CTC Union Technologies Co., Ltd.

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Quick Installation Guide

IGS-402CS-4PH(E)24

Industrial Grade Unmanaged Gigabit Ethernet PoE Switches

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Introduction

IGS-402CS-4PH(E)24 models are industrial grade unmanaged Gigabit PoE (Power over Ethernet) switches that are equipped with four 10/100/1000Mbps RJ-45 LAN ports and two 100/1000Mbps fiber optic SFP slots. Housed in rugged DIN rail or wall mountable enclosures, these switches are designed for harsh environments, such as industrial networking and intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications. Standard operating temperature range models (-10°C~60°C) and wide operating temperature range models (-40°C~75°C) are available to fulfill the special needs of industrial automation applications.

Package List

- IGS-402CS-4PH(E)24 device
- Protective caps for SFP slots
- Din rail with screws
- Terminal block

Features

- Redundant dual 24/48VDC (20~57VDC) power input
- IP30 rugged metal housing & fanless design
- Wide temperature range -40°C~75°C (IGS-402CS-4PHE24)
- 4KV surge protection for PoE, UTP and SFP ports
- Railway Traffic EN50121-4, EMS & EMI for heavy industrial environment EN61000-6-2 & EN61000-6-4

Specifications

Ethernet Interface

- Standards: IEEE802.3 (10Base-T), IEEE802.3u (100Base-TX), IEEE802.3ab (1000Base-T)
- RJ-45 (shielded) Ports: 4 ports
- Speed: 10/100/1000Mbps

Optical Interface

- Standards: IEEE802.3u (100Base-FX), IEEE802.3z (1000Base-X)
- SFP-Based Slots: 2 slots
- Speed: 100/1000Mbps

Switch Features

- Store & Forward Switch
- Supports IEEE802.3x Flow Control
- Auto MDI/MDI-X
- Duplex: Full/Half (Auto-negotiation per IEEE802.3u)
- Switching Fabric: 12Gbps (Non-blocking)
- Packet Buffer Size: 1.75Mbits
- MAC Table: 4K
- Max. Frame Size: 1522Bytes
- Jumbo Frame: 10K Bytes

Power over Ethernet

- Provide 4 ports IEEE802.3af, IEEE802.3at
- 30W (Max.) per port and total 120W (Max.) power budget
- Positive (V+) pins: 1, 2; Negative (V-) pins 3, 6; Data 1, 2, 3, 6, 4, 5, 7, 8
- 50~57VDC power input is recommended for 30W applications

Power

- Redundant Dual DC 24/48V (20~57VDC)
- Support Power Input Reverse Polarity Protection
- Support Removable Terminal Block
- Power Consumption:

Items / Input Voltage	Total Power Consumption	Device Power Consumption	PoE Power Budget
50VDC	125.3W	5.3W	120W
24VDC	125.3W	5.3W	120W

Mechanical

- Water & Dust Proof: IP30 Protection
- Dimensions: 106 mm (D) x 38.6 mm (W) x 152 mm (H)
- Mounting: DIN-Rail, Wall Mount (Optional Accessory)
- Weight: 810g

Environmental

- Operating Temperature: -10°C~60°C (IGS-402CS-4PH24); -40°C~75°C (IGS-402CS-4PHE24)
- 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
- Railway Traffic: 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
- 4KV Surge Protection: Supported for PoE, UTP and SFP ports
- Shock: IEC 60068-2-27
- Freefall: IEC 60068-2-31
- Vibration: IEC 60068-2-6

MTBF (MIL-HDBK-217)

