

# EDS-P506E-4PoE Series

**4+2G-port Gigabit PoE+ managed Ethernet switches with 4 IEEE 802.3af/at PoE+ ports**



- ▶ Built-in 4 PoE+ ports compliant with IEEE 802.3af/at standards
- ▶ Up to 60 W output per PoE+ port
- ▶ 4 kV LAN surge protection for extreme outdoor environments
- ▶ PoE diagnostic for powered device mode analysis
- ▶ 2 Gigabit combo ports for high-bandwidth and long-distance communication
- ▶ Operates at 180 watts full PoE+ loading at -40 to 75°C
- ▶ Supports MXstudio for easy, visualized industrial network management
- ▶ V-ON™ ensures millisecond-level multicast data and video network recovery



## Introduction

The Moxa EDS-P506E-4PoE Series are Gigabit managed PoE+ Ethernet switches that come standard with 4 10/100BaseT(X), 802.3af (PoE), and 802.3at (PoE+)-compliant Ethernet ports, and 2 combo Gigabit Ethernet ports. The EDS-P506E-4PoE Ethernet switches provide up to 30 watts of power per PoE+ port in standard mode and allow a high power output of up to 4-pair 60W for industrial heavy-duty PoE devices, such as weather-proof IP surveillance cameras with wipers/heaters, high-performance wireless access points, and rugged IP phones. The EDS-P506E-4PoE 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, PoE diagnostic, IGMP, VLAN, QoS, RMON, bandwidth management, and port mirroring. The EDS-P506E-4PoE series is designed especially for harsh outdoor applications with 4 kV surge protection to ensure uninterrupted reliability of PoE systems.

## Features and Benefits

- Advanced PoE management function (PoE output setting, PD failure check, PoE scheduling, and PoE diagnostic)
- Command Line Interface (CLI) for quickly configuring major managed functions
- Software-based IEEE 1588 PTPv2 (Precision Time Protocol) for precise time synchronization of networks
- DHCP Option 82 for IP address assignment with different policies
- Support EtherNet/IP and Modbus/TCP protocol for device management and monitoring
- Compatible with PROFINET protocol for transparent data transmission
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), RSTP/STP, and MSTP for network redundancy
- 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
- TACACS+, IEEE 802.1X, SNMPv3, HTTPS, and SSH 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
- Automatic warning by exception through e-mail, relay output
- ABC-02-USB (Automatic Backup Configurator) for system configuration backup/restore and firmware upgrade

## 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:** 4096

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

**IGMP Groups:** 256

**MAC Table Size:** 16 K

**Packet Buffer Size:** 12 Mbits

**Interface**

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

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

**Console Port:** USB serial console (Type B connector)

**PoE Pinout:** 2-Pair PoE Mode: V+, V+, V-, V- for pins 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 0.5 A @ 48 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

**Power Requirements**

**Input Voltage:** 12/24/48 VDC, redundant dual inputs (> 50 VDC for PoE+ or 60W output recommended)

**Operating Voltage:** 12 to 57 VDC

**Input Current:** 4.08 A @ 48 VDC

**Overload Current Protection:** Present

**Connection:** 2 removable 4-contact terminal blocks

**Reverse Polarity Protection:** Present

**Power Consumption:** Max. 18.96 W full loading without PDs' consumption

**Power Budget:**

- Max. 180 W for total PDs' consumption @ 48 VDC input
- Max. 150 W for total PDs' consumption @ 24 VDC input
- Max. 62 W for total PDs' consumption @ 12 VDC input
- Max. 60 W for each PoE port

