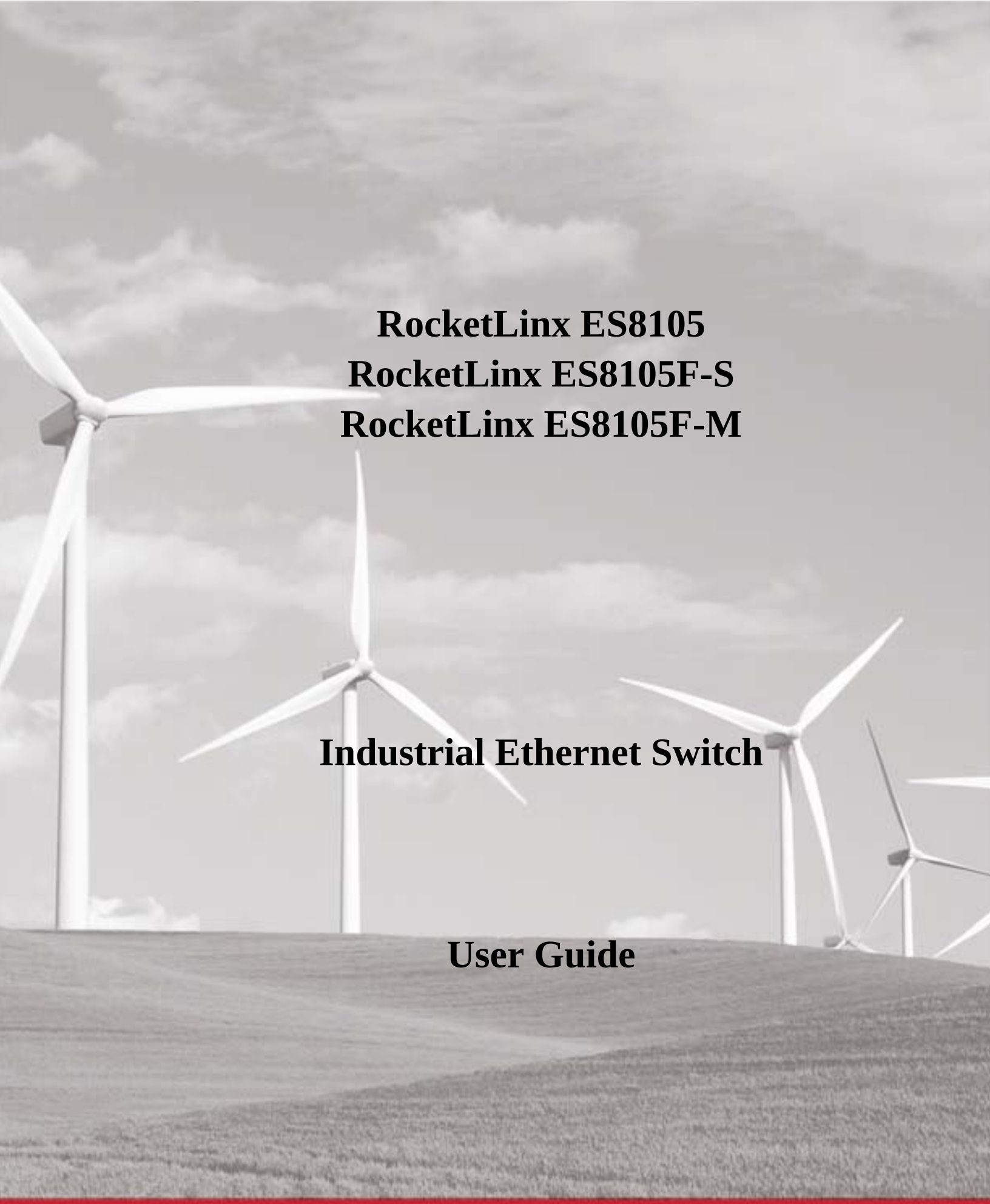

RocketLinx ES8105
RocketLinx ES8105F-S
RocketLinx ES8105F-M

Industrial Ethernet Switch

User Guide

2000558 Rev B

www.comtrol.com

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Second Edition, August 1, 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: 2000558 Revision B

