RocketLinx ES7110
RocketLinx ES7110-VB

Industrial PoE Switch

8 - 10/100BASE-TX PoE Ports
2 - Gigabit Uplink Ports

User Guide

Copyright Notice

Third Edition, June 26, 2012

Federal Communications Commission (FCC) Statement

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 expense.

The user is cautioned that changes and modifications made to the equipment without approval of the manufacturer could void the user's authority to operate this equipment.

Document Number: 2000552 Revision C

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Introduction

Product Overview

The RocketLinx ES7110 and ES7110-VBare IEEE 802.3af compliant PoE switches designed for connecting a wide range of industrial PoE equipment such as IP surveillance cameras, wireless access points, VoIP phone sets, point-of-sale systems, and other devices where a power source is not conveniently located.

The RocketLinx ES7110 and ES7110-VB are equipped with eight 10/100BASE-TX PoE injector switch ports, with each port delivering power up to 15.4W, and two 10/100/1000BASE-TX (Gigabit) Ethernet uplink ports for transferring data to the network. The ES7110 and ES7110-VB support QoS, which ensures high-quality video traffic transmission by adjusting the data transfer priority.

The RocketLinx ES7110 and RocketLinx ES7110-VB are referred to as ES7110 in the remainder of this Guide unless there is model-specific information.

The ES7110 features convenient wiring with a standard 4-pin industrial terminal block for power input and a fault relay alarm contact output. Additionally, each Ethernet port has a *Port Link Alarm*, which can be configured to automatically trigger on connection issues, warning administrators of abnormal operating conditions and ensuring quick resolution to network issues.

In addition to advanced PoE and networking capabilities, the ES7110 is designed for industrial applications and deployment in harsh conditions with an IP30 rigid aluminum housing and extended operating temperature range (-25° to 70°C) that ensure consistent operation in places such as mass transit vehicles, factories, and outdoor settings.

Refer to the Comtrol web site for detailed *ES7110* or *ES7110-VB* specifications.

Add ES7106-VB Photo

Features

The RocketLinx ES7110 has the following features:

- Ten Ports
  - Eight 10/100BASE-TX PoE injector ports
  - Two Gigabit (10/100/1000BASE-TX) uplink ports supporting high bandwidth applications such as IP surveillance
- IEEE 802.3af compliant PoE with a total output power budget of 65W (15.4W maximum on each port)
- The ES7110 uses 48VDC and the ES7110-VB 12-24VDC power input. Both models deliver IEEE 802.3af PoE on all eight PoE ports
- QoS support for optimizing video and VoIP stream
- Extended operating temperature range for installation in wide variety of environments (-25^{o} to +70^{o} C)
- Alarm relay for failure and event notification
- Industrial-grade aluminum IP30 housing
- DIN rail or wall-mount installation

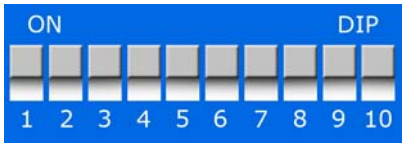
Hardware Installation

You can use the following subsections to install the RocketLinx ES7110:

- *Setting the DIP Switch*
- *Connecting the Power* on Page 8
- *Wiring the Relay Output and Ground* on Page 9
- *Mounting the RocketLinx ES7110* on Page 10
- *Connecting the Ethernet Ports* on Page 10
- *Front Panel and LEDs* on Page 12

Setting the DIP Switch

The ES7110 has a 10-pin DIP switch located on the bottom of the switch to configure the *Port Link Alarm* for the Ethernet ports. The following table shows the DIP switch number mapping to the corresponding PoE and Gigabit ports as follows.

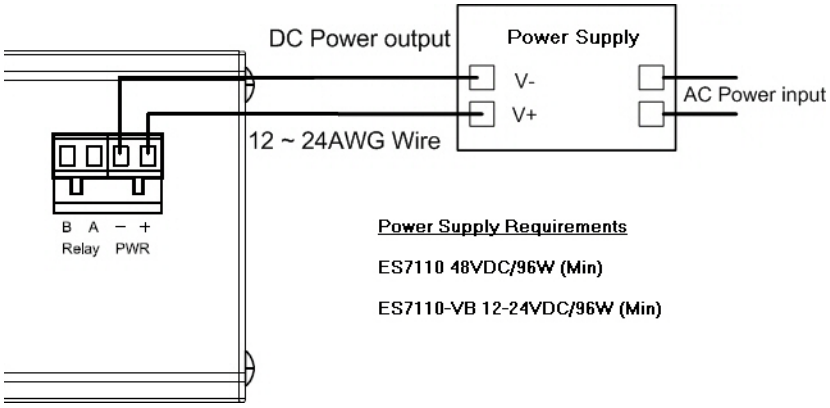


Port G2	Port G1	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8
DIP 1	DIP 2	DIP 3	DIP 4	DIP 5	DIP 6	DIP 7	DIP 8	DIP 9	DIP 10

