

# EDS-G509 Series

## 9G-port full Gigabit managed Ethernet switches



- > 4 10/100/1000BaseT(X) ports plus 5 combo (10/100/1000BaseT(X) or 100/1000BaseSFP slot) Gigabit ports
- > Fiber optic options for extending distance and improving electrical noise immunity
- > Turbo Ring, RSTP/STP (IEEE 802.1w/D) for Ethernet redundancy
- > QoS, IGMP snooping/GMRP, VLAN, LACP, SNMPv1/v2c, RMON supported
- > SNMPv3, HTTPS, SSH, IEEE 802.1X, and port security supported



### Introduction

The EDS-G509 is equipped with 9 Gigabit Ethernet ports and up to 5 fiber optic ports, making it ideal for upgrading an existing network to Gigabit speed or building a new full Gigabit backbone. Gigabit transmission increases bandwidth for higher performance and transfers large amounts of video, voice, and data across a network quickly. Redundant Ethernet Turbo Ring and RSTP/STP (IEEE

802.1w/D) increase system reliability and the availability of your network backbone. The EDS-G509 series is designed especially for communication demanding applications, such as video and process monitoring, shipbuilding, ITS, and DCS systems, all of which can benefit from a scalable backbone construction.

### Features and Benefits

- IPv6 Ready logo awarded (IPv6 Logo Committee certified)
- IEEE 1588 PTP (Precision Time Protocol) for precise time synchronization of networks
- DHCP Option 82 for IP address assignment with different policies
- Modbus/TCP industrial Ethernet protocol supported
- IEC 61850 GOOSE messaging compliance
- Turbo Ring and RSTP/STP (IEEE 802.1w/D)
- 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
- SNMPv3, IEEE 802.1X, HTTPS, and SSH to enhance network security
- SNMPv1/v2c/v3 for different levels of network management
- RMON for efficient network monitoring and proactive capability
- Bandwidth management prevents unpredictable network status
- Lock port function for blocking unauthorized access based on MAC address
- Port mirroring for online debugging
- Automatic warning by exception through e-mail, relay output
- ABC-01 (Automatic Backup Configurator) for system configuration backup

### Specifications

#### Technology

##### Standards:

IEEE 802.3 for 10BaseT  
 IEEE 802.3u for 100BaseT(X) and 100Base FX  
 IEEE 802.3ab for 1000BaseT(X)  
 IEEE 802.3z for 1000BaseSX/LX/LHX/ZX/EZX  
 IEEE 802.3x for Flow Control  
 IEEE 802.1D for Spanning Tree Protocol  
 IEEE 802.1w for Rapid STP  
 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

**Protocols:** IGMPv1/v2 device, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, DHCP Option 66/67/82, BootP, TFTP, SNMP, SMTP, RARP, RMON, HTTP, HTTPS, Telnet, SSH, Syslog, Modbus/TCP (Available Soon: SNMP Inform, LLDP, IEEE 1588 PTP, IPv6)

