CTC Union Technologies Co., Ltd.
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Quick Installation Guide

IQS-402XSM

Industrial 4 x 10M/100M/1G/2.5G Base-T RJ-45 +
2 x 100M/1G/2.5G/10G Base-X SFP Managed Switch

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CTC Union Technologies Co., Ltd.
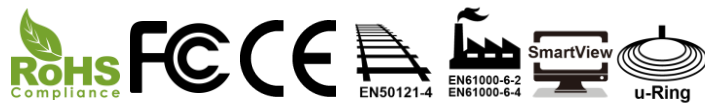Far Eastern Vienna Technology Center
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Introduction

IQS-402XSM models are managed industrial grade Gigabit switches with 4 x 10M/100M/1G/2.5G RJ-45 ports and 2 x 100M/1G/2.5G/10G SFP+ slots. Housed in rugged DIN rail or wall mountable enclosures with fanless design, these switches are designed for heavy-duty applications and harsh environments such as industrial factory automation and intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications.

Package List

- IQS-402XSM device
- Protective caps for SFP+ slots
- Din rail with screws
- Terminal block

Features

- 4 x 10M/100M/1G/2.5G RJ-45 + 2 x 1G/2.5G/10G SFP+ Slots
- Redundant 12/24/48VDC power input
- Provides 3 u-ring instances that each can support u-Ring, u-Chain or Sub-Ring type for flexible uses
- Software upgrade via TFTP and HTTP, redundant firmware to avoid upgrade failure
- CLI, Web-based management, SNMP v1/v2c/v3, SSH for management
- EN50121-4, EN61000-6-2, EN61000-6-4, CE, FCC Certified

Access to Command Line Interface (CLI)

IQS-402XSM models are managed switch devices. Initial configuration (assignment of IP address) may be accomplished via RJ45 Ethernet port running Telnet or SSH.

Accessing the switch via Ethernet port allows the user to use Command Line Interface (CLI) to manage and configure the device. This management method is relatively useful when the IP address is known or is factory default. In most configuration scenarios, the device may only be accessed via working TCP/IP. See below for useful information for accessing the device via Telnet/SSH connection.

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:

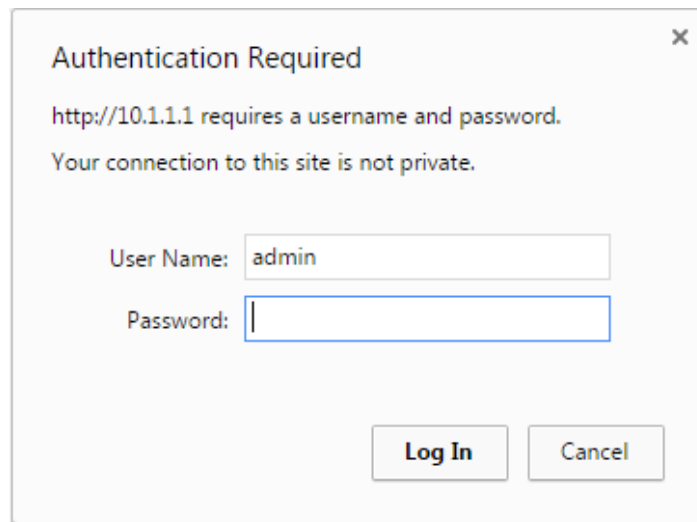|	
IP Address:	**10.1.1.1**
Subnet Mask:	**255.255.255.0**
Username:	**admin**
Password:	**No password (Press "Enter" key)**

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), 802.3bz (2.5GBase-T)
- RJ-45 (shielded) Ports: 4 ports
- Speed: 10M/100M/1000M/2.5G (Auto)

Optical
- Standards: 802.3z (1000Base-X) , 802.3cb (2.5GBase-X), 802.3ae (10Gbits Ethernet over Fiber)
- SFP-Based Slots: 2 slots (Support DDMI)
- Speed: 100M/1G/2.5G/10Gbps

Switch Features
- Store & Forward Switch
- Supports IEEE802.3x Flow Control
- Auto MDI/MDI-X
- Duplex: Full/Half (Auto-negotiation per IEEE802.3u)
- Switching Fabric: 60Gbps (Non-blocking), Full wire speed
- Memory Buffer: 512K Bytes
- MAC Table: 8K
- MTU: 9600 bytes

Power
- Redundant dual 12/24/48VDC (9.6~60VDC) power inputs
- Support Power Input Reverse Polarity Protection
- Support Dual Power Inputs
- Support Removable Terminal Block
- Consumption: 11.7W (12VDC), 12.3W (24VDC), 14W (48VDC)

Mechanical
- Water & Dust Proof: IP30 Protection
- Dimensions: 127.6mm (D) x 48.6 mm (W) x 160 mm (H)
- Mounting: DIN-Rail, Wall Mount (Optional)
- Weight: 1530 g

