

EDS-G512E-8PoE-4GSFP Series

12G-port full gigabit PoE+ managed Ethernet switches



- > 8 10/100/1000BaseT(X) ports and 4 100/1000BaseSFP ports
- > 8 IEEE 802.3af and IEEE 802.3at PoE+ standard ports
 - 36-watt output per PoE+ port in high-power mode
 - Intelligent PoE power management functions
- > Operates at 240 watts full PoE+ loading at -40 to 75°C
- > Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), RSTP/STP, and MSTP for network redundancy
- > Security features based on IEC-62443
- > Supports MXstudio for easy, visualized industrial network management
- > V-ON™ ensures millisecond-level multicast data and video network recovery



Introduction

The EDS-G512E-8PoE Series are full gigabit managed PoE+ Ethernet switches that come standard with 8 10/100/1000BaseT(X), 802.3af (PoE), and 802.3at (PoE+)-compliant Ethernet ports, and up to 4 fiber optic ports.

With the gigabit Ethernet PoE+ ports, it is perfect for high bandwidth PD device communications, such as IEEE 802.11n and IEEE 802.1ac wireless access points and high resolution GigE machine vision cameras for tolling systems. It can provide up to 30 watts of power per PoE+ port in standard mode and allow high power output of up to 36

watts for industrial heavy-duty PoE devices, such as weather-proof IP surveillance cameras with wipers/heaters, and rugged IP phones.

The EDS-G512E-8PoE Ethernet switches are highly versatile, and the SFP fiber ports can transmit data up to 120 km from the device to the control center with high EMI immunity. The Ethernet switches support a variety of management functions, including STP/RSTP, Turbo Ring, Turbo Chain, PoE power management, PoE device auto-checking, PoE power scheduling, IGMP, VLAN, QoS, RMON, bandwidth management, and port mirroring.

Features and Benefits

- Advanced PoE management function (PoE port setting, PD failure check, and PoE scheduling)
- IGMP snooping and GMRP for filtering multicast traffic
- Port-based VLAN, IEEE 802.1Q VLAN, and GVRP to ease network planning
- QoS (IEEE 802.1p/1Q) and TOS/DiffServ to increase determinism
- Port Trunking for optimum bandwidth utilization
- Command Line Interface (CLI) for quickly configuring major managed functions
- IEEE 1588 PTP V2 (Precision Time Protocol) for time synchronization of networks
- DHCP Option 82 for IP address assignment with different policies
- Support EtherNet/IP, PROFINET, and Modbus/TCP protocols for device management and monitoring
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), RSTP/STP, and MSTP for network redundancy
- RADIUS, TACACS+, MAB Authentication, SNMPv3, IEEE 802.1x, MAC ACL, HTTPS, SSH, and MAC-address sticky to enhance network security
- Lock port function for blocking unauthorized access based on MAC address
- SNMPv1/v2c/v3 for different levels of network management
- RMON for efficient network monitoring and proactive capability
- Bandwidth management to prevent unpredictable network status
- Port mirroring for online debugging
- Lock port function for blocking unauthorized access based on MAC address
- Automatic warning by exception through e-mail, relay output
- ABC-02-USB (Automatic Backup Configurator) for system

Specifications

Technology

Standards:

- IEEE 802.3af/at for Power-over-Ethernet
- IEEE 802.3 for 10BaseT
- IEEE 802.3u for 100BaseT(X) and 100BaseFX
- IEEE 802.3ab for 1000BaseT(X)
- IEEE 802.3z for 1000BaseX
- IEEE 802.3x for Flow Control
- IEEE 802.1D-2004 for Spanning Tree Protocol
- IEEE 802.1w for Rapid STP
- IEEE 802.1s for Multiple Spanning Tree Protocol
- IEEE 802.1Q for VLAN Tagging
- IEEE 802.1p for Class of Service
- IEEE 802.1X for Authentication
- IEEE 802.3ad for Port Trunk with LACP

