EtherWAN

ER52000 Hardened PoE Switch

User's Guide

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Warranty

For details on the EtherWAN warranty replacement policy, please visit our web site at:

https://kb.etherwan.com/index.php?View=entry&EntryID=27

Products Supported by this Manual:

ER52000

Preface

Audience

This guide is designed for the person who installs, configures, deploys, and maintains the Ethernet network. This document assumes the reader has moderate hardware, computer, and Internet skills.

Document Revision Level

This section provides a history of the revision changes to this document.

Revision	Document Version	Date	Description
A	Version 1	03/15/2016	

Changes in this Revision

This is first version of this document.

Document Conventions

This guide uses the following conventions to draw your attention to certain information.

Safety and Warnings

This guide uses the following symbols to draw your attention to certain information.

Symbol	Meaning	Description
	Note	Notes emphasize or supplement important points of the main text.
	Tip	Tips provide helpful information, guidelines, or suggestions for performing tasks more effectively.
	Warning	Warnings indicate that failure to take a specified action could result in damage to the device, or could result in serious bodily injury.
	Electric Shock Hazard	This symbol warns users of electric shock hazard. Failure to take appropriate precautions such as not opening or touching hazardous areas of the equipment could result in injury or death.

Typographic Conventions

This guide also uses the following typographic conventions.

Convention	Description
Bold	Indicates text on a window, other than the window title, including menus, menu options, buttons, fields, and labels.
Italic	Indicates a variable, which is a placeholder for actual text provided by the user or system. Angled brackets (< >) are also used to indicate variables.
`screen/code`	Indicates text that is displayed on screen or entered by the user.
< > angled brackets	Indicates a variable, which is a placeholder for actual text provided by the user or system. Italic font is also used to indicate variables.
[ ] square brackets	Indicates optional values.
{ } braces	Indicates required or expected values.
	vertical bar	Indicates that you have a choice between two or more options or arguments.

Contents

1 Introduction

Topics:

- *Key Features (page 7)*
- *Quick Start Guide (page 8)*

Congratulations on your purchase of the ER52000 Hardened PoE Switch from EtherWAN Systems, Inc. Your EtherWAN Hardened PoE Switch is a state-of-the-art IEEE-compliant network solution designed for users who require high-performance to eliminate bottlenecks and increase productivity.

To simplify installation, the Hardened PoE Switch is shipped ready for use.
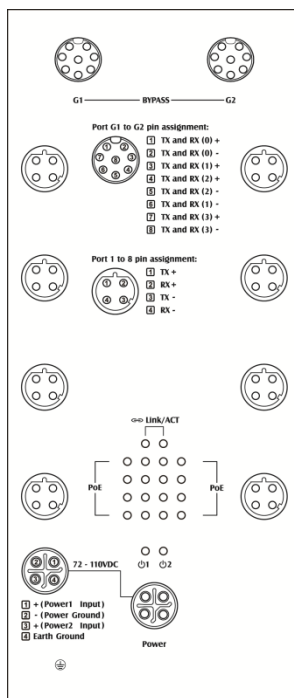
Figure 1-1. ER52000 Hardened PoE Switch

Key Features

This section summarizes the key features of the ER52000 Hardened PoE Switch.

- Eight 10/100Base-TX Ethernet ports with M12 D-Coding Female 4-Pin Connector can connect to Power over Ethernet (PoE) devices

- Two 10/100/1000Base-TX Ethernet ports with M12 A-Coding Female 8-Pin Connector

- Bypass relay function on two 10/100/1000Base-TX ports

- Auto negotiation of speed and duplex mode on Ethernet port

- Auto MDIX on Ethernet port

- Complies with IEEE 802.3 10Base-T, IEEE 802.3u 100Base-TX, IEEE 802.3ab 1000Base-T, IEEE 802.3z 1000Base-SX/LX, IEEE802.1az Energy Efficient Ethernet, and IEEE802.3af/at Power over Ethernet (PoE) standards

- Status LEDs

Quick Start Guide

The following procedure enables advanced users to get their Hardened PoE Switch up and running in the shortest possible time. For detailed installation instructions, refer to the sections in the right column below.

