FiberPlex FP2008E/AT Series

Managed Industrial Gigabit PoE+ Switch, 10 Port, 8 Copper 10/100/1000 + 2 GigE SFPs

User Manual

This is a Class A device and is not intended for use in a residential environment.

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About this guide

This guide describes the FiberPlex FP2008E/AT Series Managed Industrial Gigabit PoE+ Switch, 10 Port, 8 Copper 10/100/1000 + 2 GigE SFPs hardware, installation and basic configuration.

This manual supports the following models:

- FP2008E/2SFP/8AT/24DC
- FP2008E/2SFP/8AT/48DC

Audience

This guide is intended for the following users:

- Operators
- Installers
- Maintenance technicians

Structure

This guide contains the following chapters and appendices:

- Chapter 1 on page 11 provides information about FP2008E/AT features and capabilities
- Chapter 2 on page 15 describes the FP2008E/AT hardware
- Chapter 3 on page 24 describes how to mount the FP2008E/AT on a DIN-Rail or wall
- Chapter 4 on page 28 explains how to install the FP2008E/AT hardware
- Chapter 5 on page 30 covers maintaining and servicing the device
- Chapter 6 on page 32 contains information on contacting Patton technical support for assistance
- Appendix A on page 35 contains compliance and regulatory information for the device
- Appendix B on page 38 contains specifications for the device

For best results, read the contents of this guide *before* you install the device.

Precautions

Notes and warnings, which have the following meanings, are used throughout this guide to help you become aware of potential extender problems. *Warnings* are intended to prevent safety hazards that could result in personal injury.

Note Highlights a helpful tip to help the user work more efficiently.

The alert symbol and IMPORTANT heading calls attention to important information.

The shock hazard symbol and WARNING heading indicate a potential electric shock hazard. Strictly follow the warning instructions to avoid injury caused by electric shock.

Safety when working with electricity

The FiberPlex device contains no user serviceable parts, and is not be opened by the user. The equipment shall be returned to Patton Electronics for repairs or repaired by qualified service personnel.

For AC powered units, ensure that the power cable used meets all applicable standards for the country in which it is to be installed, and that it is connected to a wall outlet which has earth ground.

Do not work on the system or connect or disconnect cables during periods of lightning activity.

Safety when working near hot surfaces

This warning label on the device means that the surface of the device may be hot. To avoid personal injury, be careful when touching the device while it is operating.

General observations

- Clean the case with a soft slightly moist anti-static cloth
- Place the unit on a flat surface and ensure free air circulation
- Avoid exposing the unit to direct sunlight and other heat sources
- Protect the unit from moisture, vapors, and aggressive liquids

Chapter 1 General Information

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FiberPlex FP2008E/AT Series Overview

Patton's FP2008E/AT Series (see figure 1) is a 10-port industrial Gigabit PoE+ managed Ethernet switch embedded with 8*10/100/1000Tx Ethernet ports that support IEEE802.3at/af for a maximum of 30W/port, and 2*100/1000 dual rate SFP slots for Gigabit fiber connections. It is a fully manageable Layer 2 Ethernet switch that is pre-loaded with a user-friendly web management console design. It supports the ring network redundancy function using the market's open standard ITU-T G.8032 ERPS (Ethernet Ring Protection Switch) protocol that has a <50ms network recovery time. The advanced network filtering and security functions, such as, IGMP, VLAN, QoS, SNMP, RMON, ModbusTCP, and 802.1X/HTTPS/SSH/SSL increase determinism and improve network management for remote SCADA systems or control networks.

Figure 1. FiberPlex FP2008E/AT Series Switch

All Patton industrial managed switches come with a pre-installed "user friendly" web console interface, which allows users to easily configure and manage the units, whether one is using a serial console and command line interface (CLI) commands like Telnet, SSH, HTTP (Web GUI) or simple network management protocols (SNMP).

The FP2008E/AT series is IP30 rated and DIN-rail mountable. All models have an extended temperature range of -40 to 167°F (-40°C to 75°C). This series supports a dual power input. There are two products available depending on what DC voltage you are able to supply the unit. The FP2008E/AT/**24DC** is for use in application where only low voltage is available (12–55 VDC). This unit has a built-in voltage booster allowing the unit to give a full 48VDC PoE power. The FP2008E/AT/**48DC** is intended to use in applications where users are able to provide higher voltages; 48–55 VDC. Both units provide high EFT and ESD protection for

industrial networking applications, such as power/utility, water/wastewater, oil/gas/mining, factory automation, security surveillance, ITS and any other outdoor or harsh environment.

Figure 2 is a typical application for the FP2008E/AT.

