EKI-7629C

Industrial Gigabit Ethernet Switch with 8 x 10/100Base-TX Ports & 2 Combo 10/100/1000Base-TX/SFP (Mini-GBIC) Ports

User Manual

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This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.

2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.

3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.

4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.

5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Technical Support and Assistance

Step 1. Visit the Advantech web site at **www.advantech.com/support** where you can find the latest information about the product.

Step 2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
- Product name and serial number
- Description of your peripheral attachments
- Description of your software (OS, version, software, etc.)
- A complete description of the problem
- The exact wording of any error messages

Safety Instructions

1. Read these safety instructions carefully.

2. Keep this User's Manual for later reference.

3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.

5. Keep this equipment away from humidity.

6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.

7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.

8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.

10. All cautions and warnings on the equipment should be noted.

11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

12. Never pour any liquid into an opening. This may cause fire or electrical shock.

13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.

14. If one of the following situations arises, get the equipment checked by service personnel:

a. The power cord or plug is damaged.

b. Liquid has penetrated into the equipment.

c. The equipment has been exposed to moisture.

d. The equipment does not work well, or you cannot get it to work according to the user's manual.

e. The equipment has been dropped and damaged.

f. The equipment has obvious signs of breakage.

15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -40° C OR ABOVE 85° C. THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

1. To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.

2. Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

Contents

Overview

Sections include:

- Introduction
- Features
- Specifications
- Packing List
- Ordering Information
- Safety Precaution

Chapter 1 Overview

1.1 Introduction

Aside from 8 x 10/100Base-TX fast Ethernet ports, the EKI-7629C comes equipped with 2 combo 10/100/1000 Mbps RJ-45 copper ports or mini-GBIC expansion ports. Traditional RJ-45 ports can be used for uplinking wide-band paths in short distance (< 100 m), or the appropriate replaceable SFP module can be used for the application of wideband uploading and long distance transmissions to fit the field request flexibly. Also, the long MTBF (Mean Time Between Failures) ensures that the EKI-7629C will continue to operate until a Gigabit network infrastructure has been established, without requiring any extra upgrade costs.

1.1.1 The SFP Advantage

The EKI-7629C's two SFP fiber slots provide a lot of flexibility when planning and implementing a network. The slots can accept any SFP-type fiber module and these modules are designed for transmitting over distances of either 500m (multi-mode), 10km, 30km, 50km, 70km or 110km (single-mode) - and the slots support SFP modules for WDM single-fiber transmissions. This means that you can easily change the transmission mode and distance of the switch by simply pulling out the SFP module and plugging in a different module. The SFP modules are hot-swappable and plug-and-play! Also, the fact that the switch has two of these slots, means that the network manager can, for example, have one 10km module in one slot and one 110km module in the other.

1.1.2 High-Speed Transmissions

The EKI-7629C includes a switch controller that can automatically sense transmission speeds. (10/100 Mbps) The RJ-45 interface can also be auto-detected, so MDI or MDI-X is automatically selected and a crossover cable is not required. All Ethernet ports have memory buffers that support the store-and-forward mechanism. This assures that data is properly transmitted.

1.1.3 Dual Power Inputs

To reduce the risk of power failure, the EKI-7629C provides +12 ~ 48 V_{DC} dual power inputs. If there is a power failure, EKI-7629C will automatically switch to the secondary power input.

1.1.4 Flexible Mounting

EKI-7629C is extremely compact and can be mounted on a DIN-rail or a panel, so it is suitable for any space-constrained environment.

1.1.5 Advanced Protection

The power line of EKI-7629C supports up to 3,000 V_{DC} EFT protection, which secure equipment against unregulated voltage and make systems safer and more reliable. Meanwhile, 4,000 V_{DC} ESD protections for Ethernet ports make EKI-7629C more suitable for harsh environments.

1.1.6 Wide Operating Temperature

The operating temperature of the EKI-7629C is between -10 ~ 60° C (14 ~ 140° F). With such a wide range you can use the EKI-7629C in some of the harshest industrial environments that exist.

1.1.7 Easy Troubleshooting

LED indicators make troubleshooting quick and easy. Each 10/100 Base-TX port has LEDs that display the link status, transmission speed and collision status, while each combo Giga port has one LED that displays the link status. Also, the three power indicators PWR1, PWR2 and P-Fail help you onsite diagnose immediately.

