Industrial 8-Port Fast Ethernet Switch

21.13.1156R

Installation Guide

TRADEMARKS

Ethernet is a registered trademark of Xerox Corp.

FCC NOTICE

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including the interference that may cause undesired operation.

CE NOTICE

Marking by the symbol indicates compliance of this equipment to the EMC directive of the European Community. Such marking is indicative that this equipment meets or exceeds the following technical standards:

EMC Class A
EN55022:2006
          EN61000-3-2:2006
          EN61000-3-3:1995/A1:2001/A2:2005 Class A
EN 55024:1998/A1:2001/A2:2003
          IEC 61000-4-2:2001
          IEC 61000-4-3:2002/A1:2002
          IEC 61000-4-4:2004
          IEC 61000-4-5:2001
          IEC 61000-4-6:2003
          IEC 61000-4-8:2001
          IEC 61000-4-11:2001

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1. Introduction

The switch provides eight 10/100Mbps copper ports for connections to Ethernet and Fast Ethernet devices. With the featured auto-negotiation function, the switch can detect and configure the connection speed and duplex automatically. The switch also provides auto MDI/MDI-X function, which can detect the connected cable and switch the transmission wire pair and receiving pair automatically. This auto-crossover function can simplify the type of network cables used.

For industrial environment, the device is designed with the following enhanced features exceeding that of commercial Ethernet switches:

- High and wide operating Temperature
- Power input interface: Industrial screw terminal block and DC power jack for external commercial power adapter as option
- Screw panel and DIN rail mounting support for industrial enclosure
- Industrial-rated Emission and Immunity performance

1.1 Features

- Auto MDI/MDI-X crossover function on the copper port

- Support IEEE 802.3x flow control for full-duplex operation

- Support Back-pressure flow control for half-duplex operation

- Wide operating temperature range for temperature critical environment

- Support DIN-rail mounting and panel mounting

- Provide two power input types to meet more application needs

- Power saving mode for port link down

- Accept wide power input voltage range for application flexibility

- Industrial-rated Emission and Immunity performance

1.2 Product Panels

The following figure illustrates the panels of the switch:
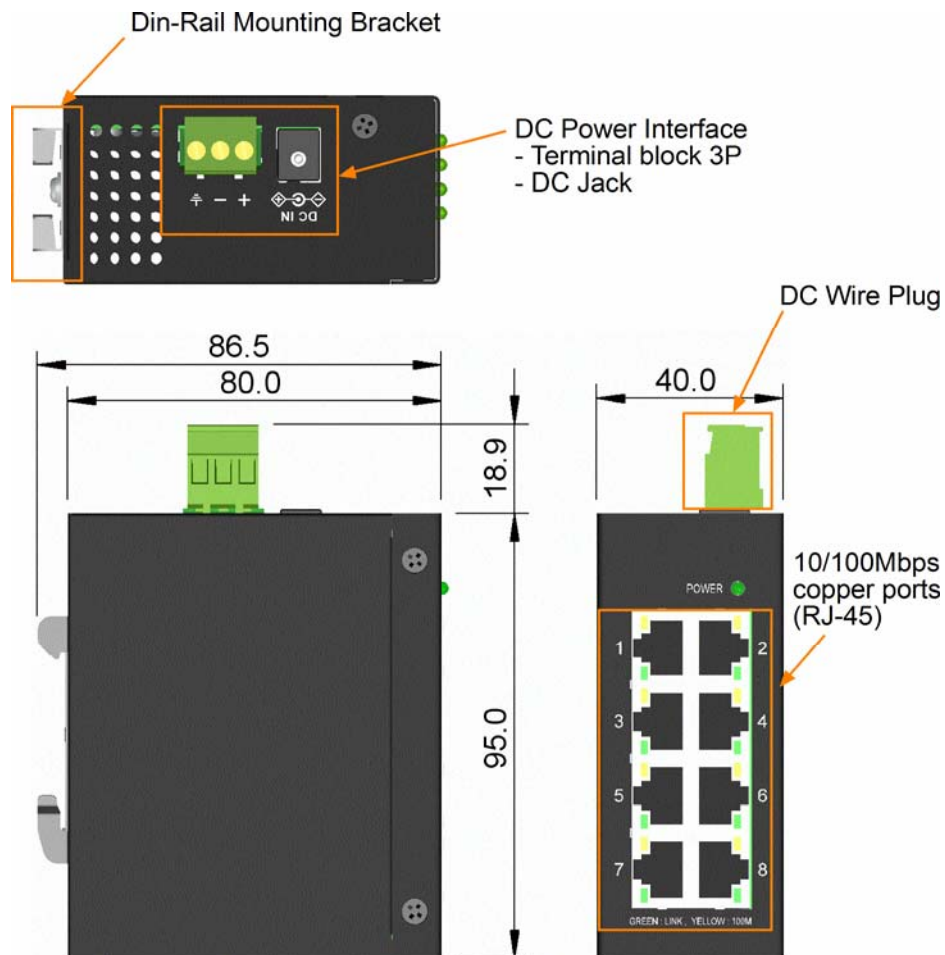
1.3 LED Indicators

