Application

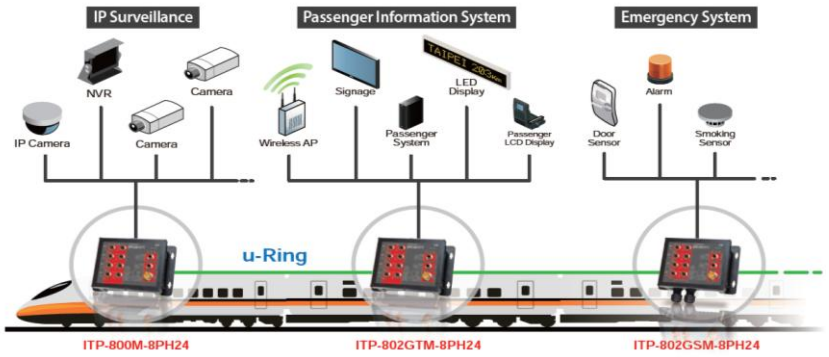


Figure 25: Onboard Train Application for ITP Series

CTC Union Technologies Co., Ltd.
Far Eastern Vienna Technology Center
(Neihu Technology Park)
8F, No. 60, Zhouzi St., Neihu District, Taipei 114
Taiwan

T +886-2-26591021
F +886-2-26590237
E sales@ctcu.com

CTC union® CTC Union Technologies Co., Ltd.
w w w . c t c u . c o m

Quick Installation Guide

ITP-800M-8PH24/ITP-800M-8PHE24

EN50155 IP67 Managed 8 x 10/100Base-TX with 8 PoE+ Ethernet Switch (-10°C~60°C/-40°C~75°C)

ITP-802GSM-8PH24/ITP-802GSM-8PHE24

EN50155 IP67 Managed 8 x 10/100Base-TX + 2 x 100/1000Base-X SFP with 8 PoE+ Ethernet Switch (-10°C~60°C/-40°C~75°C)

ITP-802GTM-8PH24/ITP-G802GTM-8PHE24

EN50155 IP67 Managed 8 x 10/100Base-TX + 2 x 10/100/1000Base-T with 8 PoE+ Ethernet Switch (-10°C~60°C/-40°C~75°C)

sales@ctcu.com

Introduction

The **ITP-800M/802GSM/802GTM-8PH(E)24** Series are managed Industrial Grade Ethernet PoE+ switches with 8 x 10/100Base-TX Fast Ethernet PoE ports plus 2 x 100/1000Base-X ports (ITP-802GSM Series) or 2 x 10/100/1000Base-T ports (ITP-802GTM Series). ITP-800M/802GSM/802GTM -8PH(E)24 Series switches equipped with PoE (Power over Ethernet) function utilize M12 connectors to ensure tight and robust connections as well as to guarantee reliable operation against environmental disturbances such as vibration and shock.

Housed in IP67 grade rugged and wall mountable housing, ITP-800M/802GSM/802GTM-8PH(E)24 Series switches are able to protect against dust and water submersion. Besides, these switches comply with EN50155 standard that covers strict demands on operating temperature, power input voltage, surge, ESD, vibration, and shock, thus making them suitable for industrial applications such as vehicle, rolling stock and railway.

Packing List

- ITP-800M-8PH(E)24, ITP-802GSM-8PH(E)24 or ITP-802GTM-8PH(E) 24 Device
- Protective caps for M12 Fast Ethernet, console, and alarm ports
- 2 Sets of Fiber Cable Gland for SFP ports (ITP-802GSM Series only)
- Console cable (M12 to DB9)
- CD-ROM (Manual, SmartConfig, MIB file)
- Quick Installation Guide

Features

- Use M12 & M23 anti-vibration and shock connector
- 24/48VDC redundant dual input power and built-in power booster design up to 55VDC for PoE output
- Regulate PoE output voltage (55VDC) to stabilize PoE device and guarantee delivery PoE power distance to 100meter
- PoE output power budget maximum 180W
- Wide temperature range -40°C~75°C (For "-**E**" models only)
- IP67 grade rugged housing against water, dust and oil
- Support many advanced Ethernet L2 functions
- CE, FCC, EN50155 and EN50121-4 certified
- Industrial grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified

Specifications

Interface

- Port 1~8 support 10/100Base-TX (M12, 4-Pin, D-Code Female)
  Port 9~10 fiber cable gland support 100/1000Base-X SFP slot with DDMI (ITP-802GSM Series only)
  Port 9~10 support 10/100/1000Base-T UTP (M12, 8-Pin, A-Code Female) (ITP-802GTM Series only)
- Port 9 & 10 with built-in 2 bypass ports (ITP-802GTM Series only)
- Support Auto MDI/MDI-X
- Support Full/Half Duplex
- IEEE 802.3x Flow Control for full duplex; Back pressure for half duplex mode
- Store & Forward Mode

Specifications (cont.)