- 911,236 Hours

Panels

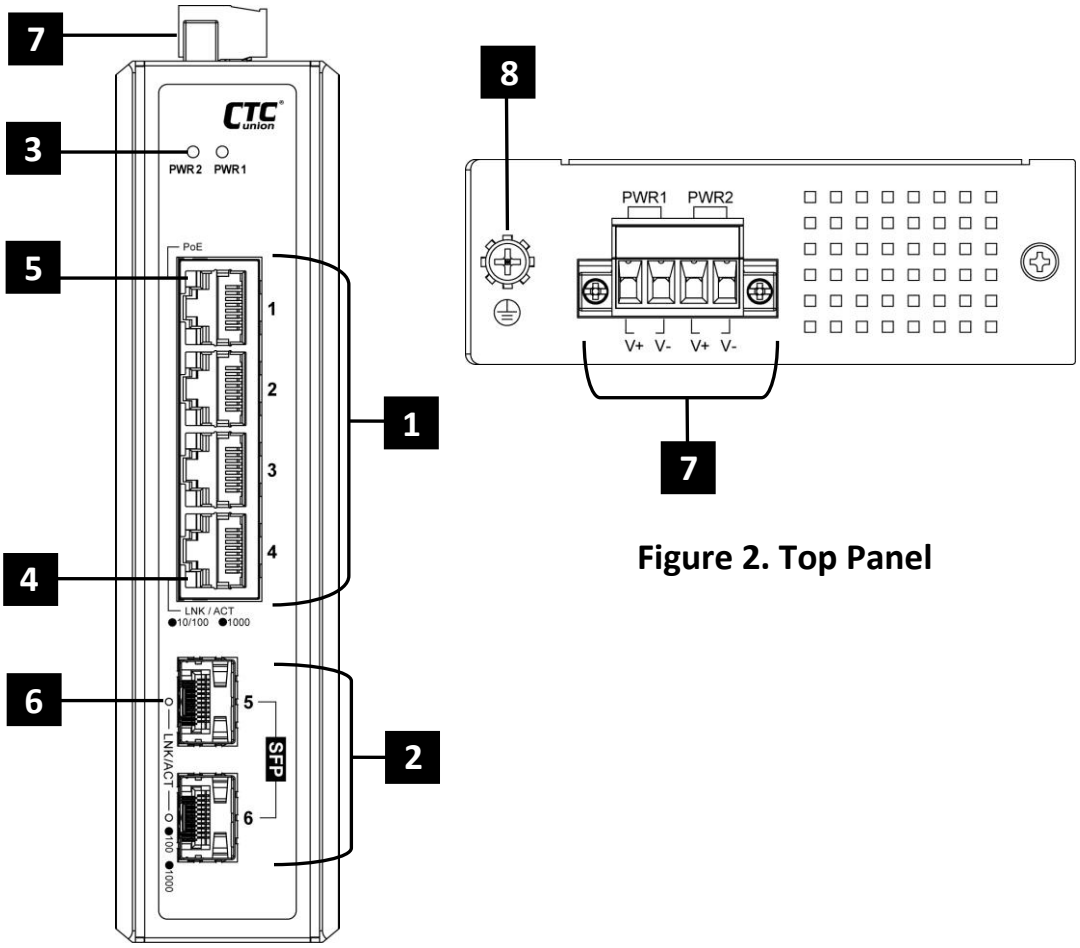


Figure 1. Front Panel

Figure 2. Top Panel

No.	Description
1	RJ-45 LAN ports (labeled 1~4)
2	Fiber optic SFP slots (labeled SFP 5~6)
3	Power 1 & 2 LED indicators
4	Speed & Link/ACT LED indicators for RJ-45 LAN ports
5	PoE LED indicators
6	Link/ACT LED indicators for fiber optic SFP slots
7	Power 1 & 2 terminal block
8	Earth grounding connection

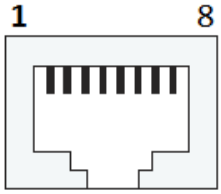
LAN and Fiber Ports

IGS-402CS-4PH(E)24 models have 4 LAN ports (labeled 1~4) and 2 fiber ports (SFP-based, labeled SFP 5~6) on the front panel. The LAN ports that utilize shielded RJ-45 connectors support 10/100/1000Mbps; while the fiber SFP ports support 100/1000Mbps.

PoE Ports

All 4 LAN ports support PoE (Power over Ethernet) per IEEE802.3af (15.4W), IEEE802.3at (30W) 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 ports may also connect to any non-PoE device 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
	100Base-TX	1000Base-T	
1	RX+	TRD 0+	V+
2	RX-	TRD 0-	V+
3	TX+	TRD 1+	V-
4	-	TRD 2+	
5	-	TRD 2-	
6	TX-	TRD 1-	V-
7	-	TRD 3+	
8	-	TRD 3-	

Recommended Power Wiring Scheme

DC Power Connection

A removable terminal block on the top panel provides two power inputs. 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. In a correct power wired system, the positive (+) DC source should connect to the positive (+) DC input on the terminal block and the negative (-) DC source should connect to the negative (-) DC input on the terminal block. See the figure provided below for the recommended DC power wiring scheme.

