CTC Union Technologies Co., Ltd.

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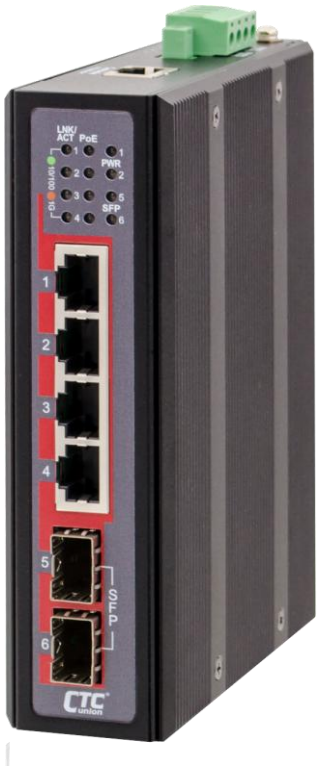
Quick Installation Guide

IGS-402CSW-4PH

IGS-402CSW-4PHE

Industrial 4 x 10/100/1000Mbps RJ-45 + 2 x 100/1000Mbps SFP with 4 x PoE Managed Switch (Hardened)



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Introduction

IGS-402CSW-4PH(E) models are managed industrial grade Gigabit PoE (Power over Ethernet) switches with 4 x 10/100/1000Base-T RJ45 ports (with PoE function) and 2 x 100/1000Base-F(X) SFP. 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) fulfill the special needs of industrial automation applications.

Package List

- IGS-402CSW-4PH(E) device
- Console cable (RJ-45 to DB-9)
- Protective caps for SFP slots
- DIN rail with screws
- Terminal block

Features

- Support 100/1000Mbps SFP slots
- Redundant dual DC inputs 48VDC (44~57VDC)
- IP30 rugged metal housing
- Wide temperature range -40°C~75°C (IGS-402CSW-4PHE)
- Support IEEE1588 PTPv2 for precise time synchronization
- Auto checking and auto reset when PoE PD fail
- μ-Ring for redundant cabling, recovery time <10ms in 250 devices
- Console, Telnet, Web and SNMP management
- Heavy Industrial grade EMS, EMI, Railway Traffic EN50121-4, EN61000-6-2, EN61000-6-4

Access to Command Line Interface (CLI)

IGS-402CSW-4PH(E) models are managed Gigabit PoE switch devices. Initial configuration (assignment of IP address) may be accomplished via the RS-232 console and a PC or laptop running terminal emulation software or via RJ45 Ethernet port running Telnet or SSH.

Accessing the switch via CONSOLE or Ethernet port allows the user to use Command Line Interface (CLI) to manage and configure the device. This management method is relatively useful when you lose the network connection to the device. In most configuration scenarios, the console will only be used to initially configure the IP address, so that the device may be accessed via the other methods which require working TCP/IP. See below for useful information for accessing the device via console and Telnet/SSH connection.

Console Connection

Use the provided accessory cable to connect the "CONSOLE" port to the PC terminal communications port (DB9). Run any terminal emulation program (HyperTerminal, PuTTY, TeraTerm Pro, etc.) and configure the communication parameters as follows:

Speed: 115,200
Data: 8 bits
Parity: None
Stop Bits: 1
Flow Control: None

From a cold start, the following screen will be displayed. At the "Username" prompt, enter "**admin**" with **no password**.

```
Press ENTER to get started

Username: admin
Password:
#
```

To change the default IP address to your desired one (for example, 192.168.0.10/24), issue the following commands:

```
#
# config terminal
(config)# interface vlan 1
(config-if-vlan)# ip address 192.168.0.10 255.255.255.0
```

For complete CLI operation, please refer to the operation manual.

Telnet/SSH Connection

To use Command Line Interface (CLI), you can also choose to access the device through a Telnet/SSH connection via TCP/IP network over Ethernet ports. For initial operation, use the default TCP/IP settings (10.1.1.1) to login to the device.