Software Features

- Management:** IPv4/IPv6, SNMP v1/v2c/v3, LLDP, Port Mirror, DDM, RMON, DHCP Server/Client, DHCP Option 66/67/82, BootP, TFTP, SMTP, RARP, Telnet, Syslog, SNMP Inform, Flow Control, Back Pressure Flow Control
- Filter:** 802.1Q VLAN, Port-Based VLAN, GVRP, IGMP v1/v2/v3, GMRP
- Redundancy Protocols:** STP, RSTP, MSTP, Turbo Ring v1/v2, Turbo Chain, Link Aggregation
- Security:** RADIUS, TACACS+, MAB Authentication, HTTPS, SSL, SSH, Broadcast Storm Protection, Port Lock, MAC ACL, MAC Sticky, NTP Authentication, SMTP with TLS
- Time Management:** SNTP, NTP Server/Client, IEEE 1588v2 PTP (software-based)
- Industrial Protocols:** EtherNet/IP, Modbus/TCP, PROFINET IO
- MIB:** MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9

Switch Properties

Priority Queues: 4
Max. Number of VLANs: 256
VLAN ID Range: VID 1 to 4094
IGMP Groups: 2048
MAC Table Size: 8 K
Packet Buffer Size: 1 Mbit
Jumbo Frame Size: 9.6 KB

Interface

RJ45 Ports: 10/100/1000BaseT(X) auto negotiation speed
Fiber Ports: 100/1000BaseSFP slot
Console Port: USB-serial console (Type B connector)
Storage Port: USB storage (Type A connector for ABC-02-USB)
PoE Pinout: V+, V+, V-, V-, for pin 1, 2, 3, 6 (Endspan, MDI, Mode A)
DIP Switches: Turbo Ring, Master, Coupler, Reserve
Alarm Contact: 1 relay output with current carrying capacity of 1 A @ 24 VDC

Digital Inputs: 1 input with the same ground, but electrically isolated from the electronics.

- +13 to +30 V for state "1"
- -30 to +3 V for state "0"
- Max. input current: 8 mA

Button: Reset button

Power Requirements

Input Voltage: 48 VDC, redundant dual inputs
Operating Voltage: 44 to 57 VDC (> 50 VDC for PoE+ output recommended)
Input Current: 5.42 A @ 48 VDC
Overload Current Protection: Present
Connection: 2 removable 4-contact terminal blocks
Reverse Polarity Protection: Present

Note: When selecting power supply, check the PD power consumption.

Power Consumption: Max. 20.16 W full loading without PDs' consumption

Power Budget:

Max. 240 W for total PD consumption
 Max. 36 W for each PoE port

Physical Characteristics

Housing: Metal
IP Rating: IP30 protection
Dimensions: 79.2 x 135 x 137 mm (3.1 x 5.3 x 5.4 in)
Weight: 1540 g (3.40 lb)
Installation: DIN-rail mounting, wall mounting (with optional kit)

Environmental Limits

Operating Temperature:
 Standard Models: -10 to 60°C (14 to 140°F)
 Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Standards and Certifications

Note: Please check Moxa's website for the most up-to-date certification status.

Safety: UL 508, EN60950-1 (LVD)

EMC: EN 61000-6-2/6-4

EMI: CISPR 22, FCC Part 15B Class A

EMS:

IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m
 IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV
 IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV
 IEC 61000-4-6 CS: Signal: 10 kV
 IEC 61000-4-8

Electrical Substations: IEC 61850-3, IEEE 1613

Rail Traffic: EN 50121-4

Traffic Control: NEMA TS2

Shock: IEC 60068-2-27

Freefall: IEC 60068-2-32

Vibration: IEC 60068-2-6

MTBF (mean time between failures)

Time: 361,368 hrs.