Table of Contents

Introduction

Product Overview

This User Guide discusses the RocketLinx ES8105 industrial Ethernet switch family, which includes three models:

- **RocketLinx ES8105** provides five10/100BASE-TX Ethernet ports
- **RocketLinx ES8105F-S** provides four 10/100BASE-TX ports and one 100BASE-FX Single-Mode fiber uplink port that supports a transmission distance of 30KM
- **RocketLinx ES8105F-M** provides four 10/100BASE-TX ports and one 100BASE-FX Multi-Mode fiber uplink port that supports a transmission distance to 2KM

The ES8105/ES8105F is enclosed in a slim and rigid aluminum case that saves rail space and provides good heat radiation for compact system requirements. In order to operate in harsh environments, the RocketLinx ES8105/ES8105F is equipped with IP31 grade case design to meet the requirements of drop-water proof and is dust proof.

The RocketLinx ES8105/ES8105F also provides one relay output for port error events, which is enabled/ disabled by the DIP switch. The RocketLinx ES8105/ES8105F has good immunity against unstable power source and can accept 18 to 27VAC or 18 to 32VDC power input.

RocketLinx ES8105/ES8105F requires no user setup and immediately starts operating as soon as you power it up.

Features

The RocketLinx ES8105/ES8105F family has the following features:

- Port alarm
- Compact IP31 aluminum alloy enclosure
- DIN rail or wall mount
- Power input of 18-27VAC or 18-32VDC
- Compliance with IEEE Hi-Pot Testing

Refer to the Comtrol web site for detailed specification information, *RocketLinx ES8105* or *RocketLinx ES8105F Single-Mode*, or *RocketLinx ES8105F Multi-Mode*.

LED Indicators

There are system diagnostic LEDs and Ethernet Port LEDs located on the front panel of the RocketLinx ES8105/ES8105F. The LED indicators provide administrators with real-time system status. The following table describes the function of each LED indicator.

LED	LED Lit	LED Blinking	LED Off
PWR	Powered		No power
Alm	Port link down or power failure event occurred.		Not activated
Port 1- 5 (RocketLinx ES8105)	A network device is detected and linked up.	Activity	No port link

LED	LED Lit	LED Blinking	LED Off
Port 1- 4 (RocketLinx ES8105F)	Yellow:100Mbps		A network device is detected and link established at 10Mbps.
Fiber port #5 (RocketLinx ES8105F)	100Mbps Link	100Mbps Activity	100Mbps Link

Hardware Installation

You can use the following subsections to install the RocketLinx ES8105/ES8105F:

Connecting the Power and Ground

Use the following procedure to connect the power and the ground.

1. Insert the positive and negative wires (12-24AWG) into V+ and V- contacts.
2. Tighten the wire-clamp screws to prevent the wires from coming loose.

   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.*
3. Connect a ground wire between the chassis and earth ground using 12-24AWG wire to ensure that the RocketLinx ES8105/ES8105F is not damaged by noise or electrical shock.
   a. Loosen the earth ground screw that is located between the DIP switch and the power/relay terminal block.
   b. Tighten the screw after the earth ground wire is connected.

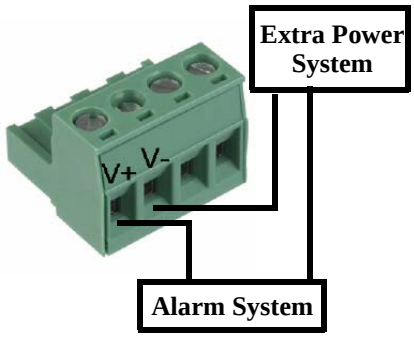
Wiring the Relay Output

The RocketLinx ES8105/ES8105F have a built-in alarm-relay for port link and power events notifications. The relay contacts are normally open and remain open when there is no failure event. The relay contacts will close when there is a failure event to notify.

The failure events are selectable and enabled using the DIP switch on the ES8105/ES8105F. The relay contacts of RocketLinx ES8105/ES8105F are rated for a maximum of 1A at 24VDC.

Wiring the alarm relay output is the same as wiring power inputs in *Connecting the Power and Ground*.

1. Insert positive and negative wires into V+ and V-.
2. Tighten the wire-clamp screws to prevent the wires from coming loose.



