LED Indicators

LED	Color	Description
PWR1	Green	Lit if power 1 is connected and active.
	Off	Power is not connected.
PWR2 (ITP-800 Only)	Green	Lit if power 2 is connected and active.
	Off	Power is not connected.
Link/ACT	Green	Lit if there is Ethernet traffic.
	Off	No Ethernet link.

DIN-Rail Installation

The 5-port & 8-port Series come with both wall mount and DIN rail hardware brackets. The wall mount bracket has been attached to the device. Therefore, there is no need to install wall mount bracket (Figure 8).

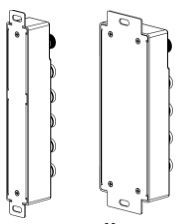

Figure 11. Wall Mounting

When installing the DIN rail bracket, be sure to correctly align the orientation pin (Figure 9). The DIN Rail bracket has a steel spring in the upper rail of the bracket. This spring is compressed for mounting and un-mounting by applying downward force.

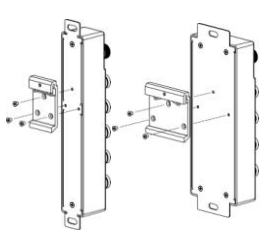

Figure 12. Din Rail

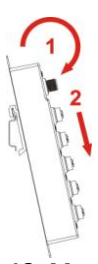

Figure 13. Mounting

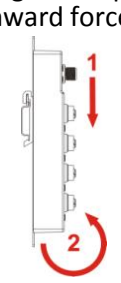

Figure 14. Un-mounting

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Quick Installation Guide

ITP-500(-E)
ITP-800(-E)

EN50155 5 x 10/100Base-TX Ethernet Switch (Hardened)
EN50155 8 x 10/100Base-TX Ethernet Switch (Hardened)

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Introduction

The ITP-500(-E) & ITP-800(-E) Series non-managed Fast Ethernet switches, designed for industrial grade applications in harsh environments, provide 5 & 8 x 10/100Base-TX Fast Ethernet ports respectively. ITP-500(-E) & ITP-800(-E) series of unmanaged Ethernet switches utilize M12 connectors to ensure tight and robust connections and guarantee reliable operation against environmental disturbances such as vibration and shock. The ITP-500(-E) & ITP-800(-E) series Ethernet switches comply with EN 50155 standard that covers strict demands on operating temperature, power input voltage, surge, ESD, vibration, and shock, thus making these switches suitable for industrial applications such as vehicle, rolling stock and railway.

Features

- Use M12 anti-vibration and shock connector
- Support broadcast storm protection
- Wide temperature range -40°C~75°C (ITP-500-E & ITP-800-E)
- IP67 grade rugged housing against water, dust and oil
- CE, FCC, EN50155 and EN50121-4 certified
- Industrial grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified

Specifications

Interface

- ITP-500(-E): 5 x 10/100Base-TX
- ITP-800(-E): 8 x 10/100Base-TX with 2 built-in bypass ports
- Standards: IEEE802.3, 802.3u, 802.3x
- Connector Type: M12 D-code Female
- Support Auto MDI/MDI-X
- Support 802.3x Flow Control
- Full/Half Duplex
- Data Processing: Store & Forward
- MAC Address Table: 1K
- Packet Buffer Size: 448Kbits
- 10/100Base-TX Network Cable: 2-pair UTP/STP Cat. 5e cable, EIA/TIA-568 100-ohm (100m)

Specifications (cont.)

Power

- Connector Type: 5-Pin Male A-Code M12
- Power Supply:
  - ITP-500(-E): DC 12/24/48V (8.4~60VDC) input power
  - ITP-800(-E): Redundant Dual DC 12/24/48V (8.4~60VDC) input power
- Reverse Polarity Protection: Yes
- Overload Current Protection: Yes
- Consumption:

Input Voltage	ITP-500	ITP-800
12VDC	0.8W	1.8W
24VDC	1.0W	2.2W
48VDC	1.9W	3.4W

Mechanical

- Housing: IP67 Waterproof Protection
- Fanless Design
- Dimensions:
  - ITP-500(-E): 43 mm (D) x 30 mm (W) x 206.5 mm (H)
  - ITP-800(-E): 39 mm (D) x 65.1 mm (W) x 191.5 mm (H)
- Mounting: DIN-Rail mounting, Wall mounting
- Weight: 260 g (ITP-500 & ITP-500-E), 410 g (ITP-800 & ITP-800-E)

Environmental

- Operating Temperature: -10°C~60°C (ITP-500 & ITP-800)
  -40°C~75°C (ITP-500-E & ITP-800-E)
- Storage Temperature: -40°C~85°C
- Humidity: 5%~95% (Non-condensing)

