KGS-0840

Industrial 8-Port Gigabit Ethernet Switch

Installation Guide

DOC.141118

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TRADEMARKS

Ethernet is a registered trademark of Xerox Corp.

FCC NOTICE

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including the interference that may cause undesired operation.

CE NOTICE

Marking by the symbol indicates compliance of this equipment to the EMC directive of the European Community. Such marking is indicative that this equipment meets or exceeds the following technical standards:

EMC Class A
IEC 61000-6-4
EN55022
CISPR 22
- IEC 61000-3-2
- IEC 61000-3-3

IEC 61000-6-2
EN 55024
CISPR 24
- IEC 61000-4-2
- IEC 61000-4-3
- IEC 61000-4-4
- IEC 61000-4-5
- IEC 61000-4-6
- IEC 61000-4-8
- IEC 61000-4-11

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1. Introduction

The switch provides eight 10/100/1000Mbps copper ports for connections to Ethernet, Fast Ethernet or Gigabit Ethernet devices. With the featured auto-negotiation function, the switch can detect and configure the connection speed and duplex automatically. The switch also provides auto MDI/MDI-X function, which can detect the connected cable and switch the transmission wire pair and receiving pair automatically. This auto-crossover function can simplify the type of network cables used.

For industrial environment, the device is designed with the following enhanced features exceeding that of commercial Ethernet switches:

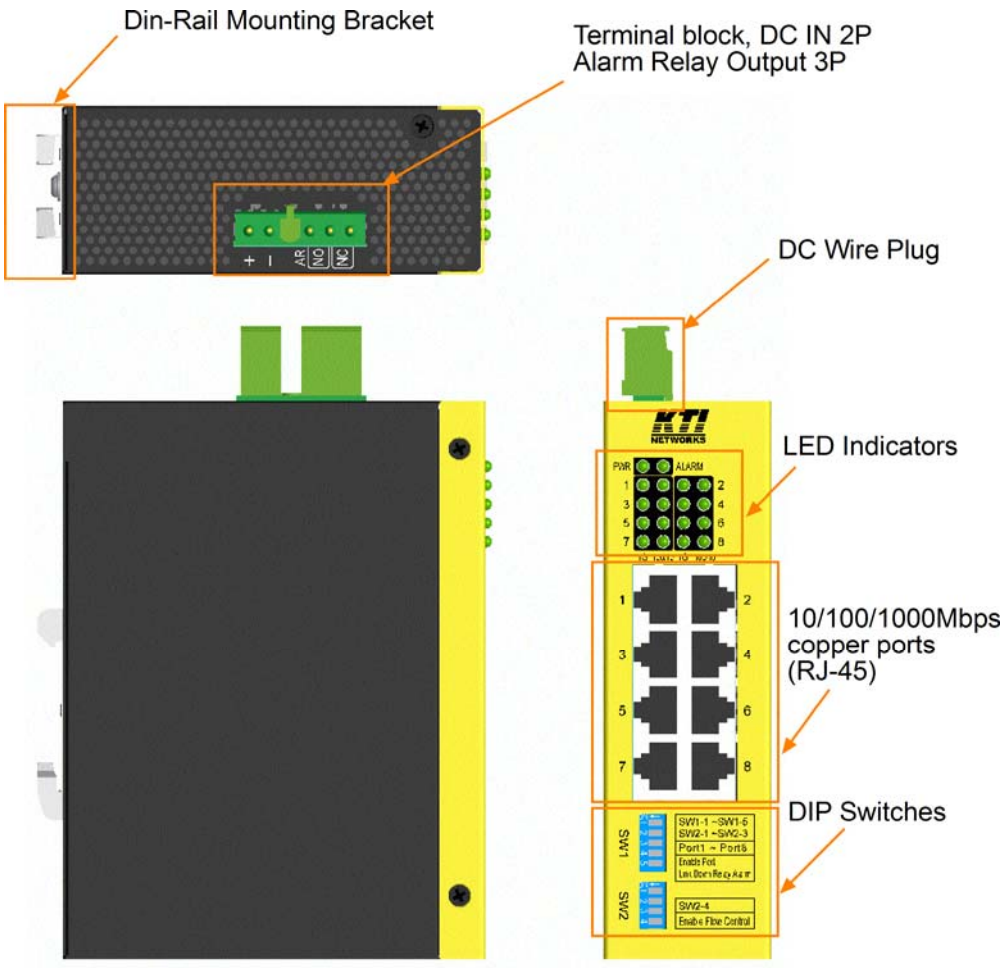
- High and wide operating Temperature
- Screw panel and DIN rail mounting support for industrial enclosure
- Industrial-rated Emission and Immunity performance