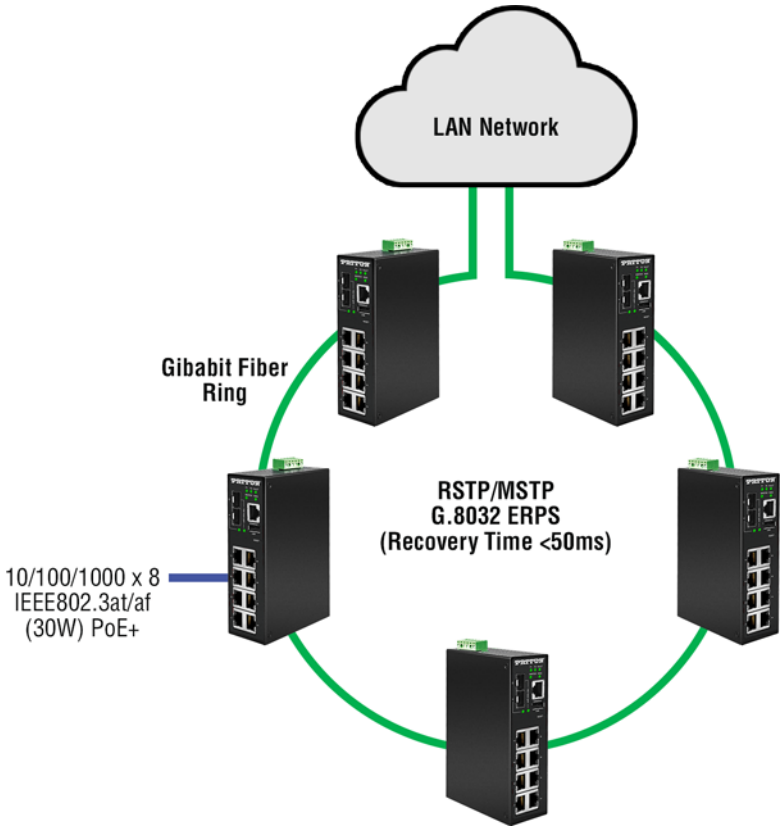

Figure 2. Typical application.

Product Software Features

Network redundancy: STP, RSTP, MSTP, ITU-T G.8032 Ethernet ring protection switch (ERPS) for network redundancy

Network management:

- Web UI based management, SNMP v1/v2/v3, serial console
- QoS, traffic classification QoS, Cos, bandwidth control for ingress and egress, broadcast storm control, Diffserv
- IEEE802.1q VLAN tagging, port-based VLAN support
- IGMP snooping v1/v2, IGMP filtering/throttling, IGMP query up to 256 groups
- Supports IPv4/IPv6, RMON, MIB II, port mirroring, event syslog, DNS, NTP/SNTP HTTPS, SSH/SSL, TFTP
- MODBUS TCP for SCADA system integration

- Port configuration: Status, statistics, mirroring, rate limiting, event syslog
- Event handling: Event notification by Email: cold/warm start, power failure, authentication, SNMP trap and fault alarm relay output

Software upgrade via TFTP and HTTP

Configuration backup via USB port

Product Hardware Features

System Interface and Performance:

- All RJ-45 ports support Auto MDI function
- Embedded 8*10/100/1000Tx (PSE 30W/Port) RJ45 ports, and 2*100/1000 SFP slots
- Store-and-forward switching architecture
- 8K MAC address table
- Power line EFT protection: 2,000VDC; Ethernet ESD protection: 6,000VDC

Power input (dual):

- DC 48–55 VDC 5.5A with a 6-pin removable terminal block (FP2008E/2SFP/8AT/48DC)
- DC 12–55 VDC 10A with a 6-pin removable terminal block (FP2008E/2SFP/8AT/24DC)
- One user-programmable 24-VDC, 1A resistive alarm relay contact
- The power input specification is complied with the requirements of SELV (safety extra low voltage), and the power supply should be complied with UL 61010-1 & UL 61010-2-201

Operating temperature: -40 to 167°F (-40 to 75°C)

Case/installation:

- IP-30 protection metal housing
- DIN rail and wall mount design
- Installation in a Pollution Degree 2 industrial environment

Package Contents

Package contents include:

- FP2008E/AT Series: 10-port industrial Gigabit PoE+ managed Ethernet switch, with 8*10/100/1000Tx (PSE 30W/Port) and 2*100/1000 SFP Slots
- Wall mounting brackets and screws
- 1 RJ45-to-DB9 serial console cable
- 1 DC cable—V18 AWG & DC jack 5.5 x 2.1 mm

Chapter 2 Hardware Description

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Front Panel

Front panel ports, LEDs, and button of the FP2008E/AT Series industrial Gigabit PoE+ managed Ethernet switch are shown figure 3 and described in table 1.