Default TCP/IP settings:

IP Address: 10.1.1.1
Subnet Mask: 255.255.255.0
Username: admin
Password: No password (Press "Enter" key)

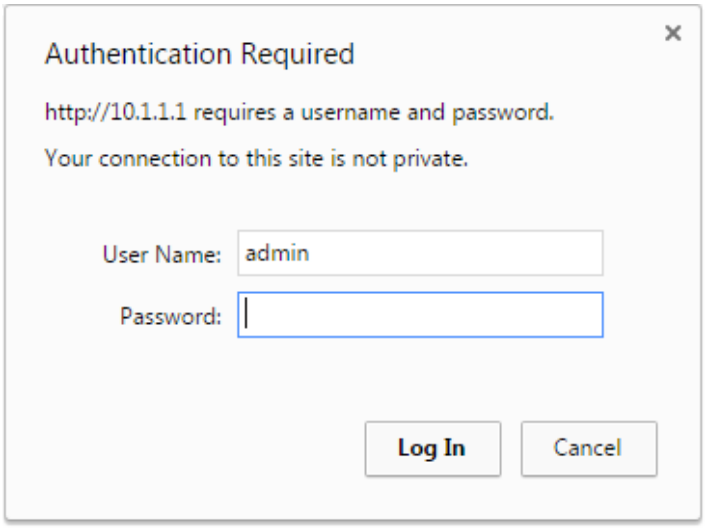
To change the default IP address to your desired one (for example, 192.168.0.10/24), issue the following commands:

```
#
# config terminal
(config)# interface vlan 1
(config-if-vlan)# ip address 192.168.0.10 255.255.255.0
```

Once the desired IP address has been configured, a web browser can be accessed and used to configure the device through a more easy-to-use GUI (graphical user interface). For complete CLI operation, please refer to the operation manual.

Access to Web-Based Management Interface

To enter the web-based management interface for the first time or after returning the device back to factory defaults, input the default IP address "**10.1.1.1**" in your web browser. Then, a standard login prompt will appear depending on the type of browser used. The example below is with Firefox browser.



Enter the factory default username "**admin**" with **no password**. After successfully entering the web based management, the Port State page will appear. For complete Web GUI operation, please refer to the operation manual.

Specifications

Ethernet Interface

- Standards: IEEE802.3 (10Base-T), 802.3u (100Base-TX), 802.3ab (1000Base-T)
- RJ-45 (shielded) Ports: 4 ports
- Speed: 10/100/1000M (Auto)

Optical Interface

- Standards: IEEE802.3u (100Base-FX), 802.3z (1000Base-X))
- SFP-Based Slots: 2 slots (Support DDMI)
- 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)
- Memory Buffer: 1.75Mbits
- MAC Table: 4K
- Maximum Frame Size: 1522Bytes

Power over Ethernet

- 4 PoE enabled ports, End Span Alternate A Mode
- Supports IEEE802.3af 15.4watts PoE per port
- Supports IEEE802.3at 30watts PoE+ per port
- Maximum 120W total PoE output power budget (30W per port)
- Positive (V+) pins 1,2; Negative (V-) pins 3,6; Data 1, 2, 3, 6, 4, 5, 7, 8

Power

- Redundant Dual Power Inputs 48VDC (44~57VDC)
- Support Power Input Reverse Polarity Protection
- Support Removable Terminal Block
- Power Consumption:

Items / Input Voltage	Total Power Consumption	Device Power Consumption	PoE Budget
50VDC	130W	8.2W	120W

Mechanical

- Water & Dust Proof: IP30 Protection
- Dimensions: 106 mm (D) x 38.6 mm (W) x 142 mm (H)
- Mounting: DIN-Rail, Wall Mount (Optional)
- Weight: 820 g

Environmental

- Operating Temperature: -10°C~60°C (IGS-402CSW-4PH); -40°C~75°C (IGS-402CSW-4PHE)
- 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
- Safety: UL/cUL 62368-1, IEC 62368-1, EN 62368-1
- 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)