DIP Switch Number	Status	Description
1-2	On	Enables the Gigabit port link failure alarm for this port.
	Off (Default)	Disables the Gigabit port link failure alarm for this port.
3-10	On	Enables the PoE port link failure alarm for the corresponding port.
	Off (Default)	Disables the PoE port link failure alarm for the corresponding port.

Connecting the Power

Use the following procedure to wire the power for the ES7110.



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.*

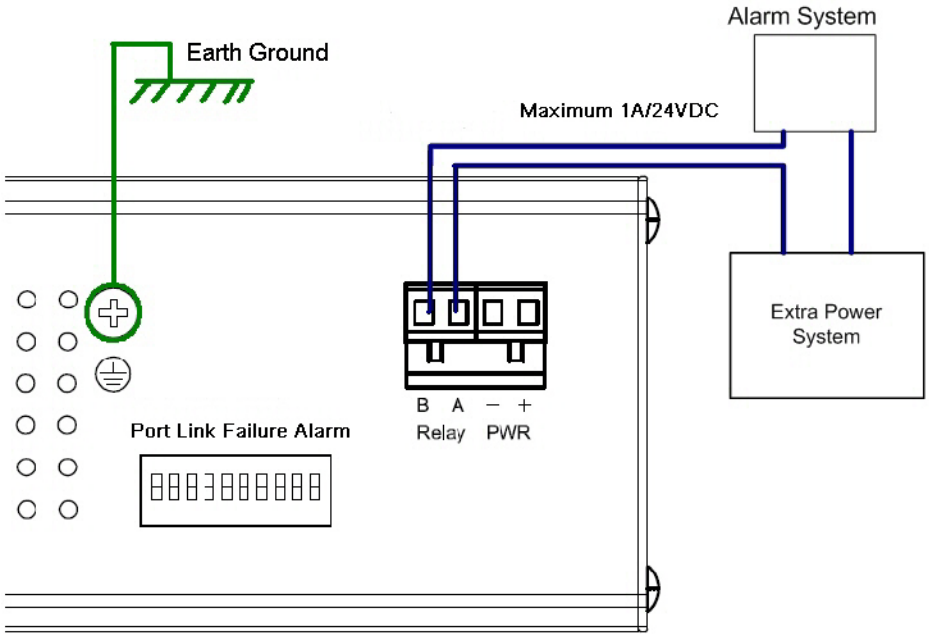
1. Disconnect the terminal block from the ES7110.
2. Insert the positive and negative wires (12-24AWG) into the **PWR+** and **PWR-** contacts.

   Make that you use the correct power supply, which requires a minimum of 96W:
   - **ES7110** requires a 48VDC power supply
   - **ES7110-VB** requires a12-24VDC power supply
3. Tighten the wire-clamp screws to prevent the wires from coming loose.

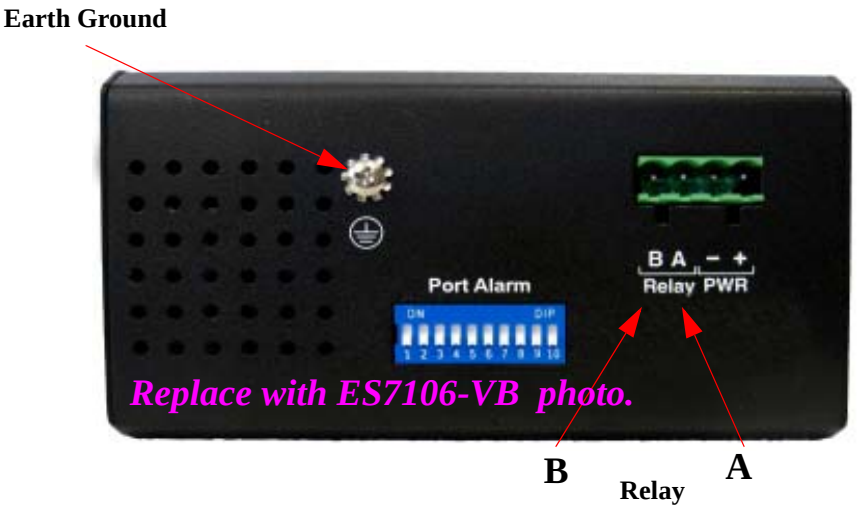
4. Plug the terminal block into the ES7110.

