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Quick Installation Guide

IMC-1000S-PB

10/100/1000Base-T RJ-45 to 100/1000Base-X SFP with
IEEE802.3af/at/bt PSE (90W)

sales@ctcu.com

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

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

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Introduction

IMC-1000S-PB are industrial grade 10/100/1000Base-T to 100/1000Base-X PoE media converters. PoE technology describes a system to pass electrical power safely, along with data, on Ethernet cabling. The original IEEE 802.3af-2003 PoE standard provides up to 15.4W of DC power to connected devices. The updated IEEE 802.3at-2009 PoE standard also known as PoE+ or PoE plus, provides up to 30W of power. It is worth mentioning that IMC-1000S-PB can provide up to 90W per port through the use of all 4 pairs of category 5e cable. Thus, IMC-1000S-PB are ideal products for various applications especially used in industrial networking.

Housed in a rugged DIN rail or wall mountable enclosure, this product is designed for harsh environments, such as industrial networking, intelligent transportation systems (ITS) and is also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications.

Package List

- IMC-1000S-PB device
- Din rail bracket with screws
- Terminal block
- Protective cap for SFP slot

Features

- Provides IEEE 802.3at/af/bt type 4 PoE output (up to 90W)
- Supports DIP switch for setting up LFPT, Store & Forward switching mode, Pass Through mode or SFP speed
- IP30 rugged metal housing & fanless design
- Railway Traffic EN50121-4, EMS & EMI for heavy industrial environment EN61000-6-2 & EN61000-6-4

Specifications

Standards
- IEEE Standards: IEEE802.3 (10Base-T), 802.3u (100Base-TX, 100Base-FX), 802.3ab (1000Base-T), IEEE802.3z (1000Base-X)
- PoE Standards: IEEE802.3at, IEEE802.3af, IEEE802.3bt

LAN Interface
- 1 x 10/100/1000Mbps RJ-45 Port
- Auto-Negotiation
- Auto MDI/MDI-X
- Jumbo Frames: 16K Bytes

Fiber Interface
- 1 x SFP Slot
- SFP Speed: 100M/1000Mbps (Set by DIP Switch)

Power over Ethernet
- Supports IEEE802.3af (15.4W)/at (30W)/bt Type 4 (90W) End-Span, Alternative A Mode
- PoE Pin Assignments:
  - Positive (V+) Pins: RJ-45 Pin 1, 2, 4, 5
  - Negative (V-) Pins: RJ-45 Pin 3, 6, 7, 8
  - Data Pins: RJ-45 Pin 1, 2, 3, 6, 4, 5, 7, 8
- Power Budget: 90W

Power Supply
- Redundant Dual 48V (44~57VDC) Power Inputs
  - 54~57VDC is recommended for 90W (4 Pairs) PoE Applications
  - 52~57VDC is recommended for 60W (4 Pairs) PoE Applications
  - 52~57VDC is recommended for 30W (2 Pairs) PoE Applications
  - 44~57VDC is recommended for 15.4W (2 Pairs) PoE Applications
  - ***Note: It is required to adjust power supply output voltage to the suitable one for PoE applications***
- Supports Power Input Reverse Polarity Protection
- Supports Overload Current Protection
- Supports Removable Terminal Block
- Consumption:

Input Voltage	Total Power Consumption	Device Power Consumption	PoE Power Budget
54 VDC	94.5W	3.8W	90W

Mechanical
- Water & Dust Proof: IP30 Protection
- Dimensions: 80 mm (D) x 30 mm (W) x 115 mm (H)
- Mounting: DIN-Rail, Wall Mount (Optional accessory)
- Weight: 340g

Environmental
- Operating Temperature: -20°C~70°C
- Storage Temperature: -40°C~85°C
- Humidity: 5%~95% (Non-condensing)

Certifications
- EMC: CE (EN55032, EN55035)
- EMI (Electromagnetic Interference): FCC Part 15 Subpart B Class A, CE
- Railway Traffic: EN50121-4
- Immunity for Heavy Industrial Environment: EN61000-6-2
- Emission for Heavy Industrial Environment: EN61000-6-4
- Shock: IEC60068-2-27
- Freefall: IEC 60068-2-31
- Vibration: IEC 60068-2-6