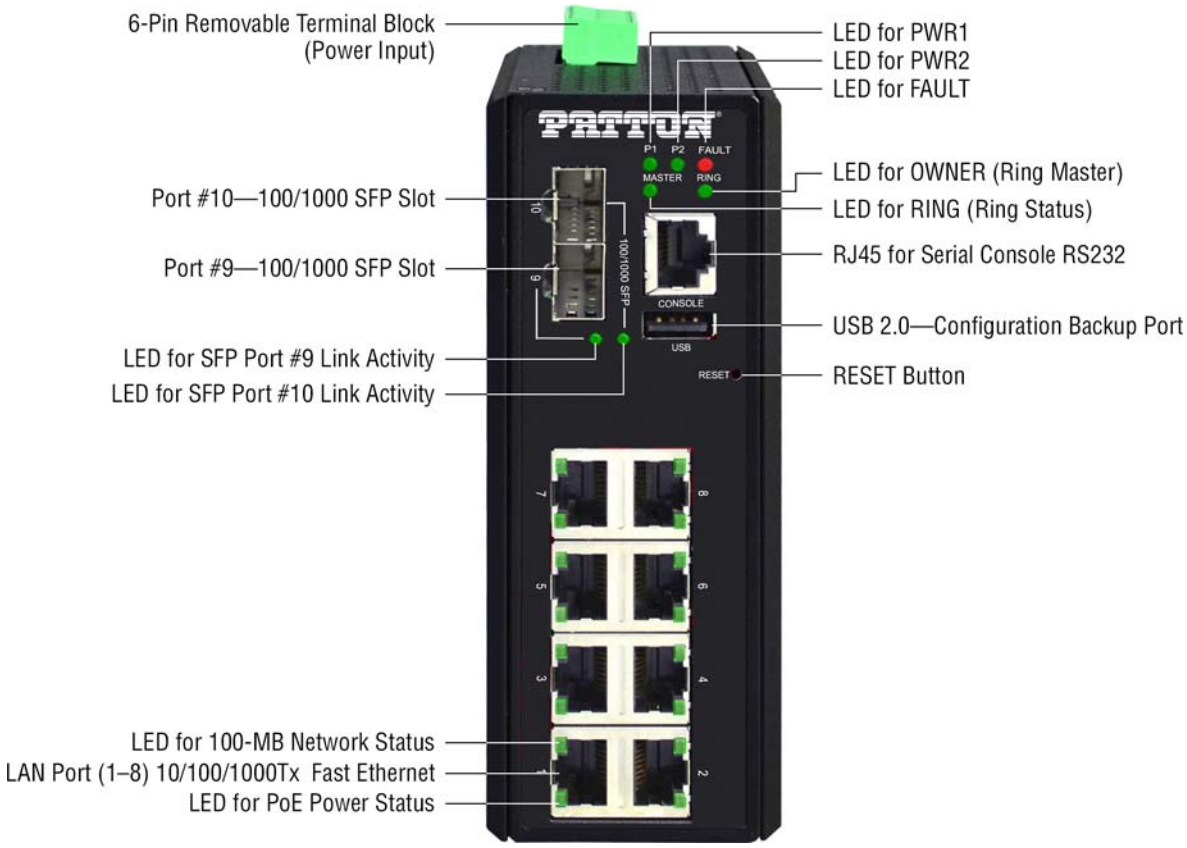

Figure 3. Front panel ports, LEDs, and button

Note *P1* is the abbreviation for *Power 1*, *P2* for *Power 2*, *LNK* for *Link*, and *ACT* for *Activity*

Table 1. Front panel ports, LEDs, and button descriptions

Button/LEDs/Ports	Description
RESET button	Used to reboot, restore default, or save running configurations as follows: • Pressing the button for 1 second saves running configuration to USB • Pressing the button for 4 to 6 seconds reboots the switch • Pressing the button for 7 or more seconds restores factory defaults
P1 LED (green)	**On**: Power input 1 is active
	Off: Power input 1 is inactive
P2 LED (green)	**On**: Power input 2 is active
	Off: Power input 2 is inactive

Table 1. Front panel ports, LEDs, and button descriptions (Continued)

Button/LEDs/Ports	Description
FAULT LED (red)	**On**: Power input 1 or 2 is inactive
	Off: Power input 1 and 2 are both functional, or no power inputs/ports link is active/port alarm is disabled
Owner LED (green)	**On**: ERPS Owner Mode (Ring Master) is ready
	Off: ERPS Owner Mode is not active
Ring LED (green)	**On**: Ring Network is active
	Off: Ring Network is inactive
LAN ports 1, 3, 5, & 7 (top LED) (green)	**On**: Connected to network, 10/100;/1000 Mbps
	Flashing: Network is active
	Off: Not connected to network
LAN ports 1, 3, 5, & 7 (bottom LED) PoE indicator (green)	**On**: The port is supplying power to the powered device
	Off: No powered device is attached or power input has failed
LAN ports 2, 4, 6, & 8 (bottom LED) (green)	**On**: Connected to network, 10/100;/1000 Mbps
	Flashing: Network is active
	Off: Not connected to network
LAN ports 2, 4, 6, & 8 (top LED) PoE indicator (green)	**On**: The port is supplying power to the powered device
	Off: No powered device is attached or power input has failed
Fiber ports 9 & 10 SFP LNK/ACT LEDs (green/ amber)	**On (green)**: Connected to network at 1000 Mbps
	Flashing (green): Networking is active at 1000 Mbps
	On (amber): Connected to network at 100 Mbps
	Flashing (amber): Networking is active at 100 Mbps
	Off: Not connected to network

Ethernet Ports

RJ-45 Ports (Auto MDI/MDIX): The RJ-45 ports are auto-sensing for 10Base-T, 100Base-TX or 1000Base-T devices connections. Auto MDI/MDIX means that the switch can connect to another switch or workstation

without changing the straight-through or crossover cabling. See figure 4 for a straight-through cabling schematic, and figure 5 on page 19 for a crossover cabling schematic.

Table 2. RJ-45 pin assignments

Pin Number	Assignment
1	Rx+
2	Rx-
3	Tx+
6	Tx-

Note "+" and "-" signs represent the polarity of the wires that make up each wire pair.

All ports on this industrial Ethernet switch support automatic MDI/MDI-X operation. Users can use straight-through cables (see figure 4) for all network connections to PCs, servers, other switches or hubs. With straight-through cable, pins 1, 2, 3, and 6, at one end of the cable, are connected straight through to pins 1, 2, 3 and 6 at the other end of the cable. Table 3 shows the 10ase-T, 100Base-TX, 1000Base-TX MDI and MDI-X port pinouts.

Table 3. Ethernet signal pinouts

Pin MDI-X	Signal Name	MDI Signal Name
1	Receive Data plus (RD+)	Transmit Data plus (TD+)
2	Receive Data minus (RD-)	Transmit Data minus (TD-)
3	Transmit Data plus (TD+)	Receive Data plus (RD+)
6	Transmit Data minus (TD-)	Receive Data minus (RD-)

Figure 4 and figure 5 on page 19 show the cabling schematics for straight-through and crossover cables.