Certifications

- EMC: CE
- EMI (Electromagnetic Interference): FCC Part 15 Subpart B Class A, CE EN55022 Class A
- Railway Traffic: EN50155, EN50121-4
- Immunity for Heavy Industrial Environment: EN61000-6-2
- Emission for Heavy Industrial Environment: EN61000-6-4
- EMS (Electromagnetic Susceptibility) Protection Level:
  - EN61000-4-2 (ESD) Level 3, Criteria B
  - EN61000-4-3 (RS) Level 3, Criteria A
  - EN61000-4-4 (Burst) Level 3, Criteria A
  - EN61000-4-5 (Surge) Level 3, Criteria B
  - EN61000-4-6 (CS) Level 3, Criteria A
  - EN61000-4-8 (PFMF, Magnetic Field) Field Strength: 300A/m, Criteria A
  - EN61000-4-11 Voltage Dips
  - EN61000-4-12
- Shock: IEC 61373
- Freefall: IEC 60068-2-32
- Vibration: IEC 61373
- MTBF (MIL-HDBK-217): 309,668 hours (ITP-500 & ITP-500-E)
  303,728 hours (ITP-800 & ITP-800-E)

Panels

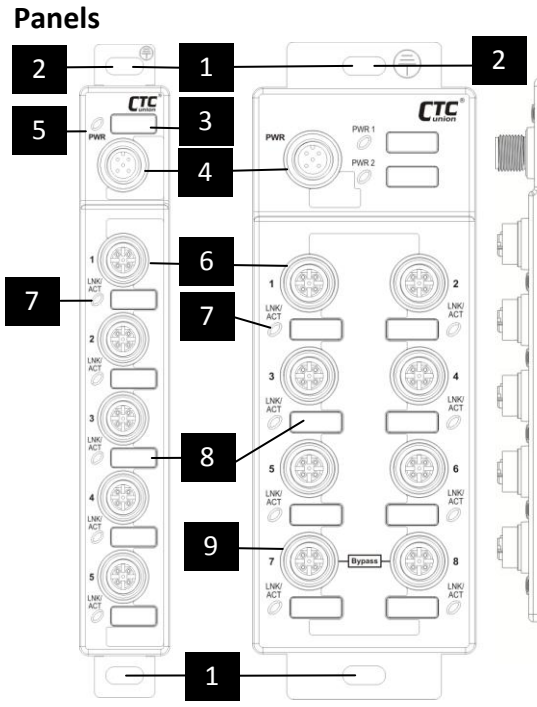


Figure 1: ITP-500 Front Panel

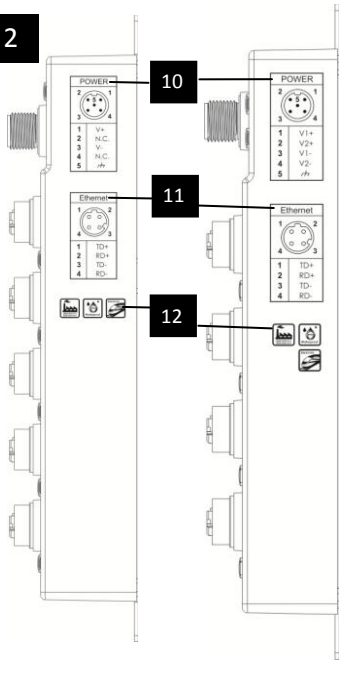


Figure 2: ITP-800 Front Panel

Figure 3: ITP-500 Side Panel

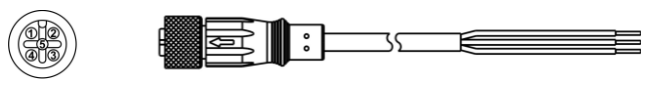
Figure 4: ITP-800 Side Panel

Index No.	Description
1	Wall mounting holes
2	Grounding
3	Power port label
4	Power input port
5	Power LED
6	M12 Ethernet ports
7	Ethernet port LED
8	Ethernet port label
9	Bypass ports (ITP-800 only)
10	Power port pin assignment table
11	Ethernet port pin assignment table
12	Compliant standards

Table 1: Panel Reference Table

PIN Assignment

➢ **Power Port**



Female M12 Connector

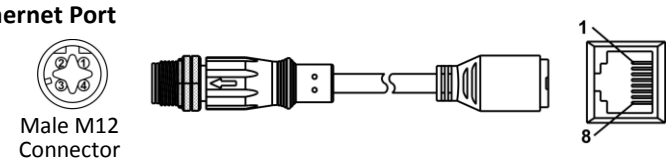
Model: IND-M12AF5-Cable

Figure 5: M12 A-code Female Cable

Pins	Color	ITP-500		ITP-800	
1	Red	V+	Power Supply Positive	V1+	Power Supply 1 Positive
2	Blue	N.C.	No Connection	V2+	Power Supply 2 Positive
3	Black	V-	Power Supply Negative	V1-	Power Supply 1 Negative
4	White	N.C.	No Connection	V2-	Power Supply 2 Negative
5	Yellow	⏚	Grounding	⏚	Grounding

