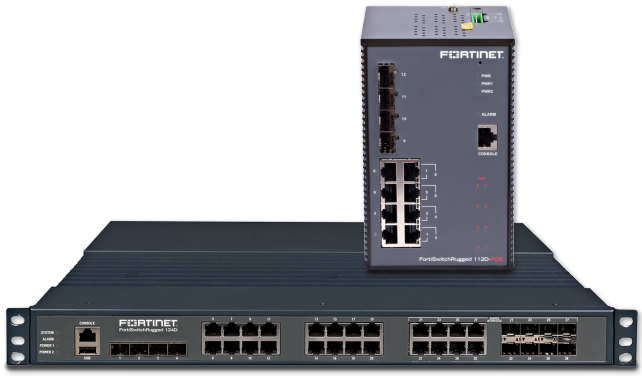
DATA SHEET

FortiSwitch™ Rugged

Secure and Ruggedized Ethernet Switching



High Performance for Harsh Environments

FortiSwitch™ Rugged switches deliver all of the performance and security of the trusted FortiSwitch Secure, Simple, Scalable Ethernet solution, but with added reinforcement that makes them ideal for deployments in harsh environments.

Resilient, sturdy and capable of withstanding intense temperature fluctuations, FortiSwitch Rugged ensures the integrity and performance of mission-critical networks in even the most challenging of deployments.

Highlights

- Mean time between failure greater than 25 years
- Fanless passive cooling
- DIN-rail or wall-mountable
- Power over Ethernet capable including PoE+
- Redundant power input terminals

Add Ruggedized FortiGate for Tough and Powerful Protection

Engineered to survive in hostile environments with an extreme temperature range, the combination of FortiGate Rugged network security appliances with the FortiSwitch Rugged provides a connected network security solution.

Simple Network Deployment

The Power over Ethernet (PoE) capability enables simple installation of cameras, sensors and wireless access points in the network, with power and data delivered over the same network cable.

There is no need to contract electricians to install power for your PoE devices, reducing your overall network TCO.

Key Features and Benefits

Sturdy IP30 construction	Built to ingress protection 30 standards, the construction is designed to perform while enduring hostile conditions.
Passive cooling	With no fan and no moving parts, the mean time between failure is greater than 25 years.
Redundant power inputs	Maximizes network availability by eliminating the downtime associated with failure of a power input.
Power over Ethernet capability	Seamless integration of peripheral devices such as cameras, sensors and wireless access points into the network.

Features

	FORTISWITCH D-SERIES FORTILINK MODE (WITH FORTIGATE)
Management and Configuration	
Auto Discovery of Multiple Switches	Yes
Number of Managed Switches per FortiGate	8 to 300 Depending on FortiGate Model (Please refer to admin-guide)
FortiLink Stacking (Auto Inter-Switch Links)	Yes
Software Upgrade of Switches	Yes
Centralized VLAN Configuration	Yes
Switch POE Control	Yes
Link Aggregation Configuration	Yes
Spanning Tree	Yes
LLDP/MED	Yes
IGMP Snooping	Yes
L3 Routing and Services	Yes (FortiGate)
Policy-based Routing	Yes (FortiGate)
Virtual Domain	Yes (FortiGate)
Security and Visibility	
802.1x Authentication (Port-based, MAC-based, MAB)	Yes
Syslog Collection	Yes
DHCP Snooping	Yes
Device Detection	Yes
MAC Black/While Listing	Yes (FortiGate)
Policy Control of Users and Devices	Yes (FortiGate)
UTM Features	
Firewall	Yes (FortiGate)
IPC, AV, Application Control, Botnet	Yes (FortiGate)
High Availability	
Support FortiLink FortiGate in HA Cluster	Yes
LAG support for FortiLink Connection	Yes