1.1 Features

- Provides 8 10/100/1000Mbps copper ports
- Auto-negotiation
- Auto MDI/MDI-X crossover function
- Supports IEEE 802.3x flow control for full duplex
- Supports back pressure flow control for half duplex
- Fully non-blocking Gigabit full wire speed switching performance
- Jumbo frame support
- Alarm relay output for power failure event and configured port link fault events
- Wide operating temperature range
- Supports Green Ethernet power saving
- Supports IEEE 802.3az Energy Efficient Ethernet
- Supports DIN-Rail mounting and panel mounting
- Industrial-rated emission and immunity performance

1.2 Product Panels

The following figure illustrates the panels of the switch:



1.3 LED Indicators

LED	Function
PWR	Power status
ALARM	Alarm relay status
1 - 8	Port 1 – Port 8
1G	1Gbps link and activity status (Port 1 - Port 8)
100/10	100Mbps or 10Mbps link and activity status (Port 1 - Port 8)

1.4 Specifications

10/100/1000 Twisted-pair Copper Port (UTP, RJ-45)

Compliance	IEEE 802.3 10Base-T, IEEE 802.3u 100Base-TX, IEEE 802.3u 1000Base-T
Connectors	Shielded RJ-45 jacks
Pin assignments	Auto MDI/MDI-X detection
Configuration	Auto-negotiation, manual settings or software control
Transmission rate	10Mbps, 100Mbps, 1000Mbps
Duplex support	Full/Half duplex
Network cable	Cat.5 UTP

Switch Functions

Forwarding & filtering	Non-blocking, full wire speed
Switching technology	Store and forward
Maximum packet length	Jumbo frame support up to 9600 bytes
MAC Addresses	8K
Packet Buffer Size	4M bits
Flow control	IEEE 802.3x pause frame base for full duplex operation Back pressure for half duplex operation
MAC Aging time	300 seconds
Storm control	Broadcast packets are dropped when more than 64 broadcast packets are received.

DC Power Input

Screwed terminal block	2P (DC+, DC-)
Operating Voltages	+8 ~ +57VDC
Power Consumption	10W max.
Power Saving Mode	Total consumption 0.28W when all ports link down
Protection	Polarity Reversal

Alarm Relay Output

Screwed terminal block	3 dry contacts (NC pair & NO pair)
Contact rating	30VDC/1A or 120VAC/0.5A
Alarm events	Power failure, configured port link faults

Mechanical

Dimension (base)	42 x 106 x 140 mm (WxDxH)
Housing	Enclosed metal with no fan
Mounting	Din-rail mounting
	Panel mounting (optional)

Environmental

Operating Temperature	Typical -30℃ ~ +70℃
Storage Temperature	-40℃ ~ +85℃
Relative Humidity	5% ~ 90% non-condensing

Electrical Approvals

FCC	Part 15 rule Class A
CE	EMC Class A
	IEC 61000-6-4
	EN55022
	CISPR 22
	IEC 61000-3-2
	IEC 61000-3-3
	IEC 61000-6-2
	EN 55024
	CISPR 24
	IEC 61000-4-2
	IEC 61000-4-3
	IEC 61000-4-4
	IEC 61000-4-5
	IEC 61000-4-6
	IEC 61000-4-8
	IEC 61000-4-11
Safety	LVD, IEC60950-1

2. Installation

2.1 Unpacking

The product package contains:

- The switch unit for Din-rail mounting
- One product CD-ROM

2.2 Safety Cautions

To reduce the risk of bodily injury, electrical shock, fire and damage to the product, observe the following precautions.

- Do not service any product except as explained in your system documentation.
- Opening or removing covers may expose you to electrical shock.
- Only a trained service technician should service components inside these compartments.
- If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your trained service provider:
- The power cable, extension cable, or plug is damaged.
- An object has fallen into the product.
- The product has been exposed to water.
- The product has been dropped or damaged.
- The product does not operate correctly when you follow the operating instructions.
- Do not push any objects into the openings of your system. Doing so can cause fire or electric shock by shorting out interior components.
- Operate the product only from the type of external power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your service provider or local power company.