Switch

- MAC Address Table: 8K
- Packet Buffer Size: 256K Bytes
- Jumbo Frame: 9.6KB
- Switching Fabric: 1.6Gbps (ITP-800M Series), 5.6Gbps (ITP-802GSM & ITP-802GTM Series)

Power over Ethernet

- 8 x PoE enabled ports, M12 (4-Pin) D-Code Female
- End-Span Alternative A Mode
- Supports IEEE802.3af 15.4watts PoE per port
- Supports IEEE802.3at 30watts PoE+ per port (180W budget)
- Pin Assignments: 2 & 4 pins (V+); 1 & 3 pins (V-); 1, 2, 3, 4 (Data)

Power

- Connector Type: 1 x M23 (5-Pin) Male
- Power Supply: Redundant Dual DC 24/48V (20~57VDC) input power
- Reverse Polarity Protection: Yes
- Overload Current Protection: Yes
- Consumption:

Model	Input Voltage	Total Power Consumption	Device Power Consumption	PoE Budget	Boost Efficiency
ITP-800M-8PH(E)24	24VDC	195.6W	7.2W	180W	95.50%
	48VDC	196.8W	8.7W	180W	95.60%
ITP-802GSM-8PH(E)24	24VDC	196.4W	8.1W	180W	95.50%
	48VDC	197.8W	9.6W	180W	95.60%
ITP-802GTM-8PH(E)24	24VDC	198.3W	8.9W	180W	95.00%
	48VDC	198.8W	10.1W	180W	95.30%

Mechanical

- Housing: IP67 Waterproof Protection
- Fanless Design
- Dimensions: 70 mm (D) x 240 mm (W) x 168 mm (H)
- Mounting: Wall mounting, DIN-Rail mounting (Optional Accessory)
- Weight: 2.055kg (ITP-800M Series), 2.17kg (ITP-802GSM Series), 2.15kg (ITP-802GTM Series)

Environmental

- Operating Temperature:
  - -10°C~60°C (ITP-800M-8PH24, ITP-802GSM-8PH24, ITP-802GTM-8PH24)
  - -40°C~75°C (ITP-800M-8PHE24, ITP-802GSM-8PHE24, ITP-802GTM-8PHE24)
- 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
- Shock: IEC 61373 •Freefall: IEC 60068-2-32 •Vibration: IEC 61373
- MTBF (MIL-HDBK-217): 218,010 Hours (ITP-800M Series); 184,605 Hours (ITP-800GSM Series); 131,930 Hours (ITP-800GTM Series)