Enabling the Event Alarm

You can use this subsection to configure and enable the event alarm to alert maintenance engineers once a system event has occurred. The RocketLinx ES8105/ES8105F is equipped with one dry relay output for port link failure.

On the bottom of the ES8105/ES8105F, there is one 5-pin DIP switch for alarm control. If you connect the alarm (*Wiring the Relay Output* on Page 7) and set the DIP switch of the intended Alarm to *ON*, the relay output forms a short circuit if an alarm occurs.

Use this table to set the DIP switch for the relay output alarm.

Pin	Status	Description
1-5	On	Enables the port link down alarm for the corresponding port.
	Off	Disables the port link down alarm on the corresponding port.

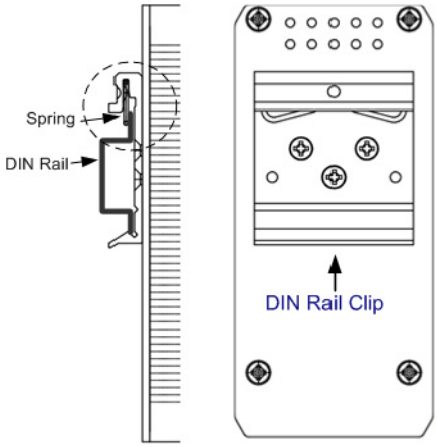
Mounting the RocketLinx ES8105/ES8105F

You can mount the RocketLinx ES8105/ES8105F on a DIN rail or mounted to the wall. The DIN rail clip is already attached to the RocketLinx ES8105/ES8105F when packaged.

Note: *The RocketLinx ES8105/ES8105F will disperse heat through the metal case during PoE port operation. The RocketLinx ES8105/ES8105F should be installed and mounted onto a panel which provides good heat dispersion.*

You can use this procedure to mount the ES8105/ES8105F 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 ES8105/ES8105F from the track, reverse the steps above.



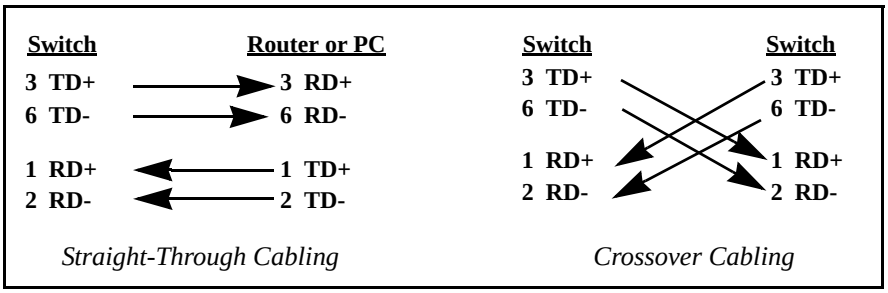
To mount the ES8105/ES8105F on the wall:

1. Snap the DIN rail plate into the track.
2. Attach the ES8105/ES8105F to the wall using the mounting screws.

Connecting the Ethernet Ports

You can use the following information to connect standard Ethernet cables between the RocketLinx ES8105/ES8105F 10/100BASE-TX Ethernet ports and the network nodes. The Fast Ethernet ports support 10BASE-T and 100BASE-TX, full- or half-duplex modes.

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-

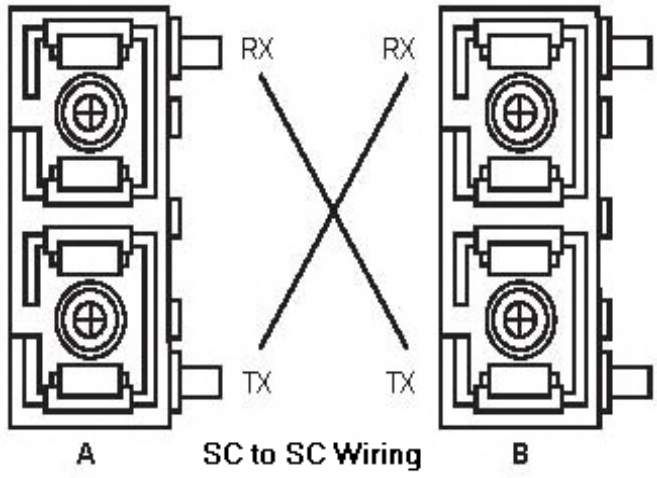
Connect one side of an Ethernet cable into any switch port and connect the other side to your attached device. The **LINK/ACT** LED is lit when the cable is correctly connected. Always make sure that the cables between the switches and attached devices (for example, switch, hub, or workstation) are less than 100 meters (328 feet).