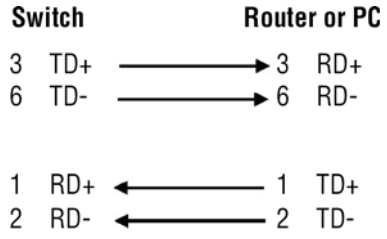

Figure 4. Straight-through cable schematic

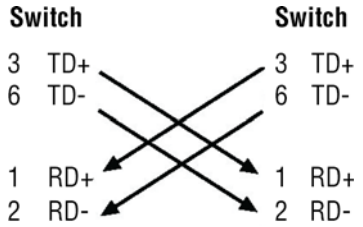

Figure 5. Crossover cable schematic

Cabling

Use the four twisted-pair, category 5e, or the above cabling for RJ-45 port connections. The cable between the switch and the link partner (switch, hub, workstation, etc.) must be less than 100 meters (328 ft.) long.

IMPORTANT

Use only optional optical transceivers (SFP) that comply with IEC 60825-1 and are classified as Class 1 laser products.

The small form-factor pluggable (SFP) is a compact optical transceiver used in optical communications for telecommunication and data communication applications.

To connect the transceiver and LC cable, do the following:

1. Insert the SFP transceiver module into the SFP slot as shown in figure 6. Figure 7 on page 20 shows the SFP transceiver module inserted into the slot.

Note The triangle mark is at the bottom of the SFP slot.

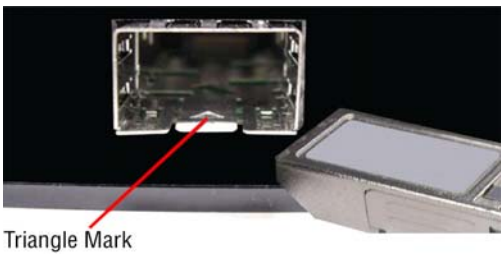

Figure 6. Transceiver to the SFP Module

Figure 7. Transceiver Inserted

2. Insert the fiber cable of the LC connector into the transceiver as shown in figure 8.

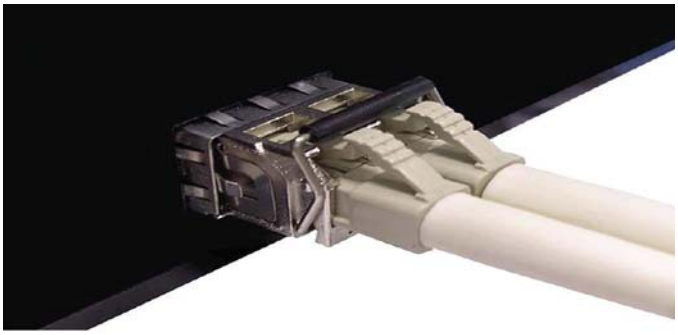

Figure 8. LC Connector to the Transceiver

To remove the LC connector from the transceiver, do the following:

1. Press the upper side of the LC connector from the transceiver and pull it out to release as shown in figure 9.

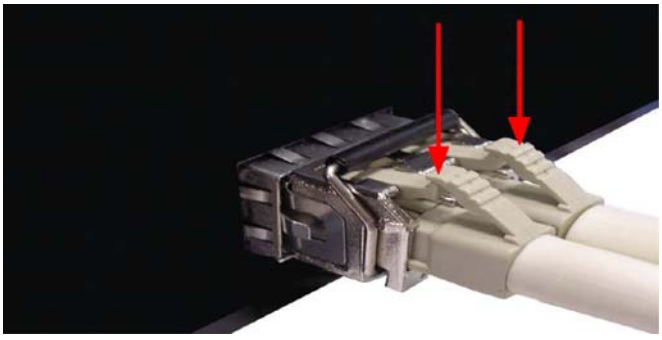

Figure 9. Remove LC Connector

2. Push down the metal clasp and pull the transceiver out by the plastic part as shown in figure 10 on page 21.

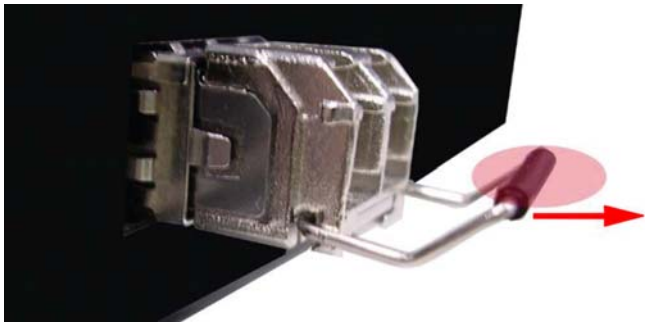

Figure 10. Pull Out from the SFP Module

Wiring the Power Inputs

Do the following to insert the power wires:

IMPORTANT

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

1. Insert the positive and negative wires into the PWR1 (V1+, V1-) and PWR2 (V2+, V2-) contacts on the terminal block connector as shown in figure 11.

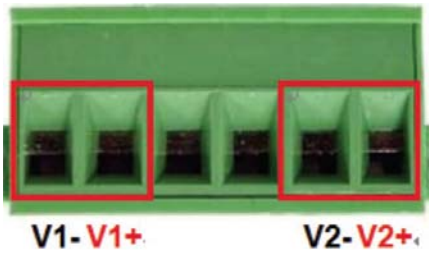

Figure 11. Power Terminal Block

2. Tighten the wire-clamp screws to prevent the wires from loosening, as shown in figure 12 on page 22.

Figure 12. Power Terminal Block

IMPORTANT

Only use copper conductors, **60/75°C**, tightened to **5 lbs**.

The wire gauge for the terminal block should range between **18~20 AWG**.

Wiring the Fault Alarm Contact

The fault alarm contact is in the middle of the terminal block connector as shown in figure 13 on page 22. By inserting the wires, it will detect the fault status including power failure or port link failure (managed industrial switch only) and form a normally open circuit. An application example for the fault alarm contact is shown in figure 13.