ITP-800M-8PH(E)24 Series Panels

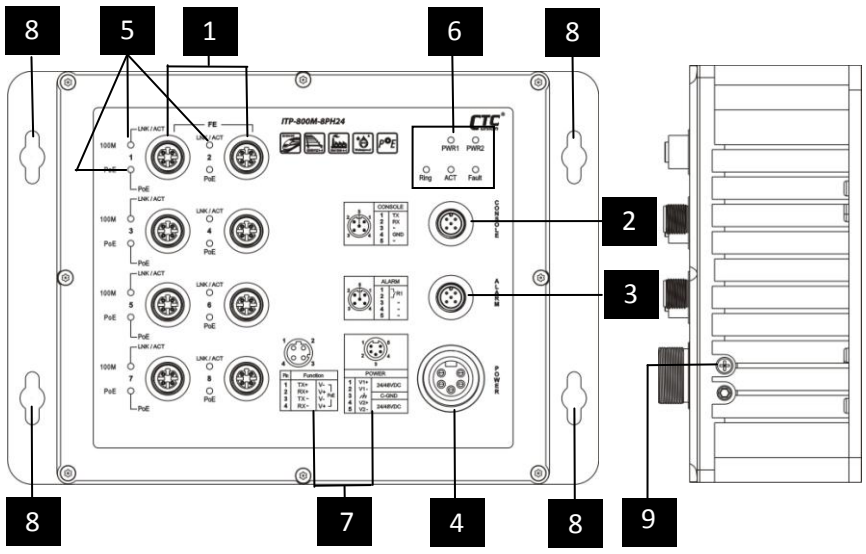


Figure 1: Front panel

Figure 2: Side panel

Index No.	Description
1	M12 Fast Ethernet port 1~8
2	M12 Console port
3	M12 Alarm port
4	M23 Power input port
5	Link/ACT & PoE LEDs for M12 Fast Ethernet ports
6	Power, Fault, ACT, Ring LEDs
7	Pin assignment tables
8	Wall mounting holes
9	Earth grounding

Table 1: Panel reference table

ITP-802GSM-8PH(E)24 Series Panels

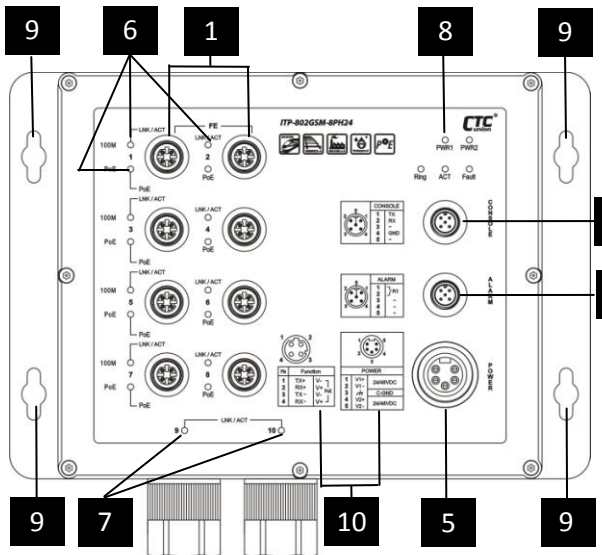


Figure 3: Front panel

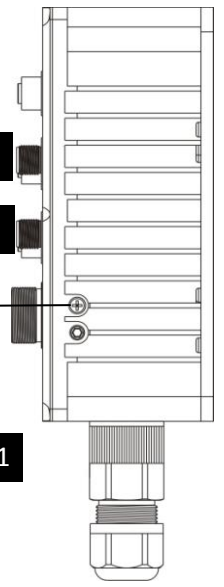


Figure 4: Side panel

Index No.	Description
1	M12 Fast Ethernet port 1~8
2	Fiber Cable Gland for SFP slot 9~10
3	M12 Console port
4	M12 Alarm port
5	M23 Power input port
6	Link/ACT & PoE LEDs for M12 Fast Ethernet ports
7	SFP LEDs
8	Power, Fault, ACT, Ring LEDs
9	Wall mounting holes
10	Pin assignment tables
11	Earth grounding