**MIB:** MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9

**Flow Control:** IEEE 802.3x flow control, back pressure flow control

#### Switch Properties

**Priority Queues:** 4

**Max. Number of Available VLANs:** 64

**VLAN ID Range:** VID 1 to 4094

**IGMP Groups:** 256

#### Interface

**Fiber Ports:** 100/1000BaseSFP slot

**RJ45 Ports:** 10/100/1000BaseT(X) auto negotiation speed

**Console Port:** RS-232 (RJ45 connector)

**DIP Switches:** Turbo Ring, Master, Coupler, Reserve

**LED Indicators:** PWR1, PWR2, FAULT, 10/100/1000M, MASTER, COUPLER

**Alarm Contact:** 2 relay outputs with current carrying capacity of 1 A @ 24 VDC

**Digital Inputs:** 2 inputs with the same ground, but electrically isolated from the electronics.

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

### Power Requirements

**Input Voltage:** 12/24/48 VDC redundant dual inputs

**Input Current:** 0.81 A @ 24 V

**Overload Current Protection:** Present

**Connection:** 2 removable 6-contact terminal blocks

**Reverse Polarity Protection:** Present

### Physical Characteristics

**Housing:** Metal, IP30 protection

**Dimensions:** 87.1 × 135 × 107 mm (3.43 × 5.31 × 4.21 in)

**Weight:** 1510 g

**Installation:** DIN-Rail mounting, wall mounting (with optional kit)

### Environmental Limits

**Operating Temperature:**

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

Wide Temp. Models: -40 to 75°C (-40 to 167°F) for T models

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

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

### Regulatory Approvals

**Safety:** UL508 (Pending), EN60950-1

**Hazardous Location:** UL/cUL Class I, Division 2, Groups A, B, C, and D (Pending); ATEX Zone 2, Ex nC IIC (Pending)

**EMI:** FCC Part 15, CISPR (EN55022) class A

### EMS:

EN61000-4-2 (ESD), level 3

EN61000-4-3 (RS), level 3

EN61000-4-4 (EFT), level 3

EN61000-4-5 (Surge), level 3

EN61000-4-6 (CS), level 3

EN61000-4-8

EN61000-4-11

**Maritime:** DNV (Pending), GL (Pending)

**Shock:** IEC 60068-2-27

**Freefall:** IEC 60068-2-32

**Vibration:** IEC 60068-2-6

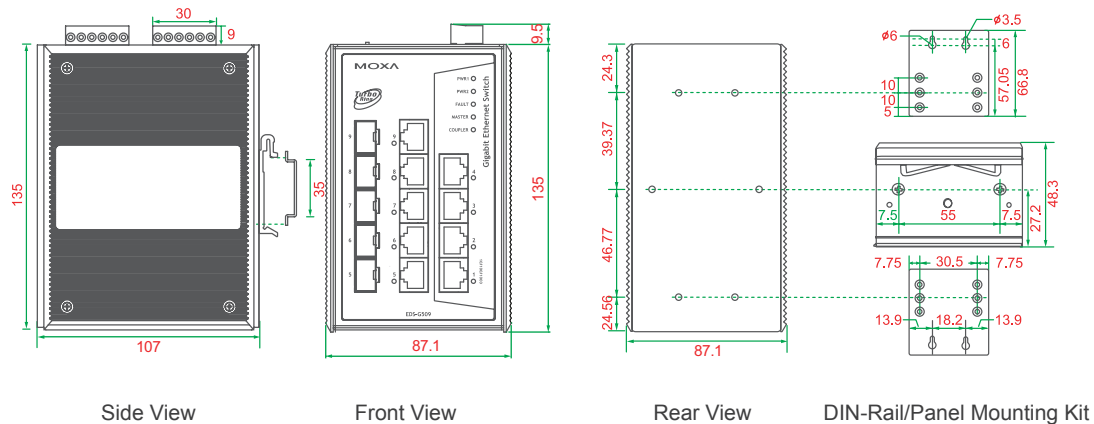
*Note: Please check Moxa's website for the most up-to-date certification status.*

### Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

### Dimensions (unit = mm)



## Ordering Information

### Available Models

**EDS-G509:** Industrial full Gigabit managed Ethernet switch with 4 10/100/1000BaseT(X) ports, and 5 10/100/1000BaseT(X) or 100/1000BaseSFP slot combo ports, 0 to 60°C operating temperature

**EDS-G509-T:** Industrial full Gigabit managed Ethernet switch with 4 10/100/1000BaseT(X) ports, and 5 10/100/1000BaseT(X) or 100/1000BaseSFP slot combo ports, -40 to 75°C operating temperature

*Note: The EDS-G509 series switches support up to 5 100/1000BaseSFP slots. See page 3-45 and 3-47 for SFP-1G/1FE series Gigabit/fast Ethernet SFP module product information.*

### Optional Accessories (can be purchased separately)

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

**ABC-01:** Configuration backup and restoration tool for managed Ethernet switches, 0 to 60°C operating temperature

**DR-4524/75-24/120-24:** 45/75/120 W DIN-Rail 24 VDC power supplies

**MDR-40-24/60-24:** 40/60 W DIN-Rail 24 VDC power supplies, -20 to 70°C operating temperature

**WK-46:** Wall mounting kit

**RK-4U:** 4U-high 19" rack mounting kit

# SFP-1G Series

## 1G-port Gigabit Ethernet SFP modules



- > Compliant with IEEE 802.3z
- > Differential LVPECL inputs and outputs
- > Single 3.3 V power supply
- > TTL signal detect indicator
- > Hot pluggable
- > Class 1 laser product, complies with EN60825-1