Step	Description	For Reference, See…
1.	**Find a Location for the Hardened PoE Switch** Set the Hardened PoE Switch on a flat surface or Wall-mount.	"Preparing the Site" (page 14)
2.	**Connect to the 10/100 Mbps Ethernet Port** • Connect one end of a Category 5 or better Ethernet cable to the Ethernet port of a computer, printer, network storage, or other network device. • Connect the other end to a 10/100 Mbps port on the Hardened PoE Switch.	"10/100 Mbps Ports" (page 11) and "Connecting to the 10/100 Mbps Port" (page 14)
3.	**Connect to the 10/100/1000 Mbps Ethernet Port** • Connect one end of a Category 5 or better Ethernet cable to the Ethernet port of a computer, printer, network storage, or other network device. • Connect the other end to a 10/100/1000 Mbps port on the Hardened PoE Switch.	"10/100/1000 Mbps Ports" (page 11) and "Connecting to the 10/100/1000 Mbps Port" (page 15)
4.	**Power On** • Connect the DC power cord to the plug-able M12 S-Coding Male 4-Pin Connector on the PoE Switch, and then plug it into a standard DC outlet. • Connect the ground connection to the grounding surface. • Wait for the Hardened PoE Switch to complete its Power On Self Test. • Confirm that the LEDs for ports connected to a device are on. If not, replace the Ethernet cable, and then check the port LED again.	"Applying DC Power" (page 15)

2 Unpacking and Installation

Topics:

This chapter describes how to unpack and install the ER52000 Hardened PoE Switch.

Unpacking the Hardware

Unpack the items and confirm that no items are missing or damaged. Your package should include:

- One ER52000 Hardened PoE Switch

- One CD containing this user's guide

- One quick start guide
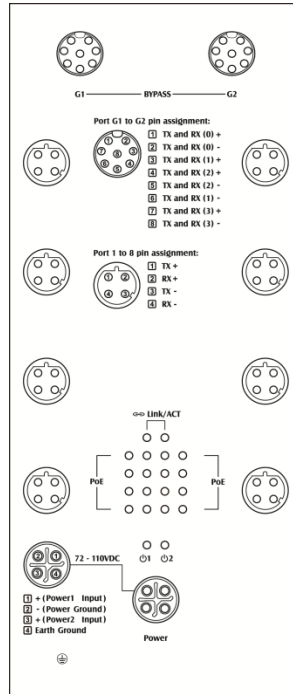
If any item is damaged or missing, notify your authorized EtherWAN representative. Keep the carton, including the original packing material, in case you need to store the product or return it.

Hardware Features

The following sections describe the hardware features of the ER52000 Hardened PoE Switch.

Front Panel

Figure 2-1 shows the front panels of the ER52000 Hardened PoE Switch.

Port G1 to G2 pin assignment:
1 TX and RX (0) +
2 TX and RX (0) -
3 TX and RX (1) +
4 TX and RX (2) +
5 TX and RX (2) -
6 TX and RX (1) -
7 TX and RX (3) +
8 TX and RX (3) -

Port 1 to 8 pin assignment:
1 TX +
2 RX +
3 TX -
4 RX -

Link/ACT

PoE   PoE

72 - 110VDC

1 + (Power1 Input)
2 - (Power Ground)
3 + (Power2 Input)
4 Earth Ground

Power

G1 ——— BYPASS ——— G2

Figure 2-1. Front Panel of the ER52000 Hardened PoE Switch

10/100 Mbps Ports

The ER52000 Hardened PoE Switch has 10/100 Mbps PoE ports (M12 D-Coding Female 4-Pin Connector) (see Figure 2-1). This port is auto-sensing, auto-MDIX 10/100 Mbps port.

When you insert a cable into a 10/100 Mbps PoE port, the Hardened PoE Switch:

• Determines whether the cable is a straight-through or crossover cable.

• Automatically ascertains the maximum speed (10 or 100 Mbps) and duplex mode (half- or full-duplex) of the attached device.

After determining this information, the Hardened PoE Switch configures the 10/100 Mbps PoE port automatically to enable communications with the attached device, without requiring user intervention.

10/100/1000 Mbps Ports

The ER52000 Hardened PoE Switch has 10/100/1000 Mbps ports (M12 A-Coding Female 8-Pin Connector) (see Figure 2-1). This port is auto-sensing, auto-MDIX 10/100/1000 Mbps port.

When you insert a cable into a 10/100/1000 Mbps port, the Hardened PoE Switch:

• Determines whether the cable is a straight-through or crossover cable.

• Automatically ascertains the maximum speed (10, 100 or 1000 Mbps) and duplex mode (half- or full-duplex) of the attached device.

