

# Manual

## Elinx EIR408-T

8 Port-10/100/1000 Unmanaged Din Rail Ethernet Switch



EIR408-T

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# Overview

B&B Electronics Elinx family of Gigabit Industrial Din Rail mount Ethernet switches have been designed to meet light and heavy Industrial communication requirements.

## High-Speed Transmissions

The Industrial switch includes a controller that can automatically sense transmission speeds (10/100/1000 Mbps). The RJ45 copper ports support auto MDI/MDIX operation. This feature allows network connections to computers, servers, or other switches using straight-through or crossover cables

All Ethernet ports have memory buffers that support the store-and-forward mechanism. This assures that data is properly transmitted.

## Dual Power Inputs

To reduce the risk of power failure, the Industrial switch provides 12 - 48 VDC dual power inputs. When power failure occurs, the device will automatically switch to the secondary power input.

## Flexible Mounting

The industrial switch is extremely compact and can be mounted on a din-rail or panel mounting making it suitable for any space-constrained environment. Both mounting options are supplied with the Ethernet switch.

## Wide Operating Temperature

The EIR408-T will operate in a -40 to 75C environment. The wide temperature range will allow the EIR408-T to operate in some of the harshest industrial environments that exist.

## Easy Troubleshooting

LED indicators make troubleshooting quick and easy. Each 10/100/1000 port has 2 LED indicators that display the link status, transmission speed and collision status. The power and fault LED's add to the ease of understanding operating conditions.

## ***Features***

- Provides 8 x 10/100/1000Base-T Mbps Ethernet ports.
- Store-and-Forward switching architecture
- Back-plane (switching fabric): 16Gbps
- Provides 176Kbits memory buffer
- 8K-entry MAC address table
- 9.6K bytes jumbo frame
- Supports full/half duplex flow control
- Supports broadcast storm protection
- Supports MDI/MDI-X auto-crossover
- Supports redundant +12 - 48 VDC power input
- Provides flexible mounting: DIN-rail, Panel Mounting
- Supports operating temperatures of -40 ~ 75°C

## ***Package Check List***

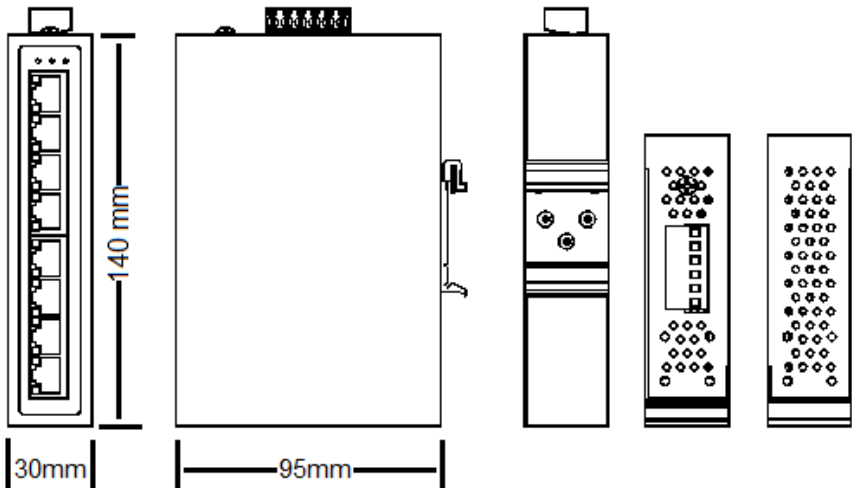
- 8-port 10/100/1000Base-T Industrial Ethernet Switch
- User Manual
- Quick Start Guide
- Wall Mounting Brackets with screws

# Hardware Description

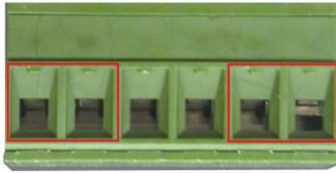
The following information is an introduction to the Gigabit Industrial Ethernet Switch dimensions, ports, cabling information, and wiring installation.

## Dimensions

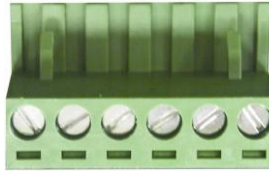
The dimensions of the industrial switch are 30 x 140 x 95 mm (W x H x D). The figure below gives the dimensions and views of each side of the 8-port 10/100/1000Base-T Industrial Ethernet switch.



