level one

COInfinity

IES-0520

4 FE + 1 MM SC Unmanaged Switch -40 to 75, DIN-rail

User Manual

Preface

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

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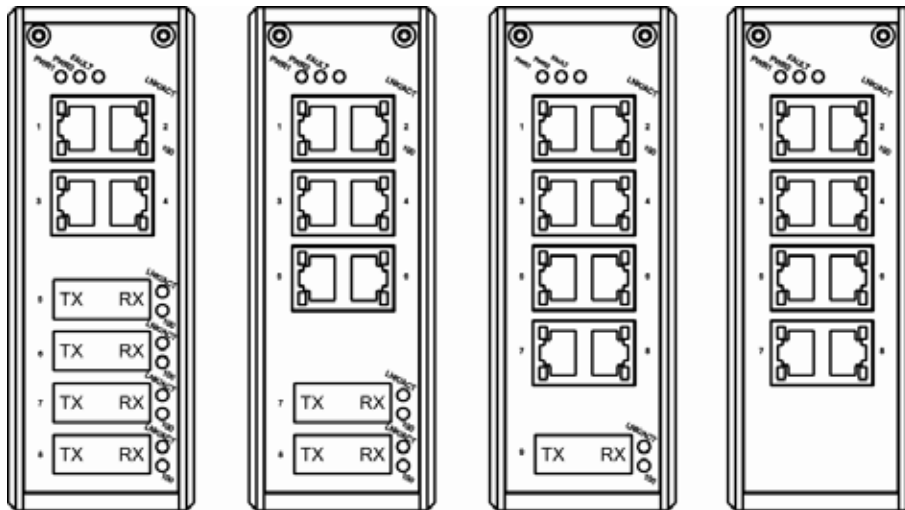
In this manual, you will find:

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

Table of Contents

Product Overview

Industrial 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.
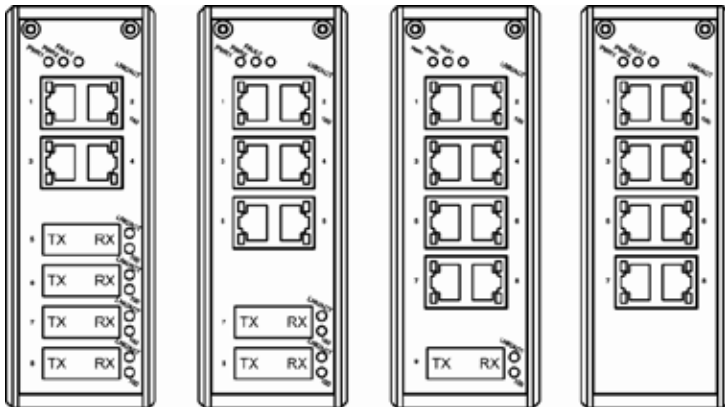
- IES-0520
- Quick Installation Guide
- CD User Manual

Product Highlights

Basic Features

- Meets NEMA TS1/TS2 Environmental requirements such as temperature, shock, and vibration for traffic control equipment.
- Meets EN61000-6-2 & EN61000-6-3 EMC Generic Standard Immunity for industrial environment.
- UL1604 Class I, Division 2 classified for use in hazardous locations (applicable to versions with terminal block power option).
- Supports 802.3/802.3u/802.3X.
- Auto-negotiation: 10/100Mbps, full/half-duplex. Auto MDI/MDIX.
- Supports 2048 MAC addresses.
- Provides 768K bits memory buffer.
- Alarms for power and port link failure by relay output 1.5A @ 24VDC.
- Operating voltage and Max. current consumption: 0.76A @ 12VDC, 0.38A @ 24VDC, 0.19A @ 48VDC. Power consumption: 9.12W Max.
- Power Supply: Redundant DC Terminal Block power inputs or 12VDC DC JACK with 100-240VAC external power supply.
- Field Wiring Terminal: Use Copper Conductors Only, 60/75°C, 12-24 AWG torque value 7 lb-in.
- -40°C to 75°C (-40°F to 167°F) operating temperature range. Tested for functional operation @ -40°C to 85°C (-40°F to 185°F). UL1604 Industrial Control Equipment certified Maximum Surrounding Air Temperature @ 74°C (165°F).
- Supports DIN-Rail or Panel Mounting installation.