Wiring the Relay Output and Ground

The ES7110 provides relay output. The relay contacts are energized (open) for normal operation and will close under a faulty condition, such as, an Ethernet port link break. The relay alarm can be configured by the DIP switches.



1. Insert positive and negative wires into **Relay A** and **Relay B**.



2. Tighten the wire-clamp screws to prevent the wires from coming loose.
3. Connect a ground wire between the chassis and earth ground using 12 to 24AWG wire to ensure that the RocketLinx ES7110 is not damaged by noise or electrical shock.
   a. Loosen the earth ground screw on the bottom of the RocketLinx ES7110 with a screw driver.
   b. Tighten the screw after the earth ground wire is connected.

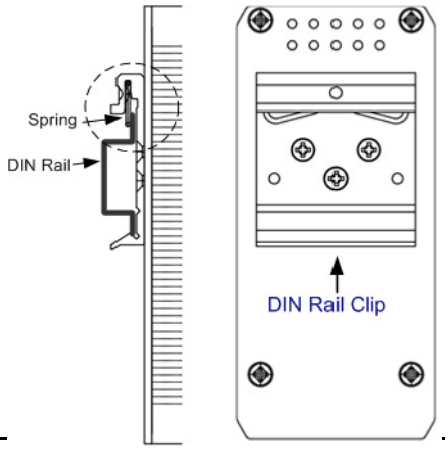
Mounting the RocketLinx ES7110

The RocketLinx ES7110 can be mounted on a DIN rail or on a wall panel. The DIN rail clip is already attached to the RocketLinx ES7110 when packaged.

Note: *The RocketLinx ES7110 will disperse heat through the metal case during PoE port operation. The RocketLinx ES7110 should be installed and mounted onto a panel which provides good heat dispersion.*

You can use this procedure to mount the ES7110 on a DIN rail.

1. Insert the upper end of DIN rail clip into the back of DIN rail track from its upper side.
2. Lightly push the bottom of DIN rail clip into the track.
3. Ensure the DIN rail clip is tightly attached on the track.
4. To remove the RocketLinx ES7110 from the track, reverse the steps above.



You can use this procedure to mount the ES7110 on the wall:

1. Snap the DIN rail plate into the track.
2. Attach the ES7110 to the wall using the mounting screws.

Connecting the Ethernet Ports

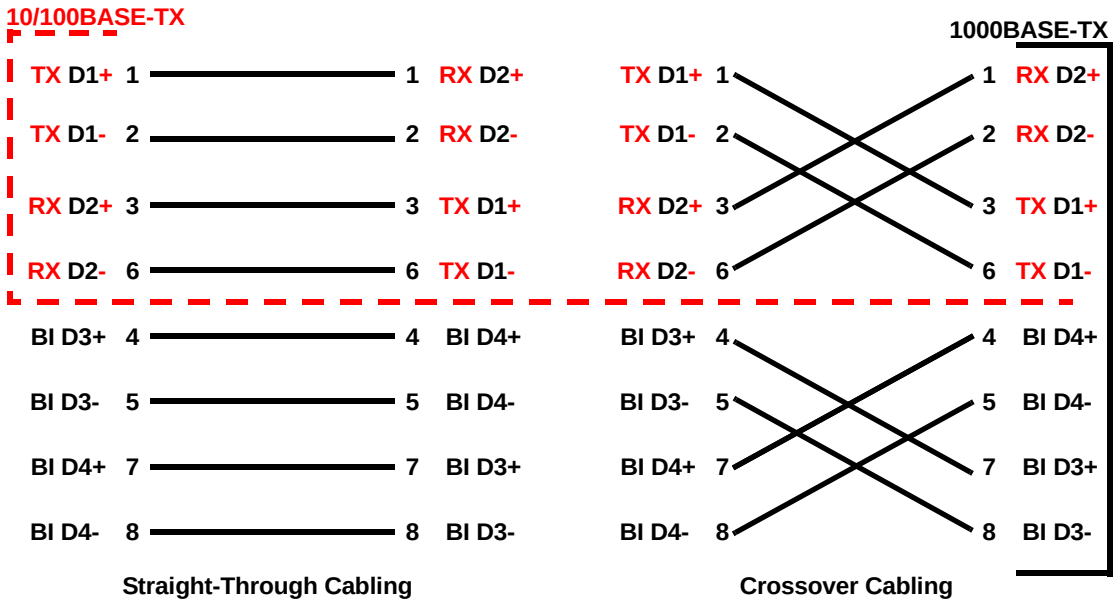
You can use the following information to connect standard Ethernet cables between the ES7110 Ethernet ports and the network nodes.

