension Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Mbps</td>
<td>1900 m (6200 ft.)</td>
</tr>
<tr>
<td>10 Mbps</td>
<td>1400 m (4500 ft.)</td>
</tr>
<tr>
<td>20 Mbps</td>
<td>1000 m (3200 ft.)</td>
</tr>
<tr>
<td>30 Mbps</td>
<td>700 m (2550 ft.)</td>
</tr>
<tr>
<td>50 Mbps</td>
<td>300 m (980 ft.)</td>
</tr>
</tbody>
</table>

**MECHANICAL DIAGRAM**
Ethernet Coaxial Extender for 10/100 Networks
EIR-EXTEND-C

The EIR-EXTEND-C is a point-to-point Ethernet Extender designed to operate in harsh environments. Ethernet connections can be made up 8,530 feet (2600 meters) using existing coaxial cable.

The perfect solution for legacy surveillance infrastructure upgrades moving from analog to IP-based, as no new cable is needed - saving time, money and labor cost. Installation is easy with a single switch setting; one end is set for local and the other remote. The EIR-EXTEND-C is used in pairs, one at each end of your existing coaxial cable.

PRODUCT FEATURES
- One 10/100Base TX (TX) Ethernet port with RJ-45 connector
- Auto negotiation of speed and duplex mode on TX port
- Auto MDI/MDIX on Ethernet port
- IEEE 802.3 10BaseT and IEEE 802.3u 100BaseTX compliant
- Line port uses BNC connector or F-Type connector
- Line port link is full-duplex up to 85Mbps over existing coaxial cable
- One DIP switch for configuring local or remote mode
- Status LED’s for monitoring and connection status
- Redundant power inputs with terminal block and DC jack

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIR-EXTEND-C</td>
<td>Hardened 10/100BASE-TX Ethernet Copper Extender Over Coaxial Cable</td>
</tr>
</tbody>
</table>

ACCESSORIES

| PS12VDC3P    | Hardened AC Power Supply, 12VDC, 36W, 3A, 90-264VAC input, DC jack |
| MDR-20-24    | DIN rail mount power supply 24VDC, 1.0 A output power |
| CSUMB3FBG    | 3 ft. (1 M) - Beige - Category 5e UTP Patch Cord |

MECHANICAL DIAGRAM
Ethernet Coaxial Extender for 10/100 Networks
EIR-EXTEND-C

SPECIFICATIONS

ETHERNET TECHNOLOGY

<table>
<thead>
<tr>
<th>Standards</th>
<th>IEEE802.3 10Base-T, IEEE802.3u 100Base-T, IEEE802.3x, Ethernet over SHDSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocols</td>
<td>Transparent to higher layer protocols</td>
</tr>
<tr>
<td>Processing Type</td>
<td>Half-duplex back-pressure and IEEE802.3x Full-duplex flow control</td>
</tr>
</tbody>
</table>

INTERFACE

| Ethernet Port   | RJ-45, 10/100Base-TX Full/Half-duplex Auto-Negotiation, Auto-MDI/MDIX |
| Speed           | 10/100Mbps                                                            |
| Distance        | 328 ft. (100meters)                                                  |
| Cable           | 10Base-T: UTP CAT. 3, 4, 5 (2-pair wire), 100Base-TX: UTP CAT. 5 (2-pair wire) |
| Extender Line Port | BNC Coaxial                                                        |
| Speed           | 1/5/10/20/30/40/50/60/70/75Mbps                                      |
| Distance        | 8,530 ft. (2,600meters)                                              |
| Cable           | Coaxial Cable (5C2V / RG6AU)                                         |

POWER

| Input Voltage   | 12 to 48VDC (Terminal Block); 12VDC (DC Jack)                        |
| Power Consumption | 7.2W Max. 0.6A@12VDC, 0.15A@48VDC                                    |
| Overload Protection | Present                                                            |
| Reverse Polarity Protection | Present                                                          |

ENVIRONMENTAL

| Operating Temperature: | -40°C to 75°C (-40°F to 167°F)                                    |
| Storage Temperature    | -40°C to 85°C (-40°F to 185°F)                                    |
| Humidity               | 5% to 95% (non-condensing)                                         |
| MTBF                   | 265,154 hours                                                      |
| MTBF Calculation       | Parts count reliability prediction @ 25°C                          |

MECHANICAL

| Enclosure            | Aluminum case, IP30                                                |
| Dimensions           | 5.0cm (W) x 11.0cm (D) x 13.5cm (H)                                |
| Weight               | 800g (1.76 lbs.)                                                   |
| Installation         | DIN-Rail (Top hat type 35mm), Panel Rack Mounting                 |

FRONT PANEL LEDS (ETHERNET AND LINE CONNECTIONS)

<table>
<thead>
<tr>
<th>Port</th>
<th>LED</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Power1</td>
<td>Steady</td>
<td>Power on (Pwr stands for POWER)</td>
</tr>
<tr>
<td></td>
<td>Power2</td>
<td>Off</td>
<td>Power off</td>
</tr>
<tr>
<td></td>
<td>Power3</td>
<td>Steady</td>
<td>Valid Ethernet connection established</td>
</tr>
<tr>
<td></td>
<td>Lnk/Act</td>
<td>Flashing</td>
<td>Transmitting or receiving Ethernet data (ACT stands for ACTIVITY)</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>No valid Ethernet connection nor transmitting/receiving Ethernet data</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fdx</td>
<td>Steady</td>
<td>Ethernet connection in full duplex mode (FDX stands for FULL-DUPLEX)</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>Collision occurred</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Line (BNC)</td>
<td>Steady</td>
<td>Operating in remote mode</td>
</tr>
<tr>
<td></td>
<td>Local</td>
<td>Steady</td>
<td>Operating in local mode</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>Steady</td>
<td>Error occurred</td>
</tr>
<tr>
<td></td>
<td>Link</td>
<td>Steady</td>
<td>A valid connection established between local &amp; remote</td>
</tr>
</tbody>
</table>

