FORTINET FS-224E

Fortinet FortiSwitch 224E Layer 2/3 Switch User Manual

Model: FS-224E

1. INTRODUCTION

The Fortinet FortiSwitch 224E is a high-performance Layer 2/3 Ethernet switch designed to provide secure, scalable, and manageable network access. It is an integral component of the Fortinet Security Fabric, offering seamless integration and unified management through the FortiGate interface via FortiLink. This manual provides essential information for the proper installation, configuration, operation, and maintenance of your FortiSwitch 224E. Please read this manual thoroughly before operating the device to ensure optimal performance and to prevent damage.

2. PRODUCT OVERVIEW

2.1 Key Features

- **Layer 2/3 Switching:** Supports advanced routing capabilities for enhanced network flexibility.
- **24 GE RJ45 Ports:** Provides high-density Gigabit Ethernet connectivity for various devices.
- **4 GE SFP Ports:** Offers fiber connectivity for long-distance links and uplink aggregation.
- **FortiGate Switch Controller Compatibility:** Enables seamless integration with FortiGate devices for centralized, unified management via FortiLink.
- **Versatile Deployment:** Ideal for enterprise networks, branch offices, and data center environments.

2.2 Package Contents

Verify that your package contains the following items:

- FortiSwitch 224E Unit
- AC Power Cord(s)
- Rack-mount Kit (brackets and screws)
- Quick Start Guide
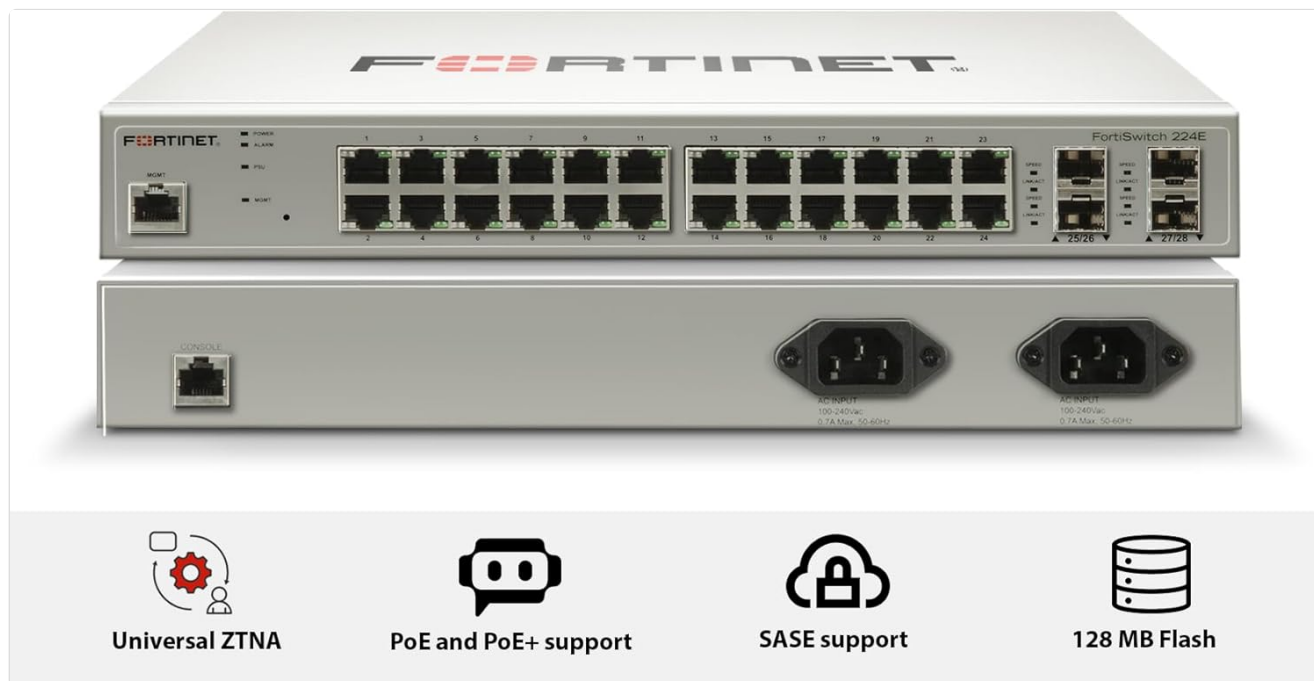- Safety Information Sheet

2.3 Front and Rear Panel Views

Image 2.3.1: Front and rear view of the FortiSwitch 224E. The front panel features 24 RJ45 ports, 4 SFP ports, and status LEDs. The rear panel includes the console port and dual AC power inputs.

