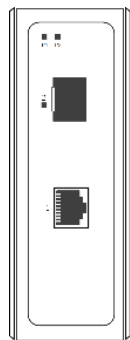


# Unmanaged Industrial Fiber Media Converter

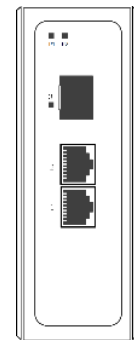
## Quick Start Guide V2.0

### Introduction

Thank you for choosing Unmanaged Industrial Fiber Media Converter. This guide is designed to familiarize you with the layout of the Unmanaged Industrial Fiber Media Converter and describes how to deploy them in your network.



1x10/100/1000 BASE-TX RJ45  
1x100/1000 BASE-X SFP/1x9



2x10/100/1000 BASE-TX RJ45  
1x100/1000 BASE-X SFP/1x9

### Packing List

- Unmanaged Industrial Fiber Media Converter x 1
- Quick Start Guide x 1
- Certificate of quality & Warranty Card x 1
- DIN-Rail Clip x 1
- Wall-mount Kit (Including screws x4) x 2

### Product Overview

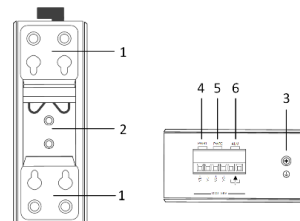
The new-generation Unmanaged Industrial Fiber Media Converter provides 1 or 2-Port 10/100/1000 BASE-TX & 1-Port 100/1000 BASE-X SFP/1x9. These models of unmanaged fiber media converters provide stable and reliable Ethernet transmission.

Its hardware adapts no-fan, low power consumption, wide temperature and voltage design. It has passed rigorous industrial standard tests, which can suit the industrial scene environment with harsh requirements for EMC. It can be widely used in smart grid, rail transportation, smart city, safe city, new energy, intelligent manufacturing and other industrial fields.

### Reliable Industrial Grade Design

- Industrial Grade Design, -40 – 75°C Operating Temperature.
- No Fan Design
- IP40 Protection Grade
- 8kV Surge Protection
- DIN Rail and Wall Mount

### Panel Layout



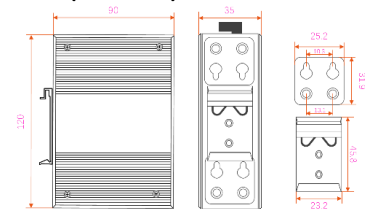
- 1: Wall Mount Kits
- 2: DIN Rail Mount Clip
- 3: Ground Screw
- 4: PWR1 Power Input Terminal Block
- 5: PWR2 Power Input Terminal Block
- 6: Relay output Terminal Block

**NOTE:** The alarm hint can be set via device network management based on power supply, temperature and port connection status.

### LEDs Indication

LED	State	Description
PWR (P1&P2)	ON	Power is being supplied
	OFF	Power is not being Supplied.
Link/ACT	ON	Port connection is active
	Blinking	Data transmitted
	OFF	Port connection is not active.

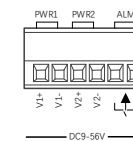
### Dimensions (Unit: mm)



Dimensions (include length, width and height) are different by product series and port amount.

### Power Supply

Front panel of Unmanaged Industrial Fiber Media Converter series provides 4-bit power supply input terminal block, which supports DC input. DC power supply input supports redundancy function, provides PWR1 and PWR2 power input, can use for single, and can connect two separate power supply system, use one pair terminal block connects the device simultaneously. If one of power systems breaks, the device will keep uninterrupted work. Additionally, it has Built-in Overcorrect Protection and Reverse Connection Protection. The voltage input range is 9~56VDC (terminal block defined as V1-, V1+, V2-, V2+).



**NOTE:** 1. Power ON operation: Insert the power cable's terminal block into the device's power port, then insert the power supply plug into the power source.  
2. Power OFF operation: Unpin the power plug, then strike the terminal block. **Please be aware of the sequence of operation.**

### Relay Connection

Relay access terminal is on the top panel of the device. For a two-terminal relay, open circuit state is normal non-alarm state; closed state is on when there is any alarm information. The two-terminal block connector is used to detect both power failure and port failure. The two wires attached to the Fault contacts form an open circuit when the device has lost power supply from one of the DC power inputs, or failure occurs in one of the ports

## PoE & Power Supply

### Standard Model

<b>PoE Ports</b>	IEEE802.3af/at
<b>Power Supply Pin</b>	Default: 1/2(+), 3/6(-)
<b>Max PWR Per Port</b>	30W
<b>Total PWR/ Input Voltage</b>	30/60W(DC48-56V)

### IEEE802.3bt Model (Additional Option)

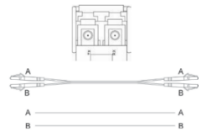
<b>PoE Ports</b>	IEEE802.3af/at/bt
<b>Power Supply Pin</b>	Default: 1/2(+), 3/6(-) or 4/5(+), 7/8(-)
<b>Max PWR Per Port</b>	90W
<b>Total PWR/ Input Voltage</b>	90-180W(DC52-56V)

## Optical Fiber Port and Connection

### SFP Transceiver

You can select different SFP modules for your requirement (Please refer to our SFP selection list for the appropriate module). To insert/remove the SFP, please follow the procedures below:

1. On the side panel, please insert the SFP module into the SFP port until it is securely locked.
2. Connect the optical fiber (1/2 core) to the SFP LC connector(s).
3. To remove the SFP module, press down the lock of the LC connector of the optical fiber, then pull out the fiber cable.