MTBF (MIL-HDBK-217)
- 1,432,119 Hours

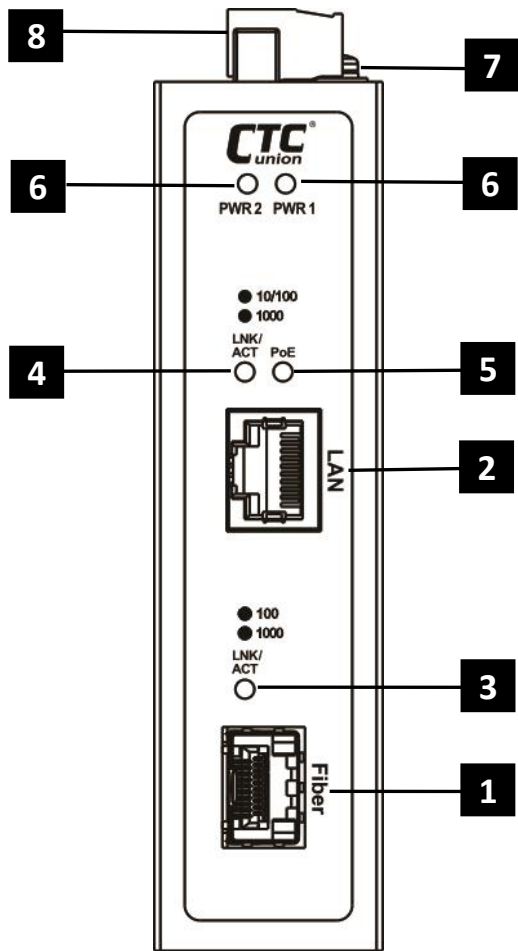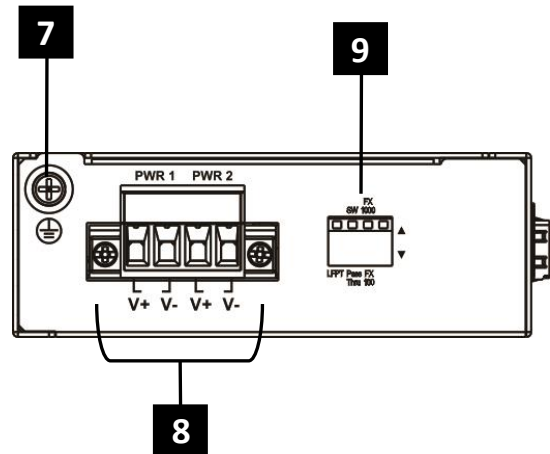# *Panels*

Figure 1. Front Panel

Figure 2. Top Panel

| No.	Description
1	SFP fiber slot
2	LAN RJ-45 connector
3	Link/ACT LED indicator for SFP interface
4	Link/ACT LED indicator for LAN interface
5	PoE LED indicator
6	Power LED indicators
7	Grounding connector
8	Terminal block for power inputs (PWR1 & PWR2)
9	DIP switch

LAN & Fiber Interface

IMC-1000S-PB PoE media converters have one electrical LAN port and one SFP fiber port on the front panel. The LAN port that utilizes shielded RJ-45 connector supports 10/100/1000M Ethernet transmissions; while the fiber port supports dual rate 100/1000M SFP transceivers.

PoE (Power over Ethernet)

The LAN port on the front panel not only supports 10/100/1000Mbps data transmissions, but also supports PoE (Power over Ethernet) for connection to standard PoE PD (Power Devices) such as IP Cameras, Access Points, IP Phones, Digital Signage, etc. PoE eliminates the need to run separate power to these devices thereby simplifying deployment and reducing expenses.

The LAN port may also connect to any non-PoE devices for normal Ethernet transmission without any damage to the non-PoE device or to this device.

RJ-45 Ethernet Port Pinouts
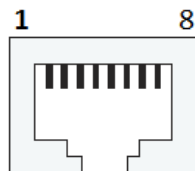
RJ-45 Ethernet & PoE Pin Assignments

Pin No.	RJ-45 Ethernet		PoE Output
	100M	1000M	
1	RX+	TRD 0+	V+
2	RX-	TRD 0-	V+
3	TX+	TRD 1+	V-
4	-	TRD 2+	V+
5	-	TRD 2-	V+
6	TX-	TRD 1-	V-
7	-	TRD 3+	V-
8	-	TRD 3-	V-

