

**Introduction**

IGS-804SM-SE-8PH(E) models are industrial grade managed Gigabit Sync Ethernet switches with PoE+ function that provide stable and reliable Ethernet transmission. 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. IGS-804SM-SE-8PH(E) models also provide Hi-pot isolation protection for Ethernet ports and power that can protect your devices from damages caused by unexpected surges. 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-804SM-SE-8PH(E) with terminal block
- Console cable (RJ-45 to D-B9)
- CD (User Manual, Smart Config, MIB File)
- Quick Installation Guide
- Din Rail with screws
- Protective caps for SFP ports

**Features**

- Redundant dual 48VDC or -48VDC power
- Support negative power input with isolated RS-232 console port
- IP30 rugged metal housing & fanless
- Wide temperature range -40°C~75°C (IGS-804SM-SE-8PHE)
- Support IEEE1588 PTPv2 for precise time synchronization
- Console, Telnet, Web and SNMP management
- 4KV surge protection for UTP and PoE ports
- 2.25K VDC Hi-pot isolation protection for Ethernet ports and power
- Railway Traffic EN50121-4, EMS & EMI for heavy industrial environment EN61000-6-2, EN61000-6-4 & EN60950-1 for safety

**Specifications**

**Ethernet Interface**

- Standards: IEEE802.3 (10Base-T), 802.3u (100Base-TX), 802.3ab (1000Base-T)
- RJ-45 (shielded) Ports: 8
- Speed: 10/100/1000M (Auto)

**Optical Interface**

- Standards: IEEE802.3u (100Base-FX), 802.3z (1000Base-X)
- SFP-based slots: 4
- Speed: 100/1000M (Manual)

**Switch Features**

- Store & Forward Switch
- Supports IEEE802.3x Flow Control
- Auto MDI/MDI-X
- Duplex: Full/Half (Auto-negotiation per IEEE802.3u)
- Switching Fabric: 24Gbps (Non-blocking)
- Memory Buffer: 512K Bytes
- MAC Table: 8K
- MTU: 9600 bytes

**Power over Ethernet**

- 8 x PoE enabled ports, End Span, Alternate A Mode
- Supports IEEE802.3af 15.4watts PoE per port
- Supports IEEE802.3at 30watts PoE+ per port (240W budget)
- Positive (V+) pins 1, 2; Negative (V-) pins 3, 6; Data 1, 2, 3, 6, 4, 5, 7, 8

# Quick Installation Guide

## IGS-804SM-SE-8PH(E)

Industrial 8 X 10/100/1000Base T(X) + 4 X 100/1000Base-X SFP Slots Managed Sync Ethernet Switches (Hardened) with 8 X PoE+



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To download this QIG or a more complete user manual, please visit  
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**Specifications (cont.)**

**Power**

- Absolute Input Range: 48VDC (44V~57VDC), -48VDC (50V~57V is recommended for IEEE802.3at PoE 30W applications)
- Support negative power input with isolated RS-232 console port
- Support Power Input Reverse Polarity Protection
- Support Dual Power Inputs
- Removable terminal block connectors
- Power Consumption:

Input Voltage	Items	Total Power Consumption	Device Power Consumption	PoE Budget
50VDC		253.5W	13.5W	240W

**Mechanical**

- Water & Dust Proof: IP30 Protection
- Dimensions: 116 mm (D) x 91 mm (W) x 157 mm (H)
- Mounting: DIN-Rail, Wall Mount (Optional)
- Weight: 760 g

**Environmental**

- Operating Temperature: -10°C~60°C; -40°C~75°C (IGS-804SM-SE-8PHE)
- Storage Temperature: -40°C~85°C
- Humidity: 5%~95% (Non-condensing)

**Certifications**

- CE, FCC
- 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: EN60950-1
- 4KV surge protection for UTP and PoE ports
- Hi Pot Protection: DC 2.25KV for power to chassis ground, Ethernet ports to chassis ground
- Shock: EN60068-2-27
- Vibration: EN60068-2-6
- Freefall: EN60068-2-32
- MTBF (MIL-HDBK-217): 564,484 Hours