Table 2: Panel reference table

ITP-802GTM-8PH(E)24 Panels

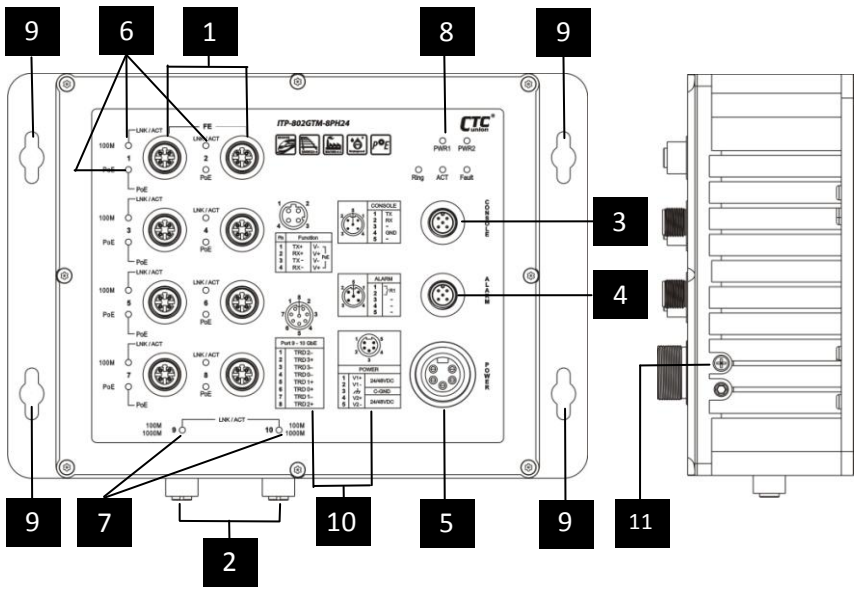


Figure 5: Front panel

Figure 6: Side panel

Index No.	Description	Index No.	Description
1	M12 Fast Ethernet port 1~8	**8**	Power, Fault, ACT, Ring LEDs
2	M12 Gigabit Ethernet port 9~10	**9**	Wall mounting holes
3	M12 Console port	**10**	Pin assignment tables
4	M12 Alarm port	**11**	Earth grounding
5	M23 Power input port		
6	Link/ACT & PoE LEDs for M12 Fast Ethernet port 1~8		
7	Link/ACT LEDs for M12 Gigabit Ethernet port 9~10		

Table 3: Panel reference table

Earth Ground Connection

An earth ground hole is provided on side panel. 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 in Page 6 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.

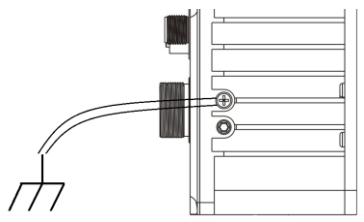
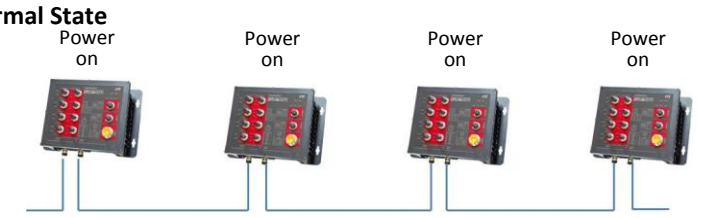


Figure 7: Grounding the device

Bypass Relay Function for ITP-802GTM Series

ITP-802GTM-8PH(E)24 provides two copper interfaces (Port 9 &10) 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**

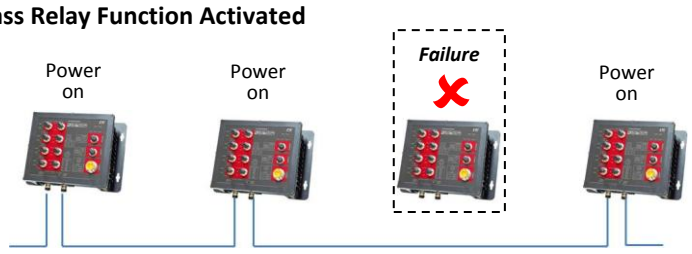


Figure 8: Bypass relay function illustration

CLI & Web Basic Operation

ITP-800M/802GSM/802GTM-8PH(E)24 Series are managed Ethernet PoE+ switches for industrial uses . Initial configuration (assignment of IP address) may be accomplished via the M12 to DB-9 console port and a PC or laptop running terminal emulation software.

First, use the provided console cable to connect the M12 to the "CONSOLE" port and the DB9 to PC COM port. Then, apply power to the switch. Run terminal emulation software and configure the terminal as follows:

115200 speed, 8 data bits, no parity, 1 stop bit, no flow control

At the "Username:" prompt, enter '**admin**' (lower case, no quotes). Just **press Enter when prompted for password**.

ITP-800M/802GSM/802GTM-8PH(E)24 switches use a command line interface (CLI) through the serial port. Once the IP address has been configured, a web browser can be used to configure the device through a more easy-to-use GUI (graphical user interface). Please refer to the operation manual on the CDROM for Web management.