Recommended Power and Ground Wiring Scheme

DC Power Connection

A removable terminal block on the top panel provides two power connections. Power can be provided through the dual inputs from separate sources (PWR1 & PWR2). One power supply is enough to power up the device. If two power supplies are used, the device provides power redundancy function. See the figure provided below for recommended DC power wiring scheme.
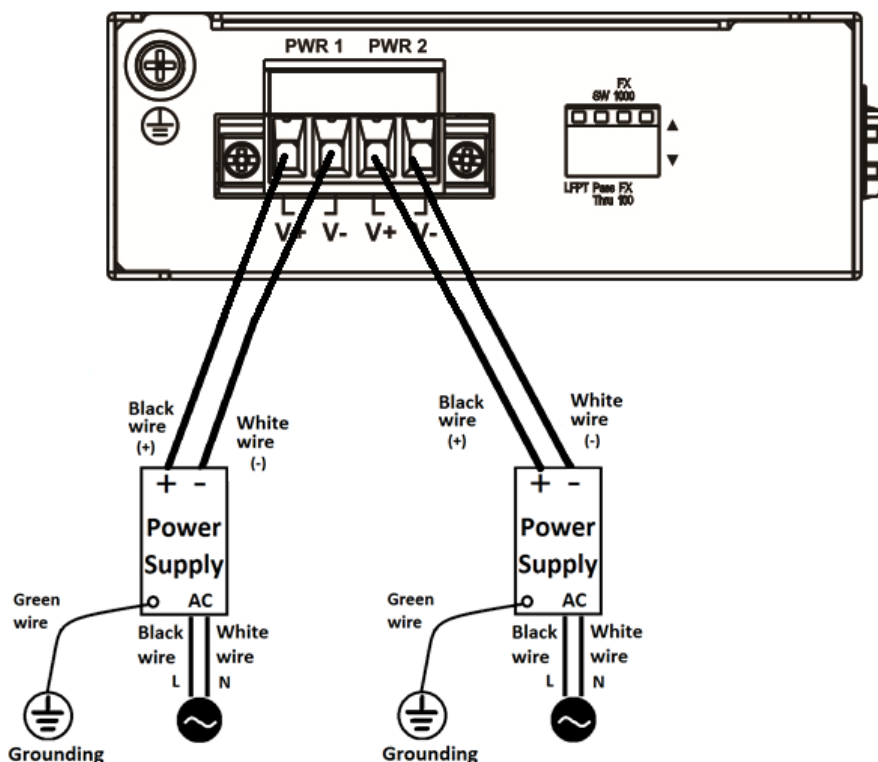

Figure 3. DC Power Connection

NOTE: This device supports redundant dual 48V (44~57VDC) power inputs. For PoE applications, it is required to adjust power supply output voltage to the suitable one based on the following recommendations:

- *54~57VDC is recommended for 90W (4 Pairs) PoE Applications*
- *52~57VDC is recommended for 60W (4 Pairs) PoE Applications*
- *52~57VDC is recommended for 30W (2 Pairs) PoE Applications*
- *44~57VDC is recommended for 15.4W (2 Pairs) PoE Applications*

Earth Ground Connection

An earth ground connector is provided on the top panel with an earth ground sign next to it. Grounding the device properly can help to release leakage of electricity to the earth safely so as to reduce unexpected influences from electromagnetic interference (EMI) and electromagnetic susceptibility (EMS).

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

1. Loosen or remove the grounding screw.

2. Attach the grounding screw to the ring-type or fork-type terminal of the grounding cable. Make sure that the grounding cable is long enough to reach the earth.

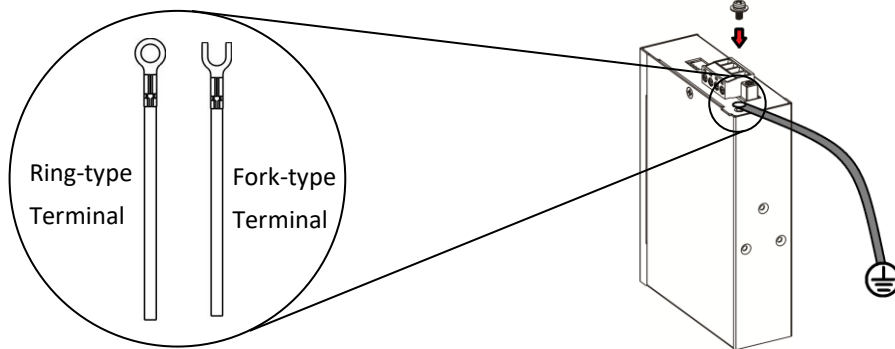3. Use a screwdriver to fasten the grounding screw.