**Panels**

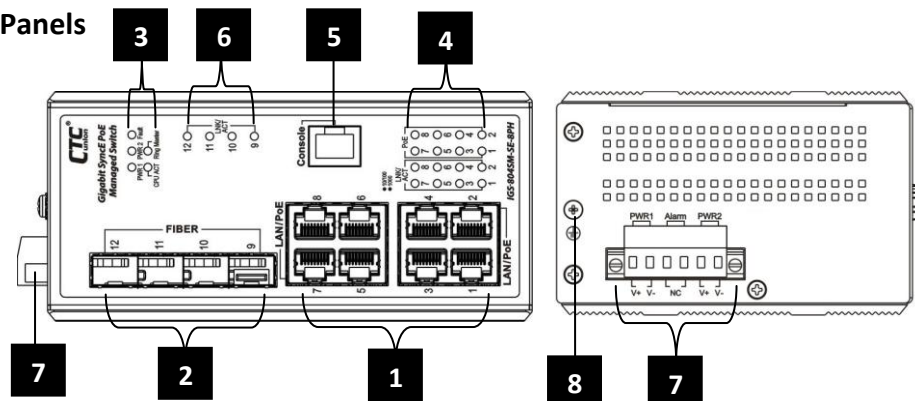


Figure 2. Top Panel

No.	Description	No.	Description
1.	UTP/PoE RJ-45 ports	5.	Console port (RJ-45 to DB-9)
2.	Fiber optic SFP slots	6.	Link/ACT LED indicators for fiber optic ports
3.	Power, Ring, CPU ACT, Fault LED indicators	7.	Terminal block
4.	Link/ACT, Speed & PoE LED indicators for UTP RJ-45 port	8.	Earth grounding connection

**Connections**

**LAN and Fiber Connection**

IGS-804SM-SE-8PH(E) models have 8 UTP LAN ports (labeled 1~8) and 4 fiber ports (SFP based, labeled Fiber 9~12) 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**

8 UTP LAN ports (labeled 1~8) 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**

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-	

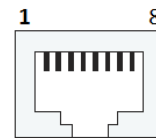


Figure 3. RJ-45 Ethernet Port Pinouts

Figure 4. RJ-45 Ethernet & PoE Pin Assignments

**Console Port**

The RJ-45 port labeled "Console" is an RS-232 terminal port for local management. These models use a CLI (Command Line Interface) in addition to a user friendly Web interface and industry standard SNMP. See page 6 for basic CLI and Web operation.

One RJ-45 to DB-9 cable is provided with this device. Console port pinouts (Figure 5) and RS-232 DB-9 (Figure 6) 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.

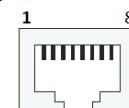


Figure 5. Console Port Pinout

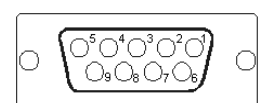


Figure 6. RS-232 (Female) Pinout

### 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

The dual power supplies of this device are completely isolated which means your PC management device connected via the console port will not be damaged while the device is powered up using negative -48VDC power.

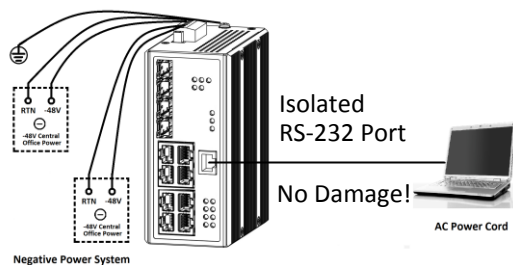


Figure 7. RS-232 Port with Isolation Protection

### Recommended Power, Alarm, Grounding Wiring Scheme DC Power Connection

A removable terminal block on the top panel provides both power and alarm 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 8 provided below for recommended DC power wiring scheme.

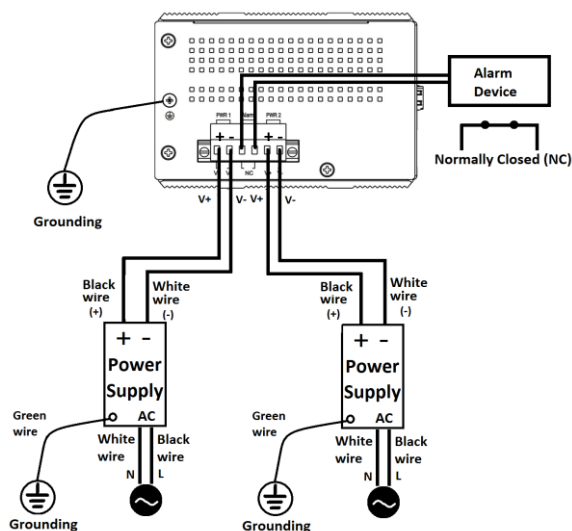


Figure 8. Recommended DC Power Wiring

### Alarm Relay Connection

The alarm relay contact can be wired into an alarm circuit which senses an alarm condition when the contact is broken. The alarm relay is normally closed when there is no alarm condition. The alarm conditions are user programmable through management to include power, link faults or other fault conditions. Please note that the alarm relay contact can only support 1A current at 24VDC. Do not apply voltage and current that exceed these specifications.

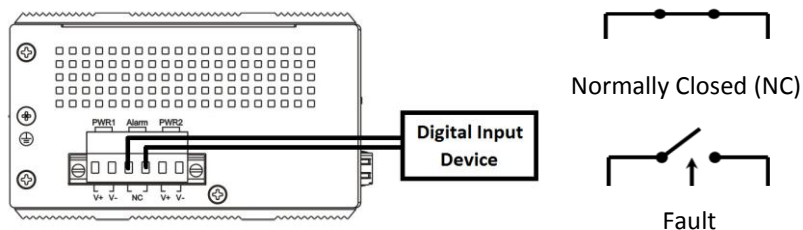


Figure 12. Alarm Relay Wiring

### CLI & Web Basic Operation

IGS-804SM-SE-8PH(E) models are managed Gigabit Sync Ethernet switch devices with PoE+ function. Initial configuration (assignment of IP address) may be accomplished via the RS-232 console and a PC or laptop running terminal emulation software. Configure the terminal as follows:

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

IGS-804SM-SE-8PH(E) models 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.

