ROCKETLINX ES8108

Industrial Ethernet Switch

Quick Installation Guide

ES8108 | ES8108F

2000578 Rev. A

www.comtrol.com

Introduction

The RocketLinx ES8108 and ES8108F series of industrial Ethernet switches conform to IEE802.3 and 802.3u standards. This series includes the following models:

- ES8108 supports eight 10/100BASE-TX ports
- ES8108F-M (Multi-Mode) supports six 10/100BASE-TX and two 100BASE-FX fiber ports
- ES8108F-S (Single-Mode) supports six 10/100BASE-TX and two 100BASE-FX fiber ports

The ES8108/ES8108F feature an IP31 rated compact metal housing for operation in harsh environments. The series also features an alarm relay output to notify users of a port link or power failure that can be enabled or disabled using the 9-pin DIP switch. The ES8108/8108F can be powered using a wide input power range of 10-60VDC using the 6-pin terminal block.

See the Comtrol website for complete product specifications.

Wiring the Power Inputs

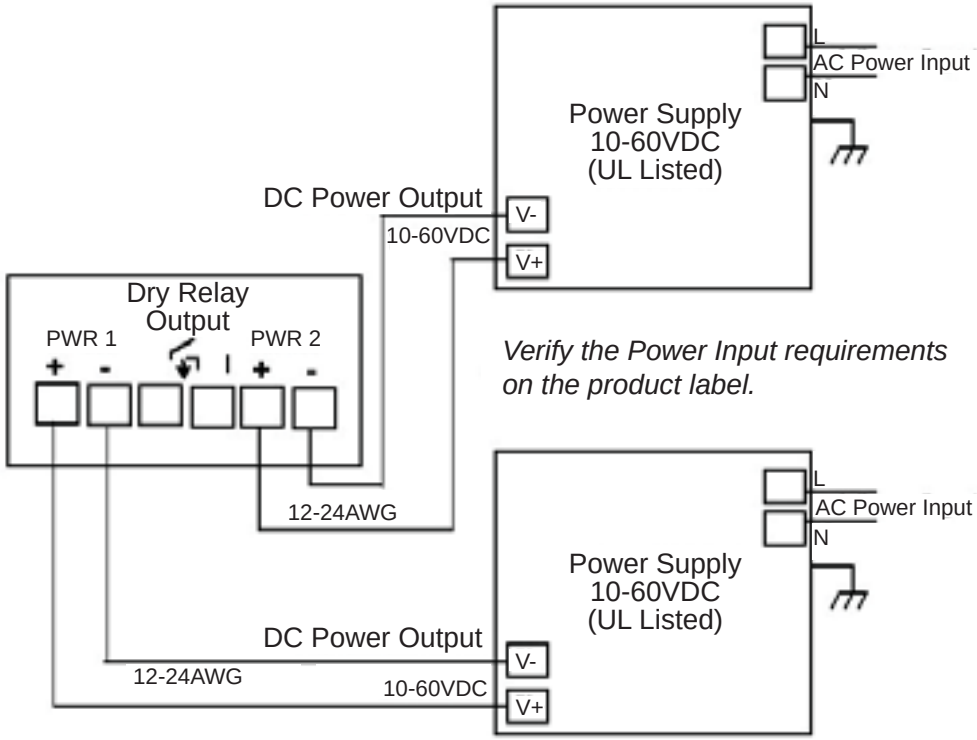
The ES8108/ES8108F provides:

- Power redundancy and reverse polarity protection (PW1/PW2). If both power inputs are connected, the ES8108/ES8108F is powered from the highest connected voltage.
- Positive or negative power source. If using redundant power supplies, they must be in the same mode.
- An alarm if PW1 or PW2 are no longer receiving power.

Use this procedure to wire the power:

1. Insert the positive and negative wires into the + and - contacts on the PW1 or PW2 on the terminal block connector.
2. Tighten the wire-clamp screws to prevent the wires from being loosened.