1.2 Features

- Provides 8 x 10/100 Mbps Ethernet ports with RJ45 connector
- Provides 2 combo 10/100/1000 Mbps Ethernet ports/ SFP type fiber ports for optional 100Base-FX or 1000Base-SX/LX device
- Supports full/half duplex flow control
- Supports MDI/MDI-X auto crossover
- Supports surge (EFT) protection 3,000 VDC for power line
- Supports 4,000 VDC Ethernet ESD protection
- Provides broadcast storm protection
- Embedded with a switch controller, supports auto-negotiation
- Embedded with memory buffer, supports store & forward transmission
- Supports redundant +12 ~ 48 VDC power input
- Provides flexible mounting: DIN-rail, Panel Mounting
- Supports operating temperatures from -10 ~ 60° C (14 ~ 140° F)

1.3 Specifications

Communications

Compatibility	IEEE 802.3, 802.3ab, 802.3u, 802.3x, 802.3z
LAN	10/100/1000Base-TX, 100Base-FX, 1000Base-SX/LX
Transmission Distance	Ethernet : Up to 100 m (Cat.5e, Cat.6 RJ-45 cable suggested for Gigabit port) Gigabit Fiber : Up to 110 km (depends on the SFP module)
Transmission Speed	Ethernet : Up to 100 Mbps Gigabit Copper : Up to 1000 Mbps Gigabit Fiber : Up to 1000 Mbps

Interface

Connectors	8 x RJ-45 2 x mini-GBIC socket 6-pin removable screw terminal (power)
LED Indicators	Unit : PWR1, PWR2, P-Fail TX Port : Link/Active, Duplex/Collision Gigabit Port : Link/Active

Power

Power Consumption	Max. 6.5W
Power Input	2 x Unregulated +12 ~ 48 V_{DC}
Fault Output	1 Relay Output

Mechanism

Dimensions (WxHxD)	79 x 152 x 105 mm
Enclosure	IP30, Metal shell with solid mounting kits
Mounting	DIN35 rail, Wall

Protection

ESD (Ethernet)	4,000 VDC
Surge (EFT for power)	3,000 VDC
Power Reverse	YES
Overload	3.2A/60V Resetable Fuse

Environment

Operating Temperature	-10 ~ 60° C (14 ~ 140° F)
Operating Humidity	5 ~ 95% (non-condensing)
Storage Temperature	-40 ~85° C
Storage Humidity	0 ~ 95% (non-condensing)
MTBF	295,700 hrs

Certifications

Safety	UL 60950-1, CAN/CSA-C22.2 No.60950
EMC	U.S.A.: FCC Part 15 CISPR 22
	EU : EN55011, EN61000-6-4
	EN55022 Class A
	EN61000-3-2/3
	EN55024
	IEC61000-4-2/3/4/5/6/8/11
	EN61000-6-2

1.4 Packing List

- 1 x EKI-7629C Industrial Gigabit Unmanaged Ethernet Switch
- 1 x eAutomation Industrial Communication CD-ROM with software, and User Manual
- 2 x Panel Mounting Bracket and Screws
- 1 x DIN-rail Mounting Bracket and Screws
- 1 x EKI-7629C Startup Manual
    1 x DC Jack Cable PHI2.0/150mm

1.5 Ordering Information

EKI-7629C	Industrial Gigabit Ethernet Switch with 8 x 10/100Base-TX Ports & 2 Combo 10/100/1000Base-TX/SFP (mini-GBIC) Ports
SFP-GSX/LC	Pluggable LC Type Gigabit Fiber Transceiver, 1000Base-SX, 500 m
SFP-GLX/LC-10	Pluggable LC Type Gigabit Fiber Transceiver, 1000Base-LX, 10 km
SFP-GLX/LC-20	Pluggable LC Type Gigabit Fiber Transceiver, 1000Base-LX, 20 km
SFP-GLX/LC-40	Pluggable LC Type Gigabit Fiber Transceiver, 1000Base-LX, 40 km

1.6 Safety Precaution

Attention   If DC voltage is supplied by an external circuit, please use a protection device on the power supply input.

Installation

Sections include:

- LED Indicators
- Dimensions
- Mounting
- Network Connection
- Connection to a Fiber Optic Network
- Power Connection

Chapter 2 Installation

In this chapter, you will be given an overview of the EKI-7629C hardware installation procedures.