CLOSED LOOP (LINE EXTEND)

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOP LEDS (BNC LINE CONNECTIONS)

<table>
<thead>
<tr>
<th>LEDs</th>
<th>Status</th>
<th>Speed</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Green</td>
<td>1~5Mbps</td>
<td>up to 2600M</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>6~10Mbps</td>
<td>up to 2400M</td>
</tr>
<tr>
<td>2</td>
<td>Green</td>
<td>11~16Mbps</td>
<td>up to 2000M</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>17~20Mbps</td>
<td>up to 1800M</td>
</tr>
<tr>
<td>3</td>
<td>Green</td>
<td>21~29Mbps</td>
<td>up to 1600M</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>30~43Mbps</td>
<td>up to 1400M</td>
</tr>
<tr>
<td>4</td>
<td>Green</td>
<td>44~54Mbps</td>
<td>up to 1200M</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>55~63Mbps</td>
<td>up to 1000M</td>
</tr>
<tr>
<td>5</td>
<td>Green</td>
<td>64~74Mbps</td>
<td>up to 600M</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>75~85Mbps</td>
<td>up to 200M</td>
</tr>
</tbody>
</table>

REGULATORY APPROVALS

<table>
<thead>
<tr>
<th>RoHS</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>UL508</td>
</tr>
<tr>
<td>EMI</td>
<td>EN61000-6-2, EN61000-4-2 (ESD Standards) Contact: + / - 4KV; Criteria B Air: + / - 8KV; Criteria B EN61000-4-3 (Radiated RFI Standards) 10V/m, 80 to 1000MHz; 80% AM Criteria A EN61000-4-4 (Burst Standards) Signal Ports: + / 2KV; Criteria B D.C. Power Ports: + / 2KV; Criteria B EN61000-4-5 (Surge Standards) Signal Ports: + / - 1KV; Line-to-Line; Criteria B D.C. Power Ports: + / 2KV; Criteria B EN61000-4-6 (Induced RFI Standards) 10Vrms @ 0.15~80MHz; 80% AM Criteria A EN61000-4-8 (Magnetic Field Standards) 30A/m @ 50, 60Hz; Criteria A</td>
</tr>
<tr>
<td>EMS</td>
<td>IEC60068-2-6 Fc (Vibration Resistance) 5g @ 10~150KHz, Amplitude 0.35mm (Operation/Storage/Transport)</td>
</tr>
<tr>
<td>Compliance</td>
<td>IEC60068-2-27 Ea (Shock) 25g @ 11ms (Half-Sine Shock Pulse; Operation) 50g @ 11ms (Half-Sine Shock Pulse; Storage/Transport)</td>
</tr>
<tr>
<td></td>
<td>IEC60068-2-32 Ed (Free Fall) 1M (3.281 ft.)</td>
</tr>
</tbody>
</table>

www.bb-elec.com
Ethernet Coaxial Extender for 10/100 Networks
EIS-EXTEND-C

The model EIS-EXTEND-C allows your existing coaxial cable to be used to extend Ethernet connections up to 8530 feet (2,600 M).

Two EIS-EXTEND-C models are required for the Ethernet extension, (one at each end of your extension points). This product can be used with included power supply or in a 19 inch rack mount chassis, which can house up to 16 EIS-EXTEND-C units or EIS Media Converters.

PRODUCT FEATURES
- One 10/100Base TX (TX) Ethernet port with RJ-45 connector
- Auto negotiation of speed and duplex mode on TX port
- Auto MDI/MDIX on Ethernet port
- IEEE 802.3 10BaseT and IEEE 802.3u 100BaseTX compliant
- Line port uses BNC connector or F-Type connector
- Line port link is full-duplex up to 85Mbps over existing coaxial cable
- One DIP switch for configuring local or remote mode
- Status LED’s for monitoring and connection status
- External AC to DC power adapter included
- Used as a stand-alone device or with a 19 inch rack chassis
- Hot-swappable when used in 19 inch rack chassis

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIS-EXTEND-C</td>
<td>10/100-TX Ethernet Copper Extender w/USA Power Adaptor</td>
</tr>
<tr>
<td>EIS-EXTEND-C-UK</td>
<td>10/100-TX Ethernet Copper Extender w/USA Power Adaptor</td>
</tr>
<tr>
<td>EIS-EXTEND-C-EU</td>
<td>10/100-TX Ethernet Copper Extender w/EU Power Adaptor</td>
</tr>
</tbody>
</table>

ACCESSORIES
EIS-RACK-PS - Power Supply For EIS-Rack-16, 84 Watts
EIS-RACK-16 - Media Converter 19 Inch 2U Rack Chassis - 16 Slots

MECHANICAL DIAGRAM
**Ethernet Coaxial Extender for 10/100 Networks**

**EIS-EXTEND-C**

## Specifications

### Ethernet Technology
- **Standards**: IEEE802.3 10Base-T, IEEE802.3u 100Base-TX, IEEE802.3x, Ethernet over VDSL
- **Protocols**: Transparent to higher layer protocols
- **Processing Type**: IEEE802.3x Full-duplex flow control

### Interface
- **Ethernet Port**: RJ-45, 10/100Base-TX Full/Half-duplex Auto-Negotiation, Auto-MDI/MDIX
- **Speed**: 10/100Mbps
- **Distance**: 328 ft. (100meters)
- **Cable**: 10Base-T: UTP CAT. 3, 4, 5 (2-pair wire), 100Base-TX: UTP CAT. 5 (2-pair wire)
- **Extender Line Port**: BNC Coaxial
- **Speed**: 1/5/10/20/30/40/50/60/75/100Mbps
- **Distance**: 8,530 ft. (2,600meters)
- **Cable**: Coaxial Cable (5C2V / RG6AU)

### Power
- **Input Voltage**: 12 VDC
- **Power Consumption**: 5.76W Max. 0.48A@12VDC

### Environmental
- **Operating Temperature**: -10°C to 60°C (14°F to 140°F)
- **Storage Temperature**: -20°C to 70°C (-4°F to 158°F)
- **Humidity**: 5% to 95% (non-condensing)
- **MTBF**: 57,515 hours
- **MTBF Calculation**: Parts count reliability prediction

### Mechanical
- **Enclosure**: Aluminum case
- **Dimensions**: 8.03cm (W) x 10.92cm (D) x 2.38cm (H)
- **Weight**: 150g (0.33 lb.)