To set the IP address and subnet mask, issue the following commands:

```
# config terminal
(config)# interface vlan 1
(config-if-vlan)#  ip address  192.168.0.10 255.255.255.0
(Example: sets VID 1 to 192.168.0.10, subnet
255.255.255.0)
```

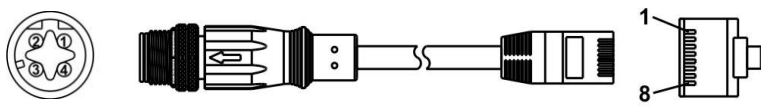
NOTE: The factory default IP address is 10.1.1.1 with mask 255.255.255.0

LED Indicators

LED	Color	Status	Description
PWR1 PWR2	Green	On	Lit if power 1 or power 2 is connected and active.
		Off	Power is not connected or active.
Fault	Amber	On	Lit when one or more of the programmable alarm conditions is active.
ACT	Green	On	During normal use, this LED will be lit, indicating a healthy condition of the running CPU.
		Blinking	Blinking when firmware is being updated.
Ring	Yellow	On	Lit when this unit is the 'master' in a fiber ring and all units are configured for u-Ring or ERPS (Ethernet Ring Protection Switching or G.8032).
100M LNK/ACT for Port 1~8	Green	On	Lit when the LAN connected speed is 100M.
		Blinking	Blinking when there is Ethernet traffic.
LNK/ACT for Port 9~10 (ITP-802GSM/802 GTM Series only)	Green	On	Lit when the fiber connected speed is 100M.
		Blinking	Blinking when there is Ethernet traffic.
	Amber	On	Lit when the fiber connected speed is 1000M
		Blinking	Blinking when there is Ethernet traffic.
PoE	Green	On	Lit when the respective LAN port has successfully negotiated PoE and is supplying output power to the remote connected PD device.

PIN Assignment

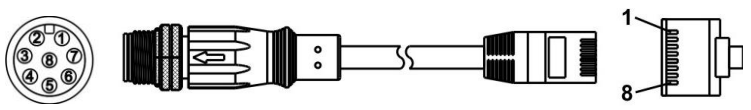
➢ **M12 Fast Ethernet Port**



Port 1~8 Fast Ethernet			PoE
M12 Pin No.	**Pinout**	**RJ-45 Pin No.**	**Pinout**
1	TX+	3	V-
2	RX+	1	V+
3	TX-	6	V-
4	RX-	2	V+

Table 4: Fast Ethernet cable pin assignment

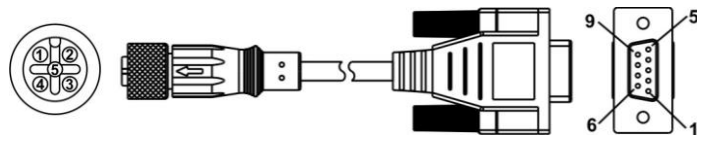
➢ **M12 Gigabit Ethernet Port (For ITP-802GTM Series only)**



Port 9~10 Gigabit Ethernet		
M12 Pin No.	**Pinout**	**RJ-45 Pin No.**
1	TDR2-	5
2	TDR3+	7
3	TDR3-	8
4	TDR0-	2
5	TDR1+	3
6	TDR0+	1
7	TDR1-	6
8	TDR2+	4

Table 5: Gigabit Ethernet cable pin assignment

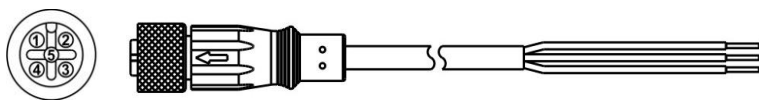
➢ **M12 Console Port**



M12 Pinout		DB-9 (Female) Pinout	
1	TX	2	RX
2	RX	3	TX
3	-	-	-
4	GND	5	GND
5	-	-	-

Table 6: Console cable pin assignment

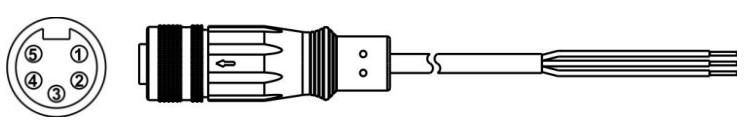
➢ **M12 Alarm Port**



M12 Pin No.	Description	Color of Open Cable
1	R1	Black
2		Blue
3	-	Red
4	-	Orange
5	-	Yellow

Table 7: Alarm cable pin assignment

➢ **M23 Power Input Port**

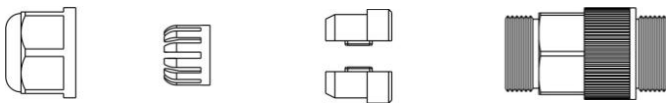


M23 Pin No.	Pinout	Description	Color of Open Cable
1	V1+	24/48VDC	Black
2	V1-		Blue
3	⏚	C-GND	Green
4	V2+	24/48VDC	Brown
5	v2-		White