### 1x9 Fiber Port and its Connectors

Specification: 1000 Base-FX full-duplex SM or MM port, SC/ST/FC type.

The fiber port must be used in a pair; TX (transmit) port connects the remote media converter's RX (receive) port; RX (receive) port connects the remote media converter's TX (transmit) port. The optical fiber connection supports the line to instruct and enhance the reliability of the network effectively.



**NOTE:** If you make your own cable, we suggest to label the two sides of the same line with the same letter (A-to-A and B-to-B, shown as below, or A1-to-A2 and B1-to-B2).

## 10/100/1000Base-T(X) Ethernet Port

RJ45 port supports automatic MDI/MDI-X operation. It can connect the PC, Server, Converter and HUB. Pin 1,2,3,6 correspond to connections in MDI. 1→3, 2→6, 3→1, 6→2 are used as cross-wiring in the MDI-X port of Converter and HUB. 10/100/1000Base-TX are used in MDI/MDI-X; the Pin definition is in the table below.

1000Base-T, RJ45 Connector Pin Assignment		
Pin	MDI Signal Definition	MDIX Signal Definition
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-



## RJ45 Ethernet Cable Pinout for PoE

No.	Description
1	White Green (TX+)
2	Green (TX-)
3	White Orange (RX+)
4	Blue(DC+) - PoE
5	White Blue(DC+) - PoE
6	Orange(RX-)
7	White Brown(DC-) - PoE
8	Brown(DC-) - PoE

### \*T-568A

No.	Description
1	White Orange(TX+)
2	Orange(TX-)
3	White Green(RX+)
4	Blue(DC+) - PoE
5	White Blue(DC+) - PoE
6	Green(RX-)
7	White Brown(DC-) - PoE
8	Brown(DC-) - PoE

### \*T-568B

## PoE Power Specification

Spec	802.3af PoE	802.3at PoE+
Device Power	12.95W	25.5W
Supplied Power	15.4W	30W
Device Voltage	44-57V	50-57V
Supplied Voltage	37-57V	42.5-57V
Current(MAX)	350mA	600mA
Resistance(Ω)	20	12.5
Cable Type	Cat3, Cat5	Cat5
Spec	802.3bt 4PoE	802.3bt Type4
Device Power	51W	71W
Supplied Power	60W	100W
Device Voltage	50-57V	52-57V
Supplied Voltage	42.5-57V	41.1-57V
Current(MAX)	600mA	960mA
Resistance(Ω)	12.5	12.5
Cable Type	Cat5	Cat5

## Installation

Before installation, please confirm the work environment fulfills the installation requirements, including the power demand and abundant space. Also, please confirm whether it is close to the connected equipment and other equipment which is prepared.

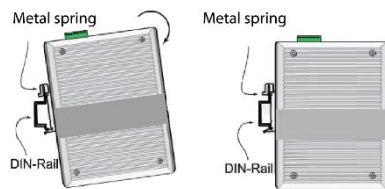
1. Avoid the sunshine; keep away from the heat source or the area in intense EMI.
2. Examine the cables and plugs and make sure fulfilling installation requirements.
3. Examine whether the cables be seemly or not (less than 100m) long enough according to a reasonable scheme.
4. Power: 9-56VDC power input
5. Environment:  
working temperature -40~75 °C  
Storage Temperature: -40~85 °C  
Relative humidity 5%~95%

## DIN-rail Installation

To apply for industrial environments conveniently, Industrial Fiber Media Converter adopts 35mm DIN-Rail installation. The installation steps are shown below:

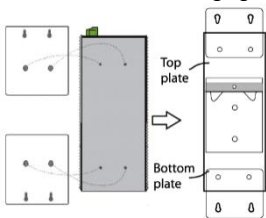
1. Examine the DIN-Rail accessories
2. Examine whether DIN Rail is firm or not and whether the position is suitable or not.
3. Insert the top of the DIN-Rail into the slot below the stiff metal spring.
4. After completing these steps, the DIN-Rail attachment

unit should snap, as shown below.



### Wall-Mount Installation

**Step 1:** When it's unpacked, the metal plate of the aluminum rail attachment has been fixed on the back side of the media converter. Please remove the wall-mounted metal plate from the media converter and reinstall it, as shown in the following figure.