# Wiring the Power Inputs



V- V+      V- V+



Note: Terminal blocks are rated for 12-24 AWG wire

## *LED Indicators*

The LED indicators located on the front panel display the power and network status of the Industrial switch. Refer to the chart below for LED description and operation.

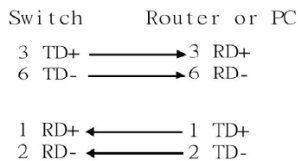
| LED                  | Color | Description |  |
|----------------------|-------|-------------|--|
| P1                   | Green | On          | Power input 1 is active                                      |
|                      |       | Off         | Power input 1 is inactive                                    |
| P2                   | Green | On          | Power input 2 is active                                      |
|                      |       | Off         | Power input 2 is inactive                                    |
| Fault                | Red   | On          | Power input 1 or 2 is inactive                               |
|                      |       | Off         | Power input 1 and 2 are both functional, or no power inputs  |
| 1 ~ 8<br>(Upper LED) | Green | On          | Connected to network   |
|                      |       | Flashing    | Networking is active   |
|                      |       | Off         | Not connected to network                                     |
| 1 ~ 8<br>(Lower LED) | Green | On          | Connected to network at speed of 1000Mbps                    |
|                      |       | Off         | Not connected to network or not working at speed of 1000Mbps |



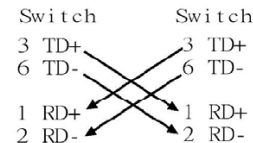
## RJ45

The RJ45 copper ports support auto MDI/MDIX operation. This feature allows network connections to computers, servers, or other switches using straight-through or crossover cables (See Figure below). Straight-through cable connections: pins 1, 2, 3 and 6, at one end of the cable, are connected straight-through to pins 1, 2, 3 and 6 at the other end of the cable. The table below shows the 10BASE-T/100BASE-TX MDI and MDI-X port pin outs.

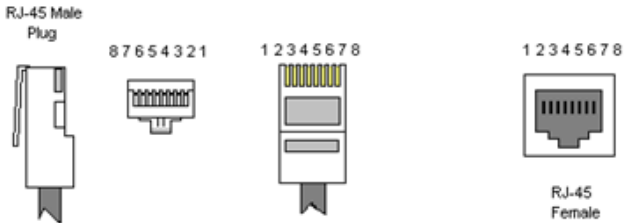
| Pin | MDI-X Signal Name         | MDI Signal Name           |
|-----|---------------------------|---------------------------|
| 1   | Receive Data plus (RD+)   | Transmit Data plus (TD+)  |
| 2   | Receive Data minus (RD-)  | Transmit Data minus (TD-) |
| 3   | Transmit Data plus (TD+)  | Receive Data plus (RD+)   |
| 6   | Transmit Data minus (TD-) | Receive Data minus (RD-)  |