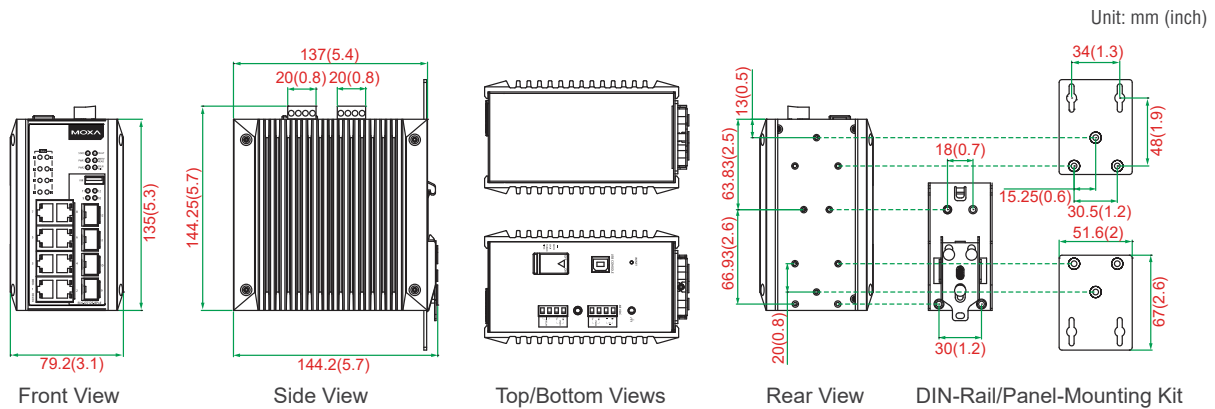
Standard: Telcordia (Bellcore), GB

Warranty

Warranty Period: 5 years

Details: See www.moxa.com/warranty

Dimensions



Ordering Information

Available Models		Port Interface	
Standard Temperature (-10 to 60°C)	Wide Temperature (-40 to 75°C)	PoE+, 10/100/1000BaseT(X)	100/1000BaseSFP*
EDS-G512E-8PoE-4GSFP	EDS-G512E-8PoE-4GSFP-T	8	4

*Note: The EDS-G512E-8PoE series supports up to 4 100/1000BaseSFP slots. See page 4 and 5 for SFP-1G/1FE series Gigabit/Fast Ethernet SFP module product information.

Optional Accessories (can be purchased separately)

MXview: Moxa industrial network management software with 50, 100, 250, 500, 1000, or 2000 nodes

EDS-SNMP OPC Server Pro: OPC server software that works with all SNMP devices

ABC-02-USB: Configuration backup and restoration tool for managed Ethernet switches, 0 to 60°C operating temperature

DR-75-48/120-48: 75/120 W DIN-rail 48 VDC power supplies

DRP-240-48: 240 W DIN-rail 48 VDC power supplies

SDR-480P-48: 480 W DIN-rail 48 VDC power supplies

WK-51-01: Wall-mounting kit, 2 plates with 6 screws

RK-4U: 4U-high 19-inch rack-mounting kit

Package Checklist

- EDS-G512E-8PoE switch
- USB Cable: CBL-USBA/B-100
- Protective caps for unused ports
- Documentation and software CD
- Warranty card
- Hardware installation guide (printed)

SFP-1FE Series

1-port Fast Ethernet SFP modules



- > Digital Diagnostic Monitor Function
- > IEEE 802.3u compliant
- > Differential PECL inputs and outputs
- > TTL signal detect indicator
- > Hot pluggable LC duplex connector
- > Class 1 laser product; complies with EN 60825-1



Specifications

Interface

Ethernet Ports: 1

Connectors: Duplex LC Connector

Optical Fiber

	Fast Ethernet SFP			
	SFP-M		SFP-S	SFP-L
Transceiver Type	Multi-Mode		Single-Mode	
Fiber Cable Type	OM1/OM2	62.5/125, 50/125 μ m	G.652	G.652
		800 MHz*km		
Typical Distance	2 km	4 km	40 km	80 km
Wave-length	Typical (nm)	1310	1310	1550
	TX Range (nm)	1280 to 1340	1280 to 1340	1530 to 1570
	RX Range (nm)	1100 to 1650	1100 to 1600	1100 to 1600
Optical Power	TX Range (dBm)	-8 to -18	0 to -5	0 to -5
	RX Range (dBm)	-3 to -32	-3 to -34	-3 to -34
	Link Budget (dB)	14	29	29
	Dispersion Penalty (dB)	2	3	1

Note: When connecting the SFP-S or L, we recommend using an attenuator to prevent damage caused by excessive optical power.