- 820,215 Hours

Panels

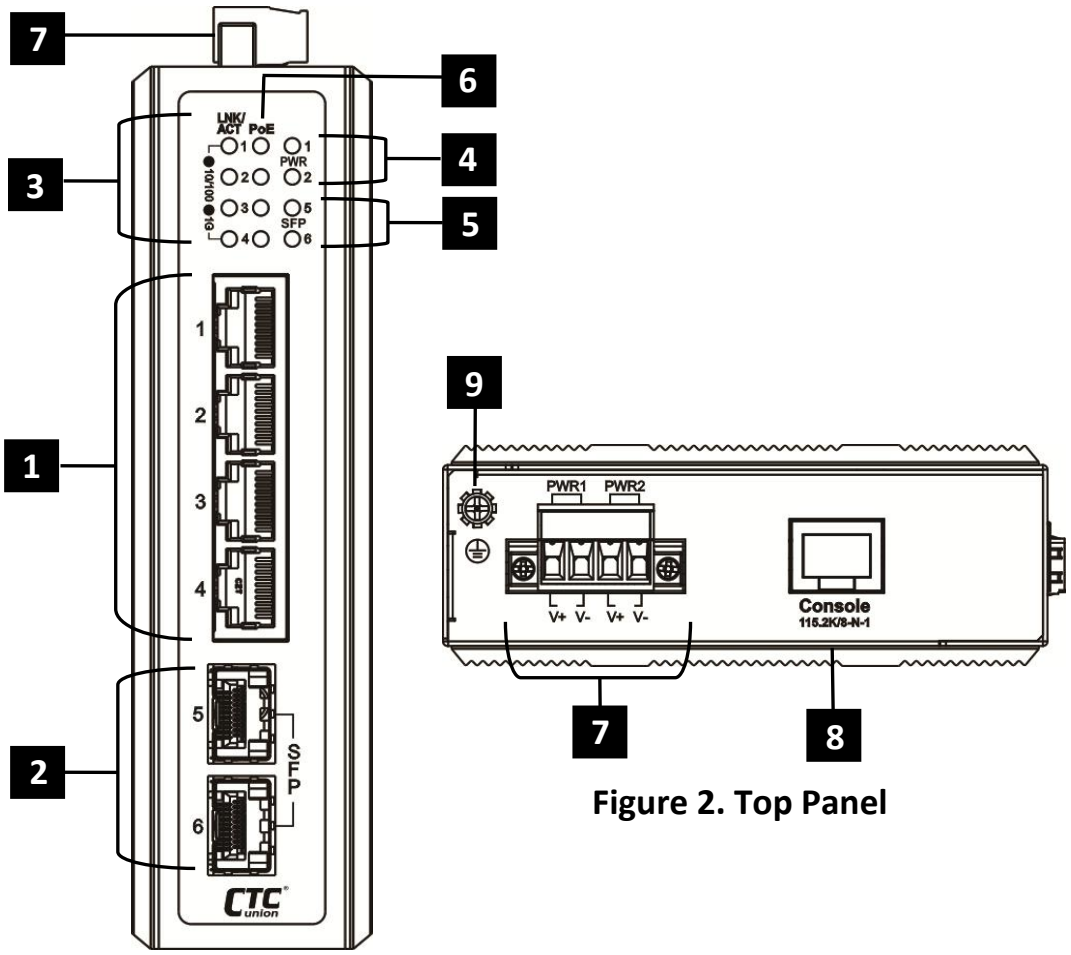


Figure 1. Front Panel

Figure 2. Top Panel

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

LAN and Fiber Ports

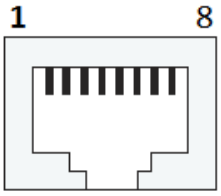
IGS-402CSW-4PH(E) models have 4 LAN ports (labeled 1~4) and 2 fiber ports (SFP based, labeled Fiber 5~6) on the front panel. The LAN ports that utilize shielded RJ-45 connectors support 10/100/1000M; while the fiber SFP ports support 100/1000M.

PoE Ports

All 4 LAN ports support PoE (Power over Ethernet) per IEEE802.3af (15.4W) or 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-	

CONSOLE Port

The RJ-45 port labeled “CONSOLE” is an RS-232 terminal port for local management. These models use a “light” CLI (Command Line Interface) in addition to a user friendly Web interface and industry standard SNMP.

One RJ-45 to DB-9 cable is provided with this device. CONSOLE port pinouts and RS-232 DB-9 connector are illustrated below together with RJ-45 to DB-9 signal mapping information. Use the supplied cable to connect the RJ-45 CONSOLE port to a console PC.

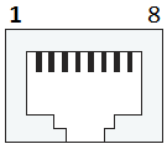


Figure 3. CONSOLE Port Pinout

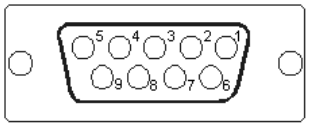


Figure 4. RS-232 (Female) Pinout

RJ-45 to DB-9 Signal Mapping

DB-9 (Female)		Direction	RJ-45	
Signal	**Pin**		**Pin**	**Signal**
RXD	2	←	3	TXD
TXD	3	→	6	RXD
GND	5	—	5	GND

Recommended Power, Alarm, 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 for recommended DC power wiring scheme.