### Top LEDs (BNC Line Connections)

<table>
<thead>
<tr>
<th>LEDs</th>
<th>Status</th>
<th>Speed</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Green</td>
<td>1 – 5Mbps</td>
<td>up to 2600M</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>6 – 10Mbps</td>
<td>up to 2400M</td>
</tr>
<tr>
<td>2</td>
<td>Green</td>
<td>11 – 16Mbps</td>
<td>up to 2000M</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>17 – 20Mbps</td>
<td>up to 1800M</td>
</tr>
<tr>
<td>3</td>
<td>Green</td>
<td>21 – 29Mbps</td>
<td>up to 1600M</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>30 – 43Mbps</td>
<td>up to 1400M</td>
</tr>
<tr>
<td>4</td>
<td>Green</td>
<td>44 – 54Mbps</td>
<td>up to 1200M</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>55 – 63Mbps</td>
<td>up to 1000M</td>
</tr>
<tr>
<td>5</td>
<td>Green</td>
<td>64 – 74Mbps</td>
<td>up to 600M</td>
</tr>
<tr>
<td></td>
<td>Amber</td>
<td>75 – 85Mbps</td>
<td>up to 200M</td>
</tr>
</tbody>
</table>

### Regulation Approvals
- **RoHS**: Yes
- **Safety**: UL60950-1, EN60950-1, IEC60950-1
- **EMI**
  - FCC Part 15, Class A
  - VCCI, Class A
  - EN61000-6-3
  - EN61000-6-2
  - EN61000-4-2 (ESD Standards) Contact: + / - 4KV; Criteria B
  - EN61000-4-3 (Radiated RFI Standards) 10V/m, 80 to 1000MHz, 80% AM Criteria A
  - EN61000-4-5 (Surge Standards) Signal Ports: + / - 2KV; Criteria B
  - EN61000-4-6 (Induced RFI Standards) Signal Ports: 10Vrms @ 0.15~80MHz; 80% AM Criteria A
- **EMS**
  - EN61000-4-3 (Radiated RFI Standards) 10V/m, 80 to 1000MHz, 80% AM Criteria A
  - EN61000-4-5 (Surge Standards) Signal Ports: + / - 2KV; Criteria B
  - EN61000-4-6 (Induced RFI Standards) Signal Ports: 10Vrms @ 0.15~80MHz; 80% AM Criteria A
  - EN61000-4-8 (Magnetic Field Standards) 30A/m @ 50, 60Hz; Criteria A

### Environmental Test Compliance
- **IEC60068-2-6 Fc (Vibration Resistance)** 5g @ 10~150KHz, Amplitude 0.35mm (Operation/Storage/Transport)
- **IEC60068-2-27 Ea (Shock)** 25g @ 11ms (Half-Sine Shock Pulse; Operation) 50g @ 11ms (Half-Sine Shock Pulse; Storage/Transport)
- **IEC60068-2-32 Ed (Free Fall)** 1M (3.281 ft.)

### Front Panel LEDs (Ethernet and Line Connections)

<table>
<thead>
<tr>
<th>Port</th>
<th>LEDs</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet (RJ-45)</td>
<td>Pwr</td>
<td>Steady</td>
<td>Power on (Pwr stands for POWER)</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>Power off</td>
<td></td>
</tr>
<tr>
<td>Lnk/Act</td>
<td>Steady</td>
<td>Valid Ethernet connection established (Lnk stands for LINK)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flashing</td>
<td>Transmitting or receiving Ethernet data (Act stands for ACTIVITY)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>No valid Ethernet connection nor transmitting/receiving Ethernet data</td>
<td></td>
</tr>
<tr>
<td>Fdx</td>
<td>Steady</td>
<td>Ethernet connection in full duplex mode (Fdx stands for FULL-DUPLEX)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flashing</td>
<td>Collision occurred</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>Ethernet connection in half-duplex mode</td>
<td></td>
</tr>
<tr>
<td>Line (BNC)</td>
<td>Rmt</td>
<td>Steady</td>
<td>The device operates in remote mode</td>
</tr>
<tr>
<td>Loc</td>
<td>Steady</td>
<td>The device operates in local mode</td>
<td></td>
</tr>
<tr>
<td>Err</td>
<td>Steady</td>
<td>Error occurred</td>
<td></td>
</tr>
<tr>
<td>Lnk</td>
<td>Steady</td>
<td>A valid connection established between local &amp; remote units</td>
<td></td>
</tr>
</tbody>
</table>
Industrial PoE Ethernet Extender
EIRP-EXTEND

Extending Ethernet to allow the PoE+ port to reach IP cameras, IP phones, and Ethernet connected control devices is simple and reliable with B&B Electronics’ Ethernet Extenders. The EIRP series extenders offer built-in PoE+ technology which allows the end device, such as an IP camera, to be powered directly from the extended Ethernet port. Used with a 2nd extender the configuration is easy. Configure one unit as the local device, and the other one as the remote device. External power supplies are required (not included).