After determining this information, the Hardened PoE Switch configures the 10/100/1000 Mbps port automatically to enable communications with the attached device, without requiring user intervention.
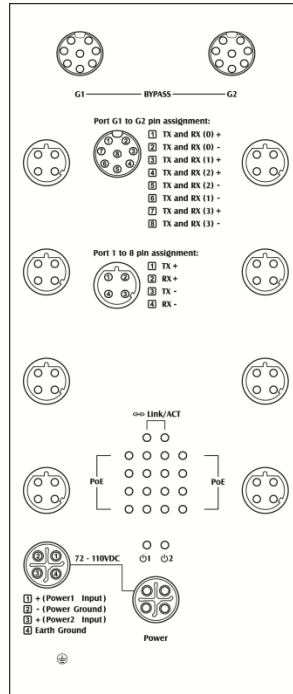
LEDs

The ER52000 front panel LEDs show power and link/activity status. Table 2-1 summarizes the LEDs on the Hardened PoE Switch.

Table 2-1. Front Panel LEDs

LED	Color	Status
⏻ PWR 1, 2	Green	ON = switch is receiving power.
10/100TX Ports		
⌘ **Link/Activity** *(port number)*	Green	ON = valid network connection.
		OFF = no data transmission on port.
		Flashing = port is sending or receiving data.
PoE *(port number)*	Amber	ON = Powered Device (PD) is connected.
		OFF = Powered Device (PD) is disconnected.
10/100/1000TX Ports		
Link/Activity	Green	ON = valid network connection.
		OFF = no data transmission on port.
		Flashing = port is sending or receiving data.

Front Panel

The ER52000 front panel has a M12 S-Coding Male 4-Pin Connector for connecting the external power supply.

G1 ——— BYPASS ——— G2

Port G1 to G2 pin assignment:
1 TX and RX (0) +
2 TX and RX (0) -
3 TX and RX (1) +
4 TX and RX (2) +
5 TX and RX (2) -
6 TX and RX (1) -
7 TX and RX (3) +
8 TX and RX (3) -

Port 1 to 8 pin assignment:
1 TX +
2 RX +
3 TX -
4 RX -

Link/ACT

PoE   PoE

72 - 110VDC   ⏻1 ⏻2

1 + (Power1 Input)
2 - (Power Ground)
3 + (Power2 Input)
4 Earth Ground

Power

Figure 2-2. Front Panel of the ER52000 Hardened PoE Switch

Installing the Hardened PoE Switch

Hardened PoE Switch installation involves the following steps:

1. Preparing the site. See page 14

2. Installing the Hardened PoE . See page 14.

3. Connecting to the 10/100 Mbps Port. See page 14.

4. Connecting to the 10/100/1000 Mbps Port. See page 15.

5. Checking the installation. See page 15.

6. Applying DC Power. See page 15.

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Preparing the Site

Before you install your Hardened PoE Switch, be sure your operating environment meets the operating environment requirements in Table 2-2.

Table 2-2. Site Requirements

Characteristics	Requirements
Mounting	
Desktop installations:	Provide a flat table or shelf surface.
Wall-mount installations:	Mount on a flat wall surface.
Access	Locate the Hardened PoE Switch in a position that lets you access the front panel Ethernet port, view the front panel LEDs, and access the front panel power connector.
Power source	Provide a power source within 6 feet (1.8 meters) of the installation location. Power specifications for the Hardened PoE Switch are shown in Appendix A.
Environmental	
Temperature:	Install the Hardened PoE Switch in a dry area, with ambient temperature between -40 and 75ºC (-40 and 167ºF). Keep the Hardened PoE Switch away from heat sources such as direct sunlight, warm air exhausts, hot-air vents, and heaters.
Operating humidity:	The installation location should have a maximum relative humidity of 95%, non-condensing.
Ventilation:	Do not restrict airflow by covering or obstructing the top and side panels of the Hardened PoE Switch. Keep at least 2 inches (5.08 centimeters) free on all sides for cooling. Be sure there is adequate airflow in the room where you intend to install the Hardened PoE Switch.
Operating conditions:	Keep the Hardened PoE Switch at least 6 ft (1.83 m) away from nearest source of electromagnetic noise, such as a photocopy machine.

Installing the Hardened PoE Switch

You can install your Hardened PoE Switch on a flat surface or Wall-mount with other equipment.

• If installing the Hardened PoE Switch on a desktop or shelf, allow sufficient ventilation space between the device and the objects around it.

• ER52000 Hardened PoE Switch Dimensions: 140mm (W) x 65.8mm (D) x 228mm (H) (5.5" (W) x 2.59" (D) x 8.98" (H))

Connecting to the 10/100 Mbps Port

The front panel of the Hardened PoE Switch provides 10/100 Mbps ports (see "10/100 Mbps Ports" on page 11). To prevent ESD damage, follow normal board and component handling procedures.