Straight Through Cable Schematic

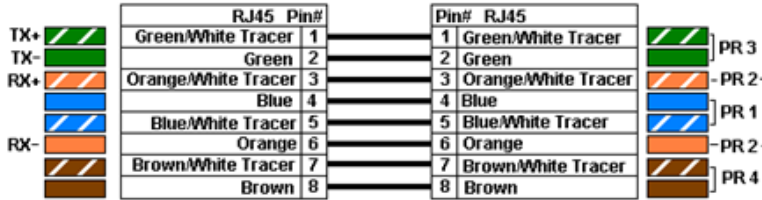


Cross Over Cable Schematic



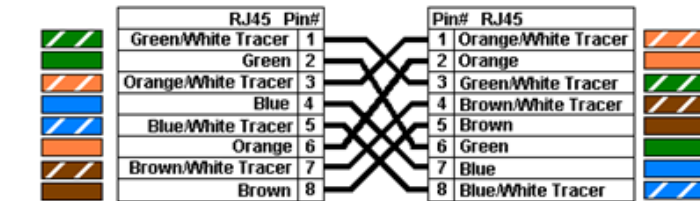
Color Standard  
EIA/TIA T568A

Ethernet Patch Cable



Color Standard  
EIA/TIA T568A

Ethernet Crossover Cable



"A" is earlier

2006.06.26

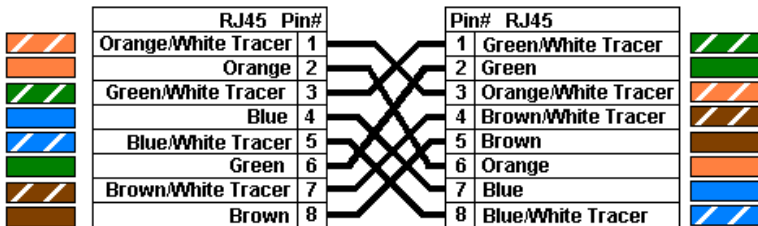
**Color Standard  
EIA/TIA T568B**

**Ethernet Patch Cable**



**Color Standard  
EIA/TIA T568B**

**Ethernet Crossover Cable**



"B" is most recent

Common Ethernet Crossover Cables may only cross connect the Orange & Green pairs

2006.06.28

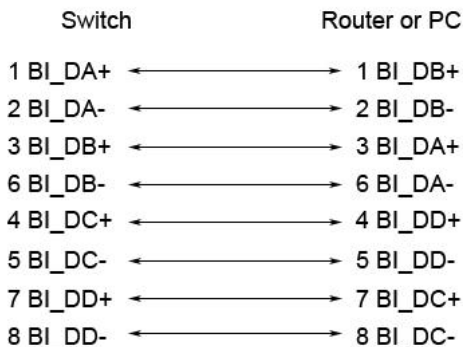
## RJ45 10/100/1000Base-T Pinouts

The table below describes gigabit Ethernet RJ-45 pinouts.

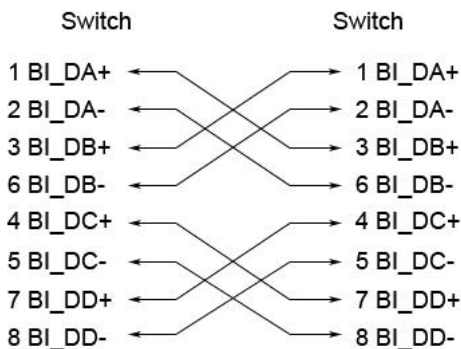
| Pin | Signal name | Description            |
|-----|-------------|------------------------|
| 1   | BI_DA+      | Bi-directional pair A+ |
| 2   | BI_DA-      | Bi-directional pair A- |
| 3   | BI_DB+      | Bi-directional pair B+ |
| 4   | BI_DC+      | Bi-directional pair C+ |
| 5   | BI_DC-      | Bi-directional pair C- |
| 6   | BI_DB-      | Bi-directional pair B- |
| 7   | BI_DD+      | Bi-directional pair D+ |
| 8   | BI_DD-      | Bi-directional pair D- |

## 10/100/1000Base-T

The following two figures illustrate the 10/100/1000Base-T cable schema.



Straight Through Cable Schema



Crossover Cable Schema

## Cabling

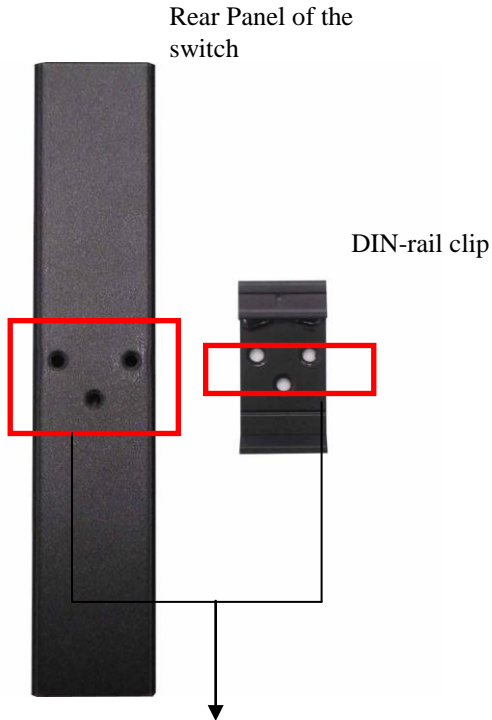
Use unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cable for RJ-45 connections: 100  $\Omega$  Category 3, 4 or 5 cable for 10Mbps connections, 100  $\Omega$  Category 5 cable for 100Mbps, or 100  $\Omega$  Category 5e/above cable for 1000Mbps connections.

