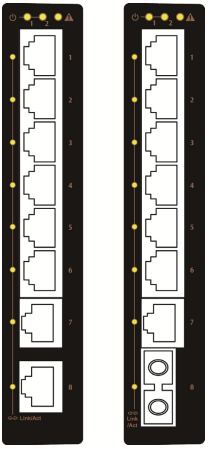
Quick Start Guide

This quick start guide describes how to install and use the Industrial Gigabit Ethernet Switch. Capable of operating at temperature extremes of -10°C to +60°C, this is the switch of choice for harsh environments constrained by space.

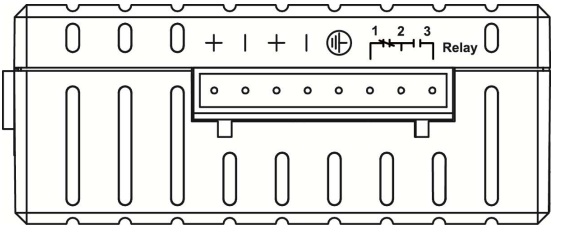
Physical Description

The Port Status LEDs



LED	State	Indication
⏻ **Power (Green)**	Steady	Power on.
	Off	Power off.
⚠ **Fault (Red)**	Steady	Relay Starts alarm.
	Off	Relay non-alarm.
Gigabit Ports		
Link/Act	Steady	A valid network connection established. 10/100Mbps: Green, 1000Mbps: Amber.
	Blinking	Transmitting or receiving data. Act stands for Activity.
	Off	No link.

The Terminal Block and Power Inputs



Power Input Assignment			
Power1	+	12~48VDC	Terminal Block
	−	Power Ground	
Power2	+	12~48VDC	
	−	Power Ground	
⏚		Earth Ground	
Relay Output Rating			1A @ 250VAC

DC Terminal Block Power Input: The DC Terminal Block power input can be used to power up this Switch.

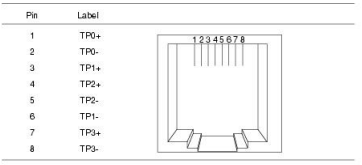
DIP Switch Settings

DIP No.	On	Off
1	Port 1 Alarm Enable.	Port 1 Alarm Disable.
2	Port 2 Alarm Enable.	Port 2 Alarm Disable.
3	Port 3 Alarm Enable.	Port 3 Alarm Disable.
4	Port 4 Alarm Enable.	Port 4 Alarm Disable.
5	Port 5 Alarm Enable.	Port 5 Alarm Disable.
6	Port 6 Alarm Enable.	Port 6 Alarm Disable.
7	Port 7 Alarm Enable.	Port 7 Alarm Disable.
8	Port 8 Alarm Enable.	Port 8 Alarm Disable.

The Gigabit Ethernet Connectors

- The 10/100/1000Base-TX Connections

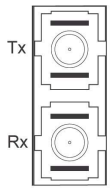
The following lists the pinouts of 10/100/1000Base-TX ports.



Pin	Signal Name	Signal Definition
1	TP0＋	Transmit and Receive Data 0 ＋
2	TP0－	Transmit and Receive Data 0 －
3	TP1＋	Transmit and Receive Data 1 ＋
4	TP2＋	Transmit and Receive Data 2 ＋
5	TP2－	Transmit and Receive Data 2 －
6	TP1－	Transmit and Receive Data 1 －
7	TP3＋	Transmit and Receive Data 3 ＋
8	TP3－	Transmit and Receive Data 3 －

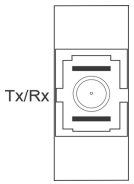
- The 1000Base-SX/LX Connections

The fiber port pinouts: The Tx (transmit) port of device I is connected to the Rx (receive) port of device II, and the Rx (receive) port of device I to the Tx (transmit) port of device II.



- The WDM 1000Base-BX Connections

The fiber port pinouts: Only one optical fiber is required to transmit and receive data.