To connect devices to the Hardened PoE Switch's 10/100 Mbps port:

1. Insert one end of the cable into a 10/100 Mbps port.

2. Insert the other cable end into the Ethernet port of a computer, printer, network storage, or other network device.

Connecting to the 10/100/1000 Mbps Port

The front panel of the Hardened PoE Switch provides 10/100/1000 Mbps ports (see "10/100/1000 Mbps Ports" on page 11). To prevent ESD damage, follow normal board and component handling procedures.

To connect devices to the Hardened PoE Switch's 10/100/1000 Mbps port:

1. Insert one end of the cable into a 10/100/1000 Mbps port.

2. Insert the other cable end into the Ethernet port of a computer, printer, network storage, or other network device.

Checking the Installation

Before you apply power:

• Inspect the equipment thoroughly.

• Verify that all cables are installed correctly.

• Check cable routing to make sure cables are not damaged or create a safety hazard.

• Be sure all equipment is mounted properly and securely.

Applying DC Power

1. Connect the female end (M12 S-Coding Female 4-Pin Connector) of the supplied DC power cord to the power receptacle on the switch front panel.

2. Connect the other end to a grounded DC outlet.

When you apply power:

• All green **Link/Activity** LEDs blink momentarily.

• The green **Power LED** goes ON.

• The **Link/Activity** LEDs for every port connected to a device flash, as the Hardened PoE Switch conducts a brief Power On Self-Test (POST).

After the Hardened PoE Switch passes the POST, the **Link/Activity** LEDs for every port connected to a device go ON. The Hardened PoE Switch is now functional and ready to pass data.

If the **Power** LED is not ON, check that the power source is plugged in correctly and that the power source is good.

Appendix A - Specifications

Technology

Specification	Description
Standards:	• IEEE802.3, 10BASE-T • IEEE802.3u, 100BASE-TX • IEEE802.3ab 1000BASE-T • IEEE802.3z 1000BASE-SX/1000BASE-LX • IEEE802.3x, full-duplex and flow control
Forward and Filtering Rate:	• 10 Mbps: 14,880 pps • 100 Mbps: 148,810 pps • 1000 Mbps: 1,488,100 pps
Processing Type:	• Store-and-Forward • Half-duplex back-pressure and IEEE802.3x full-duplex flow control • Auto Negotiation • Auto MDI/MDIX

Power

Specification	Description
Power Input:	110 VDC
Power Consumption:	11.5 W Max.
PoE Power Budget	120 W

Mechanical

Specification	Description
Casing:	- Metal case - IP30
Dimensions:	140 mm (W) x 65.8 mm (D) x 228 mm (H) (5.5" (W) x 2.59" (D) x 8.98" (H))
Weight:	1.5 Kg (3.31 lbs)
Installation:	Wall Mounting

Interface

Specification	Description
Power Port:	M12 S-Coding Male 4-Pin Connector
Ethernet Port:	10/100BASE-TX (PoE): M12 D-Coding Female 4-Pin Connector 10/100/1000BASE-TX: M12 A-Coding Female 8-Pin Connector
LED Indicators:	- Per unit: Power 1, Power 2 - Ethernet port: Link/Activity - PoE port: PoE status

Environment

Specification	Description
Operating Temperature:	-40°C to 75°C (-40°F to 167°F)
Storage Temperature:	-40°C to 85°C (-40°F to 185°F)
Ambient Relative Humidity:	5% to 95% (non-condensing)

Regulatory Approvals

Specification	Description
Address of manufacturer:	Far East World Center, 4th Fl-7, 79 Hsin Tai Wu Rd., Sec. 1, His-Chih, New Taipei, 221 Taiwan
ISO:	Manufactured in an ISO9001 facility
EMI:	FCC Part 15B, Class A EN61000-6-4: EN55022, EN61000-3-2, EN61000-3-3
EMS:	EN61000-6-2: • EN61000-4-2 (ESD Standard) • EN61000-4-3 (Radiated RFI Standards) • EN61000-4-4 (Burst Standards) • EN61000-4-5 (Surge Standards) • EN61000-4-6 (Induced RFI Standards) • EN61000-4-8 (Magnetic Field Standards)
Environmental Test Compliance	• IEC60068-2-6 Fc (Vibration) • IEC60068-2-27 Ea (Shock) • FED STD 101C Method 5007.1 (Free fall w/ package)
Rail Traffic	EN50155

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