The cable between the switch and the link partner (switch, hub, workstation, etc.) must be less than 100 meters (328 ft.) long.

# Mounting Installation

## DIN-Rail Mounting

The din-rail clip is factory installed with removable screws.

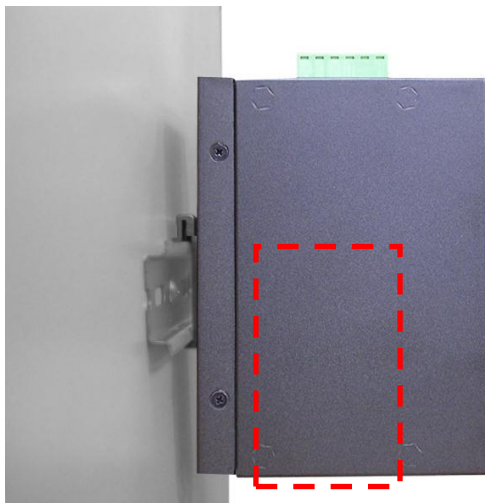


## Hang the Industrial Switch

First, position the din-rail clip of the switch directly in front of the DIN rail. Make sure the top of the clip hooks over the top of the DIN rail.



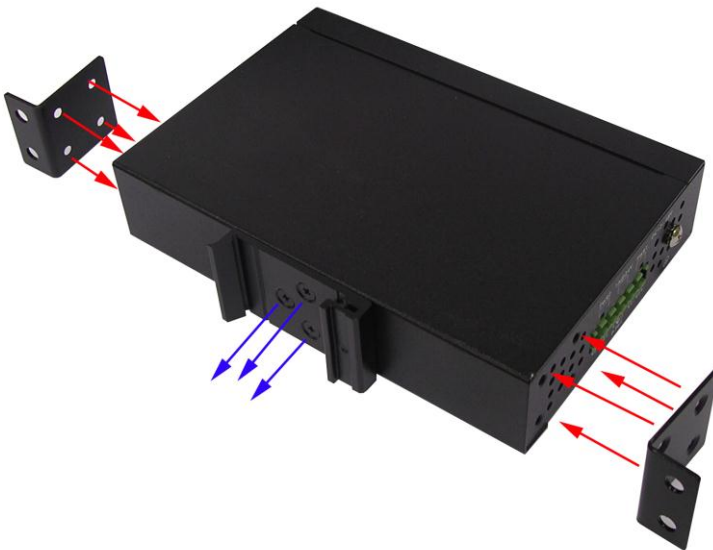
Push the unit downward.



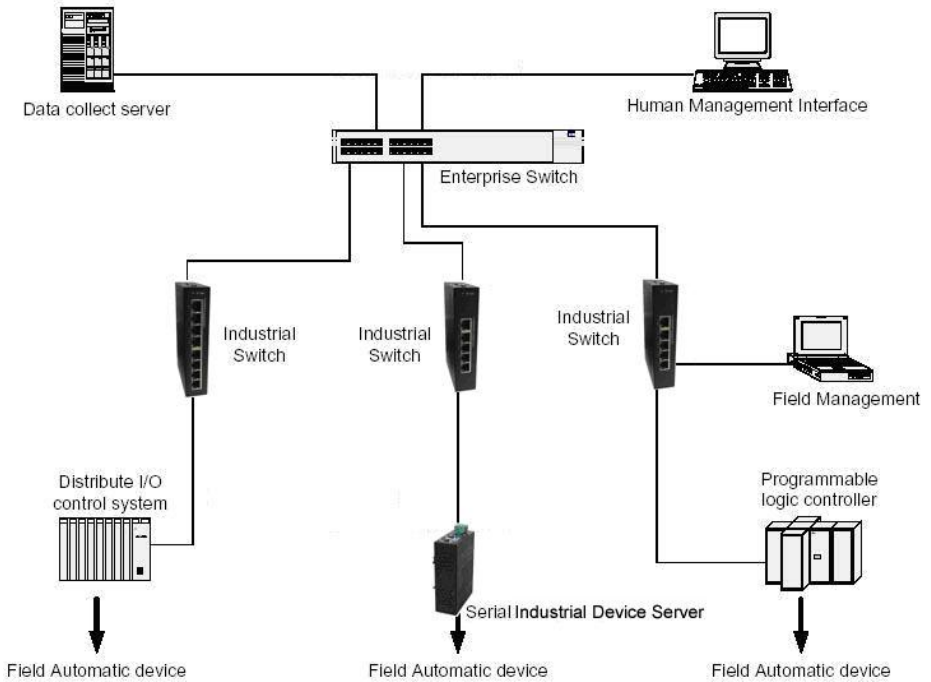
Check to see that the DIN-Rail clip is tightly fixed on the DIN rail. To remove the industrial switch from the track, reverse the steps above.