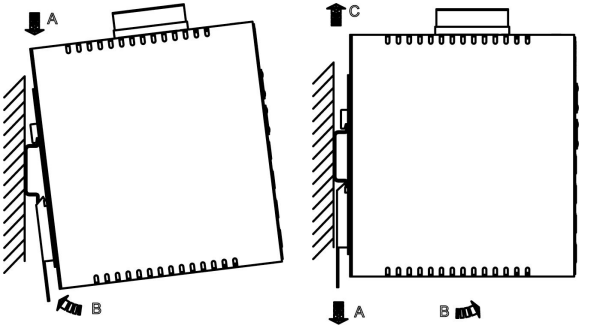


Functional Description

- Complies with EN61000-6-2 & EN61000-6-4 EMC Generic standard immunity for industrial environment.
- Supports 802.3/802.3u/802.3ab/802.3z/802.3x. Auto-negotiation: 10/100/1000Mbps, Full/Half-duplex. Auto MDI/MDIX.
- 1000Base-SX/LX: Multi mode SC or ST type, Single mode SC type. 1000Base-BX: WDM Single mode SC type.
- Supports 4096 MAC addresses, 192K Bytes buffer memory.
- Supports IEEE802.3az Energy Efficient Ethernet (EEE).
- High speed, non-blocking four traffic class QoS switch fabric.
- Supports Jumbo frame up to 9720 Bytes.
- Power Supply: Redundant 12~48VDC Terminal Block power inputs.
- Power consumption: 6.5W Max.
- Provides reverse polarity protection.
- Provides overload current protection.
- Operating temperature ranges from -10°C to 60°C (14°F to 140°F).
- Slim design with DIN-Rail mount installation.

Assembly, Startup, and Dismantling

- Assembly: Place the switch on the DIN rail from above using the slot. Push the front of the switch toward the mounting surface until it audibly snaps into place.
- Startup: Connect the supply voltage to start up the switch via the terminal block.
- Dismantling: Pull out the lower edge and then remove the switch from the DIN rail.



Preface

A member of the growing family of rugged switches, this switch addresses a need for a smaller switch. This switch provides an affordable solution for rugged and outdoor environment, transportation road-side cabinet, industrial floor shop, multitenant dwellings or Fiber To The Home (FTTH) applications. Capable of operating at temperature extremes of -10°C to +60°C, this is the switch of choice for harsh environments constrained by space.

Plug-and-Play Solution:
The switch is a plug-and-play Industrial Gigabit Ethernet Switch in compact size. It doesn't have any complicated software to set up.

This manual describes how to install and use the Industrial Gigabit Ethernet Switch. This switch integrates full wire speed switching technology. This switch brings the answer to complicated hardened networking environments.

To get the most out of this manual, you should have an understanding of Ethernet networking concepts.

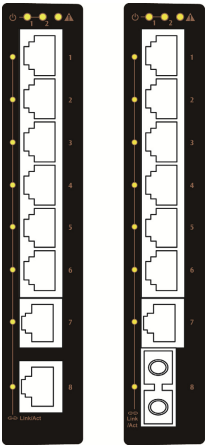
In this manual, you will find:

- Features on the switch
- Illustrative LED functions
- Installation instructions
- Specifications

Table of Contents

Product Overview

Industrial Gigabit Ethernet Switch



Package Contents

When you unpack the product package, you shall find the items listed below. Please inspect the contents, and report any apparent damage or missing items immediately to your authorized reseller.

- ✓ ***This Switch***
- ✓ ***User's Manual***

Product Highlights

Basic Features

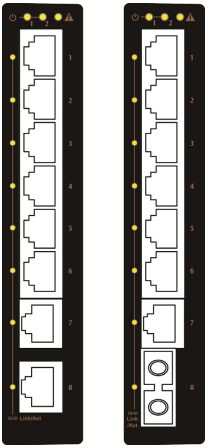
- Complies with EN61000-6-2 & EN61000-6-4 EMC Generic standard immunity for industrial environment.
- Supports 802.3/802.3u/802.3ab/802.3z/802.3x. Auto-negotiation: 10/100/1000Mbps, Full/Half-duplex. Auto MDI/MDIX.
- 1000Base-SX/LX: Multi mode SC or ST type, Single mode SC type. 1000Base-BX: WDM Single mode SC type.
- Supports 4096 MAC addresses, 192K Bytes buffer memory.
- Supports IEEE802.3az Energy Efficient Ethernet (EEE).
- High speed, non-blocking four traffic class QoS switch fabric.
  - 802.1Q VLAN Tag Based Priority, Class of Service.
  - Output Queue Schedule Mode: Weighted Round Robin (WRR) with 4 priority queues.
  - The configurations of QoS are as below:

CoS Field Value	Packet Count	Priority
0 or 1	1	Lowest
2 or 3	2	Low
4 or 5	4	High
6 or 7	8	Highest

- Supports Jumbo frame up to 9720 Bytes.
- Power Supply: Redundant 12~48VDC Terminal Block power inputs.
- Power consumption: 6.5W Max.
- Provides reverse polarity protection.
- Provides overload current protection.
- Operating temperature ranges from -10°C to 60°C (14°F to 140°F).

- Slim design with DIN-Rail mount installation.

Front Panel Display



① Power Status (Power)

This LED comes on when the switch is properly connected to power and turned on.

② Port Status LEDs

The LEDs display status for each respective port.

LED	State	Indication
⏻ **Power (Green)**	Steady	Power on.
	Off	Power off.
⚠ **Fault (Red)**	Steady	Relay Starts alarm.
	Off	Relay non-alarm.
Gigabit Ports		
Link/Act	Steady	A valid network connection established. 10/100Mbps: Green, 1000Mbps: Amber.
	Blinking	Transmitting or receiving data. Act stands for Activity.
	Off	No link.

Physical Ports

This switch provides:

- Eight 10/100/1000Base-TX ports
- Seven 10/100/1000Base-TX ports + one 1000Base-SX/LX/BX port

Connectivity

- RJ-45 connectors
- SC or ST connector on 1000Base-SX/LX fiber port
- SC connector on 1000Base-BX fiber port

Installation

This chapter gives step-by-step instructions about how to install the switch:

Selecting a Site for the Switch

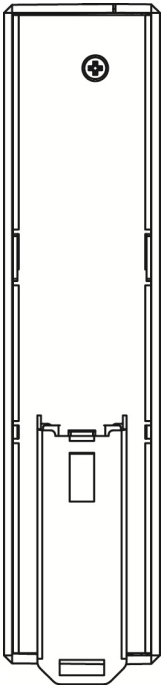
As with any electric device, you should place the switch where it will not be subjected to extreme temperatures, humidity, or electromagnetic interference. Specifically, the site you select should meet the following requirements:

- The ambient temperature should be between -10 to 60 degrees Celsius.
- The relative humidity should be less than 95 percent, non-condensing.
- Surrounding electrical devices should not exceed the electromagnetic field (RFC) standards.
- Make sure that the switch receives adequate ventilation. Do not block the ventilation holes on each side of the switch.
- The power outlet should be within 1.8 meters of the switch.

DIN Rail Mounting

Installation: Place the switch on the DIN rail from above using the slot. Push the front of the switch toward the mounting surface until it audibly snaps into place.

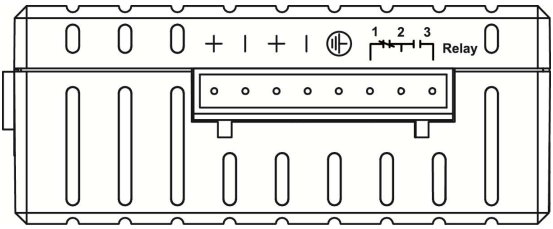
Removal: Pull out the lower edge and then remove the switch from the DIN rail.



Connecting to Power

DC Terminal Block Power Inputs

- Connect the DC power cord to the plug-able terminal block on the switch, and then plug it into a standard DC outlet.
- Disconnect the power cord if you want to shut down the switch.



Power Input Assignment			
Power1	+	12~48VDC	Terminal Block
	−	Power Ground	
Power2	+	12~48VDC	
	−	Power Ground	
⏚		Earth Ground	
Relay Output Rating			1A @ 250VAC

CAUTION: This equipment is designed to permit the connection of the earthed conductor of the DC supply circuit to the earthing conductor at the equipment.

If this connection is made, all of the following conditions must be met:

- This equipment shall be connected to directly to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode conductor is connected.