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

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

Connecting the Fiber Port (RocketLinx ES8105F)

Connect the fiber port on the RocketLinx ES8105F to another fiber Ethernet device using the following information.



Caution

This is a Class 1 Laser/LED product.
Do not stare into the Laser/LED beam.

A wrong connection will cause the fiber port not to work properly.

The fiber connector is a standard connector or square connector (SC).

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.*

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

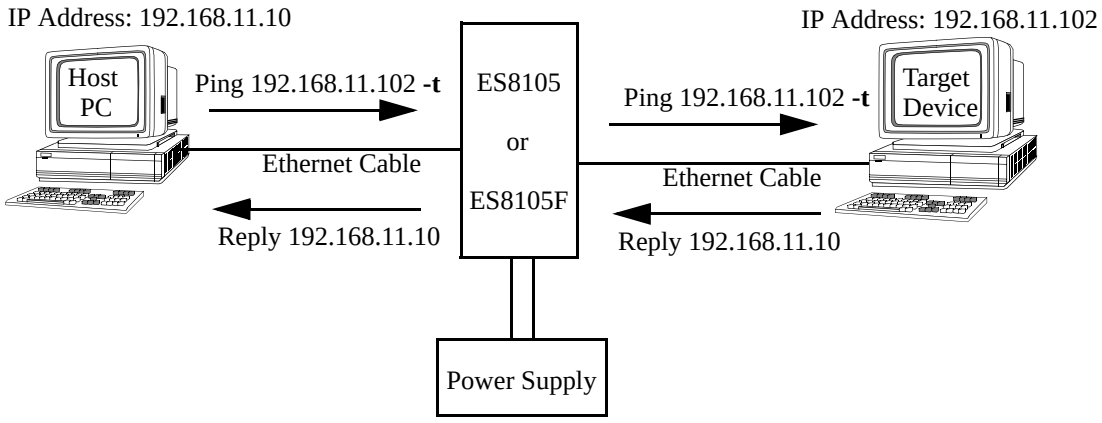
Standard	Data Rate (Mbps)	Cable Type	IEEE Standard Distance
10BASE-FL	10	850nm, 50/125um or 62.5/125um Multi-Mode optical fiber cable	2km
100BASE-FX	100	1310nm, 50/125um or 62.5/125um Multi-Mode optical fiber cable	2km
100BASE-SX	100	850nm, 50/125um or 62.5/125um Multi-Mode optical fiber cable	300m
1000BASE-SX	1000	850nm, 50/125um Multi-mode optical fiber cable 850nm, 62.5/125um Multi-Mode optical fiber cable	550m 220m
1000BASE-LX	1000	1310nm, 50/125um or 62.5/125um Multi-mode optical fiber cable 1310nm, 9/125um Single-Mode optical fiber cable	550m 5km
1000BASE-LH	1000	1550nm,9/125um Single-Mode optical fiber cable	70km

Testing the ES8105/ES8105F

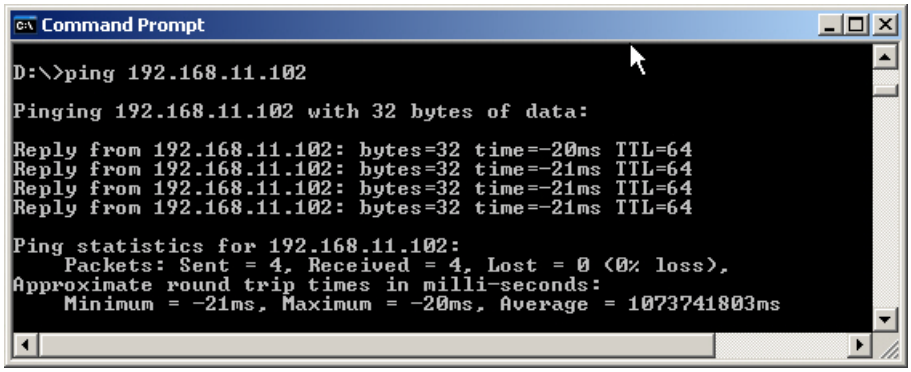
You can use the following information to verify that the RocketLinx ES8105/ES8105F is functioning properly.