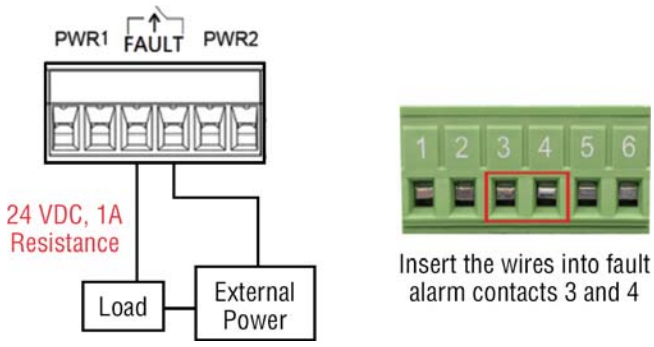

Figure 13. Wiring the Fault Alarm Contact

IMPORTANT

The wire gauge for the terminal block should range between **12 to 24 AWG**.

If only using one power source, jumper Pin 1 to Pin 5 and Pin 2 to Pin 6 to eliminate power fault alarm.

Grounding

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw (see figure 14 on page 23) to the grounding surface prior to connecting devices. The grounding screw symbol is shown in figure 15 on page 23.

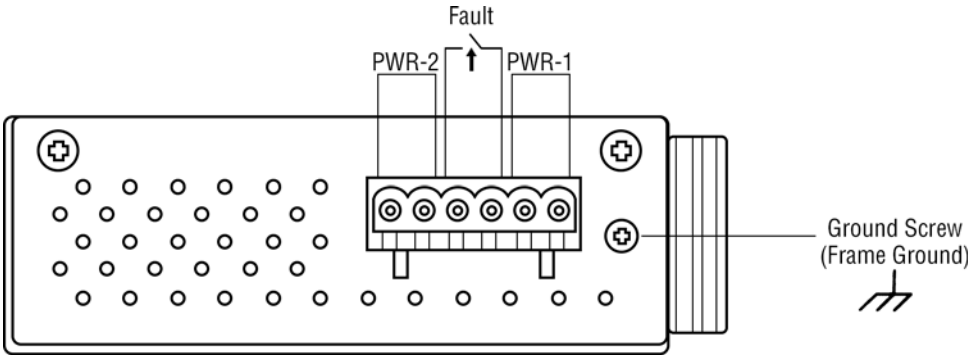

Figure 14. Grounding screw location

Figure 15. Grounding screw

IMPORTANT

Using a shielded cable achieves better electromagnetic compatibility

Chapter 3 Mounting Installation

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DIN-Rail Mounting

The DIN-Rail bracket is pre-installed on the industrial Ethernet switch from the factory. If the DIN-Rail bracket is not on the industrial Ethernet switch, see figure 16 to learn how to install the bracket on the switch.

IMPORTANT

If the device requires servicing of any kind, the user must disconnect and remove it from its mounting. The initial installation should be done in a way that makes this as convenient as possible.

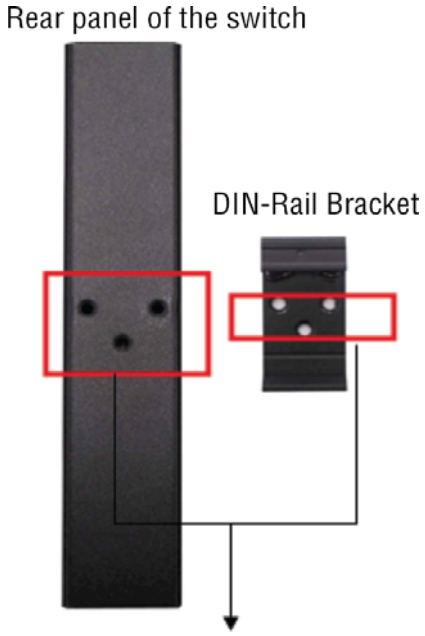

Figure 16. The Rear Side of the Switch and DIN-Rail Bracket

Do the following to learn how to hang the industrial Ethernet switch:

1. Use the screws to install the DIN-Rail bracket on the rear side of the industrial Ethernet switch.

IMPORTANT

The torque for tightening the screws on the device is 3.5 in-lbs.

2. To remove the DIN-Rail bracket, do the opposite from step 1.
3. After the DIN-Rail bracket is installed on the rear side of the switch, insert the top of the DIN-Rail on to the track as shown in figure 17 on page 26.

Figure 17. Insert the Switch on the DIN-Rail

4. Lightly pull down the bracket on to the rail as shown in figure 18.

Figure 18. Stable the Switch on DIN-Rail

5. Check if the bracket is mounted tightly on the rail.

6. To remove the industrial Ethernet switch from the rail, do the opposite from the above steps.

Wall Mounting

Follow the steps below to mount the industrial Ethernet switch using the wall mounting bracket as shown in figure 19 on page 27:

Note "Wall" means industrial control panel wall.

IMPORTANT

If the device requires servicing of any kind, the user must disconnect and remove it from its mounting. The initial installation should be done in a way that makes this as convenient as possible.

1. Remove the DIN-Rail bracket from the industrial Ethernet switch by loosening the screws.
2. Place the wall mounting brackets on the top and bottom of the industrial Ethernet switch.
3. Use the screws to screw the wall mounting brackets to the industrial Ethernet switch.

IMPORTANT

The torque for tightening the screws on the device is 3.5 in-lbs.

4. Use the hook holes at the corners of the wall mounting bracket to hang the industrial Ethernet switch on the wall.
5. To remove the wall mount bracket, do the opposite from the steps above.