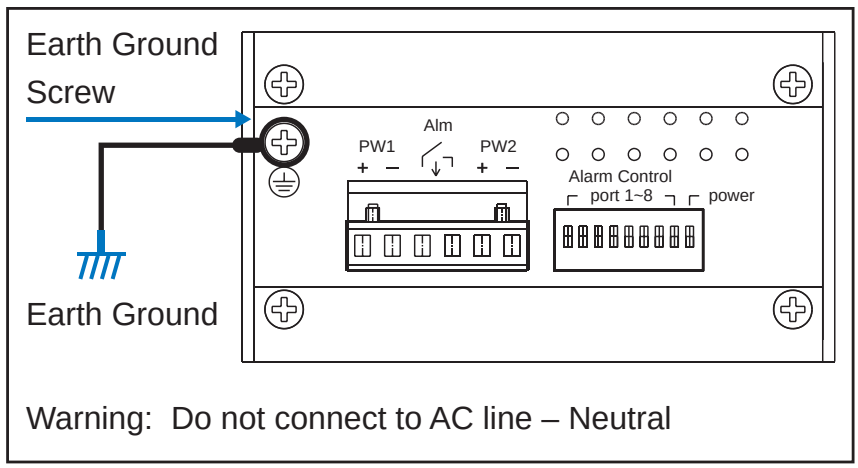
Note: Power should be disconnected from the power supply before connecting it to the switch. Otherwise, your screwdriver blade can inadvertently short your terminal connections to the grounded enclosure.



If this is a Restricted Access Location installation, make sure that the power supply is in compliance with a UL certified LPS (limited power source) and the power system is shutdown to avoid any damage while connecting the power.

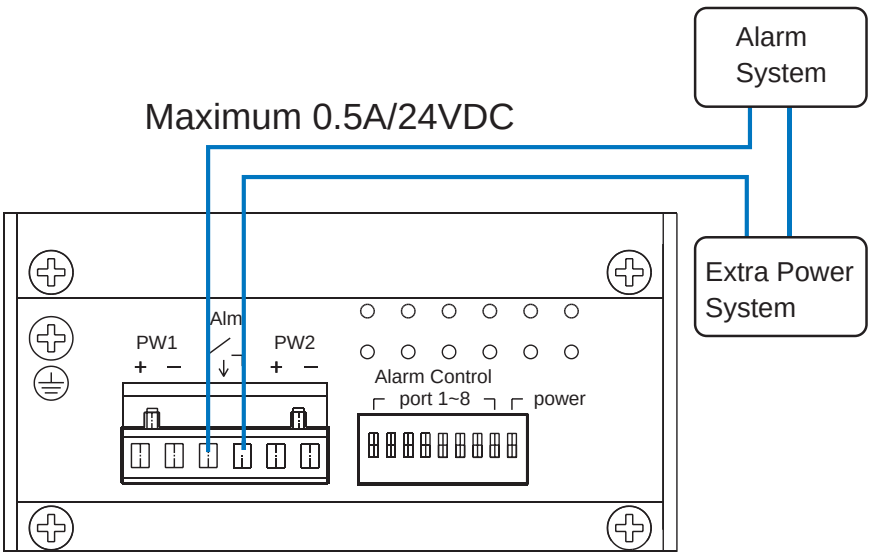
Grounding the ES8108/ES8108F

There is an earth ground screw on the bottom of the ES8108/ES8108F. Connect the earth ground screw of the switch to a grounding surface to ensure safety and prevent noise.



Wiring the Alarm Relay Output

The alarm relay output contacts are in the middle of the terminal block connector. By inserting the wires and setting the DIP switch of the respective Port Alarm to “ON”, the alarm relay output detects any port failures and forms a short circuit. The alarm relay output is “Normal Open.” The alarm relay output closes if there is a port or power failure.



Setting the DIP Switch

Switch	Status	Description
1 to 8 (Port)	On	Enables the port link down alarm for the corresponding port.
	Off	Disables the port link down alarm for the corresponding port.
9 (Power)	On	Enables the power failure alarm.
	Off	Disables the power failure alarm.