Table 2: Power Port PIN Assignment

➢ **Ethernet Port**



Male M12 Connector

Model: IND-M12DM4-Cable

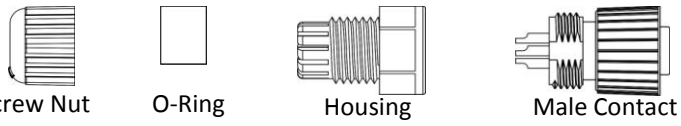
Figure 6: M12 D-code Male to RJ-45 Socket Cable

M12 Pins			RJ-45 Pins		Color
TD+	1	→	3	RD+	Green/ White
TD-	3	→	6	RD-	Green
RD+	2	→	1	TD+	Orange/ White
RD-	4	→	2	TD-	Orange

Table 3: Ethernet Port PIN Assignment

M12 Cable Connector Installation

Before assembling M12 cable, make sure you have the following M12 cable connector components (Model: IND-M12DM4-Connector / Model: IND-M12AF5-Connector) and cable at hand.



Screw Nut | O-Ring | Housing | Male Contact Connector

Assembly Steps:

Step 1. Insert the screw nut, O-ring, and housing into the cable in the order shown in Figure 7 and keep them loose in this step.

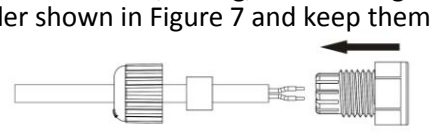


Figure 7: Insert components into the cable

Step 2. Strip the cable and the individual cores to fit the connector. Insert the stripped wires into the opened contact clamps.

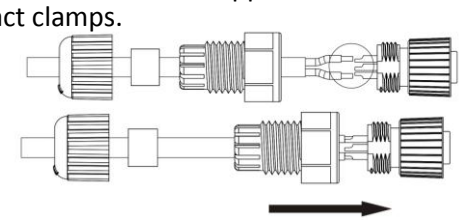


Figure 8: Insert the stripped wires to contact clamps

Step 3. Tighten the connector in clockwise direction, making sure that the wires inside the connector are not twisted as the screwed housing is assembled.

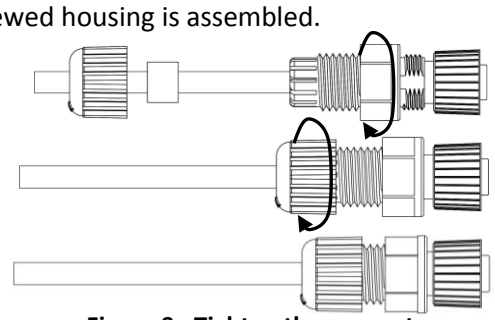


Figure 9: Tighten the connector

Earth Ground Connection

An earth ground hole (same as wall mounting hole on the top) is provided on the wall mounting metal plate (See Figure 1 & 2) with an earth ground sign next to it. Grounding the device can help to release leakage of electricity to the earth safely so as to reduce injuries from electromagnetic interference (EMI).

Prior to connecting to the power, it is important to connect the ground wire to the earth. Follow steps below to install ground wire:

Step 1. Prepare one suitable ground screw and one grounding cable.

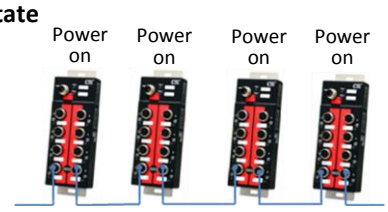
Step 2. Attach the grounding screw to the ring terminal of the grounding cable. Make sure that the grounding cable is long enough to reach the earth.

Step 3. Use a screwdriver (or other tools) to fasten the grounding screw on the earth ground hole securely.

Bypass Relay Function for ITP-800(-E)

ITP-800(-E) provides two copper interfaces with auto bypass relay function in the event of sudden power loss particularly in daisy chain or linear topology. When power failure occurs in one of the switches, bypass relay function can activate bypassing mechanism by interconnecting internal circuits automatically to ensure that links between switches operate uninterruptedly and continuously.

➢ **Normal State**



➢ **Bypass Relay Function Activated**

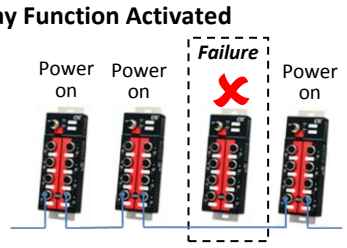


Figure 10: Bypass Relay Function Illustration