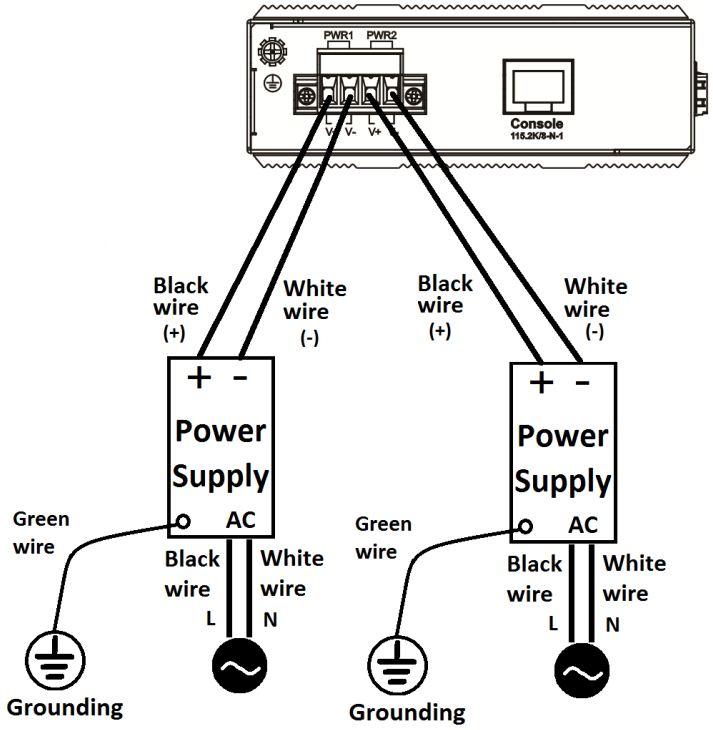


Figure 5. DC Power Connection

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.

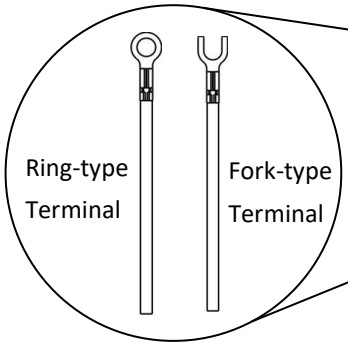


Figure 6. Grounding Cable Type

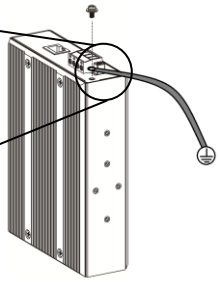


Figure 7. Grounding Connection

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.
10/100/ 1000	Green	On	Lit when the LAN connected speed is 10/100M.
		Blinking	Blinking when there is data traffic.
	Amber	On	Lit when the LAN connected speed is 1000M.
		Blinking	Blinking when there is data traffic.
	Green/ Amber	Off	No Ethernet link.
SFP	Green	On	The SFP fiber link is up and operates at 100Mbps.
		Blinking	Blinking when there is data traffic.
	Amber	On	The SFP fiber link is up and operates at 1Gbps.
		Blinking	Blinking when there is data traffic.
	Green/ Amber	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.

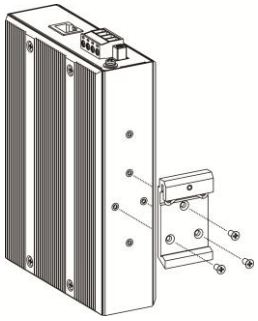


Figure 8. DIN Rail

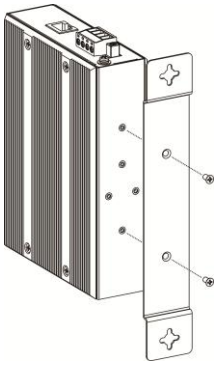


Figure 9. Wall Mount

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.

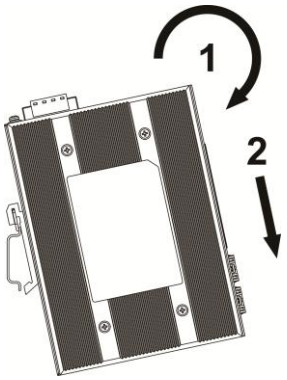


Figure 10. Mounting

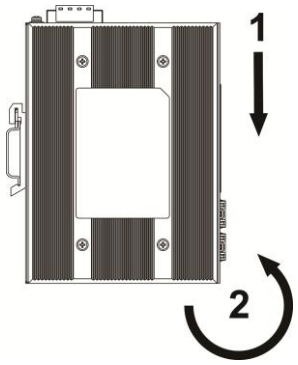


Figure 11.Un-mounting