2.1 LED Indicators

There are few LEDs display the power status and network status located on the front panel of EKI-7629C, each of them has its own specific meaning as below table.

| Table 2.1: EKI-7629C LED Definition			
LED	Color	Description	
PWR1	Green	On	Power input 1 is active
		Off	Power input 1 is inactive
PWR2	Green	On	Power input 2 is active
		Off	Power input 2 is inactive
P-Fail	Red	On	Power input 1 or 2 is inactive
		Off	Power input 1 and 2 are both active, or no power input
Link/Active (G9, G10 with mini-GBIC)	Green	On	mini-GBIC port is linking
		Flashing	Data is transmitting or receiving
		Off	Not connected to network
Link/Active (G9, G10 with copper)	Green	On	Connected to 1000Mbps network
		Flashing	Data is transmitting or receiving
		Off	Not connected to 1000 Mbps network
Link/Active (1~8, 10/100TX)	Green	On	Connected to network
		Flashing	Networking is active
		Off	Not connected to network
Duplex/ Collision (1~8, 10/100TX)	Orange	On	Ethernet port full duplex
		Flashing	Collision of packets occurs
		Off	Ethernet port half duplex or not connect to network

2.2 Dimensions (units: mm)
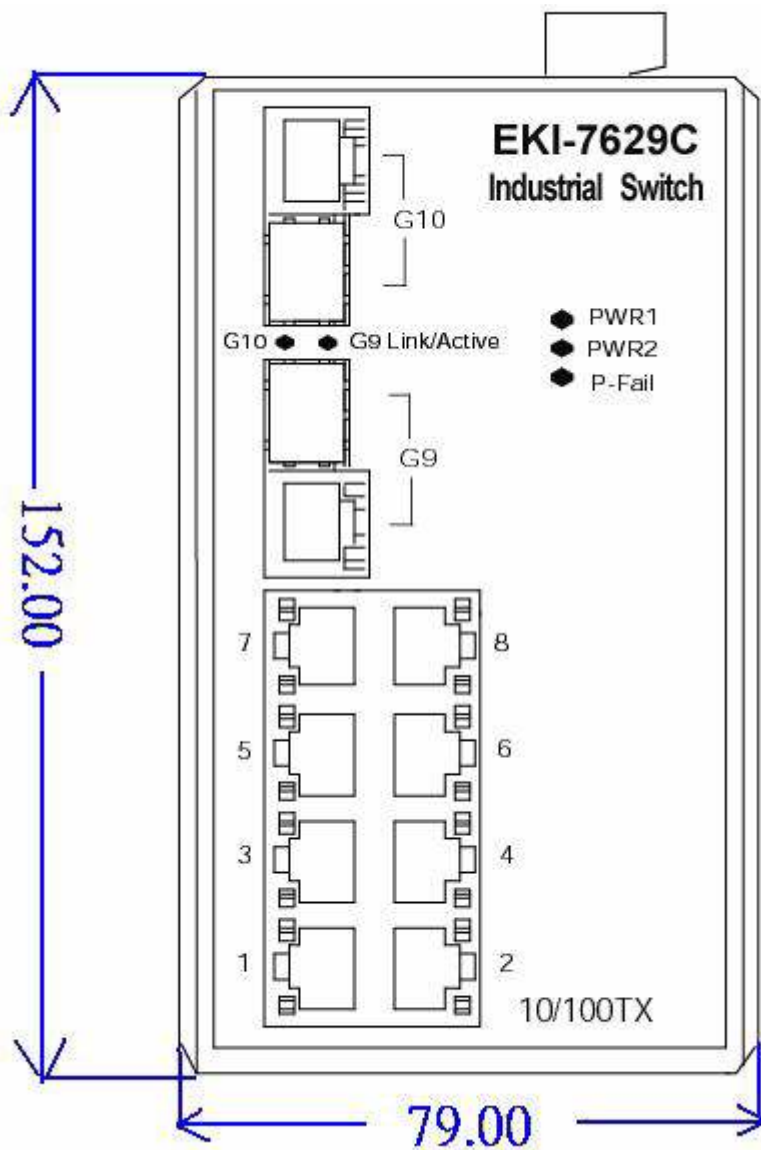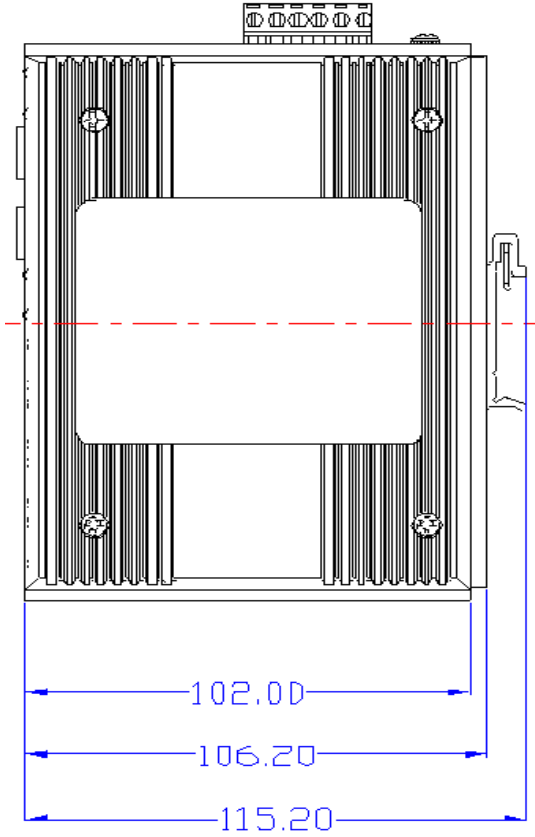

Figure 2.1: Front View of EKI-7629C

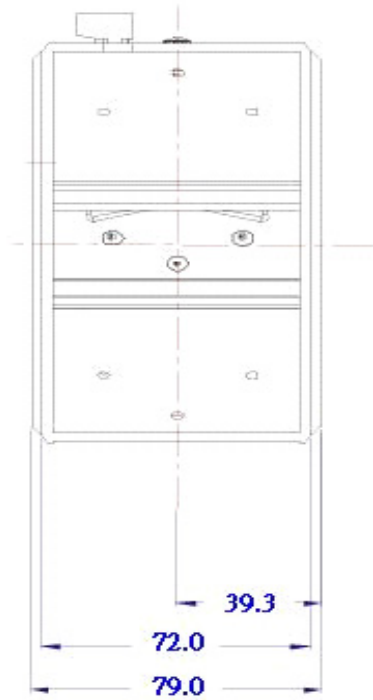*Figure 2.2: Side View of EKI-7629C*

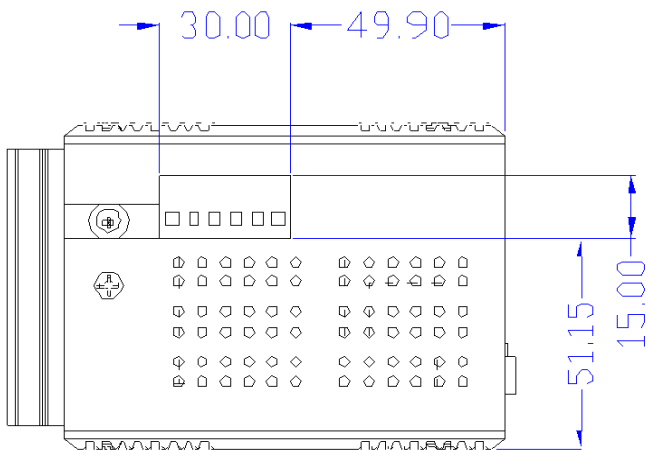**Figure 2.3: Rear View of EKI-7629C**

Figure 2.4: Top View of EKI-7629C

2.3 Mounting

The EKI-7629C supports two mounting methods: Wall & DIN-rail.

2.3.1 Wallmounting

EKI-7629C can be wallmounted by using the included mounting kit.

First, use the screws included in the package to combine the EKI-7629C and metal mounting kit.
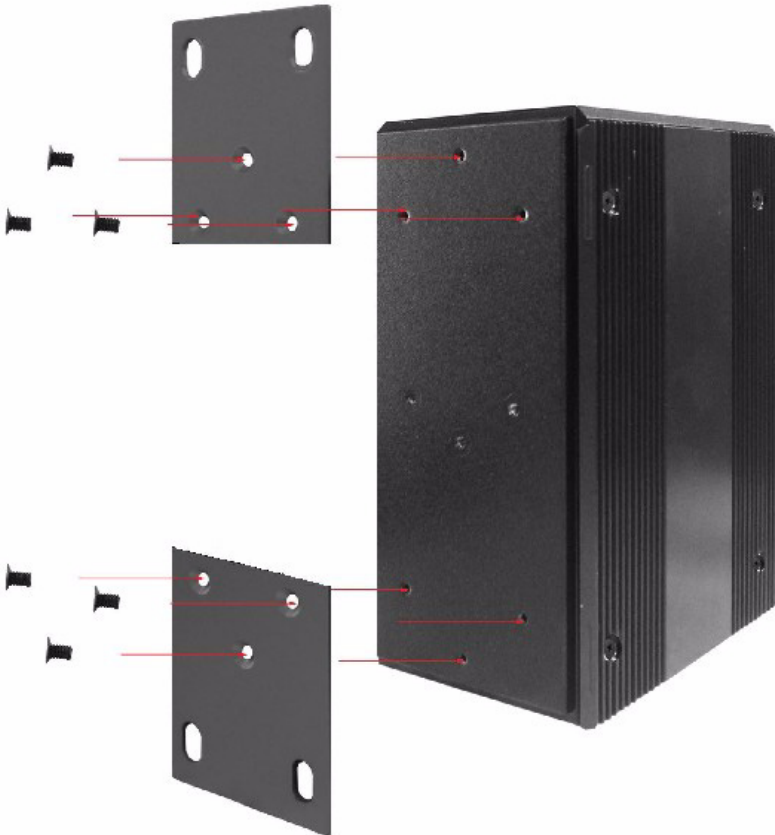