PRODUCT FEATURES
- IEEE802.3at 30W PoE+ /PSE power for last mile applications
- Complies with UL508 and NEMA TS1 & TS2 environmental requirements for traffic control equipment
- Complies with IEC61000-6-2 EMC generic standard immunity for heavy industrial environment
- Redundant 24 or 48 VDC Power Inputs
- Wide operating temperature
- Extend Ethernet up to 6232 ft. (1.9 km) over standard copper wires
- Ethernet port: PoE Plus + RJ-45 10/100Mbps Full/Half-duplex, Auto-negotiation / Auto-MDI/MDX
- Ethernet extend port: 1 RJ-11 and terminal block 50Mbps full duplex VDSL
- Extender port compatible with models EIS-EXTEND, EIR-EXTEND-x, EIRM-EXTEND-x

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIRP-EXTEND</td>
<td>PoE Plus DIN Rail Mount Ethernet Extender</td>
</tr>
</tbody>
</table>

ACCESSORIES
- PS12VDC3P  - Hardened AC Power Supply, 12VDC, 36W, 3A, 90-264VAC input, DC jack
- MDR-20-24  - DIN rail mount power supply 24VDC, 1.0 A output power
- MDR-40-48  - DIN rail mount power supply 48VDC, 0.83 A output power
- C5UMB3FBG  - 3 ft. (1 M) - Beige - Category 5e UTP Patch Cord
Industrial PoE Ethernet Extender

**EIRP-EXTEND**

**SPECIFICATIONS**

**TECHNOLOGY**
- Standards: 802.3 10BaseT
  - 802.3u 100BaseTx
  - 802.3x
- Ethernet over VDSL
- Protocol: Transparent to higher level
- Protocols
- Processing: Half-duplex: back pressure
  - Full-duplex: 802.3x

**POWER**
- Input Voltage: 48 VDC – Power Jack
  - 24 - 48 VDC Terminal Block
- Power Consumption: 38.4 W Max, 0.8A@48VDC

**MECHANICAL**
- Case: DIN Mount IP30 Aluminum
- Dimensions: 50 mm (W) x 110 mm (D) x 135 mm (H)
  - 1.97” (W) x 4.33” (D) x 5.31” (H))
- Weight: 0.8 kg (1.76 lbs)

**ETHERNET INTERFACE**
- Ports: PoE RJ-45, 10/100BaseTX
  - Full/Half Duplex
  - Auto-Negotiation
- PoE Plus: Complies with IEEE802.3af / 802.3at standard
- Speed: 10/100 Mbps
- Distance: 320 ft. (100 m)
- Cable: 100Base-TX UTPCAT 5 (4 pair)

**EXTENDER INTERFACE**
- Port: One RJ-11 or Terminal Block
- Speed: Up to 50 Mbps
- Distance: Up to 6,232 ft. (1.9 km)
- Cable: 24 AWG Copper Pair (0.5mm diameter, 1 pair wire) or larger 100 Ohm impedance

**ENVIRONMENT**
- Operating Temperature: -40 to 75° C
  - Tested to 85° C
- Storage Temperature: -40 to 85° C
- Operating Humidity: 5% to 95% Non-condensing

**LED CHART**

<table>
<thead>
<tr>
<th>Port</th>
<th>Color</th>
<th>Speed</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Green</td>
<td>1 Mbps</td>
<td>6232 ft. (1.9 km)</td>
</tr>
<tr>
<td>2</td>
<td>Amber</td>
<td>3 Mbps</td>
<td>5904 ft. (1.8 km)</td>
</tr>
<tr>
<td>3</td>
<td>Green</td>
<td>5 Mbps</td>
<td>5249 ft. (1.6 km)</td>
</tr>
<tr>
<td>4</td>
<td>Amber</td>
<td>10 Mbps</td>
<td>4593 ft. (1.4 km)</td>
</tr>
<tr>
<td>5</td>
<td>Amber</td>
<td>15 Mbps</td>
<td>3906 ft. (1.2 km)</td>
</tr>
<tr>
<td>6</td>
<td>Amber</td>
<td>20 Mbps</td>
<td>3280 ft. (1.0 km)</td>
</tr>
<tr>
<td>7</td>
<td>Green</td>
<td>25 Mbps</td>
<td>2624 ft. (0.8 km)</td>
</tr>
<tr>
<td>8</td>
<td>Amber</td>
<td>30 Mbps</td>
<td>2296 ft. (0.7 km)</td>
</tr>
<tr>
<td>9</td>
<td>Green</td>
<td>40 Mbps</td>
<td>1968 ft. (0.6 km)</td>
</tr>
<tr>
<td>10</td>
<td>Amber</td>
<td>50 Mbps</td>
<td>984 ft. (0.3 km)</td>
</tr>
</tbody>
</table>

**REGULATORY APPROVALS**

**ISO**
- Manufactured in an ISO9001 facility

**Safety**
- UL508
  - FCC Part 15, Class A
- EN61000-6-4
  - EN62042
  - EN61000-3-2
  - EN61000-3-3

**EMI**
- EN61000-6-2
  - EN61000-4-2 (ESD Standards)
    - Contact: + / - 4KV; Criteria B
    - Air: + / - 9KV; Criteria B
  - EN61000-4-3 (Radiated EMI Standards)
    - 10V/m, 80 to 1000MHz; 80% AM Criteria A
  - EN61000-4-4 (Surge Standards)
    - Signal Ports: + / - 4KV; Criteria B
    - D.C. Power Ports: + / - 1KV; Line-to-Line; Criteria B
  - EN61000-4-5 (Burst Standards)
    - Signal Ports: + / - 4KV; Criteria B
  - EN61000-4-6 (Induced EMI Standards)
    - Signal Ports: 10Vrms @ 0.15 - 80MHz; 80% AM Criteria A
  - D.C. Power Ports: 10Vrms @ 0.15 - 80MHz; 80% AM
  - Criteria B
- EN61000-4-8 (Magnetic Field Standards)
  - 30A/m @ 50, 60Hz; Criteria A

**EMS**
- EN62042
  - 5g @ 10 - 150Hz, Amplitude 0.35mm
  - (Operation/Storage/Transport)
- EN62042-2-27 Es (Shock)
  - 25g @ 11ms (Half-Sine Shock Pulse; Operation)
  - 50g @ 11ms (Half-Sine Shock Pulse; Storage/Transport)
- EN62042-2-32 Ed (Free Fall)
  - 1M (3.281ft.)