### Specifications

#### Interface

Ethernet Ports: 1

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

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

#### Optical Fiber

	Gigabit Ethernet												
	SFP-SX	SFP-LSX	SFP-LX	SFP-LH	SFP-LHX	SFP-ZX	SFP-EZX	SFP-10A	SFP-10B	SFP-20A	SFP-20B	SFP-40A	SFP-40B
Wave-length	850 nm	1310 nm	1310 nm	1310 nm	1310 nm	1550 nm	1550 nm	TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm	TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm	TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm
Max. TX	-4 dBm	-1 dBm	-3 dBm	-2 dBm	1 dBm	5 dBm	5 dBm	-3 dBm		-2 dBm		2 dBm	
Min. TX	-9.5 dBm	-9 dBm	-9.5 dBm	-8 dBm	-4 dBm	0 dBm	0 dBm	-9 dBm		-8 dBm		-3 dBm	
RX Sensitivity	-18 dBm	-19 dBm	-20 dBm	-23 dBm	-24 dBm	-24 dBm	-30 dBm	-21 dBm		-23 dBm		-23 dBm	
Link Budget	8.5 dB	10 dB	10.5 dB	15 dB	20 dB	24 dB	30 dB	12 dB		15 dB		20 dB	
Typical Distance	550 m <sup>a</sup>	2 km <sup>b</sup>	10 km <sup>c</sup>	30 km <sup>c</sup>	40 km <sup>c</sup>	80 km <sup>c</sup>	110 km <sup>c</sup>	10 km <sup>c</sup>		20 km <sup>c</sup>		40 km <sup>c</sup>	
Saturation	0 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-1 dBm		-1 dBm		-1 dBm	

a. 50/125 μm, 400 MHz \* km or 62.5/125 μm, 500 MHz \* km @ 850 nm multi-mode fiber optic cable

b. 62.5/125 μm, 750 MHz \* km @ 1310 nm multi-mode fiber optic cable

c. 9/125 μm single-mode fiber optic cable

#### Environmental Limits

##### Operating Temperature:

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

Wide Operating 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)

#### Regulatory Approvals

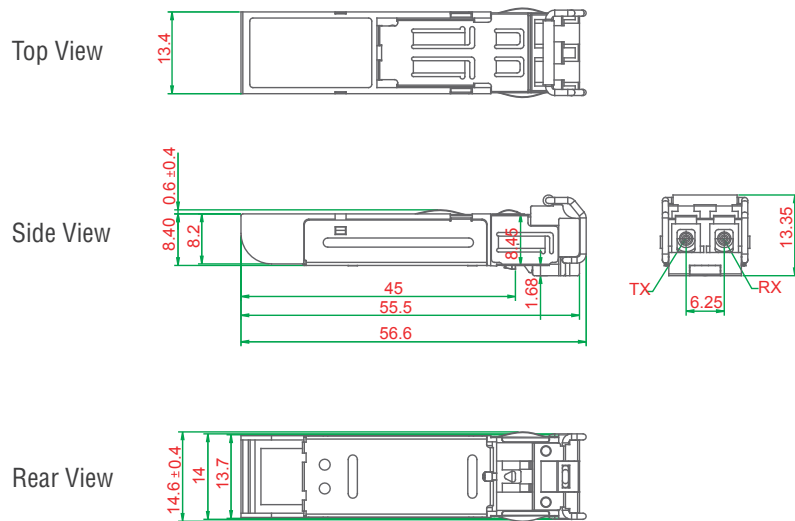
Safety: UL, TÜV

#### Warranty

Warranty Period: 3 years

Details: See [www.moxa.com/warranty](http://www.moxa.com/warranty)

**Dimensions (unit = mm)**



**Ordering Information**

**SFP Modules**

Available Models		Port Interface						
Standard Temperature (0 to 60°C)	Wide Temperature (-40 to 85°C)	1000BaseSX, LC Connector, 0.5 km	1000BaseLSX, LC Connector, 2 km	1000BaseLX, LC Connector, 10 km	1000BaseLH, LC Connector, 30 km	1000BaseLHX, LC Connector, 40 km	1000BaseZX, LC Connector, 80 km	1000BaseEZ, LC Connector, 110 km
SFP-1GSXLC	SFP-1GSXLC-T*	1	---	---	---	---	---	---
SFP-1GLSXLC	SFP-1GLSXLC-T	---	1	---	---	---	---	---
SFP-1GLXLC	SFP-1GLXLC-T	---	---	1	---	---	---	---
SFP-1GLHLC	SFP-1GLHLC-T	---	---	---	1	---	---	---
SFP-1GLHXL	SFP-1GLHXL-T	---	---	---	---	1	---	---
SFP-1GZXLC	SFP-1GZXLC-T	---	---	---	---	---	1	---
SFP-1GEZLC	---	---	---	---	---	---	---	1