2.3 Mounting the Switch to a Din-Rail

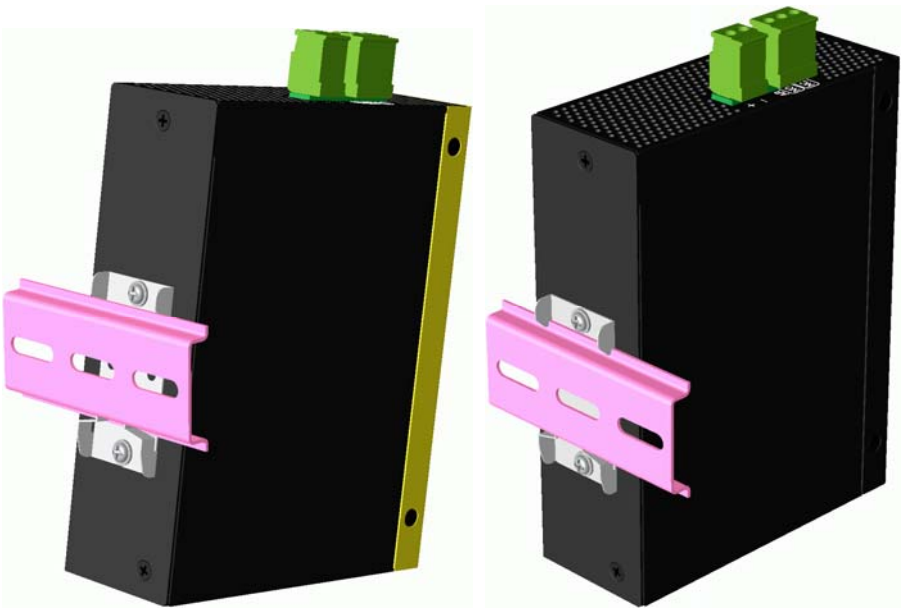
In the product package, a DIN-rail bracket is provided or has been installed for mounting the switch in a industrial DIN-rail enclosure.

The steps to mount the switch onto a DIN rail are:

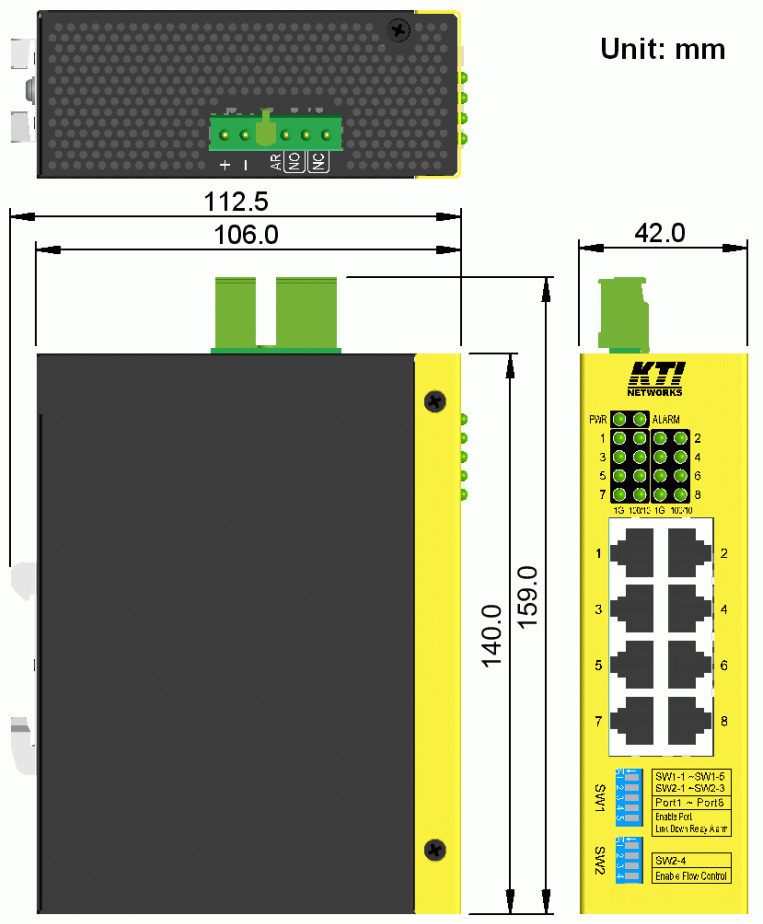
1. Install the mounting bracket onto the switch unit with screws as shown below:

2. Attach bracket to the lower edge of the DIN rail and push the unit upward a little bit until the bracket can clamp on the upper edge of the DIN rail.