Image 2.3.2: Detailed view of the FortiSwitch 224E front panel, showing the 24 Gigabit Ethernet RJ45 ports (labeled 1-24), 4 Gigabit Ethernet SFP ports (labeled 25/26 and 27/28), and various status indicators (Power, Alarm, MGMT, CONSOLE).
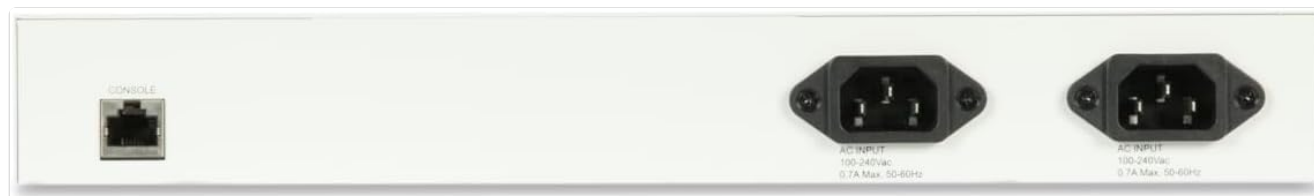

Image 2.3.3: Detailed view of the FortiSwitch 224E rear panel, featuring the RJ45 console port for local management and two AC power input receptacles (100-240Vac, 50-60Hz).

3. SAFETY INFORMATION

Please observe the following safety precautions to prevent injury and damage to the device:

- **Power:** Use only the power cord(s) supplied with the device or approved replacements. Ensure the power source voltage matches the device's requirements (100-240Vac, 50-60Hz).

- **Grounding:** Always connect the device to a grounded power outlet.
- **Ventilation:** Ensure adequate airflow around the device. Do not block ventilation openings. Maintain proper clearance for air intake and exhaust.
- **Environment:** Operate the device within the specified temperature and humidity ranges (Operating: 0-50°C, 10-90% non-condensing humidity). Avoid direct sunlight, heat sources, and excessive moisture.
- **Installation:** Install the device on a stable, level surface or securely mount it in a standard 19-inch equipment rack.
- **Servicing:** Do not attempt to service the device yourself. Refer all servicing to qualified personnel.

4. SETUP & INSTALLATION

4.1 Site Preparation

Before installation, ensure the installation site meets the environmental requirements outlined in the Safety Information and Specifications sections. Provide adequate space for cabling and ventilation.

4.2 Mounting the Switch

The FortiSwitch 224E can be installed in a standard 19-inch equipment rack or placed on a desktop.

4.2.1 Rack Mounting

1. Attach the provided rack-mount brackets to the sides of the FortiSwitch using the included screws.
2. Align the brackets with the vertical rails of the equipment rack.
3. Secure the FortiSwitch to the rack using appropriate rack screws (not always included).

4.2.2 Desktop Placement

If not rack-mounting, place the FortiSwitch on a flat, stable surface. Ensure there is sufficient space around the device for proper ventilation.

4.3 Connecting Power

1. Connect the supplied AC power cord(s) to the AC input receptacle(s) on the rear panel of the FortiSwitch.
2. Plug the other end of the power cord(s) into a grounded electrical outlet.
3. The switch will power on automatically. Verify the Power LED on the front panel illuminates.

4.4 Initial Console Connection

For initial configuration or troubleshooting, connect to the console port:

1. Connect an RJ45-to-DB9 console cable (or USB-to-RJ45 adapter) from your management workstation to the CONSOLE port on the rear panel of the FortiSwitch.
2. Configure your terminal emulation software (e.g., PuTTY, Tera Term) with the following settings**Baud Rate: 9600, Data Bits: 8, Parity: None, Stop Bits: 1, Flow Control: None.**
3. Press Enter to access the command-line interface (CLI).