LED	Function
POWER	Power status
1 - 8	Port 1 – Port 8
LINK (Green)	Link and activity status (Port 1 - Port 8)
100M (Yellow)	100Mbps speed status (Port 1 - Port 8)

1.4 Specifications

10/100 Copper Ports

Compliance	IEEE 802.3 10Base-T, IEEE 802.3u 100Base-TX
Connectors	Shielded RJ-45 jacks
Pin assignments	Auto MDI/MDI-X detection
Configuration	Auto-negotiation or software control
Transmission rate	10Mbps, 100Mbps
Duplex support	Full/Half duplex
Network cable	Cat.5 UTP up to 100 meters

Switch Functions

Forwarding & filtering	Non-blocking, full wire speed
Switching technology	Store and forward
Maximum packet length	1536 bytes
MAC Addresses Table	1K entries
Port configuration	Auto-negotiation for speed and duplex
Flow control	IEEE 802.3x pause frame base for full duplex operation
	Back pressure for half duplex operation
MAC Aging time	300 seconds
Storm control	Broadcast packets are dropped when more than 64 broadcast packets are received.

DC Power Input

Screwed terminal block	3P (Vin+, Vin-, Chassis Ground)
DC Jack Connector	-D 6.3mm / + D 2.0mm
Operating Voltages	+7 ~ +30VDC
Power Consumption	2.3W max.
Power Saving Mode	Total consumption 0.28W when all ports link down

Mechanical

Dimension (base)	40 x 80 x 95 mm (WxDxH)

Housing	Enclosed metal with no fan
Mounting	Din-rail mounting
	Panel mounting (optional)

Environmental

Operating Temperature	Typical -10°C ~ +70°C
Storage Temperature	-20°C ~ +85°C
Relative Humidity	10% ~ 90% non-condensing

Electrical Approvals

FCC	Part 15 rule Class A
CE	EMC, CISPR22 Class A
	EN55022:2006
	EN61000-3-2:2006
	EN61000-3-3:1995/A1:2001/A2:2005 Class A
	EN 55024:1998/A1:2001/A2:2003
	IEC 61000-4-2:2001
	IEC 61000-4-3:2002/A1:2002
	IEC 61000-4-4:2004
	IEC 61000-4-5:2001
	IEC 61000-4-6:2003
	IEC 61000-4-8:2001
	IEC 61000-4-11:2001
Safety	LVD, IEC60950-1

2. Installation

2.1 Unpacking

The product package contains:

- The switch unit for Din-rail mounting
- One product CD-ROM

2.2 Safety Cautions

To reduce the risk of bodily injury, electrical shock, fire and damage to the product, observe the following precautions.

- Do not service any product except as explained in your system documentation.
- Opening or removing covers may expose you to electrical shock.
- Only a trained service technician should service components inside these compartments.
- If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your trained service provider:
  - The power cable, extension cable, or plug is damaged.
  - An object has fallen into the product.
  - The product has been exposed to water.
  - The product has been dropped or damaged.
  - The product does not operate correctly when you follow the operating instructions.
- Do not push any objects into the openings of your system. Doing so can cause fire or electric shock by shorting out interior components.
- Operate the product only from the type of external power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your service provider or local power company.

2.3 Mounting the Switch to a Din-Rail

In the product package, a DIN-rail bracket is provided or has been installed for mounting the switch in a industrial DIN-rail enclosure.

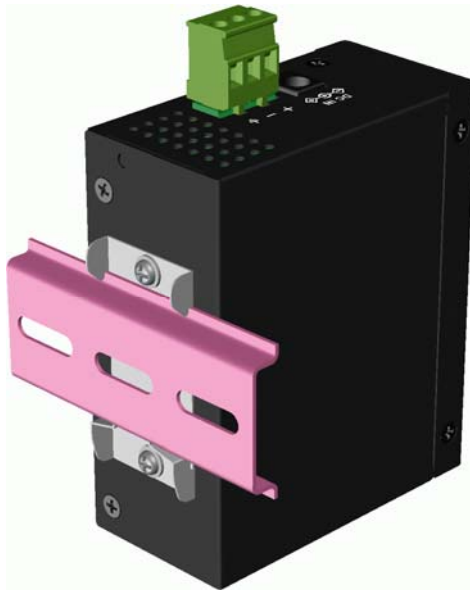The steps to mount the switch onto a DIN rail are:

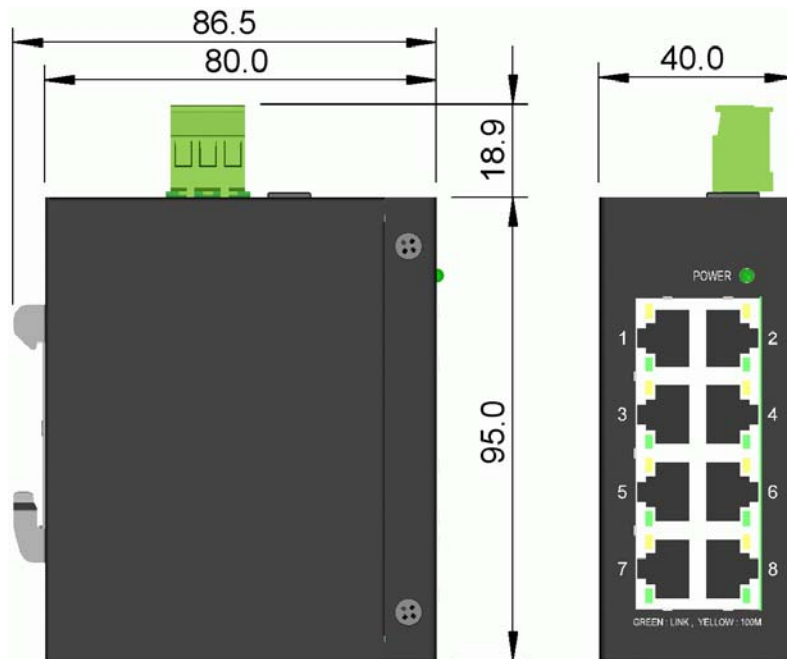1. Install the mounting bracket onto the switch unit with screws as shown below:

2. Attach bracket to the lower edge of the DIN rail and push the unit upward a little bit until the bracket can clamp on the upper edge of the DIN rail.

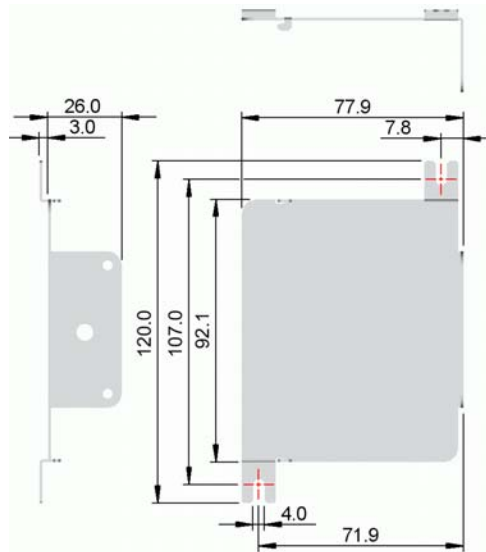3. Clamp the unit to the DIN rail and make sure it is mounted securely.

The final dimension is:

2.4 Mounting the Switch on a Panel

The switches may be provided optionally with a panel mounting bracket. The bracket supports mounting the switch on a plane surface securely.
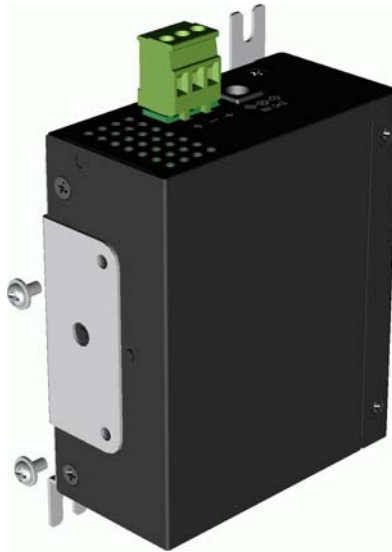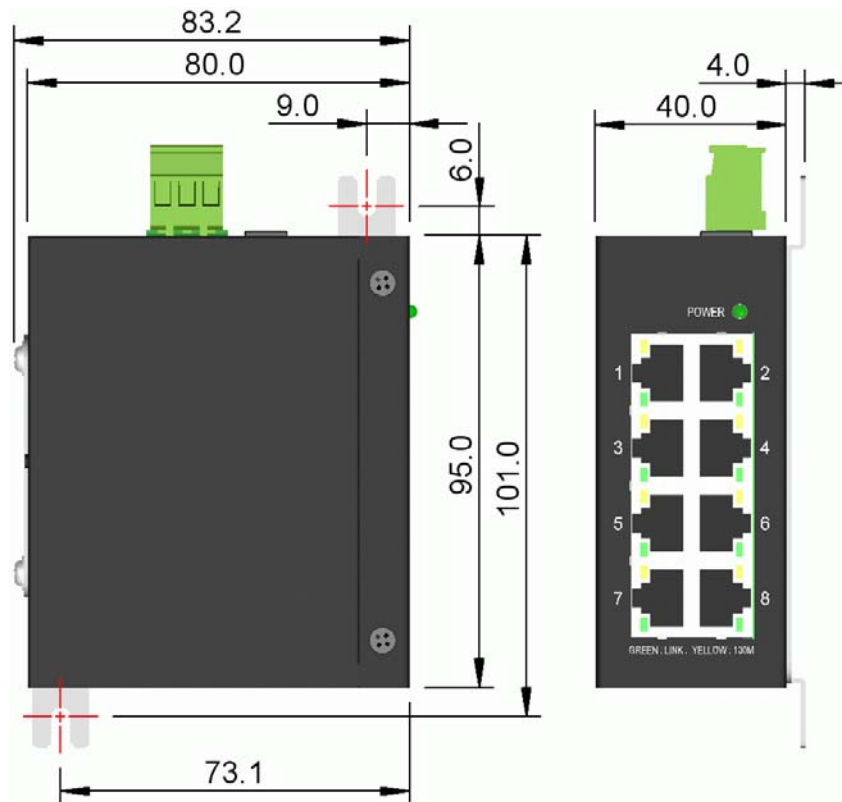