**Physical Characteristics**

**Housing:** Metal

**IP Rating:** IP40 protection

**Dimensions:** 49.1 x 135 x 116 mm (1.93 x 5.31 x 4.57 in)

**Weight:** 910 g (2.00 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 61010-2-201, EN 61010 (LVD)

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

**EMI:** CISPR 22, FCC Part 15B Class A

**EMS:**

EN 61000-4-2 (ESD): Contact: 8 kV; Air: 15 kV

EN 61000-4-3 (RS): 80 MHz to 1 GHz: 20 V/m

EN 61000-4-4 (EFT): Power: 4 kV; Signal: 4 kV

EN 61000-4-5 (Surge): Power: 4 kV; Signal: 4 kV

EN 61000-4-6 (CS): 10 V

EN 61000-4-8

**Electrical Substations:** IEC 61850-3, IEEE 1613

**Traffic Control:** NEMA-TS2 (Pending)

**Rail Traffic:** EN 50121-4

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

**Freefall:** IEC 60068-2-31

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

**MTBF (mean time between failures)**

Time: 755,167 hrs

Standard: Telcordia (Bellcore), GB

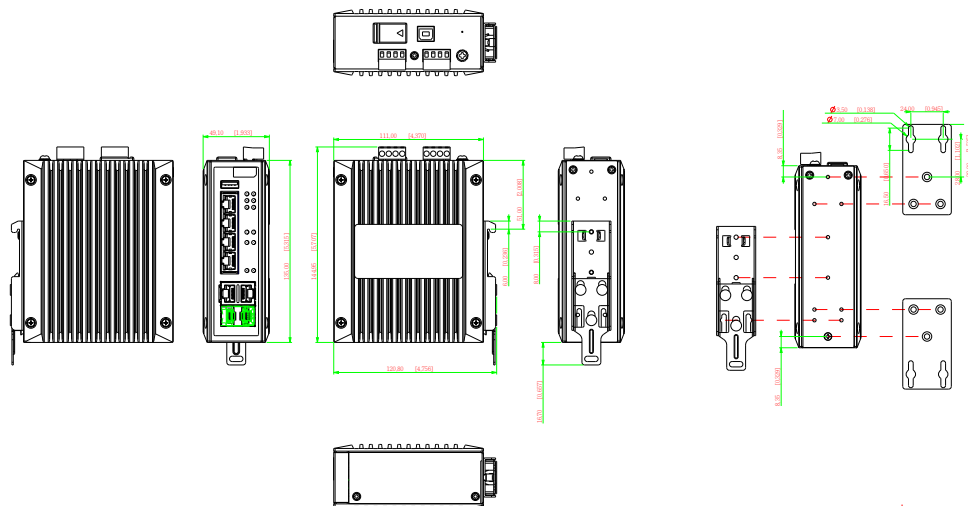
**Warranty**

**Warranty Period:** 5 years

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

**Dimensions**

Unit: mm (inch)



## Ordering Information

| Available Models                      |                                   | Port Interface   |                                       |
|---------------------------------------|-----------------------------------|--|---------------------------------------|
|                                       |                                   | Gigabit Ethernet<br>Combo Port,<br>10/100/1000BaseT(X) or 100/1000BaseSFP* | Fast Ethernet<br>PoE+, 10/100BaseT(X) |
| Standard Temperature<br>(-10 to 60°C) | Wide Temperature<br>(-40 to 75°C) |  |                                       |
| EDS-P506E-4PoE-2GTXSFP                | EDS-P506E-4PoE-2GTXSFP-T          | 2  | 4                                     |

\*The EDS-P506E-4PoE series supports 2 100/1000BaseSFP slots. See the SFP-1G and SFP-1FE datasheets for 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-4524/75-24/120-24:** 45/75/120 W DIN-rail 24 VDC power supplies

