DATA SHEET

FortiSwitch™ Rugged

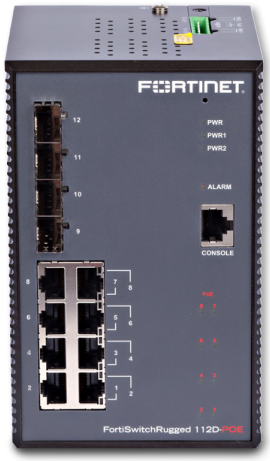
Available in:

Appliance

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.

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.

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

Key Features

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 down time 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
Automated Detection and Recommendations	Yes
Centralized VLAN Configuration	Yes
Dynamic Port Profiles for FortiSwitch ports	Yes
FortiLink Stacking (Auto Inter-Switch Links)	Yes
IGMP Snooping	Yes
L3 Routing and Services	Yes (FortiGate)
Link Aggregation Configuration	Yes
LLDP/MED	Yes
Number of Managed Switches per FortiGate	8 to 300 Depending on FortiGate Model (Please refer to admin-guide)
Policy-based Routing	Yes (FortiGate)
Provision FSW firmware upon authorization	Yes
Software Upgrade of Switches	Yes
Spanning Tree	Yes
Switch POE Control	Yes
Virtual Domain	Yes (FortiGate)
Health Monitoring	Yes

	FORTISWITCH D-SERIES FORTILINK MODE (WITH FORTIGATE)
Security and Visibility	
802.1X Authentication (Port-based, MAC-based, MAB)	Yes
Block Intra-VLAN Traffic	Yes
DHCP Snooping	Yes
FortiGuard IoT identification	Yes
FortiSwitch recommendations in Security Rating	Yes
Host Quarantine on Switch Port	Yes
Integrated FortiGate Network Access Control (NAC) function	Yes
MAC Black/While Listing	Yes (FortiGate)
Network Device Detection	Yes
Policy Control of Users and Devices	Yes (FortiGate)
Syslog Collection	Yes
Port Statistics	Yes
Clients Monitoring	Yes
UTM Features	
Firewall	Yes (FortiGate)
IPC, AV, Application Control, Botnet	Yes (FortiGate)
Quality for Service Egress priority tagging	Yes
High Availability	
LAG support for FortiLink Connection	Yes
Support FortiLink FortiGate in HA Cluster	Yes

FEATURES

	FORTISWITCH D-SERIES STANDALONE MODE
Layer 2	
Auto Topology	Yes
Auto-negotiation for Port Speed and Duplex	Yes
Edge Port / Port Fast	Yes
IEC 62439-2 Media Redundancy Protocol - MRP	Yes
IEEE 802.1AX Link Aggregation	Yes
IEEE 802.1D MAC Bridging/STP	Yes
IEEE 802.1Q VLAN Tagging	Yes
IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)	Yes
IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)	Yes
IEEE 802.3 10Base-T	Yes
IEEE 802.3 CSMA/CD Access Method and Physical Layer Specifications	Yes
IEEE 802.3ab 1000Base-T	Yes
IEEE 802.3ad Link Aggregation with LACP	Yes
IEEE 802.3az Energy Efficient Ethernet	Yes
IEEE 802.3u 100Base-TX	Yes
IEEE 802.3x Flow Control and back-pressure	Yes
IEEE 802.3z 1000Base-SX/LX	Yes
Jumbo Frames	Yes
LAG Min/Max Bundle	Yes
Loop Guard	Yes
MAC, IP, Ethertype-based VLANs	Yes
Per-port Storm Control	Yes
Rapid PVST interoperation	Yes
Spanning Tree Instances (MSTP/CST)	15/1
Storm Control	Yes
STP Root Guard	Yes
Unicast/Multicast traffic balance over trunking port (dst-ip, dst-mac, src-dst-ip, src-dst mac, src-ip, src-mac)	Yes
VLAN Mapping	Yes
Dynamically shared packet buffers	Yes
Services	
IGMP Proxy / Querier	Yes
IGMP Snooping	Yes