Using the provided console cable, connect the RJ-45 to the "Console" port and the DB9 to PC COM port. Apply power to the switch. At the "Username:" prompt, enter 'admin' (lower case, no quotes). Just **press Enter when prompted for password.**

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

```
Example: sets VID 1 to 192.168.0.250, subnet 255.255.255.0)
# config terminal
(config)# interface vlan 1
(config-if-vlan)# ip address 192.168.0.250 255.255.255.0
Then, press Enter.
```

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

### Negative DC Power Connection

In some telecom applications, users may need to use negative DC power to prevent the electrical magnetic interference. One power supply is enough to power up the device. If two power supplies are used, the device provides power redundancy function.

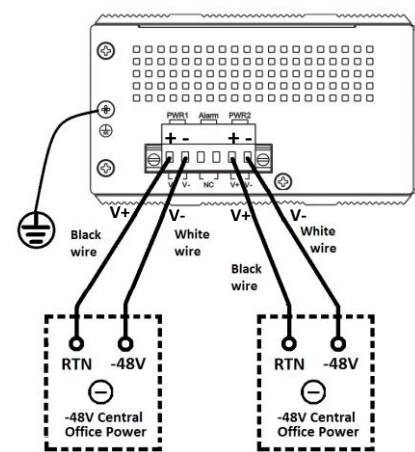


Figure 9. Recommended Negative DC Power Wiring

### Earth Ground Connection

Prior to connecting to the power, it is important to connect the ground wire to the earth. An earth ground connector is provided on the top panel with an earth ground sign next to it. 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.

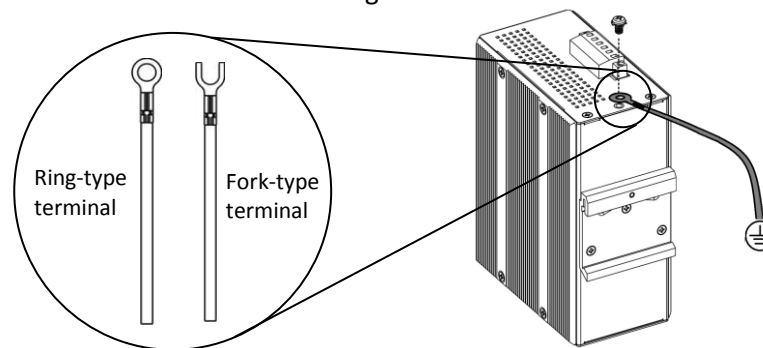


Figure 10. Grounding Cable Type

Figure 11. Grounding Connection

**ATTENTION:** It is important to mount this product on the well-grounded surface before using it to reduce unexpected noises or injuries.

### 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.
Fault	Amber	On	When one or more of the programmable alarm conditions is active.
		Off	Normal operation without faults. Alarm conditions are all disabled.
CPU ACT	Green	On	Lit during normal use, indicating a healthy condition of the running CPU.
Ring Master	Yellow	On	Lit when this unit is the 'master' in a ring and all units are configured for u-Ring or ERPS.
FIBER LINK/ACT	Green	On	The SFP fiber link is up.
		Blinking	Blinking when there is data traffic.
LAN LINK/ACT	Green	On	The connected LAN speed is 10M or 100M.
		Blinking	Blinking when there is Ethernet traffic.
		Amber	The connected LAN speed is 1000M.
PoE	Green	On	The respective LAN port has successfully negotiated PoE and is supplying output power to the remote connected PD.
		Blinking	One of the PoE faults (overload, short circuit, port failure at startup) occurs.
		Off	PD is not connected or output power is not provided.

### Installation

The switch comes with both wall mount and DIN rail hardware brackets. When installing the DIN rail bracket, be sure to correctly align the orientation pin.

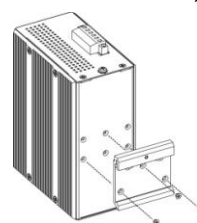


Figure 13. DIN Rail

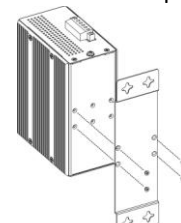


Figure 14. Wall Mount

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.

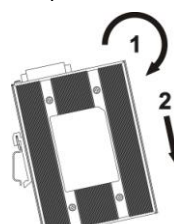


Figure 15. Mounting

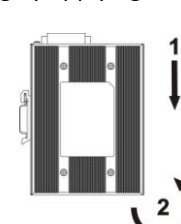


Figure 16. Un-mounting