Table 8: Power cable pin assignment

Fiber Cable Gland Installation for ITP-802GSM Series

ITP-802GSM Series offer two metal fiber cable glands on the bottom panel. They are designed to provide watertight seals for the cable embedded inside so that fiber transmission loss due to external factors can be reduced to minimum. Before assembling fiber cable glands, make sure your cable gland kit have the following components:



Sealing nut Clip Split seals Body

Assembly Steps:

Step 1. Loosen and remove the protective cap of the fiber port by turning counter-clockwise using a coin.

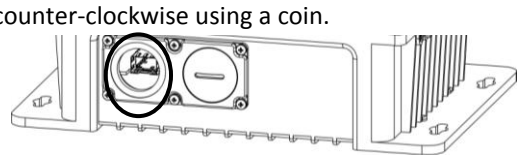


Figure 9: Remove the protective cap

Step 2. Insert the fiber transceiver.

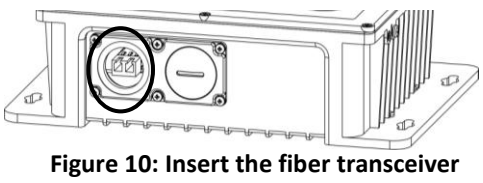


Figure 10: Insert the fiber transceiver

Step3. Thread the components of cable gland over the fiber cable in the order as indicated below and keep them loose in this step.

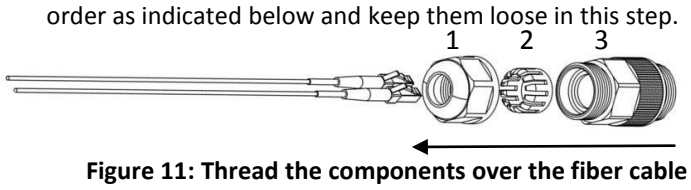


Figure 11: Thread the components over the fiber cable

Step 4. Connect the fiber cable to the fiber transceiver.

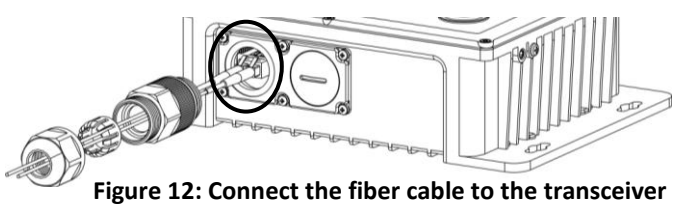


Figure 12: Connect the fiber cable to the transceiver

Step 5. Attach the body of the gland to the device and tighten by turning clockwise.

Figure 13: Install the body component

Step 6. Attach the split seals to the cable.

Figure 14: Install the split seals

Step 7. Slide the split seals along the cable and into the body. Press firmly to ensure the split seals are completely seated on the body.

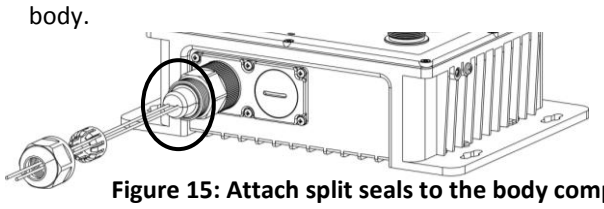


Figure 15: Attach split seals to the body component

Step 8. Slide the clip along the cable and make sure that it is firmly attached to the split seals.

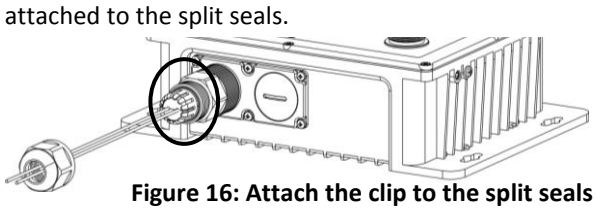


Figure 16: Attach the clip to the split seals

Step 9. Finally, move along the sealing nut and attach it to the body. Firmly attach the sealing nut by turning clockwise.