	FORTISWITCH D-SERIES STANDALONE MODE
Layer 2	
Jumbo Frames	Yes
Auto-negotiation for port speed and duplex	Yes
IEEE 802.1D MAC Bridging/STP	Yes
IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)	Yes
IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)	Yes
STP Root Guard	Yes
Edge Port / Port Fast	Yes
IEEE 802.1Q VLAN Tagging	Yes
Private VLAN	Yes (FSR-124D)
IEEE 802.3ad Link Aggregation with LACP	Yes
Unicast/Multicast traffic balance over trunking port (dst-ip, dst-mac, src-dst-ip, src-dst-mac, src-ip, src-mac)	Yes
IEEE 802.1AX Link Aggregation	Yes
Spanning Tree Instances (MSTP/CST)	15/1
IEEE 802.3x Flow Control and back-pressure	Yes
IEEE 802.3 10Base-T	Yes
IEEE 802.3u 100Base-TX	Yes
IEEE 802.3z 1000Base-SX/LX	Yes
IEEE 802.3ab 1000Base-T	Yes
IEEE 802.3 CSMA/CD Access Method and Physical Layer Specifications	Yes
Storm Control	Yes
MAC, IP, Ethertype-based VLANs	Yes
Virtual-Wire	Yes (FSR-124D)
Time-Domain Reflectcometry (TDR) Support	Yes (FSR-124D)

Features

	FORTISWITCH D-SERIES STANDALONE MODE
Services	
IGMP Snooping	Yes
Security and Visibility	
Port Mirroring	Yes
Admin Authentication Via RFC 2865 RADIUS	Yes
IEEE 802.1x authentication Port-based	Yes
IEEE 802.1x Authentication MAC-based	Yes
IEEE 802.1x Guest and Fallback VLAN	Yes
IEEE 802.1x MAC Access Bypass (MAB)	Yes
IEEE 802.1x Dynamic VLAN Assignment	Yes
sFlow	Yes
ACL	Yes (FSR-124D)
IEEE 802.1ab Link Layer Discovery Protocol (LLDP)	Yes
IEEE 802.1ab LLDP-MED	Yes
DHCP-Snooping	Yes
Dynamic ARP Inspection	Yes
Sticky MAC and MAC Limit	Yes (FSR-124D)
Quality of Service	
IEEE 802.1p Based Priority Queuing	Yes (FSR-124D)
IP TOS/DSCP Based Priority Queuing	Yes (FSR-124D)
Management	
IPv4 and IPv6 Management	Yes
Telnet / SSH	Yes
HTTP / HTTPS	Yes
SNMP v1/v2c/v3	Yes
SNTP	Yes
Standard CLI and web GUI interface	Yes
Software download/upload: TFTP/FTP/GUI	Yes
Managed from FortiGate	Yes
Support for HTTP REST APIs for Configuration and Monitoring	Yes