## Wall-Mount Plate Mounting

1. When using the wall mount plates the din-rail clip can be removed.
2. Place the wall-mount plates on the rear panel of the industrial switch and fasten the screws.



# Hardware Installation Diagram





## ***Troubleshooting***

- Do not use the power adapter with DC output higher than the power rating of the device.
- Select the proper UTP/STP cable to construct your network. Use unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cable for RJ-45 connections: 100  $\Omega$  Category 3, 4 or 5 cable for 10Mbps connections, 100  $\Omega$  Category 5 cable for 100Mbps, or 100  $\Omega$  Category 5e/above cable for 1000Mbps connections. Insure the length of any twisted-pair connection does not exceed 100 meters (328 feet).
- **Diagnosing LED Indicators:** The Switch can be easily monitored through panel LED's. The LED's will provide an easy way of detecting power or communication problems.
- During loss or no communications verify the Industrial switch LED indicators are displaying normal operating status. Next perform the ping test to confirm connection and status of device connections on the network.

# Technical Specifications

## Communications

|  |  |
|--|--|
| <b>Compatibility</b>                   | IEEE 802.3, 802.3u, 802.3ab<br>IEEE 802.3x |
| <b>LAN</b>                             | 10/100/1000Base-T                          |
| <b>Back-plane (Switching Fabric)</b>   | 16 Gbps                                    |
| <b>Packet Throughput (Full-duplex)</b> | 23.8Mpps @ 64bytes                         |
| <b>Transmission Distance</b>           | Up to 100 m                                |
| <b>Transmission Speed</b>              | Up to 1000 Mbps                            |
| <b>Broadcast Storm Rate Limit</b>      | 7,926pps (default)                         |

## Interface

|                       |  |
|-----------------------|--|
| <b>Connectors</b>     | 8 x RJ-45 (8-port 10/100/1000TX)<br>6-pin removable screw terminal (power & relay) |
| <b>LED Indicators</b> | Unit: P1, P2, Fault<br>Ethernet port: Link/Active, Speed                           |

## Power

|                          |                              |
|--------------------------|------------------------------|
| <b>Power Consumption</b> | 7.788 W                      |
| <b>Power Input</b>       | 2 x Unregulated +12 ~ 48 VDC |
| <b>Fault Output</b>      | 1 Relay Output               |

## Mechanism

|                           |   |
|---------------------------|---|
| <b>Dimensions (WxHxD)</b> | 30 x 140 x 95 mm                            |
| <b>Enclosure</b>          | IP-30, Metal shell with solid mounting kits |

## Environment

|                              |   |
|------------------------------|---|
| <b>Operating Temperature</b> | -10 ~ 60°C (standard model)                   |
|                              | -40 ~ 75°C (wide operating temperature model) |
| <b>Operating Humidity</b>    | 5% ~ 95% (non-condensing)                     |
| <b>Storage Temperature</b>   | -40 ~ 85°C                                    |

### Certifications

|                           |  |
|---------------------------|--|
| <b>Safety</b>             | CE EN60950-1   |
| <b>Hazardous Location</b> | UL/cUL Class I, Division 2, Groups A, B, C and D   |
| <b>EMC</b>                | FCC Class A,<br>CE EN61000-4-2 (ESD)<br>CE EN61000-4-3 (RS)<br>CE EN61000-4-4 (EFT)<br>CE EN61000-4-5 (Surge)<br>CE EN61000-4-6 (CS)<br>CE EN61000-4-8<br>CE EN61000-6-2<br>CE EN61000-6-4 |
| <b>Free Fall</b>          | IEC60068-2-32  |
| <b>Shock</b>              | IEC60068-2-27  |
| <b>Vibration</b>          | IEC60068-2-6   |