5. OPERATION

5.1 Connecting Network Devices

5.1.1 RJ45 Ports

Connect Ethernet cables from your network devices (e.g., computers, servers, access points) to the 24 GE RJ45 ports on the front panel. The corresponding Link/Activity LEDs will illuminate when a valid connection is established and blink during data transmission.

5.1.2 SFP Ports

Insert compatible Gigabit Ethernet SFP transceivers into the 4 GE SFP ports. Connect fiber optic cables from other network devices or uplinks to these transceivers. Ensure the correct fiber type (single-mode or multi-mode) is used for your transceivers and cables.

5.2 Management and Configuration

The FortiSwitch 224E can be managed through several methods:

- **FortiLink Integration (Recommended):** For unified management, connect the FortiSwitch to a FortiGate firewall. The FortiGate acts as a switch controller, allowing you to manage the switch directly from the FortiGate's GUI. Refer to the FortiGate documentation for detailed FortiLink setup.
- **Command-Line Interface (CLI):** Access the CLI via the console port (as described in Section 4.4) or via SSH/Telnet over the network (after initial configuration). The CLI provides full control over all switch features.
- **Web-based Management:** The FortiSwitch may offer a web-based graphical user interface (GUI) for configuration. Access it by entering the switch's IP address into a web browser.

6. MAINTENANCE

6.1 Firmware Updates

Regularly check the Fortinet support website for the latest firmware versions. Keeping your FortiSwitch firmware up-to-date ensures optimal performance, security, and access to new features. Follow the instructions provided with the firmware release notes for the update process.

6.2 Cleaning

Periodically clean the exterior of the switch with a soft, dry cloth. Do not use liquid or aerosol cleaners directly on the device. Ensure ventilation openings are free from dust and obstructions.

6.3 Environmental Monitoring

Ensure the operating environment remains within the specified temperature and humidity ranges to prevent overheating and component damage.

7. TROUBLESHOOTING

7.1 Power Issues

- **No Power LED:** Check if the power cord is securely connected to both the switch and the power outlet. Verify the power outlet is functional. Try a different power cord.
- **Alarm LED On:** This indicates a system fault. Consult the Fortinet documentation or support for specific alarm codes and resolutions.

7.2 Connectivity Issues

- **Port Link/Activity LED Off:** Ensure the Ethernet or fiber cable is securely connected at both ends. Verify the connected device is powered on and functioning correctly. Check cable integrity.
- **No Network Access:** Verify IP configuration on the switch and connected devices. Check VLAN assignments

if configured. Ensure FortiLink is properly established if managing via FortiGate.

7.3 Console Access Problems

- **No Output on Console:** Double-check the console cable connection. Verify the terminal emulation software settings (Baud Rate: 9600, Data Bits: 8, Parity: None, Stop Bits: 1, Flow Control: None). Try a different console cable or adapter.

8. SPECIFICATIONS

FS-224E Specifications

Switching Capacity (Duplex)	56 Gbps
Packets Per Second (Duplex)	83 Mpps
Memory	512 MB DDR3
RJ-45 Serial Console Port	1
VLANs Supported	4K
Network Latency	< 1µs

Image 8.1: Key performance and hardware specifications for the FortiSwitch 224E.