	FORTISWITCH D-SERIES STANDALONE MODE
Security and Visibility	
ACL	Yes
Admin Authentication Via RFC 2865 RADIUS	Yes
Assign VLANs via Radius attributes (RFC 4675)	Yes
DHCP-Snooping	Yes
IEEE 802.1ab Link Layer Discovery Protocol (LLDP)	Yes
IEEE 802.1ab LLDP-MED	Yes
IEEE 802.1X Authentication MAC-based	Yes
IEEE 802.1X Authentication Port-based	Yes
IEEE 802.1X Dynamic VLAN Assignment	Yes
IEEE 802.1X EAP Pass-through	Yes
IEEE 802.1X Guest and Fallback VLAN	Yes
IEEE 802.1X MAC Access Bypass (MAB)	Yes
IEEE 802.1X Open Auth	Yes
LLDP-MED ELIN Support	Yes
Network Device Detection	Yes
Per-Port and Per-VLAN MAC Learning Limit	Yes
Port Mirroring	Yes
RADIUS Accounting	Yes
RADIUS CoA	Yes
sFlow	Yes
Sticky MAC	Yes
MAC Limit	Yes
Wake on LAN	Yes
Management	
Control of Temperature Alerts	Yes
Display Average Bandwidth and Allow Sorting on Physical Port / Interface Traffic	Yes
Dual Firmware Support	Yes
HTTP / HTTPS	Yes
IPv4 and IPv6 Management	Yes
Link Monitor	Yes
Managed from FortiGate	Yes
POE Control Modes	Yes
RMON Group 1	Yes
SNMP v1/v2c/v3	Yes
SNMP v3 traps	Yes
SNTP	Yes
Software Download/Upload: TFTP/FTP/ GUI	Yes
SPAN, RSPAN	Yes
Standard CLI and Web GUI Interface	Yes
Support for HTTP REST APIs for Configuration and Monitoring	Yes
Syslog UDP/TCP	Yes
System Alias Command	Yes
Telnet / SSH	Yes
Automation Stitches	Yes

RFC COMPLIANCE

RFC and MIB Support*
BFD
RFC 5880: Bidirectional Forwarding Detection (BFD)
RFC 5881: Bidirectional Forwarding Detection (BFD) for IPv4 and IPv6 (Single Hop)
RFC 5882: Generic Application of Bidirectional Forwarding Detection (BFD)
BGP
RFC 1771: A Border Gateway Protocol 4 (BGP-4)
RFC 1965: Autonomous System Confederations for BGP
RFC 1997: BGP Communities Attribute
RFC 2545: Use of BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing
RFC 2796: BGP Route Reflection - An Alternative to Full Mesh IBGP
RFC 2842: Capabilities Advertisement with BGP-4
RFC 2858: Multiprotocol Extensions for BGP-4
RFC 4271: BGP-4
RFC 6286: Autonomous-System-Wide Unique BGP Identifier for BGP-4
RFC 6608: Subcodes for BGP Finite State Machine Error
RFC 6793: BGP Support for Four-Octet Autonomous System (AS) Number Space
RFC 7606: Revised Error Handling for BGP UPDATE Messages
RFC 7607: Codification of AS 0 Processing
RFC 7705: Autonomous System Migration Mechanisms and Their Effects on the BGP AS_PATH Attribute
RFC 8212: Default External BGP (EBGP) Route Propagation Behavior without Policies
RFC 8654: Extended Message Support for BGP
DHCP
RFC 2131: Dynamic Host Configuration Protocol
RFC 3046: DHCP Relay Agent Information Option
RFC 7513: Source Address Validation Improvement (SAVI) Solution for DHCP
IP/IPv4
RFC 2697: A Single Rate Three Color Marker
RFC 3168: The Addition of Explicit Congestion Notification (ECN) to IP
RFC 5227: IPv4 Address Conflict Detection
RFC 5517: Cisco Systems' Private VLANs: Scalable Security in a Multi-Client Environment
RFC 7039: Source Address Validation Improvement (SAVI) Framework
IP Multicast
RFC 2362: Protocol Independent Multicast-Sparse Mode (PIM-SM): Protocol Specification
RFC 2710: Multicast Listener Discovery (MLD) for IPv6 (MLDv1)
RFC 4541: Considerations for Internet Group Management Protocol (IGMP) and Multicast Listener Discovery (MLD) Snooping Switches
RFC 4605: Internet Group Management Protocol (IGMP)/Multicast Listener Discovery (MLD)-Based Multicast Forwarding ("IGMP/MLD Proxying")
RFC 4607: Source-Specific Multicast for IP
IPv6
RFC 2464: Transmission of IPv6 Packets over Ethernet Networks: Transmission of IPv6 Packets over Ethernet Networks
RFC 2474: Definition of the Differentiated Services Field (DS Field) in the and IPv6 Headers (DSCP)
RFC 2893: Transition Mechanisms for IPv6 Hosts and Routers
RFC 4213: Basic Transition Mechanisms for IPv6 Hosts and Router
RFC 4291: IP Version 6 Addressing Architecture
RFC 4443: Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification
RFC 4861: Neighbor Discovery for IP version 6 (IPv6)
RFC 4862: IPv6 Stateless Address Auto configuration
RFC 5095: Deprecation of Type 0 Routing Headers in IPv6
RFC 6724: Default Address Selection for Internet Protocol version 6 (IPv6)
RFC 7113: IPv6 RA Guard
RFC 8200: Internet Protocol, Version 6 (IPv6) Specification
RFC 8201: Path MTU Discovery for IP version 6
IS-IS
RFC 1195: Use of OSI IS-IS for Routing in TCP/IP and Dual Environments
RFC 5308: Routing IPv6 with IS-IS
MIB
RFC 1213: MIB II parts that apply to FortiSwitch 100 units
RFC 1354: IP Forwarding Table MIB
RFC 1493: Bridge MIB
RFC 1573: SNMP MIB II
RFC 1643: Ethernet-like Interface MIB