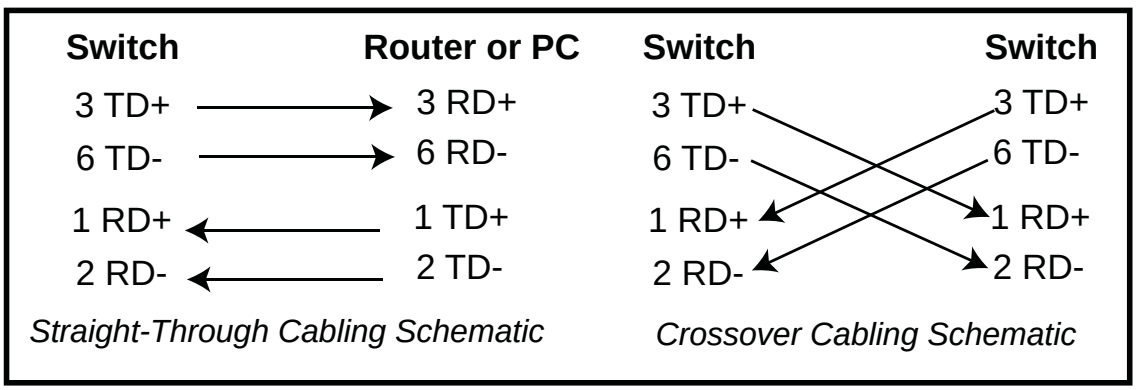
Mounting the Switch

Mount the ES8108/ES8108F on the DIN rail using the DIN rail clip that is attached to the rear of the unit.

Connecting to the Network

Connecting the Ethernet Ports

Connect one end of an Ethernet cable into the Ethernet port of the ES8108/ES8108F and the other end to the attached device. All Ethernet ports support auto MDI/MDIX functionality.



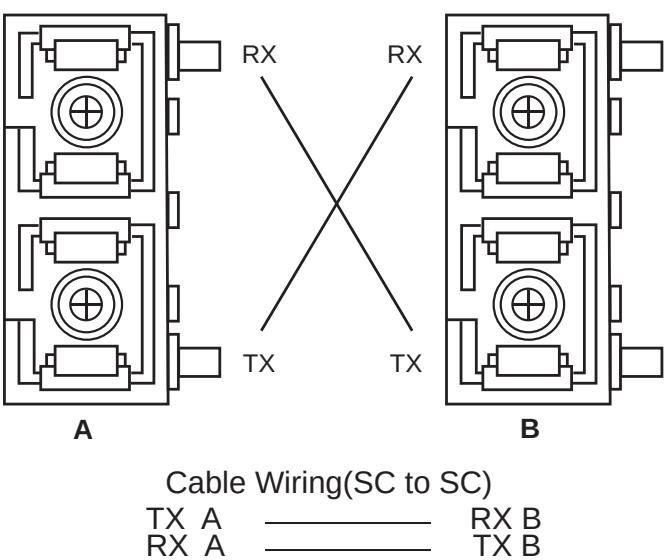
Always make sure that the cables between the switches and attached devices (for example, switch, hub, or workstation) are no more than 100 meters (328 feet). The cable must meet EIA/TIA-568 100-ohm specifications:

- 10BASE-T: 2-pair UTP/STP Category 3, 4, 5, or 5e
- 100BASE-TX: 2-pair UTP/STP Category 5 or 5e

Connecting the Fiber Ports (ES8108F)

Connect the fiber port to another Fiber Ethernet device using the following diagram.

An improper connection will cause the fiber port not to work properly. The fiber port is a standard or square connector (SC).



ATTENTION

This is a Class 1 Laser/LED product.

Don't stare into the Laser/LED Beam.