SPECIFICATIONS

	FORTISWITCH 224D-FPOE	FORTISWITCH 224E	FORTISWITCH 224E-POE
Hardware Specifications			
Total Network Interfaces	24x GE RJ45 ports and 4x GE SFP ports	24x GE RJ45 ports and 4x GE SFP ports	24x GE RJ45 ports and 4x GE SFP ports
Dedicated Management 10/100 Port	1	1	1
RJ-45 Serial Console Port	1	1	1
Form Factor	1 RU Rack Mount	1 RU Rack Mount	1 RU Rack Mount
Power over Ethernet (PoE) Ports	24 (802.3af/802.3at)	NA	12 (802.3af/802.3at)
PoE Power Budget	370 W	NA	180 W
Mean Time Between Failures	> 10 years	> 10 years	> 10 years
System Specifications			
Switching Capacity (Duplex)	56 Gbps	56 Gbps	56 Gbps
Packets Per Second (Duplex)	83 Mpps	83 Mpps	83 Mpps
MAC Address Storage	16 K	16 K	16 K
Network Latency	< 1µs	< 1µs	< 1µs
VLANs Supported	4 K	4 K	4 K
Link Aggregation Group Size	8	8	8
Total Link Aggregation Groups	Up to number of ports	Up to number of ports	Up to number of ports
Packet Buffers	1.5 MB	1.5 MB	1.5 MB
DRAM	512 MB DDR3	512 MB DDR3	512 MB DDR3
FLASH	128 MB	128 MB	128 MB
ACL	512	512	512
Spanning Tree Instances	16	16	16
Route Entries	64	64	64
Host Entries	1k	1k	1k
Dimensions			
Height x Depth x Width (inches)	1.73 × 12.2 × 17.5	1.73 × 9 × 12.99	1.73 × 9 × 12.99
Height x Depth x Width (mm)	44 × 310 × 440	44 × 230 × 330	44 × 230 × 330
Weight	10.64 lbs (4.83 kg)	4.78 lbs (2.17 kg)	5.37 lbs (2.44 kg)
Environment			
Power Required	100–240V AC, 50/60 Hz	100–240V AC, 50/60 Hz	100–240V AC, 50/60 Hz
Power Supply	AC built in	AC built in	AC built in
Redundant Power	Optional FRPS-740	Redundant AC	Optional FRPS-740
Power Consumption* (Average / Maximum)	380 W / 397 W	17.2 W / 17.3 W	220.18 W / 223.57 W
Heat Dissipation	85 BTU/h	59.095 BTU/h	74.29554 BTU/h
Operating Temperature	32–122°F (0–50°C)	32–122°F (0–50°C)	32–122°F (0–50°C)
Storage Temperature	-4–158°F (-20–70°C)	-4–158°F (-20–70°C)	-4–158°F (-20–70°C)
Humidity	10–90% non-condensing	10–90% non-condensing	10–90% non-condensing
Air-Flow Direction	side-to-back	side-to-back	side-to-back
Certification and Compliance			
	FCC, CE, RCM, VCCI, BSMI, UL, CB, RoHS2		
Warranty			
Fortinet Warranty	Limited lifetime** warranty on all models		

* POE models power consumption is similar to non-POE model if POE is not in use
** Fortinet Warranty Policy: http://www.fortinet.com/doc/legal/EULA.pdf

FortiSwitch 224E-POE

FortiSwitch 224D-FPOE

FortiSwitch 224E

Image 8.2: Comprehensive hardware and environmental specifications for the FortiSwitch 224E, including comparisons with other models.

Height x Depth x Width: 1.73 x 9 x 12.99 inches
Weight: 4.78 pounds

Image 8.3: Visual representation of the FortiSwitch 224E with its physical dimensions and weight.

FortiSwitch 224E Technical Specifications

Feature	Specification
Model Number	FS-224E
Interface Type	RJ45
Total Network Interfaces	24x GE RJ45 ports, 4x GE SFP ports
RJ-45 Serial Console Port	1
Switching Capacity (Duplex)	56 Gbps
Packets Per Second (Duplex)	83 Mpps
Memory	512 MB DDR3
Flash	128 MB
VLANs Supported	4K
Network Latency	<1µs
Product Dimensions (LxWxH)	15.5 x 12.4 x 4.3 inches (39.4 x 31.5 x 10.9 cm)
Item Weight	4 pounds (1.81 kg)
Power Required	100-240V AC, 50/60Hz
Power Supply	AC built-in
Operating Temperature	32-122°F (0-50°C)
Storage Temperature	-4-158°F (-20-70°C)
Humidity	10-90% non-condensing
Air-Flow Direction	Side-to-back
Certifications	FCC, CE, RCM, VCCI, BSMI, UL, CB, RoHS2

9. Warranty & Support

9.1 Product Warranty

The FortiSwitch 224E comes with a **Limited Lifetime Warranty**. For detailed terms and conditions of the warranty, please refer to the official Fortinet website or the warranty documentation included with your product.

9.2 Technical Support

For technical assistance, documentation, firmware downloads, and other support resources, please visit the official Fortinet support website:

https://support.fortinet.com

You may need to register your product to access full support services.