- This equipment shall be located in the same immediate area (such as, adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system shall not be earthed elsewhere.

- The DC supply source is to be located within the same premises as the equipment.

- Switching or disconnecting devices shall not be in the earthed circuit conductor between the DC source and the point of connection of the earthing electrode conductor.

Connecting to Your Network

Cable Type & Length

It is necessary to follow the cable specifications below when connecting the switch to your network. Use appropriate cables that meet your speed and cabling requirements.

Cable Specifications

Speed	Connector	Port Speed Half/Full Duplex	Cable	Max. Distance
10Base-T	RJ-45	10/20 Mbps	2-pair UTP/STP Cat. 3, 4, 5	100 m
100Base-TX	RJ-45	100/200 Mbps	2-pair UTP/STP Cat. 5	100 m
1000Base-T	RJ-45	2000 Mbps	4-pair UTP/STP Cat. 5, 5e	100 m
1000Base-SX	SC, ST	2000 Mbps	MMF (50 or 62.5µm)	220, 550 m or 2 km
1000Base-LX	SC, ST	2000 Mbps	SMF (9 or 10µm)	10, 30, 40 km
1000Base-BX	SC	2000 Mbps	SMF (9 or 10µm)	70 km

Cabling

Step 1: First, ensure the power of the switch and end devices are turned off.

<Note> Always ensure that the power is off before any installation.

Step 2: Prepare cable with corresponding connectors for each type of port in use.

<Note> To connect two regular RJ-45 ports between switches or hubs, you need a straight or cross-over cable.

Step 3: Consult the previous section for cabling requirements based on connectors and speed.

Step 4: Connect one end of the cable to the switch and the other end to a desired device.

Step 5: Once the connections between two end devices are made successfully, turn on the power and the switch is operational.

Specifications

Industrial Compact Switch	10/100/1000Base-TX auto-negotiating ports with RJ-45 connectors, 1000Base-SX/LX/BX fiber port
Applicable Standards	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX IEEE802.3ab 1000Base-T IEEE802.3z 1000Base-SX/LX
Forwarding Rate 10Base-T: 100Base-TX: 1000Base-T: 1000Base-SX/LX/BX:	 10 / 20Mbps Half / Full-duplex 100 / 200Mbps Half / Full-duplex 2000Mbps Full-duplex 2000Mbps Full-duplex
Performance	148,80pps for 10Mbps 148,810pps for 100Mbps 1,488,100pps for 1000Mbps
Cable 10Base-T: 100Base-TX: 1000Base-T: 1000Base-SX/LX/BX:	 2-pair UTP/STP Cat. 3, 4, 5 2-pair UTP/STP Cat. 5 4-pair UTP/STP Cat. 5, 5e Up to 100m (328ft) MMF (50 or 62.5μm), SMF (9 or10μm)
LED Indicators	Per unit – Power (Green), Fault (Red) Per port – 10/100Mbps: Link/Act (Green) 1000Mbps: Link/Act (Amber)
Dimensions	35mm (W) × 86mm (D) × 149mm (H) (1.4” (W) × 3.44” (D) × 5.96” (H))
Net Weight	0.3Kg (0.66lb.)
Power	Terminal Block: 12-48VDC
Power Consumption	6.5W Max.
Operating Temperature	-10°C to 60°C (14°F to 140°F) Tested @ -20°C to 70°C (-4°F to 158°F)
Storage Temperature	-25°C to 85°C (-13°F to 185°F)
Humidity	5%-95% non-condensing

EMI	FCC Part 15, Class A VCCI EN61000-6-4: EN55022, EN61000-3-2, EN61000-3-3
EMS	EN61000-6-2: EN61000-4-2 (ESD Standard) EN61000-4-3 (Radiated RFI Standards) EN61000-4-4 (Burst Standards) EN61000-4-5 (Surge Standards) EN61000-4-6 (Induced RFI Standards) EN61000-4-8 (Magnetic Field Standards)
Environmental Test Compliance	IEC60068-2-6 Fc (Vibration Resistance) IEC60068-2-27 Ea (Shock) FED STD 101C Method 5007.1 (Free Fall with package)