**Environmental Test Compliance**
- IEC60068-2-6 Fc (Vibration Resistance)
- 5g @ 10 - 150Hz, Amplitude 0.35mm
  - (Operation/Storage/Transport)
- IEC60068-2-27 Es (Shock)
  - 25g @ 11ms (Half-Sine Shock Pulse; Operation)
  - 50g @ 11ms (Half-Sine Shock Pulse; Storage/Transport)
- IEC60068-2-32 Ed (Free Fall)
  - 1M (3.281ft.)

**Installation:**
- DIN Rail (35mm) Panel Mount, Rack Mounting with optional kit.
Industrial 2 & 4 port 10/100BaseTX PoE Ethernet Extender
EIRP-EXTEND-2 and EIRP-EXTEND-4

PRODUCT FEATURES
- Extend Ethernet up to 6232 ft. (1.9 km) over existing copper wires
- IEEE802.3at 30W PoE/PSE power for last mile applications
- Complies with UL508 and NEMA TS1/ TS2 environmental requirements for traffic control equipment
- Complies with IEC61000-6-2 EMC generic standard immunity for heavy industrial environment
- Redundant 24 or 48 VDC power inputs
- Wide operating temperature
- Ethernet port: PoE Plus (25W) RJ-45 10/100Mbps Full/Half-duplex, Auto-negotiate/Auto-MDI/MDX
- Ethernet extender port: 1 RJ-11 50Mbps full duplex VDSL
- Port compatible with EIS-EXTEND, EIR-EXTEND-x, EIRM-EXTEND-x

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIRP-EXTEND-2</td>
<td>2-port 10/100BASE-TX IEEE802.3at PoE/PSE Ethernet Extender</td>
</tr>
<tr>
<td>EIRP-EXTEND-4</td>
<td>4-port 10/100BASE-TX with 2-port IEEE802.3at PoE/PSE Ethernet Extender</td>
</tr>
</tbody>
</table>

ACCESSORIES
PS12VDC3P - Hardened AC Power Supply, 12VDC, 36W, 3A, 90-264VAC input, DC jack
MDR-20-24 - DIN rail mount power supply 24VDC, 1.0 A output power
MDR-40-48 - DIN rail mount power supply 48VDC, 0.83 A output power
C5UMB3F8G - 3 ft. (1 M) - Beige - Category 5e UTP Patch Cord

Extending Ethernet to reach IP cameras, IP phones, and Ethernet connected control devices is simple and reliable with B&B Electronics’ Ethernet Extenders. The EIRP series extenders offer built-in PoE+ technology which allows the end device, such as an IP camera, to be powered directly from the extended Ethernet port. Used with a second extender the configuration is easy. Configure one unit as the local device, and the other one as the remote device. External power supplies are required (not included).

MECHANICAL DIAGRAM
# Specifications

## Technology

<table>
<thead>
<tr>
<th>Standards</th>
<th>802.3 10BaseT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>802.3u 100BaseTx</td>
</tr>
<tr>
<td></td>
<td>802.3x</td>
</tr>
<tr>
<td>Protocol</td>
<td>Ethernet over VDSL</td>
</tr>
<tr>
<td>Processing</td>
<td>Transparent to higher level Protocols</td>
</tr>
<tr>
<td></td>
<td>Half-duplex: back pressure</td>
</tr>
<tr>
<td></td>
<td>Full-duplex: 802.3x</td>
</tr>
</tbody>
</table>

## Power

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>48 VDC – Power Jack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Consumption</td>
<td>69.12 W Max, 1.44A@48VDC, when 2 PoE link with PD Class 0 devices: Each PSE Port allows Max. 30W power consumption.</td>
</tr>
</tbody>
</table>

## Mechanical

<table>
<thead>
<tr>
<th>Case</th>
<th>DIN Mount IP30 Aluminum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>50 mm (W) x 110 mm (D) x 135 mm (H)</td>
</tr>
<tr>
<td></td>
<td>1.97&quot; (W) x 4.33&quot; (D) x 5.31&quot; (H)</td>
</tr>
<tr>
<td>Weight</td>
<td>0.8 kg (1.76 lbs)</td>
</tr>
</tbody>
</table>

## Ethernet Interface

<table>
<thead>
<tr>
<th>Ports</th>
<th>2 or 4 port 10/100BaseTX, 2 with PoE Plus RJ-45, 10/100BaseTX</th>
</tr>
</thead>
<tbody>
<tr>
<td>PoE</td>
<td>Complies with IEEE802.3af / 802.3at standard</td>
</tr>
<tr>
<td>Speed</td>
<td>10/100 Mbps</td>
</tr>
<tr>
<td>Distance</td>
<td>320 ft. (100 m)</td>
</tr>
<tr>
<td>Cable</td>
<td>100Base-TX UTP CAT 5 (4 pair) 100 Ohm impedance</td>
</tr>
</tbody>
</table>

## Extender Interface

<table>
<thead>
<tr>
<th>Port</th>
<th>One RJ-11 or Terminal Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>Up to 50 Mbps</td>
</tr>
<tr>
<td>Distance</td>
<td>Up to 6,232 ft. (1.9 km)</td>
</tr>
<tr>
<td>Cable</td>
<td>24 AWG Copper Pair (0.5mm diameter, 1 pair wire) or larger</td>
</tr>
</tbody>
</table>

*See LED chart for distance/speed combinations

## Environment

| Operating Temperature | -40 to 75°C Tested to 85°C                              |
| Storage Temperature   | -40 to 85°C                                              |
| Operating Humidity    | 5% to 95% Non-condensing                                 |