Front Panel Display

Status LEDs

LED	Status	Description
PW 1,2 (Green)	Steady	Power On
	Off	Power Off
Fault		
FAULT (Red)	Steady	· Redundant power is failed or not being used · Port failure (When Port Fault Alarm is enabled)
	Off	· Redundant power is active · Port failure is not occurred · Port Fault Alarm is disabled
10/100Base-TX or 100Base-FX/BX		
LNK/ACT (Green)	Steady	Network connection is established
	Flashing	Transmitting or Receiving data
100 (Yellow)	Steady	Connection at 100Mbps speed
	Off	Connection at 10Mbps speed

Physical Ports

This switch provides:
Eight 10/100Base-TX ports
Eight 10/100Base-TX ports + one 100Base-FX/BX port
Six 10/100Base-TX ports + two 100Base-FX/BX ports
Four 10/100Base-TX ports + four 100Base-FX/BX ports

Connectivity
RJ-45 connectors
SC or ST connector on 100Base-FX fiber port
SC connector on 100Base-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 -40 to 75 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

Fix the DIN rail attachment plate to the back panel of the switch.

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.
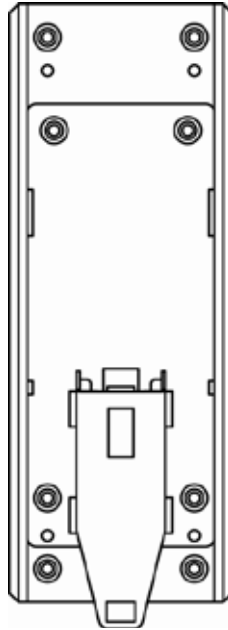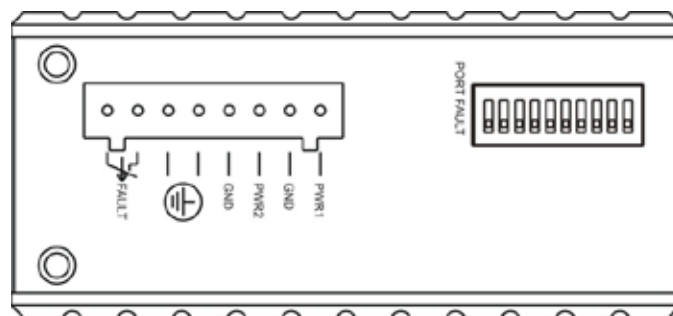
Connecting to Power

Redundant DC Terminal Block Power Inputs or 12VDC DC Jack (Optional)

Redundant DC Terminal Block Power Inputs

There are two pairs of power inputs can be used to power up this device. You need to have two power inputs connected to run the device, but the FAULT LED indicator will light up to remind that the power redundant system functions abnormal in case either PWR1 or PWR2 is dead. This device, however, continues working normally even fault LED indicator lights up.

Step 1: Connect the DC power cord to the plug-able terminal block on the switch, and then plug it into a standard DC outlet.

Step 2: Disconnect the power cord if you want to shut down the switch.

Field Wiring Terminal: Use Copper Conductors Only, 60/75°C, 12-24 AWG torque value 7 lb-in.

Terminal Block	PW1	+	10 – 48VDC
		–	Power Ground
	PW2	+	10 – 48VDC
		–	Power Ground
	⏚	**Earth Ground**	
	⎓	**Relay Output**	1A @ 24VDC
	1. The relay contact opens if Power1 or Power2 falls 2. The relay contact opens if the Port Link is broken (When Link Down Detection is enabled)		

12VDC DC Jack Input (Optional)

Step 1: Connect the supplied AC to DC power adapter to the receptacle on the topside of the switch.

Step 2: Connect the power cord to the AC to DC power adapter and attach the plug into a standard AC outlet with the appropriate AC voltage.
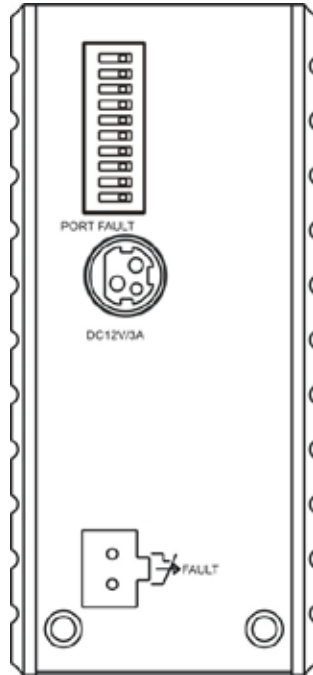
DC Jack			
	PW1	**DC Jack**	12VDC Input
	⌇	**Relay Output**	1A @ 24VDC
	1. The relay contact close if power falls		

Alarms for Power and Port Failure

Step 1: There are two pins on the terminal block are used for power failure detection. It provides the normally closed output when the power source is active. Use this as a dry contact application to send a signal for power failure detection.