**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

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

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

**WK-36-02:** Wall-mounting kit, 2 plates with 6 screws

### Package Checklist

- EDS-P506E-4PoE switch
- USB Cable: CBL-USBA/B-100
- Protective caps for unused ports
- Documentation
- Hardware installation guide (printed)
- 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)            | 850                  |       | 1310         |      | 1310         | 1310         | 1310         | 1550         | 1550         | 1550         |
|                  | TX Range (nm)           | 830 to 860           |       | 1270 to 1355 |      | 1280 to 1355 | 1280 to 1355 | 1280 to 1340 | 1530 to 1570 | 1530 to 1570 | 1530 to 1570 |
|                  | RX Range (nm)           | 770 to 860           |       | 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)          | -4 to -9.5           |       | -1 to -9     |      | -3 to -9     | -3 to -8     | +3 to -4     | +5 to 0      | +5 to 0      | +3 to -2     |
|                  | RX Range (dBm)          | 0 to -18             |       | -1 to -19    |      | -3 to -21    | -3 to -23    | -1 to -24    | -1 to -24    | -9 to -30    | -8 to -33    |
|                  | Link Budget (dB)        | 8.5                  |       | 10           |      | 12           | 15           | 20           | 24           | 30           | 31           |
|                  | Dispersion Penalty (dB) | 4.3                  | 3.6   | 5            | 5    | 1            | 1            | 1            | 1            | 1            | 2            |

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 1310, RX 1550         | TX 1550, RX 1310 | TX 1310, RX 1550 | TX 1550, RX 1310 | TX 1310, RX 1550 | TX 1550, RX 1310 |              |
|                  | TX Range (nm)           | 1270 to 1355             |                  | 1530 to 1570     |                  | 1290 to 1330     |                  | 1530 to 1570 |
|                  | RX Range (nm)           | 1480 to 1580             |                  | 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

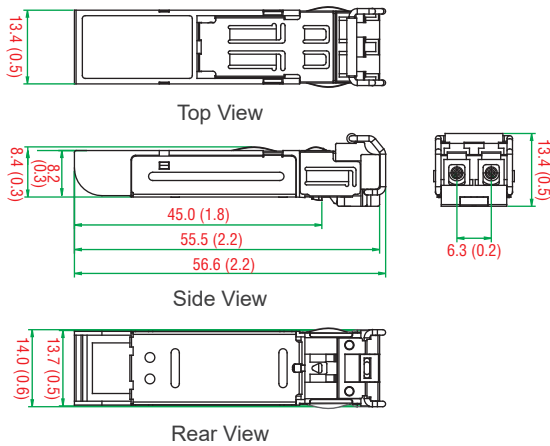
Warranty Period: 5 years

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

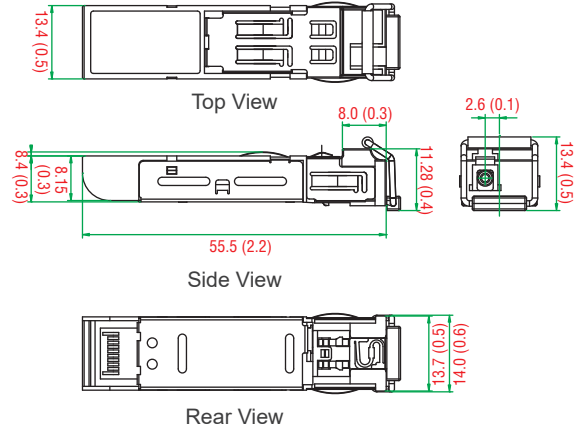
### Dimensions

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) | Transceiver Type | Typical Distance | Standard Temperature (0 to 60°C) | Wide Temperature (-40 to 85°C) | Transceiver 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

# 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 $\mu$ 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

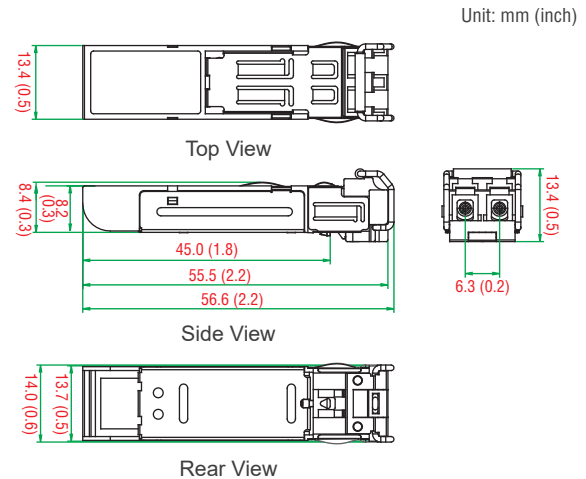
Marine: DNV, GL

#### Warranty

Warranty Period: 5 years

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