Fiber Transceiver

Mode	Cable Type	Wavelength	Transmit Power (Min.)	Transmit Power (Max.)	Receive Sensitivity (Max.)	Receive Sensitivity (Min.)	Min. Launch Power –Max. Receive Sensitivity	Distance (km)
Multi	50/125um 62.5/125um	1310nm	-20dBm	-14dBm	-31dBm	0dBm	11dBm	2km Note (below)
Single	8-10/125um	1310nm	-15dBm	-8dBm	-34dBm	-8dBm	19dBm	30km

Note: In the IEEE standard, it suggests the available transmission distance is 2km for 62.5/125um fiber optical cable in 1310nm wave length. Actually, the attenuation of Multi-Mode 62.5/125um optical fiber cable is 1.5dBm/km and the maximum link distance can up to 4 to 5km.

The IEEE organization recommends maximum optical fiber cable distances as defined in the following table.

Standard	Data Rate (Mbps)	Cable Type	IEEE Standard Distance
10BASE-FL	10	850nm, 50/125um or 62.5/125um Multi-Mode optical fiber cable	2km
100BASE-FX	100	1310nm, 50/125um or 62.5/125um Multi-Mode optical fiber cable	2km
100BASE-SX	100	850nm, 50/125um or 62.5/125um Multi-Mode optical fiber cable	300m

Optical Fiber Cable Attenuation

Fiber Type	Wavelength	Attenuation/km *	Attenuation/km **	Connector Loss	Splice loss
Multi-Mode 50/125um	850nm 1310mm	3.5dBm 1.5dBm	2.5dBm 0.8dBm	0.75dBm	0.1dBm
Multi-Mode 62.5/125um	850nm 1310nm	3.5dBm 1.5dBm	3.0dBm 0.7dBm	0.75dBm	0.1dBm
Single-Mode 9/125um	1310nm	0.4dBm	0.35dBm	0.75dBm	0.1dBm
Single-Mode 9/125um	1550nm	0.3dBm	0.22dBm	0.75dBm	0.1dBm

* *These values are per TIA/EIA and other industrial specifications.*

** *These values are one example of the performance that can be obtained with a new fiber installation.*

LED Indicators

There are system diagnostic and Ethernet port LEDs located on the front panel of the ES8108/ES8108F.

LED	LED Lit	LED Off
PWR 1/PWR2	Powered	No power
Alm (Alarm)	Port link is down or a power failure event has occurred.	Not activated
Port 1- 8 (ES8108) Port 1- 6 (ES8108F-S or ES8105F-M)	A green lit LED indicates that a network device is detected and linked up. A yellow lit LED indicates that a network device is detected and link established at 100Mbps.	If the green Link LED is lit and the yellow speed LED is off, a network device is detected and a link has been established at 10Mbps. Both green and yellow LEDs are not lit a port link has not been established.
Fiber Ports 7- 8 (ES8108F)	A green lit LED indicates that a network device is detected and a link has been established at 100Mbps.	No active link

Packet Forwarding Ability

The ES8108/ES8108F features a packet filtering function for broadcast packet control protection and Quality of Service (QoS). Both features can provide higher performance in a crowded network through traffic filtering and prioritization

Broadcast Control

The ES8108/ES8108F begins to drop broadcast packets with DA (destination address) equal to FF:FF:FF:FF:FF:FF if the received broadcast packets are more than the threshold, 198 packets/per second at 100Mbps or 19 packets/per second at 10Mbps link speed.
All ports are enabled with this function by default to provide better network performance and prevent congestion caused by the flooding of broadcast packets.

Quality of Service

The ES8108/ES8108F supports the frame type priority function, where high priority packets will be queued to a high priority queue to share more bandwidth. The ratio of bandwidth of the high priority to the low priority queue is 8:1. After 8 high priority packets are processed, then 1 low priority packet is processed. Both the ES8108 and ES8108F can examine the specific bits of VLAN Tag and TCP/IP TOS of IPv4 and IPv6.

Comtrol Customer Service

Contact Method	Web Address or Phone Number
Support	http://www.comtrol.com/pub/en/support
Downloads	ftp://ftp.comtrol.com/html/ES8108.htm
Web Site	http://www.comtrol.com
Phone	763.957.6000