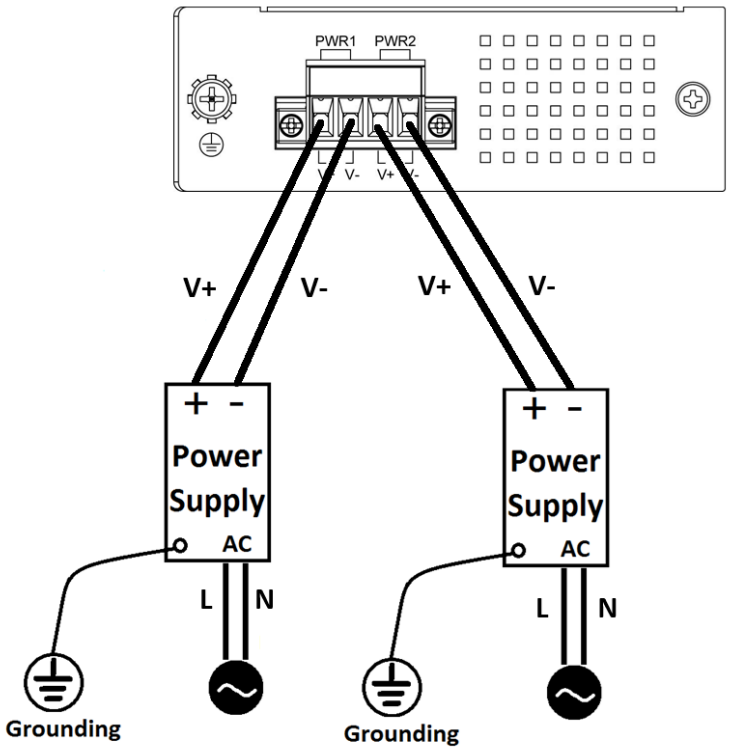


Figure 3. DC Power Connection

WRONG DC Power Connection

WARNING

In this faulty connection, one-pair of power input incorrectly swaps and one-pair of power input correctly connects to the terminal block. Using this wrong power connection, the reverse polarity protection will not take effect. As a result, this way of connection will cause significant damage to the device. This connection is PROHIBITED. Please connect the power inputs correctly as shown in the Figure 3.