3. Clamp the unit to the DIN rail and make sure it is mounted securely.



The final dimension is:



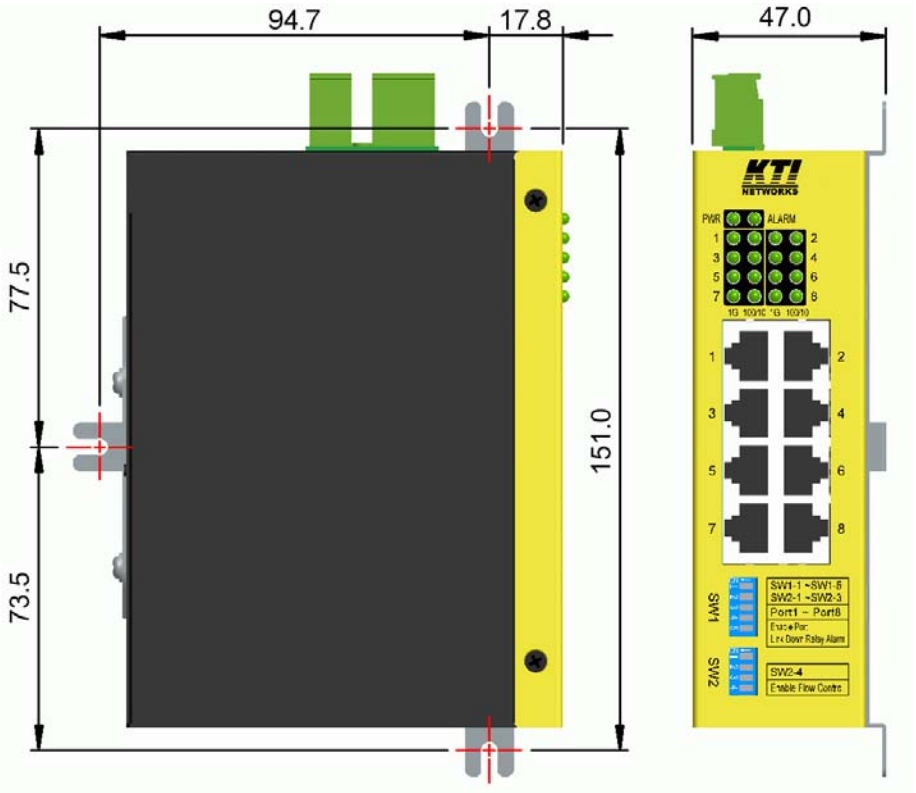
2.4 Mounting the Switch on a Panel

The switches may be provided optionally with a panel mounting bracket. The bracket supports mounting the switch on a plane surface securely. The mounting steps are:

1. Install the mounting bracket on the switch unit.

2. Screw the bracket on the switch unit.

3. Screw the switch unit on a panel and the locations for screws are shown below:



2.5 Applying Power

Power pins of the terminal block connector

Pin	1	+	DC+ Positive (+) input terminal
	2	−	DC- Negative (−) input terminal
Pin	3		NC, Reserved

DC+/- Input specifications

Working voltage range: +8V ~ +57VDC

WARNING: The -48VDC power supply is not supported.

Terminal Plug & Power Wire

A 2P terminal plugs are provided together with the switch as shown below:

Power wires: 24 ~ 12AWG (IEC 0.5~2.5mm^2)

Wire length: 1 meter max.

2.6 Alarm Relay Output

Alarm relay output is provided for reporting failure events to a remote alarm relay monitoring system. The replay output is provided with three contacts (supporting two logic types) on the terminal block connector next DC power interfaces.

Alarm Relay output pins and logic:

Pin	4	5	Alarm relay output, NO (Normal Open) contacts
	NO	NO	Open: normal, Shorted: Alarm
Pin	5	6	Alarm relay output, NC (Normal Closed) contacts
	NC	NC	Shorted: normal, Open: Alarm

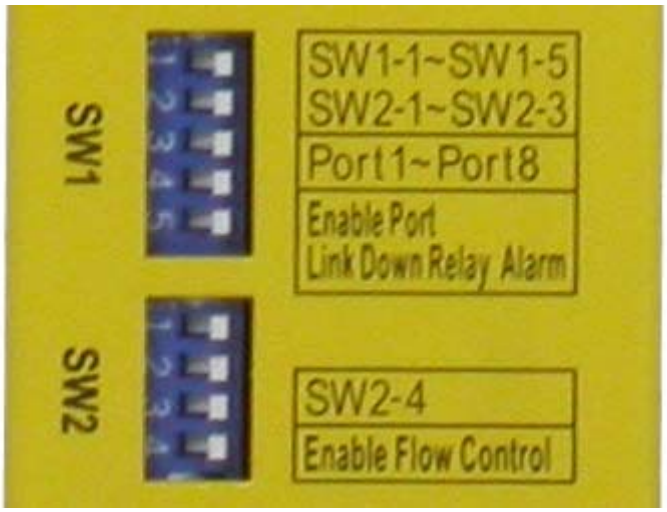
Either pair can be used depending on the logic requirement for the relay monitoring system.
Use the provided 3P terminal plug for signal wiring and plug into the contacts.