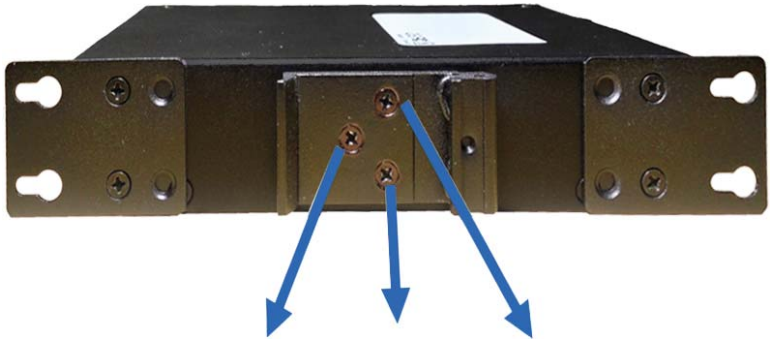

Figure 19. Remove DIN-Rail Bracket from the Switch

The dimensions of the wall mounting bracket are shown in figure 20.

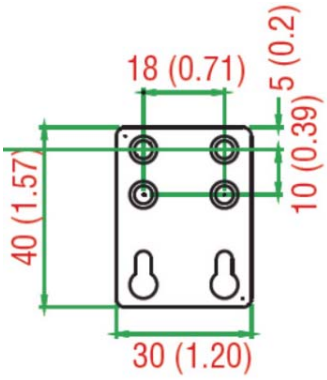

Figure 20. Wall Mounting Bracket Dimensions

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Installation Steps

Do the following to install the FP2008E/AT Series switch.

This device is intended for use indoor and at altitudes up to 6561 feet (2000 meters).

This device is intended to be installed in an industrial control enclosure and panel.

1. Unpack the industrial Ethernet switch from the original packing box.
2. Check if the DIN-Rail bracket is screwed on the industrial Ethernet switch.
   - If the DIN-Rail is not screwed on the industrial Ethernet switch, refer to section "DIN-Rail Mounting" on page 25 for DIN-Rail installation.
   - If you want to wall mount the industrial Ethernet switch, refer to section "Wall Mounting" on page 26 for wall mounting installation.
3. To hang the industrial Ethernet switch on a DIN-Rail or wall, please refer to the Mounting Installation section.
4. Power-on the industrial Ethernet switch and then the power LED light will turn on.
   - If you need help on how to wire power, refer to section "Wiring the Power Inputs" on page 21.
   - Refer to table 1 on page 16 section for LED light indications.
5. Prepare the twisted-pair, straight-through category 5 cable for Ethernet connection.
6. Insert one side of the RJ-45 cable into the switch's Ethernet port, and the other side into the networking device's Ethernet port (for example: switch, PC, or server. The Ethernet port's (RJ-45) LED on the industrial Ethernet switch will turn on when the cable is connected to the networking device. Refer to table 1 on page 16 section for LED light indications.
7. When all connections are set and the LED lights all show normal, the installation is complete.

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Maintenance

This warning label on the device means that the surface of the device may be hot. To avoid personal injury, be careful when touching the device while it is operating.

Clean the device with dry soft cloth.

Service

Do not open the device for any reason. Contact Patton for service (see Chapter 6 "Contacting Patton for Assistance" on page 32).

Chapter 6 Contacting Patton for Assistance

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Contacting Patton Technical Services for Free Support 33
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Introduction

This chapter contains the following information:

- "Contact information"—describes how to contact Patton technical support for assistance.
- "Warranty Service and Returned Merchandise Authorizations (RMAs)"—contains information about the warranty and obtaining a return merchandise authorization (RMA).

Contact information

Patton Electronics offers a wide array of free technical services. If you have questions about any of our other products we recommend you begin your search for answers by using our technical knowledge base. Here, we have gathered together many of the more commonly asked questions and compiled them into a searchable database to help you quickly solve your problems.

Contacting Patton Technical Services for Free Support

REGION	North America	Western Europe	Central & Eastern Europe
Location	**Maryland, USA**	**Bern, Switzerland**	**Budapest, Hungary**
Time Zone	EST/EDT UTC/GMT - 4/5 hours	CET/CEDT UTC/GMT + 1/2 hours	CET/CEDT UTC/GMT + 1/2 hours
Business Hours	Monday-Friday 8:00am to 5:00pm	Monday-Friday 09:00 to 12:00 13:30 to 17:30	Monday-Friday 8:30 to 17:00
Email	support@patton.com	support@patton.com	support@patton.com
Phone	+ 1 301 975 1007	+41 31 985 25 55	+36 439 3835
Fax	+1 301 869 9293	+41 31 985 2526	

Warranty Service and Returned Merchandise Authorizations (RMAs)

Patton Electronics is an ISO-9001 certified manufacturer and our products are carefully tested before shipment. All of our products are backed by a comprehensive warranty program.

Note If you purchased your equipment from a Patton Electronics reseller, ask your reseller how you should proceed with warranty service. It is often more convenient for you to work with your local reseller to obtain a replacement. Patton services our products no matter how you acquired them.

Warranty coverage

Our products are under warranty to be free from defects, and we will, at our option, repair or replace the product should it fail within one year from the first date of shipment. Our warranty is limited to defects in workmanship or materials, and does not cover customer damage, lightning or power surge damage, abuse, or unauthorized modification.

Out-of-warranty service

Patton services what we sell, no matter how you acquired it, including malfunctioning products that are no longer under warranty. Our products have a flat fee for repairs. Units damaged by lightning or other catastrophes may require replacement.