RFC Compliance

RFC and MIB Support*	
BFD	MIB
RFC 5880: Bidirectional Forwarding Detection (BFD)	RFC 1724: RIPv2-MIB
RFC 5881: Bidirectional Forwarding Detection (BFD) for IPv4 and IPv6 (Single Hop)	RFC 1850: OSPF Version 2 Management Information Base
RFC 5882: Generic Application of Bidirectional Forwarding Detection (BFD)	RFC 2233: The Interfaces Group MIB using SMIv2
BGP	RFC 2618: Radius-Auth-Client-MIB
RFC 1771: A Border Gateway Protocol 4 (BGP-4)	RFC 2620: Radius-Acc-Client-MIB
RFC 1965: Autonomous System Confederations for BGP	RFC 2674: Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering and Virtual LAN extensions
RFC 1997: BGP Communities Attribute	
RFC 2545: Use of BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing	RFC 2787: Definitions of Managed Objects for the Virtual Router Redundancy Protocol
RFC 2796: BGP Route Reflection - An Alternative to Full Mesh IBGP	RFC 2819: Remote Network Monitoring Management Information Base
RFC 2842: Capabilities Advertisement with BGP-4	RFC 2932: IPv4 Multicast Routing MIB
RFC 2858: Multiprotocol Extensions for BGP-4	RFC 2934: Protocol Independent Multicast MIB for IPv4
RFC 4271: BGP-4	RFC 3289: Management Information Base for the Differentiated Services Architecture
RFC 6286: Autonomous-System-Wide Unique BGP Identifier for BGP-4	RFC 3433: Entity Sensor Management Information Base
RFC 6608: Subcodes for BGP Finite State Machine Error	RFC 3621: Power Ethernet MIB
RFC 6793: BGP Support for Four-Octet Autonomous System (AS) Number Space	RFC 6933: Entity MIB (Version 4)
RFC 7606: Revised Error Handling for BGP UPDATE Messages	OSPF
RFC 7607: Codification of AS 0 Processing	RFC 1583: OSPF version 2
RFC 7705: Autonomous System Migration Mechanisms and Their Effects on the BGP AS_PATH Attribute	RFC 1765: OSPF Database Overflow
RFC 8212: Default External BGP (EBGP) Route Propagation Behavior without Policies	RFC 2328: OSPF version 2
RFC 8654: Extended Message Support for BGP	RFC 2370: The OSPF Opaque LSA Option
DHCP	RFC 2740: OSPF for IPv6
RFC 2131: Dynamic Host Configuration Protocol	RFC 3101: The OSPF Not-So-Stubby Area (NSSA) Option
RFC 3046: DHCP Relay Agent Information Option	RFC 3137: OSPF Stub Router Advertisement
RFC 7513: Source Address Validation Improvement (SAVI) Solution for DHCP	RFC 3623: OSPF Graceful Restart
IP/IPv4	RFC 5340: OSPF for IPv6 (OSPFv3)
RFC 3168: The Addition of Explicit Congestion Notification (ECN) to IP	RFC 5709: OSPFv2 HMAC-SHA Cryptographic Authentication
RFC 5227: IPv4 Address Conflict Detection	RFC 6549: OSPFv2 Multi-Instance Extensions
RFC 5517: Cisco Systems' Private VLANs: Scalable Security in a Multi-Client Environment	RFC 6845: OSPF Hybrid Broadcast and Point-to-Multipoint Interface Type
RFC 7039: Source Address Validation Improvement (SAVI) Framework	RFC 6860: Hiding Transit-Only Networks in OSPF
IP Multicast	RFC 7474: Security Extension for OSPFv2 When Using Manual Key Management
RFC 2362: Protocol Independent Multicast-Sparse Mode (PIM-SM): Protocol Specification	RFC 7503: OSPF for IPv6
RFC 2710: Multicast Listener Discovery (MLD) for IPv6 (MLDv1)	RFC 8042: CCITT Draft Recommendation T.4
RFC 4541: Considerations for Internet Group Management Protocol (IGMP) and Multicast Listener Discovery (MLD) Snooping Switches	RFC 8362: OSPFv3 Link State Advertisement (LSA) Extensibility
RFC 4605: Internet Group Management Protocol (IGMP)/Multicast Listener Discovery (MLD)-Based Multicast Forwarding ("IGMP/MLD Proxying")	OTHER
RFC 4607: Source-Specific Multicast for IP	RFC 2030: SNTP
IPv6	RFC 3176: InMon Corporation's sFlow: A Method for Monitoring Traffic in Switched and Routed Networks
RFC 2464: Transmission of IPv6 Packets over Ethernet Networks: Transmission of IPv6 Packets over Ethernet Networks	RFC 3768: VRRP
RFC 2474: Definition of the Differentiated Services Field (DS Field) in the and IPv6 Headers (DSCP)	RFC 3954: Cisco Systems NetFlow Services Export Version 9
RFC 2893: Transition Mechanisms for IPv6 Hosts and Routers	RFC 5101: Specification of the IP Flow Information Export (IPFIX) Protocol for the Exchange of Flow Information
RFC 4213: Basic Transition Mechanisms for IPv6 Hosts and Router	RFC 5798: VRRPv3 (IPv4 and IPv6)
RFC 4291: IP Version 6 Addressing Architecture	RADIUS
RFC 4443: Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification	RFC 2865: Admin Authentication Using RADIUS
RFC 4861: Neighbor Discovery for IP version 6 (IPv6)	RFC 2866: RADIUS Accounting
RFC 4862: IPv6 Stateless Address Auto configuration	RFC 5176: Dynamic Authorization Extensions to Remote Authentication Dial In User Service (RADIUS)
RFC 5095: Deprecation of Type 0 Routing Headers in IPv6	RIP
RFC 6724: Default Address Selection for Internet Protocol version 6 (IPv6)	RFC 1058: Routing Information Protocol
RFC 7113: IPv6 RA Guard	RFC 2080: RIPng for IPv6
RFC 8200: Internet Protocol, Version 6 (IPv6) Specification	RFC 2082: RIP-2 MD5 Authentication
RFC 8201: Path MTU Discovery for IP version 6	RFC 2453: RIPv2
IS-IS	RFC 4822: RIPv2 Cryptographic Authentication
RFC 1195: Use of OSI IS-IS for Routing in TCP/IP and Dual Environments	SNMP
RFC 5308: Routing IPv6 with IS-IS	RFC 1157: SNMPv1/v2c
MIB	RFC 2571: Architecture for Describing SNMP
RFC 1213: MIB II parts that apply to FortiSwitch 100 units	RFC 2572: SNMP Message Processing and Dispatching
RFC 1354: IP Forwarding Table MIB	RFC 2573: SNMP Applications
RFC 1493: Bridge MIB	RFC 2576: Coexistence between SNMP versions
RFC 1573: SNMP MIB II	
RFC 1643: Ethernet-like Interface MIB	