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

RFC COMPLIANCE

MIB
RFC 1724: RIPv2-MIB
RFC 1850: OSPF Version 2 Management Information Base
RFC 2233: The Interfaces Group MIB using SMIv2
RFC 2618: Radius-Auth-Client-MIB
RFC 2620: Radius-Acc-Client-MIB
RFC 2674: Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering and Virtual LAN extensions
RFC 2787: Definitions of Managed Objects for the Virtual Router Redundancy Protocol
RFC 2819: Remote Network Monitoring Management Information Base
RFC 2863: The Interfaces Group MIB
RFC 2932: IPv4 Multicast Routing MIB
RFC 2934: Protocol Independent Multicast MIB for IPv4
RFC 3289: Management Information Base for the Differentiated Services Architecture
RFC 3433: Entity Sensor Management Information Base
RFC 3621: Power Ethernet MIB
RFC 6933: Entity MIB (Version 4)
OSPF
RFC 1583: OSPF version 2
RFC 1765: OSPF Database Overflow
RFC 2328: OSPF version 2
RFC 2370: The OSPF Opaque LSA Option
RFC 2740: OSPF for IPv6
RFC 3101: The OSPF Not-So-Stubby Area (NSSA) Option
RFC 3137: OSPF Stub Router Advertisement
RFC 3623: OSPF Graceful Restart
RFC 5340: OSPF for IPv6 (OSPFv3)
RFC 5709: OSPFv2 HMAC-SHA Cryptographic Authentication
RFC 6549: OSPFv2 Multi-Instance Extensions
RFC 6845: OSPF Hybrid Broadcast and Point-to-Multipoint Interface Type
RFC 6860: Hiding Transit-Only Networks in OSPF
RFC 7474: Security Extension for OSPFv2 When Using Manual Key Management
RFC 7503: OSPF for IPv6
RFC 8042: CCITT Draft Recommendation T.4
RFC 8362: OSPFv3 Link State Advertisement (LSA) Extensibility
OTHER
RFC 2030: SNTP
RFC 3176: InMon Corporation's sFlow: A Method for Monitoring Traffic in Switched and Routed Networks
RFC 3768: VRRP
RFC 3954: Cisco Systems NetFlow Services Export Version 9
RFC 5101: Specification of the IP Flow Information Export (IPFIX) Protocol for the Exchange of Flow Information
RFC 5798: VRRPv3 (IPv4 and IPv6)
RADIUS
RFC 2865: Admin Authentication Using RADIUS
RFC 2866: RADIUS Accounting
RFC 4675: RADIUS Attributes for Virtual LAN and Priority Support
RFC 5176: Dynamic Authorization Extensions to Remote Authentication Dial In User Service (RADIUS)
RIP
RFC 1058: Routing Information Protocol
RFC 2080: RIPng for IPv6
RFC 2082: RIP-2 MD5 Authentication
RFC 2453: RIPv2
RFC 4822: RIPv2 Cryptographic Authentication
SNMP
RFC 1157: SNMPv1/v2c
RFC 2571: Architecture for Describing SNMP
RFC 2572: SNMP Message Processing and Dispatching
RFC 2573: SNMP Applications
RFC 2576: Coexistence between SNMP versions