Returns for credit

Customer satisfaction is important to us, therefore any product may be returned with authorization within 30 days from the shipment date for a full credit of the purchase price. If you have ordered the wrong equipment or you are dissatisfied in any way, please contact us to request an RMA number to accept your return. Patton is not responsible for equipment returned without a Return Authorization.

Return for credit policy

- Less than 30 days: No Charge. Your credit will be issued upon receipt and inspection of the equipment.
- 30 to 60 days: We will add a 20% restocking charge (crediting your account with 80% of the purchase price).
- Over 60 days: Products will be accepted for repairs only.

RMA numbers

RMA numbers are required for all product returns. You can obtain an RMA by doing one of the following:

- Completing a request on the RMA Request page in the *Support* section at **www.patton.com**
- By calling **+1 (301) 975-1007** and speaking to a Technical Support Engineer
- By sending an e-mail to **returns@patton.com**

All returned units must have the RMA number clearly visible on the outside of the shipping container. Please use the original packing material that the device came in or pack the unit securely to avoid damage during shipping.

Shipping instructions

The RMA number should be clearly visible on the address label. Our shipping address is as follows:

Patton Electronics Company
RMA#: xxxx
7622 Rickenbacker Dr.
Gaithersburg, MD 20879-4773 USA

Patton will ship the equipment back to you in the same manner you ship it to us. Patton will pay the return shipping costs.

Appendix A Compliance Information

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Regulatory Information

EMC Directive:

- EN 55032:2012/AC:2013 Class A
- EN 55024:2010
- EN 50581:2012
- EN 50564:2011

PSTN:

- This device is not intended nor approved for connection to the PSTN

Radio and TV Interference (FCC Part 15)

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 in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. It may cause harmful interference to radio communications if the equipment is not installed and used in accordance with the instructions. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

CE Declaration of Conformity

This device is in compliance with the essential requirements and other relevant provisions of Directive 2004/30/EC relating to electromagnetic compatibility. Council Directive 2011/65/EU on the approximation of the laws of the member states relating to RoHS compliance and Council Directive 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products. The Declaration of Conformity may be obtained from Patton Electronics, Inc at www.patton.com/certifications.

The safety advice in the documentation accompanying this device shall be obeyed. The conformity to the above directive is indicated by CE mark on the device.

Authorized European Representative

D R M Green
European Compliance Services Ltd
Greyfriars Court
Paradise Square
Oxford, OX1 1BE, UK

Service

All warranty and non-warranty repairs must be returned freight prepaid and insured to Patton Electronics. All returns must have a Return Materials Authorization number on the outside of the shipping container. This number may be obtained from Patton Electronics Technical Services at:

- Tel: +1 (301) 975-1007
- Email: **support@patton.com**
- URL: **http://www.patton.com**

Packages received without an RMA number will not be accepted.

Appendix B Specifications

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Standards

IEEE 802.3, 10Base-T 10 Mbps Ethernet

IEEE 802.3u, 100Base-Tx, 100Base-Fx, Fast Ethernet

IEEE 802.3ab, 1000Base-Tx Gigabit Ethernet

IEEE 802.3z, Gigabit Fiber

IEEE 802.3x, Flow Control for Full Duplex

IEEE 8023.af, Power over Ethernet

IEEE 802.3at, Power over Ethernet Plus (Enhanced)

IEEE 802.3ad, Port Trunking with LACP

IEEE 802.1d, STP (Spanning Tree Protocol)

IEEE 802.1w, RSTP (Rapid Spanning Tree Protocol)

IEEE 802.1s, MTP (Multiple Spanning Tree Protocol)

ITU-TG.8032 / Y.1344, ERPS (Ethernet Ring Protection Switch)

IEEE 802.1q, Virtual LANs (VLAN)

IEEE 802.1x, Port based Network Control, Authentication

IEEE 802.1ad, Stacked VLAN, Q-in-Q

IEEE 802.1p, QoS/CoS Protocol for Traffic Prioritization

Protocols

IGMPv1/v2, SNMPv1/v2c/v3, TFTP, SNTP, SMTP, RMON, HTTP, HTTPS, Telnet, Syslog, DHCP Option 66/67/82, SSH/SSL, Modbus/TCP, LLDP, IPv4/IPv6

Data Process

Store and Forward

Transfer Rate

14,880 pps for 10Base-Tx Ethernet port

148,800 pps for 100Base-TX Fast Ethernet port

1,488,000pps for 1000Base-TxGigabit Ethernet port

Switch

Packet Buffer

4 Mbps

MAC Table

8K

Jumbo Frame
9.6k

Flow Control
IEEE 802.3x-full duplex mode, back pressure-half duplex mode

VLAN Groups
1 to 4094

IGMP Groups
Up to 256

Port Interface

Ethernet (RJ45) Port
8*10/100/1000BaseTx (PSE: 30W/Port) auto negotiation speed, Full/Half duplex mode, and auto MDI connection

PoE Pin Assignment
V+, V+, V-, V-, for pin 1, 2, 3, 6 (Endspan, MDI Alternative A)

Fiber Port
2*100/1000 dual rate SFP Slots for fiber

Wavelength
Refer to SFP Key Module

Serial Console Port
1 * RS232 in RJ45 connector with console cable, 115.2 Kbps, 8, N, 1

Configuration Backup Port
1 * USB 2.0

Protection

Overload Current
Present

Power Reverse polarity
Present

CPU Watch Dog
Present

Network Cable
10Base-T: 2-pair UTP/STP Cat. 3, 4, 5 cable; 100Base-TX: 2- pair UTP/STP Cat. 5 cable. EIA/TIA-568 100-ohm (100m) 1000BaseTX: UTP/STP Cat.5/5E cable; EIA/TIA-568 100-ohm (100m)