Figure 2.5: Combine the Metal Mounting Kit

Then, hang on the EKI-7629C to the nails on the wall.

2.3.2 DIN-rail Mounting

You can also mount EKI-7629C on a standard DIN-rail by below steps.

The DIN-rail kit is screwed on the industrial switch when out of factory. If the DIN-rail kit is not screwed on the industrial switch, please screw the DIN-rail kit on the switch first.
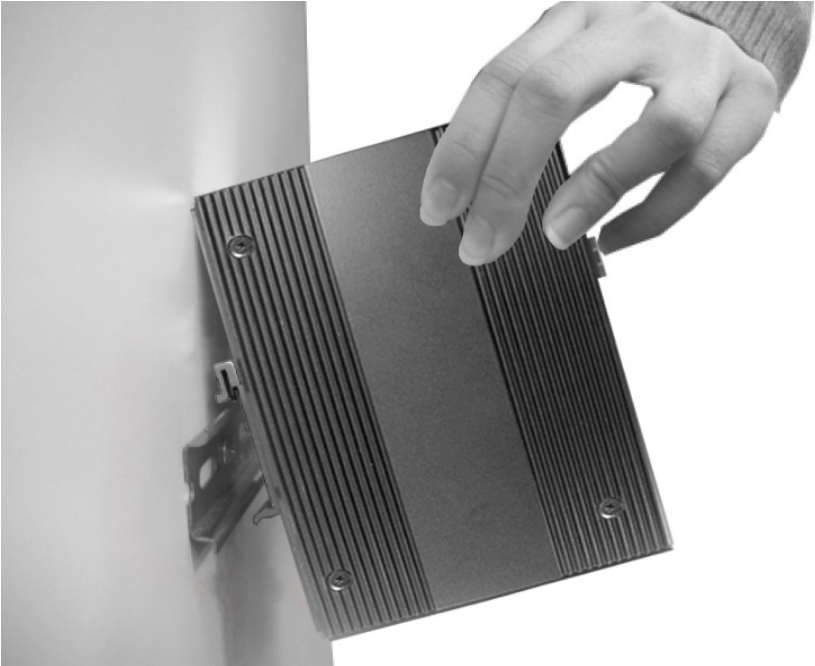

Figure 2.6: Installation to DIN-rail Step 1

First, hang the EKI-7629C to the DIN-rail with angle of inclination.

Figure 2.7: Installation to DIN-rail Step 2

2.4 Network Connection

EKI-7629C has 8 x RJ-45 ports that support connection to 10 Mbps Ethernet, or 100 Mbps Fast Ethernet, and half or full duplex operation. EKI-7629C can be connected to other hubs or switches through a twisted-pair straight through the cable or a crossover cable up to 100m long. The connection can be made from any TX port of the EKI-7629C (MDI-X) to another hub or switch either MDI-X or uplink MDI port.

EKI-7629C supports auto crossover to make networking more easy and flexible. You can connect any RJ-45 (MDI-X) station port on the switch to any device such as a switch, bridge or a router.

2.5 Connection to a Fiber Optic Network

EKI-7629C has two SFP slots for connecting to the network segment with single or multi-mode fiber. You can choose appropriate mini-GBIC module to plug into the slot. Make sure the module is aligned correctly and then slide the module into the SFP slot until a click is heard. You can use proper multi-mode or single-mode fiber according to the used SFP module. With fiber optic, it transmits speed up to 1000 Mbps and you can prevent noise interference from the system and transmission distance up to 110 km, depending on the mini-GBIC module.