Note: SFP-1GSXLC-T: -20 to 75°C operating temperature

**WDM-type (BiDi) SFP Modules**

Available Models		Port Interface					
Standard Temperature (0 to 60°C)	Wide Temperature (-40 to 85°C)	1000BaseSFP, LC Connector, 10 km		1000BaseSFP, LC Connector, 20 km		1000BaseSFP, LC Connector, 40 km	
		TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm	TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm	TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm
SFP-1G10ALC	SFP-1G10ALC-T	1	---	---	---	---	---
SFP-1G10BLC	SFP-1G10BLC-T	---	1	---	---	---	---
SFP-1G20ALC	SFP-1G20ALC-T	---	---	1	---	---	---
SFP-1G20BLC	SFP-1G20BLC-T	---	---	---	1	---	---
SFP-1G40ALC	SFP-1G40ALC-T	---	---	---	---	1	---
SFP-1G40BLC	SFP-1G40BLC-T	---	---	---	---	---	1

**The SFP-1G series modules can be used with the following products**

- EDS-728/828 series:** IM-2GSFP series Gigabit Ethernet interface modules
- EDS-G509 series:** 9G-port full Gigabit managed Ethernet switches
- EDS-518A series:** 16+2G-port Gigabit managed Ethernet switches
- EDS-510A series:** 7+3G-port Gigabit managed Ethernet switches
- EDS-P510 series:** 7+3G-port Gigabit PoE managed Ethernet switches
- PT and IKS series:** PM-7200-2G/4G series Gigabit Ethernet interface modules
- EDS-G308 series:** 8G-port full Gigabit unmanaged Ethernet switches
- IMC-101G series:** Industrial Gigabit media converters

# SFP-1FE Series

## 1-port fast Ethernet SFP modules



- > Single + 3.3 V power Supply
- > Small Form Factor Pluggable MSA Compliant
- > PECL Differential Inputs and Output
- > TTL Signal Detect Indicator
- > Compliant with SONET / SDH Standard
- > LC Duplex Connector
- > EEPROM with serial ID functionality
- > Class 1 Laser International Safety Standard IEC 825 Compliant



### Specifications

#### Interface

Ethernet Ports: 1

Connectors: Duplex LC Connector

#### Optical Fiber

	Fast Ethernet		
	SFP-M	SFP-S	SFP-L
Wavelength	1300 nm	1310 nm	1550 nm
Max. TX	-18 dBm	0 dBm	0 dBm
Min. TX	-8 dBm	-5 dBm	-5 dBm
RX Sensitivity	-34 dBm	-34 dBm	-34 dBm
Link Budget	26 dB	29 dB	29 dB
Typical Distance	4 km <sup>a</sup>	40 km <sup>b</sup>	80 km <sup>b</sup>
Saturation	0 dBm	-3 dBm	-3 dBm

a. 50/125 μm or 62.5/125 μm, 800 MHz \* km @ 1300 nm multi-mode fiber optic cable

b. 9/125 μm single-mode fiber optic cable

#### 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)

#### Regulatory Approvals

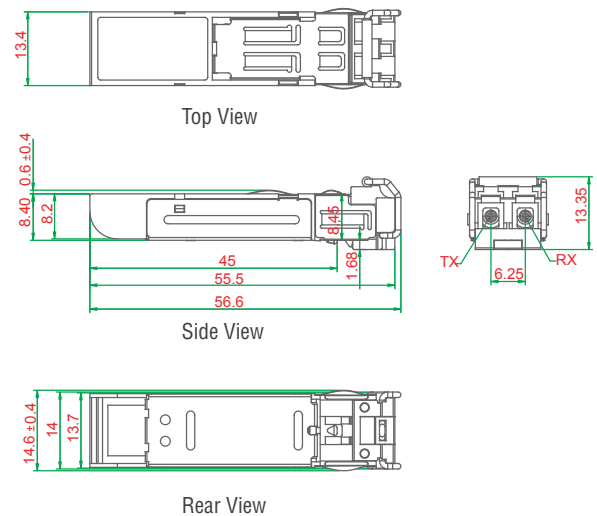
Safety: UL, TÜV

#### Warranty

Warranty Period: 3 years

Details: See [www.moxa.com/warranty](http://www.moxa.com/warranty)

#### Dimensions (unit = mm)



### Ordering Information

Available Models	Port Interface			
	Wide Temperature (-40 to 85°C)	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

#### The SFP-1FE series modules can be used with the following products

EDS-G509 series: 9G-port full Gigabit managed Ethernet switches

EDS-G308 series: 8G-port full Gigabit unmanaged Ethernet switches

EDS-P510 series: 7+3G-port Gigabit PoE managed Ethernet switches

PT and IKS series: PM-7200-8SFP fast Ethernet interface modules