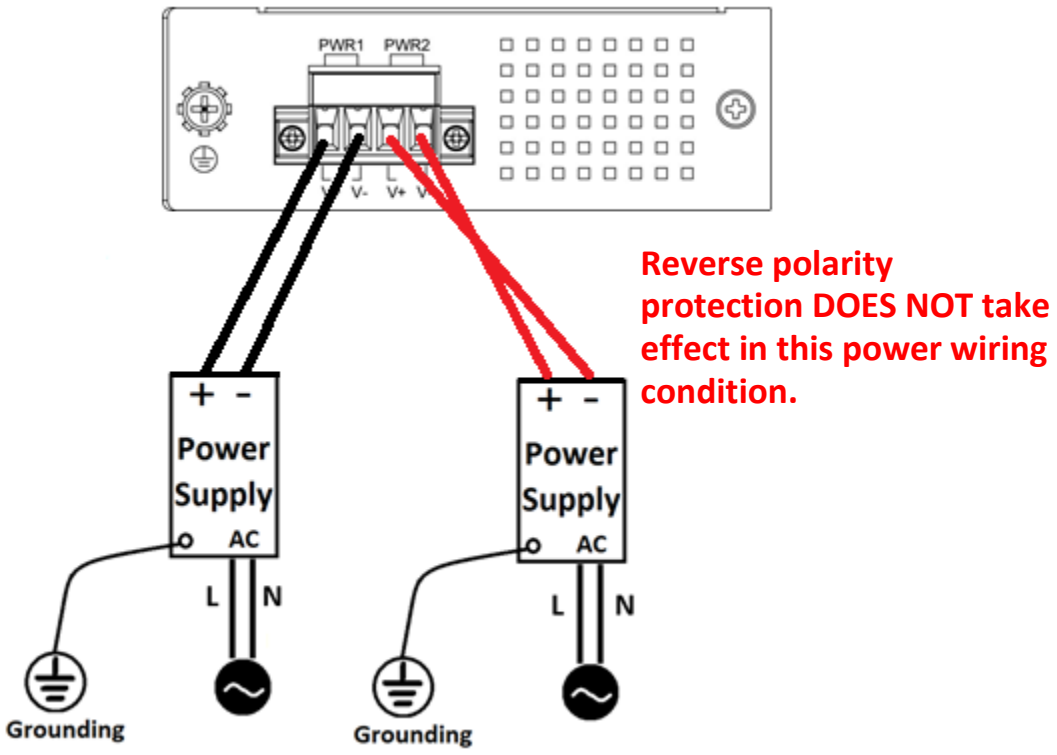


Figure 4. WRONG DC Power Connection

Recommended Ground Wiring Scheme

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.

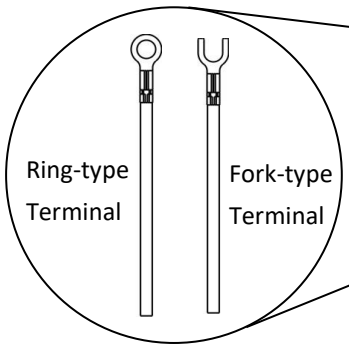


Figure 5. Grounding Cable Type

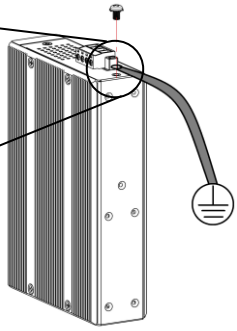


Figure 6. Grounding Connection

LED Indicators

LED	Color	Status	Definition
PWR1 PWR2	Green	On	Power is connected and active at the PWR1/PWR2 input terminal connection.
		Off	PWR1/PWR2 is not connected.
LNK/ACT LAN 1~4	Green	On	Lit when the LAN connected speed is 10/100Mbps.
		Blinking	Blinking when there is data traffic.
		Off	No Ethernet link.
	Amber	On	Lit when the LAN connected speed is 1000Mbps.
		Blinking	Blinking when there is data traffic.
		Off	No Ethernet link.
LNK/ACT SFP 5~6	Green	On	The SFP fiber link is up and operates at 100Mbps.
		Blinking	Blinking when there is data traffic.
		Off	No fiber link.
	Amber	On	The SFP fiber link is up and operates at 1000Mbps.
		Blinking	Blinking when there is data traffic.
		Off	No fiber link.
PoE	Green	On	Lit when the device is working on IEEE802.3af or, IEEE802.3at and the respective LAN port has successfully negotiated PoE and is supplying output power to the remote connected PD.
		Off	PD is not connected or output power is not provided.

Installation

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

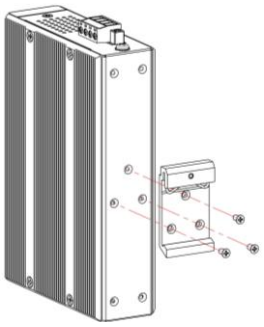


Figure 7. DIN Rail

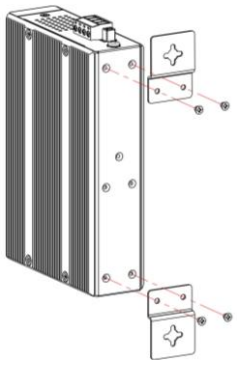


Figure 8. Wall Mount

The switch 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.

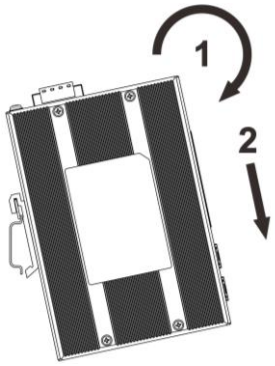


Figure 9. Mounting

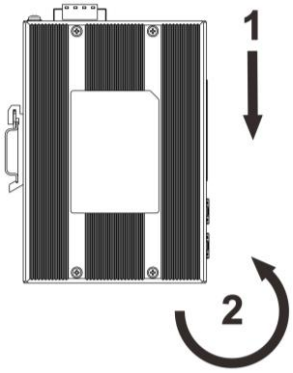


Figure 10. Un-mounting