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

SPECIFICATIONS

	FSR-112D-POE
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
Console Interface	DB9 connector
Operating Mode	Store and forward, L2/L3 wire-speed/non-blocking switching engine
MAC Addresses	8K
Switching Capacity	24 Gbps
Packets Per Second	46 Mpps
VLANs Supported	4K
DRAM	512 MB
FLASH	64 MB
Network Latency	< 2 µs
Copper RJ45 Ports	
Speed	10/100/1000 Mbps
MDI/MDIX Auto-crossover	Support straight or cross wired cables
Auto-negotiating	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	100Base-FX and 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)
Power	
Power Input	Redundant input terminals
Input Voltage Range	+/-48V to +/-57V DC to support PoE output +/-50V to +/-57V DC to support PoE+ output +/-12V to +/-57V DC to support non-POE operation
Reverse Power Protection	Yes
Power Consumption (Maximum)	10.12 W (Without PoE/PoE+)
Heat Dissipation	822 BTU/h with 8x PoE+ devices, 68.65 BTU/h without PoE
Indicators	
Power Status Indication	Indication of power input status
PoE Indication	PoE port status
Ethernet Port Indication	Link and speed
Environment	
Operating Temperature Range	-40°–167°F (-40°–75°C) cold startup at -40°C/°F)
Operating Altitude	4000m within -40°C -55°C (2000m within -40°C -75°C)
Storage Temperature Range	-40°–185°F (-40°–85°C)
Humidity	5%–95% RH non-condensing
MTBF	> 30 years
Cooling	Fanless

SPECIFICATIONS

	FSR-112D-POE
Certification and Compliances	
EMI	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
RoHS and WEEE	Compliant
FCC	Yes
ICES	Yes
CE	Yes, with supplementary EN50155, EN50121-1, EN50121-3-2, EN50121-4, EN 61000-6-4
RCM	Yes
VCCI	Yes
BSMI	Yes
CB	Yes
UL/cUL	Yes, with additional Class I, Division 2, Groups A, B, C, D
ATEX	ATEX 2218X
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6
Mechanical	
Ingress Protection	IP30
Installation Option	DIN-Rail mounting, wall mounting
Dimensions	
Length x Width x Height	3.8 × 4.15 × 6.06 inches (96.4 × 105.5 × 154 mm)
Weight	2.7 lbs (1230 g)
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.
FortiLAN Cloud Management License	FC-10-FSW10-628-02-DD	FortiSwitch 200 - 400 Series (incl all FSW Rugged Models) FortiLAN Cloud Management SKU Including Forticare 24×7. (Note, FortiCare only applicable when used with FortiLAN Cloud).
FortiSwitchManager Subscription License	FC1-10-SWMVM-258-01-DD	Subscription license for 10 FortiSwitch Units managed by FortiSwitchManager VM. 24×7 FortiCare support (for FSWM VM) included.
	FC2-10-SWMVM-258-01-DD	Subscription license for 100 FortiSwitch Units managed by FortiSwitchManager VM. 24×7 FortiCare support (for FSWM VM) included.
	FC3-10-SWMVM-258-01-DD	Subscription license for 1000 FortiSwitch Units managed by FortiSwitchManager VM. 24×7 FortiCare support (for FSWM VM) included.
Accessories	**SKU**	**Description**
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	FN-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	FN-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.

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