Environmental
- Operating Temperature: -10°C~60°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
- 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: EN62368-1 (Pending)
- Shock: IEC 60068-2-27
- Freefall: IEC 60068-2-31
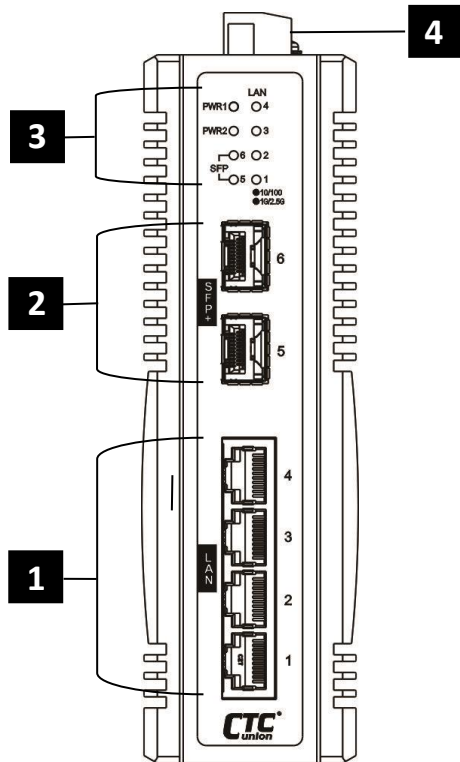- Vibration: IEC 60068-2-6

MTBF (MIL-HDBK-217)
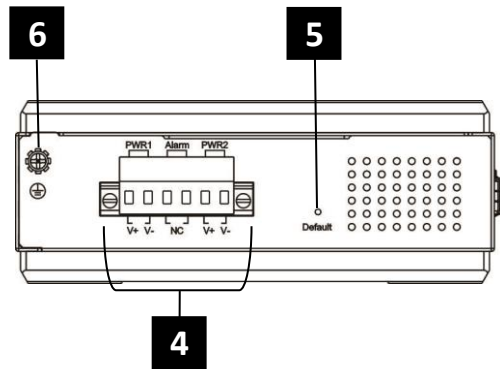- 588,603 Hours

Panels

Figure 1. Front Panel

Figure 2. Top Panel

No.	Description
1	10M/100M/1G/2.5G RJ-45 ports
2	100M/1G/2.5G/10G SFP+ slots
3	Power, LAN & Fiber LED indicators
4	Terminal block for power and alarm connection
5	Reset-to-default push button
6	Earth grounding connection

LAN and Fiber Ports

IQS-402XSM 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 10M/100M/1G/2.5G; while the fiber SFP ports support 100M/1G/2.5G/10G.

Recommended Power, Alarm, Ground 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 provided below for recommended DC power wiring scheme.
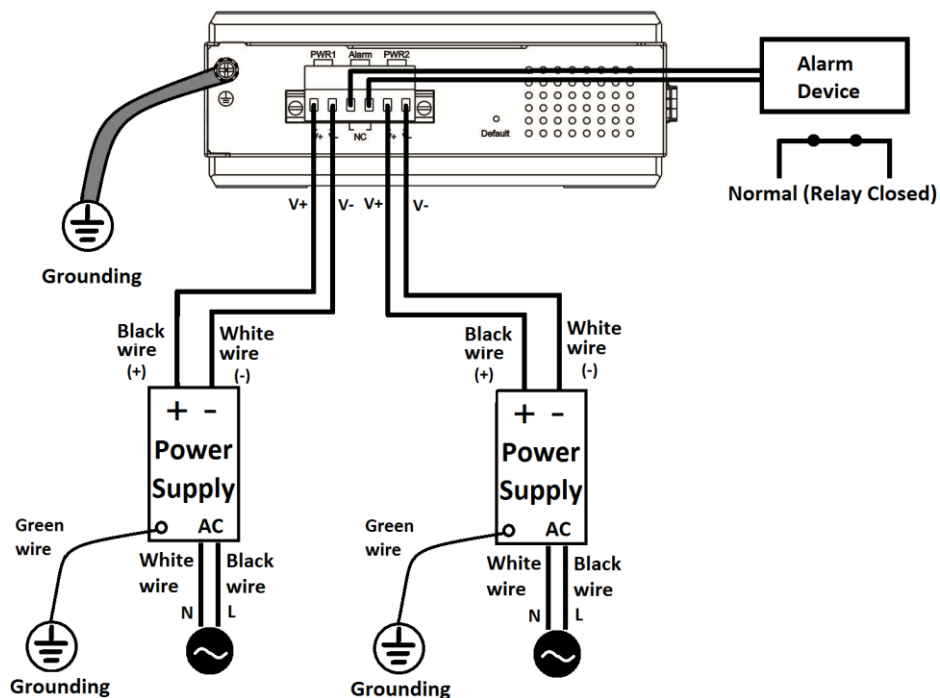

Figure 3. DC Power Connection

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.
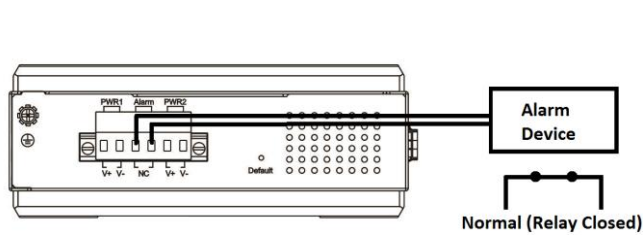
Normal (Relay Closed)

Fault (Relay Open)

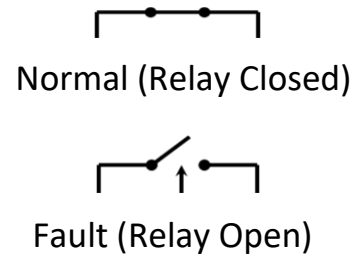**Figure 4. Alarm Relay Wiring**   **Figure 5. Alarm Relay Circuit**

Earth Ground Connection

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

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.