**Step 2:** Install the media converter onto the wall, total 4 screws are required for wall mounting.

**NOTE:** Before screwing the screws into the wall, make sure that the screw size matches the wall-mounted metal panel.

### Wiring Requirements

Cable placement needs to meet the following requirements,

1. It is needed to check whether the type, quantity and specification of the cable match the requirement before cable placement.
2. It is necessary to check the cable is damaged or not. Also check its factory records and quality assurance booklet before cable placement.
3. The required cable specification, quantity, direction and laying position need to match construction requirements, and cable length which depends on actual position.
4. All cables able cannot have a break-down and terminal in the middle.
5. Cables should be straight in the hallways and turning.
6. Cable should be straight in the groove and cannot go beyond the groove in case of holding back the inlet and outlet holes. Cables should be banded and fixed when they are out of the groove.
7. User cable should be separated from the power lines.

Cables, power lines and grounding lines cannot be overlapped and mixed when they are in the same groove road. When the cable is too long, it cannot hold down another cable but is structured in the middle of the alignment rack.

**8.** Pigtail cannot be tied, then it should be swerved as less as possible. The swerving radius cannot be too small (small swerving causes terrible link loss). Its banding should be moderate (not too tight), and should be separated from other cables.

**9.** It should have a corresponding simple signal at both sides of the cable for maintenance.

### PoE Power Supply Budget Calculation

**Step1:** Add Up the Demand for PoE In Watts. Then add up the expected demand for power for each Powered Device (PD) in watts. Mark the information which is about the capacity of the maximum power and upper end of PD classification. Any unspecified devices should be assumed Class 0.

For example, an IEEE802.3af, Class 0 device may consume 9 watts; however, it can be up to 15.4 watts.

**Round the numbers up:** Occasionally, it is used for accounting the additional consumption of the UTP (unshielded twisted-pair) ethernet cable that runs between the PD and PoE media converter.

For example, if an IEEE802.3at Class 4 IP camera consumes 25.5 watts, round to 30 watts, which adds a buffer to balance the loss between the PoE media converter and the device.

**Include room for future capacity:** Having at least one spare port for diagnostics, troubleshooting, or monitoring is convenient.

Many clients want extra ports for the option to add more PD devices in the future. However, devices could be appropriately selected and integrated. Then accounting for spare ports isn't required for a PoE power budget calculation.

**Step 2:** Estimate the Operating Environment when performing a PoE power budget calculation. It's essential to account for environmental conditions.

**Prepare power redundancy for any conditions.** We expect the long-term performance of a power supply to be 70% of its rating in a benign/conditioned environment (somewhere with steady temperatures between 32°F/0°C and 120°F/50°C). In benign environment, please estimate the total wattage from step one by 0.7. If the power supply is subject to a harsh environment (cold temperatures less than 32°F/0°C or heat above 120°F/50°C), plan for diminished performance. Please estimate the total wattage from step one by 0.6 for this type of setting.

In extreme conditions, industrial-grade modes include Fiberroad Industrial PoE Series, DIN rail mountable, and DC 48V power supplies.

### Take this harsh scenario for an instance:

A media converter and its power supply will be stored in a metal enclosure, exposed to direct sunlight, at a site in the northeastern United States. In winter, the

temperature inside the enclosure could be as low as -10°F/-24°C. And in summer, it could be as high as 140°F/60°C. Accounting for the temperature inflexions, we expect the power supply to operate at 60% of its power rating.

It's always safe to assume a conservative long-term performance drop of 50%, no matter what conditions. That means total the anticipated power demand (step 1) and dividing by 2 (step 2) to get a power budget in watts.

### Step 3: Select Power Source

After determining the demand for PoE power and accounting for the environment, it's time to select an appropriate supply. Fiberroad provides DC 48-56V which supplies power ratings from 30 watts to 480 watts.

### Troubleshoot

- Please follow this step if the equipment has failure.
- Make sure the equipment is installed according to the manufacture installation guide.
- Please confirm the order of RJ45 cable meets EIA/TIA568A or 568B standard.
- Every PoE port can provide PoE equipment with power control up to 30W by a connection to the PoE equipment
- Replace the equipment that can't work in a proper function of PoE Fiber Media Converter to check if the equipment is damaged.
- Please get in touch with your vendor if failure still exists.

### Precaution

- Keep the power off during installation. Then wear an antistatic wrist ring and ensure that the anti-static wrist ring is connected well with the skin to avoid potential safety hazards.
- The media converter can typically work only when the correct power supply powers it. Make sure that the power supply voltage matches the voltage marked on the media converter.
- Before powering the media converter, please make sure that it won't overload the power circuit, so it won't affect the regular operation of the media converter or even cause unnecessary damage.
- To avoid the danger of electric shock, do not open the media converter housing when the media converter is working. Even it is not powered, don't open it by yourself.
- Before cleaning the media converter, please unplug the power plug of the media converter. Don't wipe with wet fabric and directly use liquid to wash.
- In order to avoid overload installation, equipment installed in the rack is generally from bottom to top.
- To prevent accidents, don't place any other heavy objects on the surface of the media converter

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