Power Requirements

Power Consumption: Max. 1 W

Environmental Limits

Operating Temperature: -40 to 85°C (-40 to 185°F)

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

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

Standards and Certifications

Safety: CE, FCC, TÜV, UL 60950-1

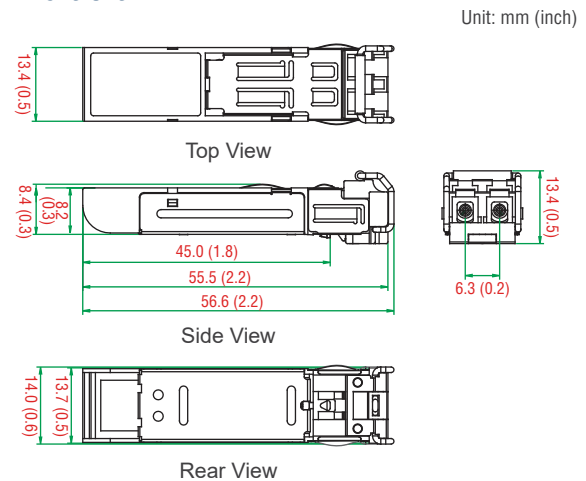
Marine: DNV, GL

Warranty

Warranty Period: 5 years

Details: See www.moxa.com/warranty

Dimensions



Ordering Information

Available Models	Port Interface		
	100BaseFX, Multi-Mode, LC Connector, 4 km	100BaseFX, Single-Mode, LC Connector, 40 km	100BaseFX, Single-Mode, LC Connector, 80 km
SFP-1FEMLC-T	1	-	-
SFP-1FESLC-T	-	1	-
SFP-1FELLC-T	-	-	1

Package Checklist

- SFP-1FE module
- Warranty card

SFP-1G Series

1-port Gigabit Ethernet SFP modules



- > Digital Diagnostic Monitor Function
- > -40 to 85°C operating temperature range (T models)
- > IEEE 802.3z compliant
- > Differential LVPECL inputs and outputs
- > TTL signal detect indicator
- > Hot pluggable LC duplex connector
- > Class 1 laser product, complies with EN 60825-1



Specifications

Interface

Ethernet Ports: 1

Connectors: Duplex LC Connector or Simplex LC Connector (WDM-type only)

Optical Fiber

	Gigabit Ethernet SFP									
	SFP-SX		SFP-LSX		SFP-LX	SFP-LH	SFP-LHX	SFP-ZX	SFP-EZX	SFP-EZX-120
Transceiver Type	Multi-Mode		Multi-Mode		Single-Mode	Single-Mode	Single-Mode	Single-Mode	Single-Mode	Single-Mode
Fiber Cable Type	OM1	OM2	OM2	OM1	G.652	G.652	G.652	G.652	G.652	G.652
Typical Distance	300 m	550 m	1 km	2 km	10 km	30 km	40 km	80 km	110 km	120 km
Wave-length	Typical (nm)		1310		1310	1310	1310	1550	1550	1550
	TX Range (nm)		1270 to 1355		1280 to 1355	1280 to 1355	1280 to 1340	1530 to 1570	1530 to 1570	1530 to 1570
	RX Range (nm)		1260 to 1610		1260 to 1610	1260 to 1610	1260 to 1610	1260 to 1610	1260 to 1610	1100 to 1600
Optical Power	TX Range (dBm)		-1 to -9		-3 to -9	-3 to -8	+3 to -4	+5 to 0	+5 to 0	+3 to -2
	RX Range (dBm)		-1 to -19		-3 to -21	-3 to -23	-1 to -24	-1 to -24	-9 to -30	-8 to -33
	Link Budget (dB)		10		12	15	20	24	30	31
	Dispersion Penalty (dB)		4.3	3.6	5	5	2	1	1	1

Note: When connecting the SFP-LHX, ZX, EZX, or EZX-120, we recommended using an attenuator to prevent the transceiver from being damaged by excessive optical power.

	WDM Gigabit Ethernet SFP							
	SFP-10A	SFP-10B		SFP-20A	SFP-20B	SFP-40A	SFP-40B	
Transceiver Type	Single-Mode			Single-Mode		Single-Mode		
Fiber Cable Type	G.652			G.652		G.652		
Typical Distance	10 km			20 km		40 km		
Wave-length	Typical (nm)		TX 1550, RX 1310		TX 1550, RX 1310		TX 1550, RX 1310	
	TX Range (nm)		1530 to 1570		1270 to 1355		1290 to 1330	
	RX Range (nm)		1260 to 1360		1480 to 1580		1260 to 1360	
Optical Power	TX Range (dBm)		-3 to -9		-2 to -8		+2 to -3	
	RX Range (dBm)		-3 to -21		-2 to -23		-1 to -23	
	Link Budget (dB)		12		15		20	
	Dispersion Penalty (dB)		2		3		1	

Note: WDM-type SFP modules must be used in pairs (e.g., SFP-1G10ALC and SFP-1G10BLC)

Note: When connecting the SFP-40A and 40B, we recommend using an attenuator to prevent damage caused by excessive optical power.