## LED Chart

<table>
<thead>
<tr>
<th>LED Color</th>
<th>Distance</th>
<th>Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>1 Mbps</td>
<td>6232 ft. (1.9 km)</td>
</tr>
<tr>
<td>Amber</td>
<td>3 Mbps</td>
<td>5904 ft. (1.8 km)</td>
</tr>
<tr>
<td>Green</td>
<td>5 Mbps</td>
<td>5249 ft. (1.6 km)</td>
</tr>
<tr>
<td>Amber</td>
<td>10 Mbps</td>
<td>4593 ft. (1.4 km)</td>
</tr>
<tr>
<td>Green</td>
<td>15 Mbps</td>
<td>3936 ft. (1.2 km)</td>
</tr>
<tr>
<td>Amber</td>
<td>20 Mbps</td>
<td>3280 ft. (1.0 km)</td>
</tr>
<tr>
<td>Green</td>
<td>25 Mbps</td>
<td>2624 ft. (0.8 km)</td>
</tr>
<tr>
<td>Amber</td>
<td>30 Mbps</td>
<td>2296 ft. (0.7 km)</td>
</tr>
<tr>
<td>Green</td>
<td>40 Mbps</td>
<td>1968 ft. (0.6 km)</td>
</tr>
<tr>
<td>Amber</td>
<td>50 Mbps</td>
<td>984 ft. (0.3 km)</td>
</tr>
</tbody>
</table>

## Regulatory Approvals

### EMI

- EN61000-6-2
  - EN61000-4-2 (ESD Standards)
    - Contact: + / - 4KV, Criteria B
    - Air: + / - 8KV, Criteria B
  - EN61000-4-3 (Radiated RFI Standards)
    - 10V/m, 80 to 1000MHz; 80% AM Criteria A
  - EN61000-4-4 (Surge Standards)
    - Signal Ports: + / - 1KV; Line-to-Line; Criteria B
    - D.C. Power Ports: + / - 0.5KV; Line-to-earth; Criteria B
  - EN61000-4-5 (Surge Standards)
    - Signal Ports: + / - 4KV / 8KV; Criteria B
    - D.C. Power Ports: + / - 4KV; Criteria B
  - EN61000-4-6 (Induced RFI Standards)
    - Signal Ports: 10Vrms @ 0.15 - 80MHz; 80% AM Criteria A
    - D.C. Power Ports: 10Vrms @ 0.15 - 80MHz; 80% AM Criteria A
  - EN61000-4-8 (Magnetic Field Standards)
    - 30A/m @ 50, 60Hz; Criteria A

### EMS

- EN61000-6-2
  - IEC60068-2-6 Fc (Vibration Resistance)
    - 5g @ 10 - 150Hz; Amplitude 0.35mm (Operation/Storage/Transport)
  - IEC60068-2-27 Ea (Shock)
    - 25g @ 11ms (Half-Sine Shock Pulse; Operation)
    - 50g @ 11ms (Half-Sine Shock Pulse; Storage/Transport)
    - IEC60068-2-32 Ed (Free Fall)
    - 1M (3.281ft.)

## Installation

- DIN Rail (35mm) Panel Mount, Rack Mounting with optional kit.
B&B Electronics’ Industrial Hardened EIRM-EXTEND is a point-to-point Managed Ethernet Extender designed to operate in harsh environments. It efficiently extends 10/100 Ethernet circuits to over 300 meters (984 feet) at 50Mbps using existing cross-over pair copper wire.

The EIRM-EXTEND allows Ethernet connectivity in existing facilities over existing voice grade copper wire – no pulling extra cable. This is the perfect solution to Ethernet on the factory floor where systems have been upgraded from slower serial communications to Ethernet networking.

The EIRM-EXTEND is used in pairs. Installation is easy with a single switch setting; one end is set for local and the other remote. The EIRM-EXTEND also provides several advanced functions such as System, SNMP, F/W upgrade, and Load Default setting through the Web based browser to enhance total networking performance.

**PRODUCT FEATURES**
- Extends Ethernet communications up to 1900 meters
- Complies with NEMA TS1 & TS2 environmental requirements for traffic control equipment
- Complies with IEC61000-6-2 EMC generic standard immunity for industrial environments
- Supports SNMP management and monitoring of connected devices.
- Operates transparent to higher layer protocols such as TCP/IP
- Ethernet port: 10/100Mbps-Full/Half-duplex, Auto-Negotiation, Auto-MDI/MDIX
- Ethernet extender (RJ-11 and Terminal Block) ports
- Supports DIN rail panel rack mounting installation
- Ten communications speeds with speed indicator LEDs on front panel of unit. From 50Mbps@about 300 meters (984 ft.) to 1Mbps@ about 1,900 meters (6,232 ft.)
- Supports external hardware watch dog
- Supports web, CLI, SNMP management interface
- Link status (for VDSL, Ethernet),
- Redundant power inputs: 12 to 32VDC (terminal block);12VDC (DC jack)
- -40°C to 75°C (-40°F to 167°F) operating temperature range
- Hardened IP30 aluminum case; DIN or panel mount

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>ETHERNET PORTS</th>
<th>MAX DISTANCE</th>
<th>MAX SPEED</th>
<th>VDSL PORTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIRM-EXTEND</td>
<td>1</td>
<td>1900m</td>
<td>50 Mbps</td>
<td>RJ-11 and Terminal Block</td>
</tr>
</tbody>
</table>

**ACCESSORIES**

- PS12VDC3P - Hardened AC Power Supply, 12VDC, 36W, 3A, 90-264VAC input, DC jack
- MDR-20-24 - DIN rail mount power supply 24VDC, 1.0 A output power
- CSUMB3F8G - 3 ft. (1 M) - Beige - Category 5e UTP Patch Cord
**SPECIFICATIONS**

**TECHNOLOGY**
- **Standards**: IEEE802.3 10BASE-T, IEEE802.3u 100BASE-TX, IEEE802.3x, Ethernet over VDSL
- **Protocols**: Transparent to higher layer protocols
- **Flow Control**: Half-duplex back-pressure and IEEE802.3x Full-duplex flow control

**ETHERNET PORT**
- **RJ45 Ports**: One Ethernet 10/100BASE-TX Full/Half-duplex Auto-Negotiation, Auto-MDI/MDIX
- **RJ45 Distance**: 100 meters (328 ft.)
- **LED Indicators**: LNK/ACT, Duplex

**ETHERNET VDSL EXTENDER PORT**
- **Port**: One RJ-11 and Terminal Block Port
- **Speed**: 1/3/5/10/15/20/25/30/40/50Mbps
- **Distance**: 1900 meters (6,232 ft.)
- **Cable**: 24 AWG (0.5mm diameter, (pair wire) or larger 100 Ohm impedance