Figure 4. Grounding Cable Type   **Figure 5. Grounding Connection**

LED Indicators

LED	Color	Status	Definition
PWR1 PWR2	Green	On	Power LED indicator is lit and remains steady on when power is connected and active at the PWR1/ PWR2 input terminal connection.
		Off	PWR1/PWR2 is not connected.
Fiber Link/ACT	Green	On	The fiber link is up and operates at 100Mbps.
		Blinking	Blinking when there is data traffic.
	Amber	On	The fiber link is up and operates at 1000Mbps.
		Blinking	Blinking when there is data traffic.
LAN Link/ACT	Green	On	The LAN link is up and operates at 10/100Mbps.
		Blinking	Blinking when there is data traffic.
	Amber	On	The LAN link is up and operates at 1000Mbps.
		Blinking	Blinking when there is data traffic.
PoE	Green	On	PoE LED indicator is lit and remains steady on when the LAN port has successfully negotiated PoE and is supplying output power to the remote connected PD.
		Blinking slowly	PoE LED indicator blinks slowly when the media converter is detecting PD device.
		Blinking quickly	PoE LED indicator blinks quickly when errors occur such as overload.

DIP Switch

The DIP switch is provided on the top panel next to the terminal block for power inputs. There are four function switches available for use. See the table below for details.

DIP No.	Status	Function	Description
1	Off*	Disable LFPT (Link Fault Pass Through)	LFPT functions is disabled.
	On	Enable LFPT (Link Fault Pass Through)	LAN-Fiber: If LAN port link is down, the media converter will force fiber port to link down. Fiber-LAN: If fiber port link is down, the media converter will force LAN port to link down. By default, this function is disabled.
2	Off*	SW Mode	The media converter works in Store and Forward switching mode
	On	Pass Thru Mode	The media converter works in Pass Through mode.
3	Off*	FX 1000	The fiber speed is forced at 1000Mbps.
	On	FX 100	The fiber speed is forced at 100Mbps.
4	Reserved		

NOTE 1: *By default, all DIP switches are set to OFF (marked with *).*
NOTE 2: *After changing the DIP switch setting, you must restart the device to activate the setting.*

Installation

The PoE media converter can be mounted on the wall or installed in DIN rail depending on your installation needs. When installing the wall-mounting brackets (optional accessory) and DIN rail bracket, be sure to correctly align the orientation pin.
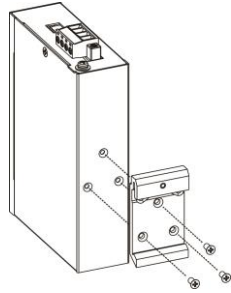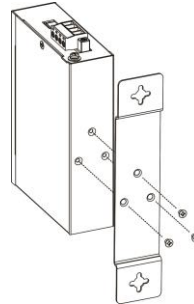

Figure 6. DIN Rail   **Figure 7. Wall Mount**

The PoE media converter with 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.
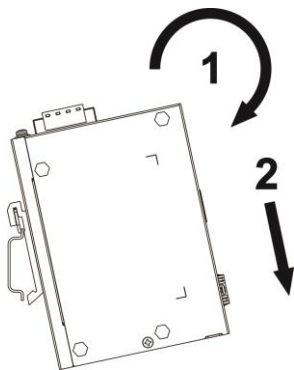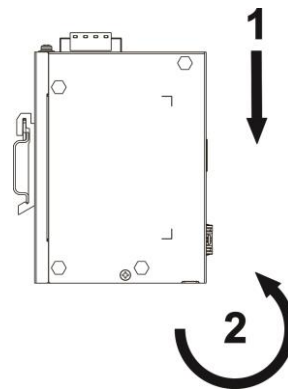

Figure 8. Mounting   **Figure 9. Un-mounting**

Application Diagram

10M/100M/1G
Ethernet

10M/100M/1G
Ethernet + PoE

Up to 90W

IMC-1000S-PB

WiFi AP
WiFi 6 IEEE802.11ax
IEEE802.11b/g/n/ac

Non-PoE Ethernet Switch/HUB