Typical Distance: To reach the typical distance of specified fiber transceiver, please refer to formula: Link budget(dB) > dispersion penalty(dB) + total link loss(dB).

Power Requirements

Power Consumption: Max. 1 W

Environmental Limits

Operating Temperature:

Standard Models: 0 to 60°C (32 to 140°F)

Wide Temp. Models: -40 to 85°C (-40 to 185°F)

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

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

Standards and Certifications

Safety: CE, FCC, TÜV (EN 60825), UL 60950-1

Marine: DNV, GL

Warranty

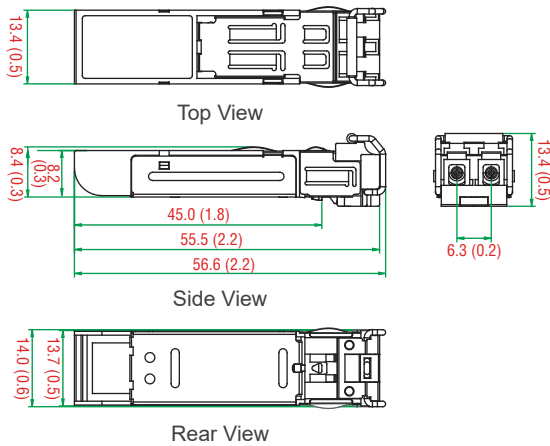
Warranty Period: 5 years

Details: See www.moxa.com/warranty

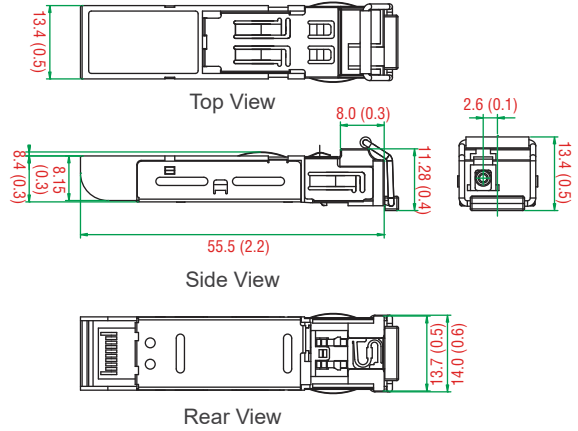
Dimensions

Unit: mm (inch)

SFP-1G Series



SFP-1G Series (WDM Type)



Ordering Information

Gigabit Ethernet SFP Models				WDM Gigabit Ethernet SFP Models			
Standard Temperature Models (0 to 60°C)	Wide Temperature Models (-40 to 85°C)	Tranceiver Type	Typical Distance	Standard Temperature (0 to 60°C)	Wide Temperature (-40 to 85°C)	Tranceiver Type	Typical Distance
SFP-1GSXLC	SFP-1GSXLC-T	Multi-Mode	300/550 m	SFP-1G10ALC	SFP-1G10ALC-T	Single-Mode	10 km
SFP-1GLSXLC	SFP-1GLSXLC-T	Multi-Mode	1/2 km	SFP-1G10BLC	SFP-1G10BLC-T	Single-Mode	10 km
SFP-1GLXLC	SFP-1GLXLC-T	Single-Mode	10 km	SFP-1G20ALC	SFP-1G20ALC-T	Single-Mode	20 km
SFP-1GLHLC	SFP-1GLHLC-T	Single-Mode	30 km	SFP-1G20BLC	SFP-1G20BLC-T	Single-Mode	20 km
SFP-1GLHXLC	SFP-1GLHXLC-T	Single-Mode	40 km	SFP-1G40ALC	SFP-1G40ALC-T	Single-Mode	40 km
SFP-1GZXLC	SFP-1GZXLC-T	Single-Mode	80 km	SFP-1G40BLC	SFP-1G40BLC-T	Single-Mode	40 km
SFP-1GEZXLC	-	Single-Mode	110 km	-	-	-	-
SFP-1GEZXLC-120	-	Single-Mode	120 km	-	-	-	-

Package Checklist

- SFP-1G module
- Warranty card