This DIP Switch features the Port Fault Detection; once enabled, it sends fault signal (relay opens) when the port link is broken

On: Enable Port Fault Detection
Off: Disable Port Fault Detection
Note: Pin No. maps to Port No & extra Pin has no function

Special note:
The relay output is normal open position when there is no power to the switch.
Please do not connect any power source to this terminal to prevent the shortage to your power supply.

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	100 m
100Base-FX	ST, SC	200 Mbps	MMF (62.5µm)	2 km
100Base-FX	ST, SC	200 Mbps	SMF (10µm)	20, 40, 75, 100 km
100Base-BX	SC	200 Mbps	MMF (62.5µm)	2, 5 km
100Base-BX	SC	200 Mbps	SMF (10µm)	20, 40 km
1000Base-SX	SC	2000 Mbps	MMF (62.5µm)	220 m, 2 km
1000Base-SX	SC	2000 Mbps	MMF (50µm)	550 m
1000Base-LX	SC	2000 Mbps	SMF (10µm)	10, 20, 50 km
1000Base-BX	SC	2000 Mbps	SMF (10µm)	20, 40 km
SFP				
1000Base-SX	Duplex LC	2000 Mbps	MMF (62.5µm)	550 m, 2 km
1000Base-LX	Duplex LC	2000 Mbps	SMF (9µm)	10, 40, 60 km
1000Base-BX	Duplex LC	2000 Mbps	SMF (9µm)	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.
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

Ethernet Switch	10/100Base-TX auto-negotiating ports with RJ-45 connectors, 100Base-FX/BX fiber ports
Applicable Standards	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX/FX
Switching Method	Store-and-Forward
Forwarding Rate 10Base-T: 100Base-TX: 100Base-FX/BX:	 10 / 20Mbps half / full-duplex 100 / 200Mbps half / full-duplex 200Mbps full-duplex
Performance	14,880pps for 10Mbps 148,810pps for 100Mbps
Cable 10Base-T: 100Base-TX: 100Base-FX/BX:	 2-pair UTP/STP Cat. 3, 4, 5 2-pair UTP/STP Cat. 5 Up to 100m (328ft) MMF (50 or 62.5µm), SMF (9 or 10µm)
LED Indicators	Per unit – Power status (Power 1, Power 2) 　　　　　FAULT Per port –10/100TX or 100FX/BX - LNK/ACT (Green), 100 (Yellow)
Dimensions	50mm (W) × 110mm (D) × 135mm (H) (1.97″ (W) x 4.33″ (D) x 5.31″ (H))
Net Weight	0.8Kg (1.76lbs.)
Power	Terminal Block: 10-48VDC DC Jack: 12VDC, External AC/DC required
Operating Voltage & Max. Current Consumption	0.76A @ 12VDC, 0.38A @ 24VDC, 0.19A @ 48VDC
Power Consumption	9.12W Max.
Operating Temperature	-40°C to 75°C (-40°F to 167°F) Tested for functional operation @ -40°C to 85°C (-40°F to 185°F) UL1604 Industrial Control Equipment certified Maximum Surrounding Air Temperature @ 74°C (165°F)
Storage Temperature	-45°C to 85°C (-40°F to 185°F)
Humidity	5%-95% non-condensing
Safety	Hazardous location: Class I, Division 2 group A, B, C & D UL60950-1, EN60950-1, IEC60950-1
EMI	FCC Part 15, Class A EN61000-6-3: EN55022, EN61000-3-2, EN61000-3-3

| EMS |
| --- |
| EN61000-6-2: |
| EN61000-4-2 (ESD Standards) |
| 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) |
| IEC60068-2-32 Ed (Free Fall) |
| NEMA TS1/2 Environmental requirements for traffic control equipment |

Appendix A – Connector Pinouts

Pin arrangement of RJ-45 connectors:
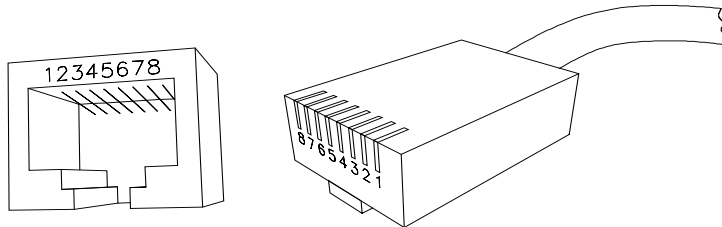
RJ-45 Connector and Cable Pins

The following table lists the pinout of 10/100Base-TX ports.

Pin	Standard Port	Uplink Port
1	Output Transmit Data +	Input Receive Data +
2	Output Transmit Data -	Input Receive Data -
3	Input Receive Data +	Output Transmit Data +
4	NC	NC
5	NC	NC
6	Input Receive Data -	Output Transmit Data -
7	NC	NC
8	NC	NC