- Ports G1 and G2 are Gigabit Ethernet uplink ports that support 10BASE-T, 100BASE-TX, and 1000BASE-TX.
- Ports 1-8 are Fast Ethernet 10/100BASE-TX PoE ports that are IEEE 802.3af (PoE) compliant (15.4W maximum). The Fast Ethernet ports support full- or half-duplex modes, with automatic MDI/MDIX crossover, and PoE Injector.

The following table shows the RJ45 pin-out assignments for the PoE and Gigabit ports.

RJ45 Pin	10/100BASE-TX PoE Ports (Alternative B)	Gigabit Uplink Ports
1	RX +	BI_DA+
2	RX -	BI_DA-
3	TX +	BI_DB+
4	Vport+	BI_DC+
5	Vport+	BI_DC-
6	TX -	BI_DB-
7	Vport-	BI_DD+
8	Vport-	BI_DD-

All the Fast Ethernet ports automatically detect the signal from the connected devices to negotiate the link speed and duplex mode. Auto MDI/MDIX allows you to connect another switch, hub, or workstation without changing straight-through or crossover cables. Crossover cables cross-connect the transmit lines at each end to the received lines at the opposite end.



The Ethernet cables use Pins 1, 2, 3, and 6 of an 8-pin RJ45 connector. The signals of these pins are converted by the automatic MDIX function, as shown in the following table.

Pin	MDIX Signals	MDI Signals
1	RD+	TD+
2	RD-	TD-
3	TD+	RD+
6	TD-	RD-

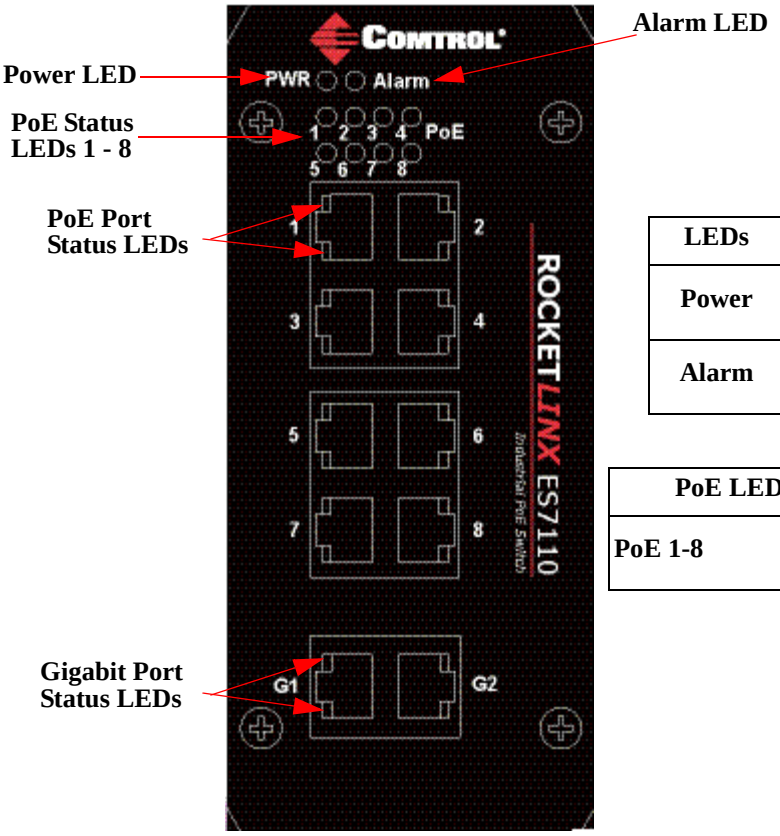
Connect one side of an Ethernet cable into any switch port and connect the other side to your attached device. The **Link/ Activity** LED is lit when the cable is correctly connected. See *Setting the DIP Switch* on Page 7 for detailed information about the ES7110 LEDs. Always make sure that the cables between the switches and attached devices (for example, switch, hub, or workstation) are less than 100 meters (328 feet).