**CONSOLE PORT**
- **Port One**: DB9 RS232 port

**POWER**
- **Input Voltage**: 12 to 32VDC
- **Power Use**: 5.76W Max. 0.48A@12VDC, 0.24A@24VDC
- **Input Connection**: (Terminal Block); 12VDC (DC Jack)
- **Protection**: Reverse Polarity Protection

**ENVIRONMENTAL**
- **Operating Temperature**: -40°C to 75°C
- **Storage Temperature**: -40°C to 85°C
- **Operating Humidity**: 5% to 95% (non-condensing)
- **MTBF**: 844,028.71

**MECHANICAL DIAGRAM**

**LED CHART**

<table>
<thead>
<tr>
<th>LEDs</th>
<th>Status</th>
<th>Speed</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Green</td>
<td>1 Mbps</td>
<td>1,900m (6,232 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>Amber</td>
<td>3 Mbps</td>
<td>1,800m (5,904 ft.)</td>
</tr>
<tr>
<td>3</td>
<td>Green</td>
<td>10 Mbps</td>
<td>1,400m (4,593 ft.)</td>
</tr>
<tr>
<td>4</td>
<td>Amber</td>
<td>15 Mbps</td>
<td>1,200m (3,936 ft.)</td>
</tr>
<tr>
<td>5</td>
<td>Green</td>
<td>20 Mbps</td>
<td>1,000m (3,280 ft.)</td>
</tr>
<tr>
<td>6</td>
<td>Amber</td>
<td>25 Mbps</td>
<td>800m (2,642 ft.)</td>
</tr>
<tr>
<td>7</td>
<td>Amber</td>
<td>30 Mbps</td>
<td>700m (2,296 ft.)</td>
</tr>
<tr>
<td>8</td>
<td>Amber</td>
<td>40 Mbps</td>
<td>600m (1,968 ft.)</td>
</tr>
<tr>
<td>9</td>
<td>Amber</td>
<td>50 Mbps</td>
<td>300m (984 ft.)</td>
</tr>
</tbody>
</table>

- Per Input: Power Status LED
- Per Port: 10/100TX: Link/Activity, Full-duplex
- Line: Error, Link, Local, Remote

**Note**: All speed selections are Symmetrical on the DSL and Full-duplex on the Ethernet.

**REGULATORY APPROVALS**

**ISO**
- Manufactured in an ISO9001 facility
- UL508

**EMI**
- FCC Part 15, Class A
- EN61000-6-4
- EN55022
- EN61000-3-2
- EN61000-3-3
- EN61000-6-2
- EN61000-4-2 (ESD Standards)
  - Contact: + / - 4KV; Criteria B
  - Air: + / - 8KV; Criteria B
- EN61000-4-3 (Radiated RFI Standards)
  - 10V/m, 80 to 3000MHz; 80% AM Criteria A
- EN61000-4-4 (Burst Standards)
  - Signal Ports: + / - 4KV; Criteria B
  - D.C. Power Ports: + / - 4KV; Criteria B
- EN61000-4-5 (Surge Standards)
  - Signal Ports: + / - 1KV, Line-to-Line; Criteria B
  - D.C. Power Ports: + / - 0.5KV, Line-to-earth; Criteria B
- EN61000-4-6 (Induced RFI Standards)
  - Signal Ports: 10Vrms @ 0.15 - 80MHz; 80% AM Criteria A
  - D.C. Power Ports: 10Vrms @ 0.15 - 80MHz; 80% AM Criteria A
- EN61000-4-8 (Magnetic Field Standards)
  - 30A/m @ 50, 60Hz; Criteria A
- IEC60068-2-6 Fc (Vibration Resistance)
  - 5g @ 10 - 150Hz, Amplitude 0.35mm (Operation/Storage/Transport)
- IEC60068-2-7a Ea (Shock)
  - 25g @ 11ms (Half-Sine Shock Pulse; Operation)
- 50g @ 11ms (Half-Sine Shock Pulse; Storage/Transport)
- IEC60068-2-32 Ed (Free Fall)
  - 1M (3.281ft.)
- NEMA TS1 Environmental requirements for Traffic control equipment
EthErnEt SwitchES, routErS, & ExtEndErS

Managed Hardened 8 port 10/100BASE-TX Ethernet Extender
EIRM-EXTEND-8

Product Features

- Extends Ethernet communications up to 1900 meters
- Compiles with NEMA TS1 & TS2 Environmental requirements for traffic control equipment
- Complies with IEC61000-6-2 EMC Generic standard immunity for industrial environment
- Ethernet Port: 10/100Mbps-Full/Half-dulex, Auto-Negotiation, Auto-MDI/MDIX
- Proprietary “-ring” support for network redundancy; recovery time < 15ms
- IEEE802.1w RSTP, IEEE802.1S MSTP and IEEE802.1D STP compatible
- IP Multicast Filtering through IGMP Snooping V1, V2 & V3
- Supports port-based VLAN and IEEE802.1Q VLAN Tagging and GVRP
- IEEE802.1p QoS with four priority queues
- MAC-based Trunking with automatic link fail-over
- RS-232 console, Telnet, SSL/SSH, SNMP V1, V2c & V3, RMON, Web Browser, and TFTP Management
- Supports IEEE802.1x Security
- Bandwidth Rate Control
- Per-port programmable MAC address locking
- Up to 24 Static Secure MAC addresses per port
- Port mirroring
- Full wire-speed forwarding rate
- Redundant power inputs with Terminal Block and DC Jack
- -40°C to 75°C (-40°F to 167°F) operating temperature range
- Supports NTP

Ordering Information

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIRM-EXTEND-8</td>
<td>Managed Hardened 8 port 10/100BASE-TX Ethernet Extender</td>
</tr>
</tbody>
</table>

Accessories

- PS12VDC3P - Hardened AC Power Supply, 12VDC, 36W, 3A, 90-264VAC input, DC jack
- MDR-20-24 - DIN rail mount power supply 24VDC, 1.0 A output power
- C5UMB3FBG - 3 ft. (1 M) - Beige - Category 5e UTP Patch Cord

Designed for rugged environments, the EIRM-EXTEND-8 series switch comes with eight 10/100BASE-TX plus two VDSL ports in one package. It efficiently extends 10/100 Ethernet circuits to over 300 meters (984 feet) at 50Mbps by using an existing pair of copper wire. Installation is easy with a single switch setting - one end is set for local and the other for remote. The EIRM-EXTEND-8 is used in pairs (compatible with other EIS, EIR and EIRM models) to extend Ethernet connectivity over existing voice grade copper wire.