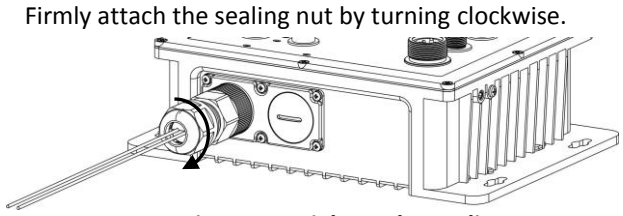
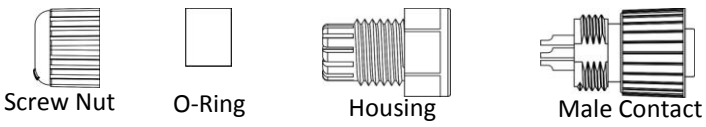


Figure 17: Tighten the sealing nut

M12 Cable Connector Installation

Before assembling M12 cable, make sure you have the following M12 cable connector components and cable at hand.



Screw Nut O-Ring Housing Male Contact Connector

Assembly Steps:

Step 1. Thread the screw nut, O-ring, and housing over the cable in the order shown below and keep them loose in this step.

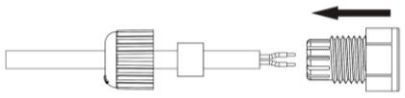


Figure 18: Insert components into the cable

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

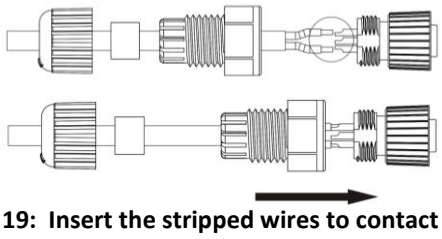


Figure 19: Insert the stripped wires to contact clamps

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

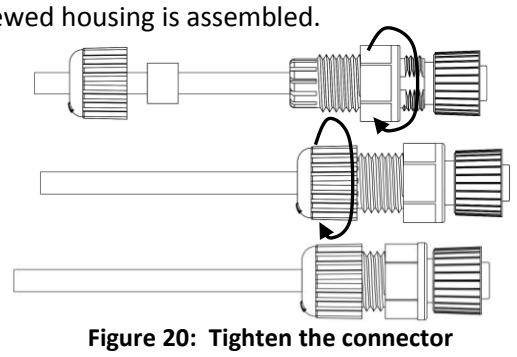


Figure 20: Tighten the connector

DIN-Rail Installation

The ITP-800M/802GSM/802GTM Series come with both wall mount (standard accessory) and DIN rail hardware brackets (optional accessory). The wall mount bracket has been attached to the device. Therefore, there is no need to install wall mount bracket.

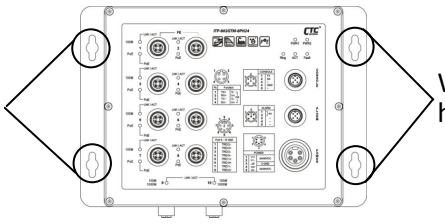


Figure 21: Wall mounting

When installing the DIN rail bracket, be sure to correctly align the orientation pin (Figure 22). 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.

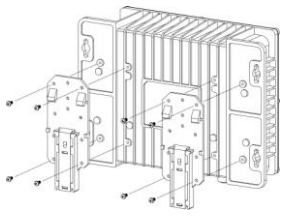


Figure 22: Din rail installation

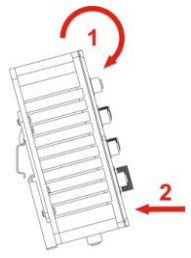
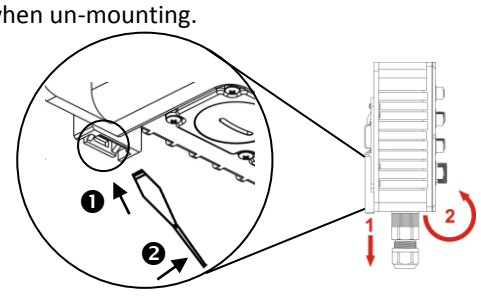


Figure 23: Mounting

Use a flat-head screwdriver to unlock and remove the device from the din rail when un-mounting.



❶ Insert the flat-head screwdriver into the indicated din rail snap level hole.

❷ Push up the flat-head screwdriver to pull the din rail snap level open.

Figure 24: Un-mounting