Alarm Events

- Input power failure
- Specific port link faults (The specific ports can be configured via panel switch setting, SW1-1 ~ SW1-5 & SW2-1 ~ SW2-3.)

Note: Be sure the voltage applied on the contacts is within the specification of 30VDC/1A max. or 120VAC/0.5A max.

2.7 Setting DIP Switches



Functions of SW1 & SW2:

SW1-1	ON to enable Port 1 link fault relay alarm
SW1-2	ON to enable Port 2 link fault relay alarm
SW1-3	ON to enable Port 3 link fault relay alarm
SW1-4	ON to enable Port 4 link fault relay alarm
SW1-5	ON to enable Port 5 link fault relay alarm
SW2-1	ON to enable Port 6 link fault relay alarm
SW2-2	ON to enable Port 7 link fault relay alarm
SW2-3	ON to enable Port 8 link fault relay alarm
SW2-4	ON to enable flow control for all ports

3. Making LAN Connections

3.1 10/100/1000 Copper Ports

The 10/100/1000 RJ-45 copper ports support the following connection types and distances:

Network Cables

10BASE-T:	2-pair UTP Cat. 3, 4, 5 , EIA/TIA-568B 100-ohm
100BASE-TX:	2-pair UTP Cat. 5, EIA/TIA-568B 100-ohm
1000BASE-T:	4-pair UTP Cat. 5 or higher (Cat.5e is recommended), EIA/TIA-568B 100-ohm
Link distance:	Up to 100 meters for all above

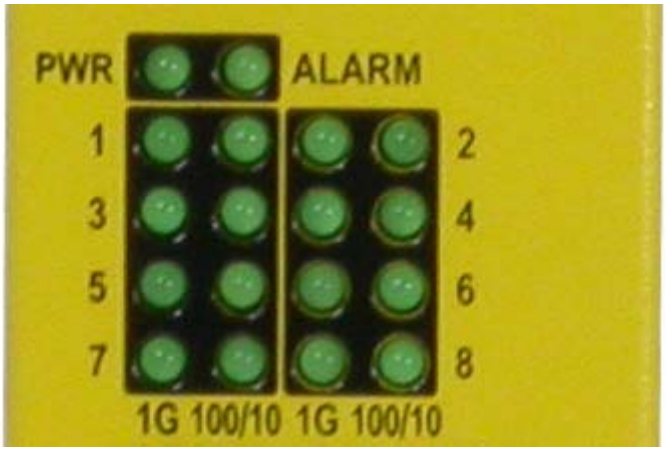
Auto MDI/MDI-X Function

This function allows the port to auto-detect the twisted-pair signals and adapts itself to form a valid MDI to MDI-X connection with the remote connected device automatically. No matter a straight through cable or crossover cable are connected, the ports can sense the receiving pair automatically and configure themselves to match the rule for MDI to MDI-X connection. It simplifies the cable installation.

Auto-negotiation Function

The ports are featured with auto-negotiation function and full capability to support connection to any Ethernet devices. The port performs a negotiation process for the speed and duplex configuration with the connected device automatically when each time a link is being established. If the connected device is also auto-negotiation capable, both devices will come out the best configuration after negotiation process. If the connected device is incapable in auto-negotiation, the switch will sense the speed and use half duplex for the connection.

3.2 LED Indication



LED	Function	State	Interpretation
PWR	Power status	ON	The power is supplied to the switch.
		OFF	The power is not supplied to the switch.
ALARM	Alarm status	ON	Alarm event occurs.
		OFF	No alarm event.
1G	Port 1Gbps link status	ON	A 1Gbps (1000Mbps) link is established on the port. (No traffic)
		BLINK	Port link is up and there is traffic.
		OFF	Port link is down.
100/10	Port 100/10M link status	ON	A 100Mbps or 10Mbps link is established on the port.
		BLINK	Port link is up and there is traffic.
		OFF	Port link is down.

Note: LED 1G and 100/10 are per port basis.