* RFC and MIB supported by FortiSwitch Operating System. Check feature matrix in administration guide for model specific support.

Specifications

	FSR-112D-POE	FSR-124D
Ethernet		
Ethernet Interface	8x GE RJ45 (including 8x PoE/PoE+ capable ports), 4x GE SFP slots PoE is 802.3 af and PoE+ is 802.3at	16x GE RJ45, 4x GE SFP slots, 8 shared media interfaces (GE RJ45 / GE SFP slots)
Console Interface	DB9 connector	DB9 connector
Operating Mode	Store and forward, L2/L3 wire-speed/non-blocking switching engine	Store and forward, L2/L3 wire-speed/non-blocking switching engine
MAC Addresses	8K	8K
Switching Capacity	24 Gbps	56 Gbps
Packets Per Second	46 Mpps	83 Mpps
VLANs Supported	4K	4K
DRAM	512 MB	512 MB
FLASH	64 MB	512 MB
Network Latency	< 2 µs	< 1 µs
Copper RJ45 Ports		
Speed	10/100/1000 Mbps	10/100/1000 Mbps
MDI/MDIX Auto-crossover	Support straight or cross wired cables	Support straight or cross wired cables
Auto-negotiating	10/100/1000 Mbps speed auto-negotiation; Full and half duplex	10/100/1000 Mbps speed auto-negotiation; Full and half duplex
PoE+ (PSE)	IEEE 802.3at, up to 30 W per RJ45 GE port (up to 8 PoE+ ports)	–
SFP (pluggable) Ports		
Port Types Supported	Gigabit fiber multimode, fiber single mode, fiber long-haul single mode 1000Base(SX/LX/ZX)	Gigabit fiber multimode, fiber single mode, fiber long-haul single mode 1000Base(SX/LX/ZX)
Fiber Port Connector	LC typically for fiber (depends on module)	LC typically for fiber (depends on module)
Power		
Power Input	Redundant input terminals	Redundant input terminals
Input Voltage Range	+48V to +57V DC to support PoE output +50V to +57V DC to support PoE+ output +12 to +57 DC to support non-POE operation	+48V DC
Reverse Power Protection	Yes	–
Power Consumption (Maximum)	10.12 W (Without PoE/PoE+)	25.434 W
Heat Dissipation	822 BTU/h with 8x PoE+ devices, 68.65 BTU/h without PoE	117.49 BTU/h
Indicators		
Power Status Indication	Indication of power input status	Indication of power input status
PoE Indication	PoE port status	–
Ethernet Port Indication	Link and speed	Link and speed
Environment		
Operating Temperature Range	-40–167°F (-40–75°C) cold startup at -40°C/°F)	-40–185°F (-40–85°C)
Operating Altitude	up to 2,000 m	up to 3,000 m
Storage Temperature Range	-40–185°F (-40–85°C)	-40–185°F (-40–85°C)
Humidity	5–95% RH non-condensing	10–95% non-condensing
MTBF	> 30 years	> 30 years
Cooling	Fanless	Fanless
Certification and Compliances		
EMI	Radiated Emission: CISPR 22, EN55022 Class B Conducted Emission: EN55022 Class B	Radiated Emission: CISPR 22, EN55022 Class B Conducted Emission: EN55022 Class B
EMS	ESD: IEC61000-4-2 Radiated RF (RS): IEC61000-4-3 EFT: IEC61000-4-4 Surge: IEC61000-4-5 Conducted RF (CS): IEC61000-4-6	ESD: IEC61000-4-2 Radiated RF (RS): IEC61000-4-3 EFT: IEC61000-4-4 Surge: IEC61000-4-5 Conducted RF (CS): IEC61000-4-6
RoHS and WEEE	Compliant	Compliant
FCC	Yes	Yes, with supplementary IEEE 1613
ICES	Yes	Yes
CE	Yes, with supplementary EN50155, EN50121-1, EN50121-3-2, EN50121-4, EN 61000-6-4	Yes, with supplementary IEC 61850-3
RCM	Yes	Yes
VCCI	Yes	Yes
BSMI	Yes	Yes