The wiring cable types and maximum cable length are as follows.

- Uplink ports: 10BASE-T: 2-pair UTP/STP Category 3, 4, 5 cable, EIA/TIA-568 100-ohm (100 meters)
- Uplink ports: 100BASE-TX: 2-pair UTP/STP Category 5 cable, EIA/TIA-568 100-ohm (100 meters)
- Uplink ports: 1000BASE-TX: 4-pair UTP/STP Category 5 cable, EIA/TIA-568 100-ohm (100 meters)
- PoE ports: 4-pair UTP/STP Category 5e / 6 cable, EIA/TIA-568 100-ohm (100 meters)

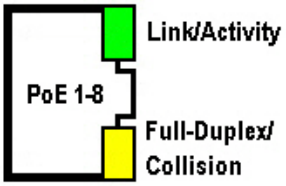
Front Panel and LEDs

The RocketLinx ES7110 front panel contains the Ethernet ports and LEDs as shown below.

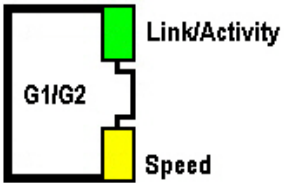


LEDs	Status	Description
Power	Green	Valid DC input power applied.
	Off	No power.
Alarm	Red	A ports link failure has occurred.
	Off	No failure has been found.

PoE LEDs	Status	Description
PoE 1-8	Green	The port is delivering PoE power.
	Off	No PD is attached.



PoE 1-8 Port Status	LED	Description
Link/Activity	Green	The port is connected.
	Blinking	Transmitting or receiving packets.
	Off	The port link is inactive.
Full-Duplex/Collision	Yellow	Full-duplex mode connection.
	Blinking	Data collision.
	Off	The link is inactive or operating in half-duplex mode.



G1/G2 Port Status	LED	Description
Link/Activity	Green	The port is connected.
	Blinking	Transmitting or receiving packets.
	Off	The port link is inactive.
Speed	Yellow	Full-duplex mode connection.
	Blinking	3 blinks per cycle – 1000Mbps
		2 blinks per cycle – 100Mbps
		1 blink per cycle – 10Mbps
	Off	The link is inactive.

Troubleshooting and Technical Support

Troubleshooting

If you are having problems, you may want to check the following:

- Make sure you are using the correct DC power supply.
  - **ES7110**: Use power supplies with 48VDC output.
  - **ES7110-VB**: Use power supplies with 12-24VDC output.
- Select Ethernet cables with specifications suitable for your applications to set up your systems.
  - Ethernet cables are categorized into unshielded twisted-pair (UTP) and shielded twisted-pair (STP) cables.
  - Category 3, 4, 5, and 6 Ethernet cables are suitable for systems with 10 Mbps transmission speed.
  - For systems with 100 Mbps transmission speed, Category 5 and 6 Ethernet cables are the only suitable specifications for this environment.
  - You also need to make sure that the distance between any two nodes does not exceed 100 meters (328 feet).
  - Use *Alternative B* Ethernet cabling on PoE ports.
- If the **Power** LED goes off when the power cord is plugged in, a power failure might have occurred. Check the power output connection to see if there is any error at the power source. If you still cannot solve the problem, contact Comtrol Technical Support for assistance.

Comtrol Support

You can use one of the following methods to contact Comtrol.

Contact Method	Web Address or Phone Number
Support	http://www.comtrol.com/pub/en/support
Web Site	http://www.comtrol.com/
Downloads **ES7110** **ES7110-VB**	 ftp://ftp.comtrol.com/html/rocketlinx/es7110.htm ftp://ftp.comtrol.com/html/rocketlinx/es7110-VB.htm
Phone	763.957.6000