The mounting steps are:

1. Install the mounting bracket on the switch unit.
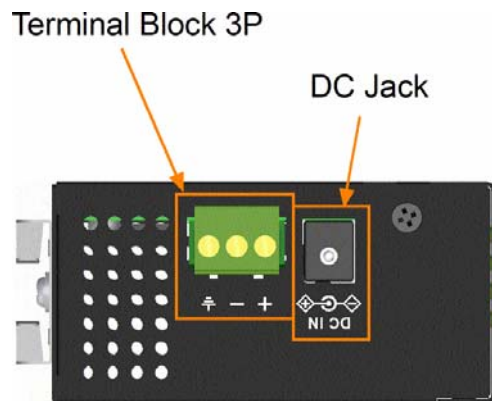
2. Screw the bracket on the switch unit.

3. Screw the switch unit on a panel and the locations for screws are shown below:

2.5 Applying Power

The switch provides two types of power interfaces, terminal block and DC power jack for receiving DC power input from external power supply.

The DC power requirements no matter which interface is used for the switch are:

Operating Vin Voltage Range
+7V ~ +30VDC

Power Consumption
2.3Watts max.

2.5.1 Using Terminal Blocks

3P Contacts

Vin Positive (+) terminal

Vin Negative (-) terminal

Chassis ground

3P Terminal Plug

A plug is provided together with the switch. The plug is shown below:

Power Wires Specification

24 ~ 12AWG (IEC 0.5~2.5mm^2)

Install the power source wires with the plug properly.

Note: When using terminal block connectors, put a cap on the DC jack.

2.5.2 Using DC Power Jack

When an external power system is not available, the switch provides a DC jack to receive power from typical AC-DC power adapter alternatively.

Interfaces

DC Jack (-D 6.3mm / + D 2.0mm)

Note:

1. *When using DC Jack, put caps on the contacts of the terminal block.*

2. *Before you begin the installation, check the AC voltage of your area. The AC power adapter which is used to supply the DC power for the unit should have the AC voltage matching the commercial power voltage in your area*

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3. Making LAN Connections

3.1 10/100 Copper Ports

The 10/100 RJ-45 copper ports support the following connection types and distances:

Network Cables

10BASE-T: 2-pair UTP Cat. 3, 4, 5, EIA/TIA-568B 100-ohm

100BASE-TX: 2-pair UTP Cat. 5, EIA/TIA-568B 100-ohm

Link distance: Up to 100 meters

Auto MDI/MDI-X Function

This function allows the port to auto-detect the twisted-pair signals and adapts itself to form a valid MDI to MDI-X connection with the remote connected device automatically. No matter a straight through cable or crossover cable are connected, the ports can sense the receiving pair automatically and configure themselves to match the rule for MDI to MDI-X connection. It simplifies the cable installation.

Auto-negotiation Function

The ports are featured with auto-negotiation function and full capability to support connection to any Ethernet devices. The port performs a negotiation process for the speed and duplex configuration with the connected device automatically when each time a link is being established. If the connected device is also auto-negotiation capable, both devices will come out the best configuration after negotiation process. If the connected device is incapable in auto-negotiation, the switch will sense the speed and use half duplex for the connection.

3.2 LED Indication

LED	Function	State	Interpretation
Power	Power status	ON	The power is supplied to the switch.
		OFF	The power is not supplied to the switch.
LINK (Green)	Port link status	ON	A 10M or 100Mbps link is established on the port. (No traffic)
		BLINK	Port link is up and there is traffic.
		OFF	Port link is down.
100M (Yellow)	100Mps status	ON	100Mbps speed is used on the port.
		OFF	10Mbps speed is used on the port.