Specifications

	FSR-112D-POE	FSR-124D
CB	Yes	Yes
UL/cUL	Yes, with additional Class I, Division 2, Groups A, B, C, D	Yes
ATEX	ATEX 2218X	–
Mechanical		
Ingress Protection	IP30	IP40
Installation Option	DIN-Rail mounting, wall mounting	Rack mount
Dimensions		
Length x Width x Height	3.8 x 4.15 x 6.06 inches (96.4 x 105.5 x 154 mm)	17.40 x 13.86 x 1.73 inches (442 x 352 x 44 mm)
Weight	2.7 lbs (1230 g)	12.78 lbs (5.80 kg)
Warranty		
Fortinet warranty	Limited lifetime*	

* Fortinet Warranty Policy: **http://www.fortinet.com/doc/legal/EULA.pdf**

Order Information

Product	SKU	Description
FortiSwitch Rugged 112D-POE	FSR-112D-POE	Ruggedized L2 PoE Switch — 8x GE RJ45 (including 8x PoE/PoE+ capable ports), 4x GE SFP slots, FortiGate switch controller compatible.
FortiSwitch Rugged 124D	FSR-124D	Ruggedized L2 Switch — 16x GE RJ45, 4x GE SFP slots, 8x shared media pairs (including 8x GE RJ45, 8x GE SFP slots), FortiGate switch controller compatible.
Accessories		
1 GE SFP LX Transceiver Module	FG-TRAN-LX	1 GE SFP LX transceiver module for all systems with SFP and SFP/SFP+ slots.
1 GE SFP RJ45 Transceiver Module	FG-TRAN-GC	1 GE SFP RJ45 transceiver module for all systems with SFP and SFP/SFP+ slots.
1 GE SFP SX Transceiver Module	FG-TRAN-SX	1 GE SFP SX transceiver module for all systems with SFP and SFP/SFP+ slots.
1 GE SFP RJ45 Transceiver Module	FS-TRAN-GC	1 GE SFP RJ45 transceiver module for FortiSwitch with SFP and SFP/SFP+ slots.
1 GE SFP SX Transceivers, MMF, -40–85°C operation	FR-TRAN-SX	1 GE SFP SX transceiver module, -40–85°C, over MMF, for all systems with SFP and SFP/SFP+ slots.
1 GE SFP LX Transceivers, SMF, -40–85°C operation	FR-TRAN-LX	1 GE SFP LX transceiver module, -40–85°C, over SMF, for all systems with SFP and SFP/SFP+ slots.
1 GE SFP Transceivers, 90 km range, -40–85°C operation	FR-TRAN-ZX	1 GE SFP transceivers, -40–85°C operation, 90 km range for all systems with SFP slots.
100base-FX SFP Transceiver Module	FS-TRAN-FX	100Mb multimode SFP transceivers, -40–85°C operation, 500m (OM1 fiber) range for systems with SFP slots and capable of 10/100/1000Mb mode selection.

FS-TRAN-FX is supported only by the FSR-112D-POE.

For details of Transceiver modules, see the Fortinet Transceivers datasheet.

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