1. Use the *Hardware Installation* section on Page 7 to install the ES8105/ES8105F.
2. Apply power to the ES8105/ES8105F.
3. Verify that the **PWR** LED is lit.
4. Connect one side of an Ethernet cable (Category-5 or above straight-through Ethernet cable with RJ45 connectors to connect network devices.) with an RJ45 connector to the ES8105/ES8105F Ethernet port (RJ45 port), and the other side of the Ethernet cable to the target device with a configured IP address and capable of supporting the ICMP protocol, such as ping packets.

   Note: *Make sure that any connected network switches support MDI/MDIX functionality. If they do not, use an Ethernet crossover cable.*
5. Verify that the port status LED indicator is blinking green on the RocketLinx ES8105/ES8105F to see if the network connection was established successfully.
6. Power on your host PC, make an Ethernet connection to RocketLinx ES8105/ES8105F and verify that the connected port is lit. The connection diagram is shown below:

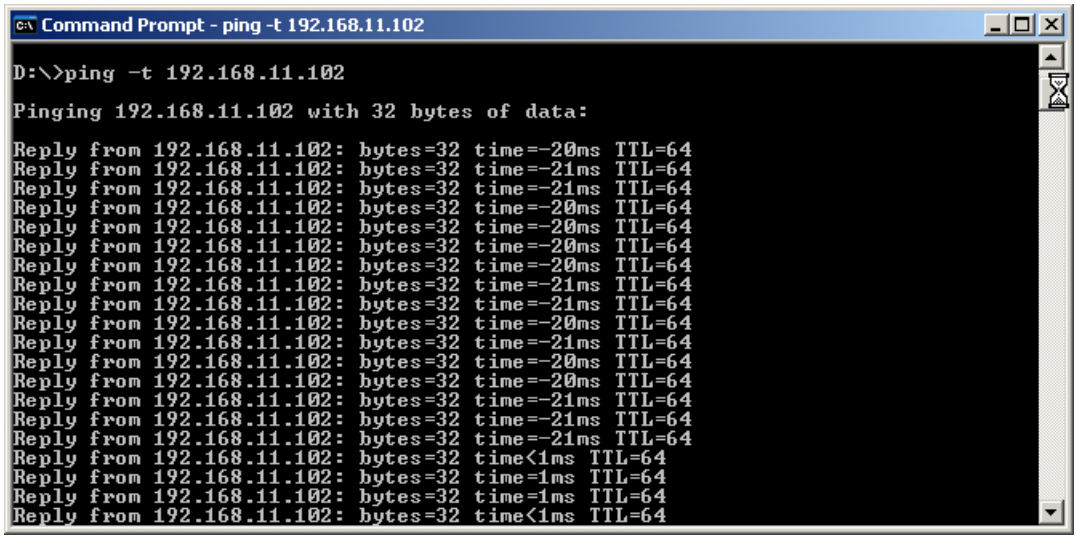


7. Open a *Command Line window* by clicking **Run** in **Start** menu, type command, and then click **Ok** to continue.
8. For example, type `ping 192.168.11.102` to check the connection. The IP address for the remote device in this example is: 192.168.11.102.



9. Repeat Step 8 to make sure that the connection of each device connected to the ES8105/ES8105F is properly established.

10. Power on the host PC, activate the *Command Line* mode, and ping the connected Ethernet device by typing the `ping 192.168.11.102 -t` command to see if it will respond. The PC host IP address must be in the same subnet address as the target device: 192.168.11.102. The parameter **-t** allows you to continually ping the network device, as shown in the figure below.



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 supplies (12 to 48VDC). Do not use power supplies with DC output over 48VDC.
- 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).
- 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
Downloads	ftp://ftp.comtrol.com/html/ES8105.htm
Web Site	http://www.comtrol.com
Phone	763.957.6000

Index