The EIRM-EXTEND-8 functions at temperatures ranging from -40°C to 75°C (-40°F to 167°F) and is tested for functional operation @ -40°C to 85°C (-40°F to 185°F). The EIRM-EXTEND-8 is fully managed via SNMP, Web Browser, Telnet or Console Port and is designed to integrate 10/100 Mbps networks into VDSL backbones. The EIRM-EXTEND-8 series supports advanced features such as 802.1Q VLAN, MAC-based Trunking, IP Multicast IGMP Snooping, Rapid Spanning Tree for Redundancy, QoS for priority queuing, and port mirroring. Users may choose among SNMP/ RMON, Web browser, or Telnet for remote monitoring and configuration. It also supports rate control, which allows users to set the maximum bandwidth in each port individually.
 Managed Hardened 8 port 10/100BASE-TX Ethernet Extender  
EIRM-EXTEND-8

**SPECIFICATIONS**

**TECHNOLOGY**
- Standards: IEEE802.3 10Base-T, IEEE802.3u 100Base-TX, IEEE802.3x, Ethernet over VDSL
- Forward and Filtering Rate: 14,880 pps for 10 Mbps, 148,810 pps for 100 Mbps
- Packet Buffer Memory: 2M bits
- Processing Type: Store-and-Forward, Half-duplex back-pressure and IEEE802.3x full duplex flow control
- Address Table Size: 8192 MAC addresses

**ETHERNET PORTS**
- RJ45 Ports: Eight Ethernet 10/100BASE-TX Full/Half-duplex Auto-Negotiation, Auto-MDI/MDIX
- RJ45 Distance: 100 meters (328 ft.)
- LED Indicators: LNK/ACT, Duplex

**ETHERNET DSL EXTENDER PORTS**
- Port: Two RJ-11 and Terminal Block Ports
- Speed: 1/3/5/10/15/20/25/30/40/50 Mbps
- Distance: 1900 meters (6,232 ft.)
- Cable: 24 AWG (0.5mm diameter, (pair wire) or larger 100 Ohm impedance

**CONSOLE PORT**
- One DB9 RS232 port

**POWER**
- Input Voltage: 12 to 48VDC
- Power Use: 11W Max. 0.92A@12VDC, 0.46A@24VDC
- Input Connection: (Terminal Block); 12VDC (DC Jack)
- Protection: Reverse Polarity Protection

**MECHANICAL**
- Enclosure: Aluminum IP30
- Dimensions: 600mm (W) x 125mm (D) x 145mm (H)
- 2.36” (W) x 4.92” (D) x 5.7” (H)
- Installation: DIN Rail or optional Panel mount

**ENVIRONMENTAL**
- Operating Temperature: -40°C to 75°C (-40°F to 167°F)
- Storage Temperature: -40°C to 85°C (-40°F to 185°F)
- Operating Humidity: 5% to 95% (non condensing)
- MTBF: 844,028.71
- Alarm Contact: One relay output with current 1A@24VDC

**LED INDICATORS**

<table>
<thead>
<tr>
<th></th>
<th>Speed</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Green 1 Mbps</td>
<td>1,900m (6,232 ft.)</td>
</tr>
<tr>
<td></td>
<td>Amber 3 Mbps</td>
<td>1,800m (5,904 ft.)</td>
</tr>
<tr>
<td>2</td>
<td>Green 5 Mbps</td>
<td>1,600m (5,249 ft.)</td>
</tr>
<tr>
<td></td>
<td>Amber 10 Mbps</td>
<td>1,400m (4,593 ft.)</td>
</tr>
<tr>
<td>3</td>
<td>Green 15 Mbps</td>
<td>1,200m (3,936 ft.)</td>
</tr>
<tr>
<td></td>
<td>Amber 20 Mbps</td>
<td>1,000m (3,280 ft.)</td>
</tr>
<tr>
<td>4</td>
<td>Green 25 Mbps</td>
<td>800m (2,642 ft.)</td>
</tr>
<tr>
<td></td>
<td>Amber 30 Mbps</td>
<td>700m (2,296 ft.)</td>
</tr>
<tr>
<td>5</td>
<td>Green 40 Mbps</td>
<td>600m (1,968 ft.)</td>
</tr>
<tr>
<td></td>
<td>Amber 50 Mbps</td>
<td>300m (984 ft.)</td>
</tr>
</tbody>
</table>

Note: All speed selections are Symmetrical on the DSL and Full-duplex on Ethernet.

**REGULATORY APPROVALS**
- ISO: Manufactured in an ISO9001 facility
- EMI: EN61000-6-2, EN61000-6-3, EN61000-6-4, EN65022, EN61000-3-2, EN61000-3-3
- EMS: EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6

**Environmental Test Compliance**
- IEC60068-2-6: Fc (Vibration Resistance) 5g @ 10~150KHz, Amplitude 0.35mm (Operation/Storage/Transport)
- IEC60068-2-27: Ea (Shock) 25g @ 11ms (Half-Sine Shock Pulse; Operation) 50g @ 11ms (Half-Sine Shock Pulse; Storage/Transport)
- IEC60068-2-32: Ed (Free Fall) 1M (3.281 ft.)

**NEMA**
- NEMA TS1/2 Environmental requirements for Traffic control equipment

**MECHANICAL DIAGRAM**

![Mechanical Diagram](image_url)