Note: The SFP/Copper Combo module (G9, G10) can be used at one either. The SFP module has the higher priority than copper module; Although, if you insert the 1000Mbps SFP transceiver into the SFP module which is connected to the remote device, the connection of the copper module will link down.

Also, if you insert the 100Mbps SFP transceiver into the SFP module even without a fiber connection to the remote, the connection of the accompanying copper port will link down immediately.

2.6 Power Connection

EKI-7629C supports dual +12 ~ 48 V_{DC} power inputs and power-fail relay output.

PWR2   P-Fail   PWR1

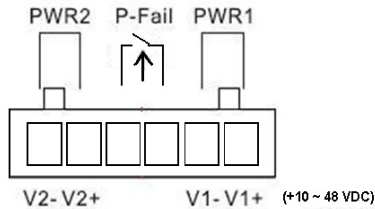V2- V2+   V1- V1+   (+10 ~ 48 VDC)

Figure 2.8: Pin Assignment of the Power Connector

You can connect an alarm indicator, buzzer or other signaling equipment through the relay output. The relay opens if power input 1 or 2 fails. ("Open" means if you connect relay output with a LED, the light would be off)

Troubleshooting

Chapter 3 Troubleshooting

Verify that is using the right power cord/adapter (DC 10~48V), please don't use the power adapter with DC output voltage higher than 48V, or it will burn this converter down.

Select the proper UTP cable to construct user network. Please check that is using the right cable. use unshielded twisted-pair (UTP) or shield twisted-pair (STP) cable for RJ-45 connections: 100 Category 3, 4 or 5 cable for 10Mbps connections or 100 Category 5 cable for 100Mbps connections. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).

Diagnosing LED Indicators

The Switch can be easily monitored through panel indicators, which describes common problems user may encounter and where user can find possible solutions, to assist in identifying problems.

If the power indicator does not light up when the power cord is plugged in, user may have a problem with power cord. Than check for loose power connections, power losses or surges at power outlet. If user still cannot resolve the problem, contact the local dealer for assistance.

If the Industrial switch LED indicators are normal and the connected cables are correct but the packets still cannot transmit. Please check your system's Ethernet devices configuration or status.

Pin Assignments & Wiring

Appendix A Pin Assignments & Wiring

It is suggested to adopt ELA/TIA as the wiring of the RJ45.

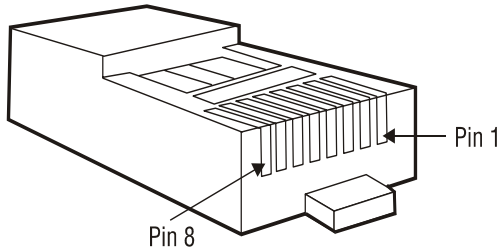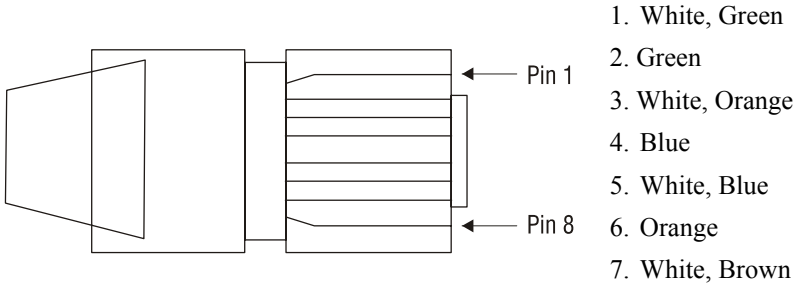*Figure A.1: RJ-45 Pin Assignment*

1. White, Green
2. Green
3. White, Orange
4. Blue
5. White, Blue
6. Orange
7. White, Brown

Figure A.2: EIA/TIA-568B

Compatible SFP Modules

Appendix B Compatible SFP Modules

The table below shows compatible SFP modules for EKI-7629C

Item	Brand	Part Number	Mode	Transmission Distance
1	AVAGO	AFBR-5710PZ	Multi-mode	550m
2	APAC	LM28-C3S-TC-N		550m
3	HOATECH	HTI8512-X5ATO		550m
4	SPACE SHUTTLE	S56L-S85-6L-N		550m
5	LuminentOIC	SP-GB-LX	Single-mode	10km
		SP-GB-ELX		20km
		SP-GB-XD		50km
6	AVAGO	AFCT-5710PZ		10km
7	APAC	LS38-C3M-TC-N		20km
8	SPACE SHUTTLE	S56L-L13-6L-N		10km