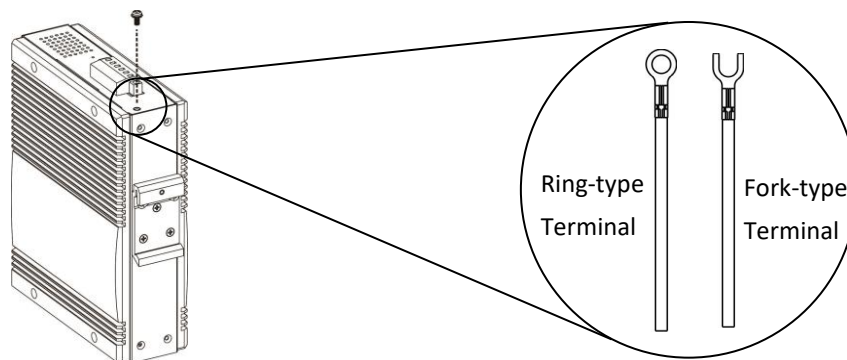3. Use a screwdriver to fasten the grounding screw.

Ring-type Terminal   Fork-type Terminal

Figure 6. Grounding Connection   **Figure 7. Grounding Cable Type**

LED Indicators

LED	Color	Status	Meaning
PWR	Green	On	The switch is receiving power.
		Off	The switch does not receive power or is in standby mode.
LAN 1~4	Amber	On	When the LAN port is up and operating at 1Gbps or 2.5Gbps.
		Blinking	The LAN port is receiving and transmitting traffic.
		Off	The LAN port link is down.
	Green	On	When the LAN port is up and operating at 10Mbps or 100Mbps.
		Blinking	The LAN port is receiving and transmitting traffic.
		Off	The LAN port link is down.
SFP+ 5~6	Green	On	The fiber port link is up.
		Blinking	The fiber port is receiving and transmitting traffic.
		Off	The fiber port link is down.

Reset Push-Button

The "Reset" push-button provides the following two functions:

Function	Press and hold for~	LED Status	Description
Reboot	1~6 seconds	PWR LED blinks	Using a ball-point pen, press the "Reset" button and hold for 1~6 seconds then release. The switch will clear all unsaved settings and restart.
Reset to factory defaults	> 6 seconds	PWR LED blinks rapidly	Using a ball-point pen, press the "Reset" button and hold for 6 seconds or longer then release to set running configurations to factory defaults, including the original factory default IP address. If the IP address of the switch is unknown, it may be necessary to do a factory default reset. The IP address will then be the known default.

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.
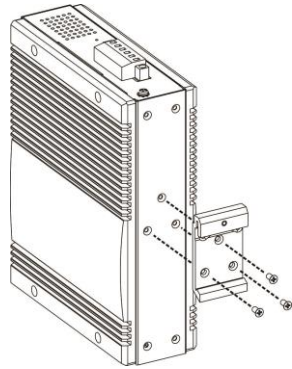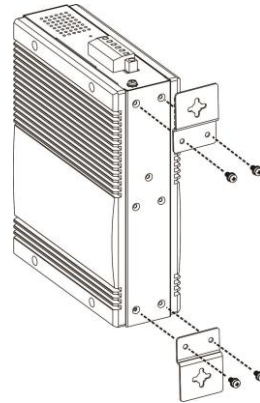

Figure 8. DIN Rail

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.
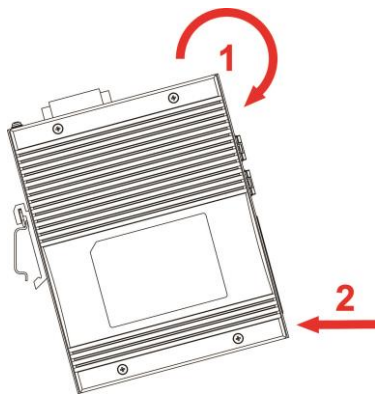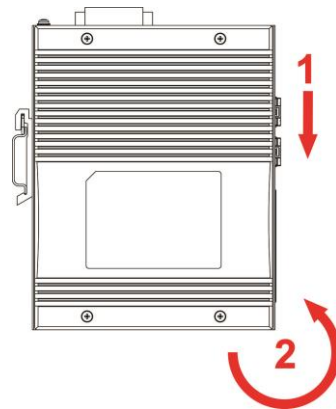

Figure 10. Mounting

Figure 11. Un-mounting