Mechanical Characteristics

LED Indicator
- Power Unit: P1 (Green), P2 (Green), Fault (Red)
- Ethernet port: Link/active (Green), 1000Mbps
- SFP: Link/active (Green)

Housing
Metal IP30 protection

Mounting
DIN-Rail Mounting, wall-mounting (optional)

Power Requirement, 48DC

Input Voltage
48~55VDC 5.5A Redundant Input

Power Connection
1 removable 6-contact terminal block

Power Consumption
240 Watts @ 48 to 55 VDC (Max. PoE Power Budget)

Power Requirement, 24DC

Input Voltage
12~55VDC 10A Redundant Input

Power Connection
1 removable 6-contact terminal block

Power Consumption
90 Watts @ 12 to 55 VDC (Max. PoE Power Budget)

Regulatory Approvals

EMI
FCC Class A

EMS
IEC6100-4-2/3/4/5/6/8; IEC6100-6-2; IEC6100-6-4

Stability Testing
IEC60068-2-32 (Free fall)

IEC60068-2-27 (Shock)

IEC60068-2-6 (Vibration)

Safety
UL 61010-1, 61010-2-201, ISA 12.12.01, ATEX

Certifications
NEMA TS2

Physical

Operating Temperature
-40 to 167° F (-40 to 75° C)

Storage Temperature
-40 to 185°F (-40 to 85°C)

Ambient Relative Humidity
5 to 95%, (non-condensing)

Weight
Unit Weight: 2.4 lbs (1.1 kg)

Shipping Weight: 3.2 lbs (1.5 kg)

Dimensions
2.1 x 5.6 x 3.9 inches (54 x 142 x 99 mm)

Figure 21 on page 44 shows the physical dimensions of Patton's FP2008E/AT.

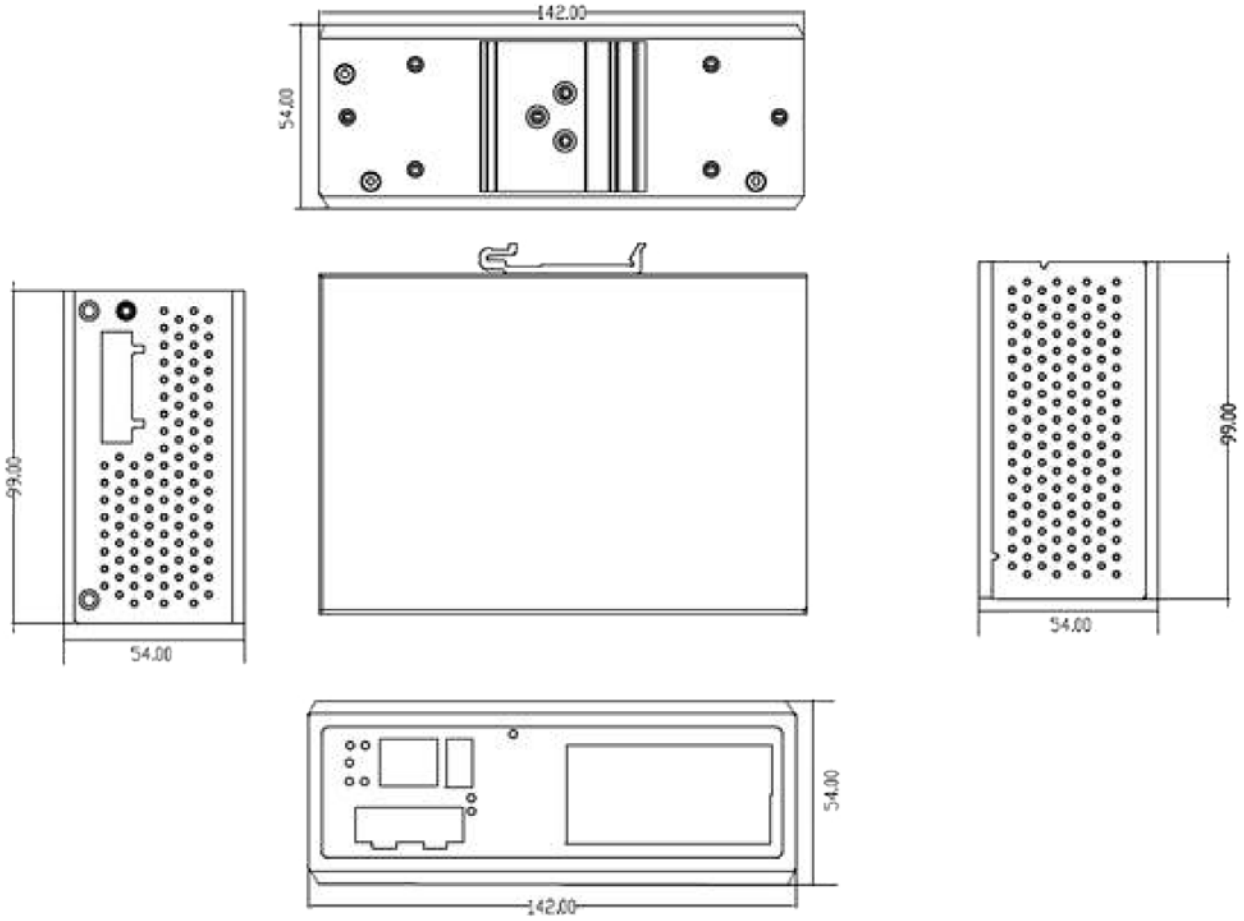

Figure 21. FP2008E/AT Physical Dimensions