

# EDS-P510 Series

## 7+3G-port Gigabit PoE managed Ethernet switches



- > 4 IEEE 802.3af-compliant PoE and Ethernet combo ports
- > Provides up to 15.4 watts at 48 VDC per PoE port
- > Intelligent power consumption detection, PD failure check, and PoE scheduling function
- > 3 combo (10/100/1000BaseT(X) or 100/1000BaseSFP slot) Gigabit ports; 2 ports for redundant ring and 1 port for uplink
- > Turbo Ring, Turbo Chain, RSTP/STP, and MSTP\* for network redundancy
- > TACACS+\*, SNMPv3, IEEE 802.1X, HTTPS, and SSH to enhance network security
- > Easy network management by web browser, CLI\*, Telnet/serial console, windows utility, and ABC-01

\*Available in Q3, 2011



### Introduction

The EDS-P510 series Gigabit managed redundant Ethernet switches come standard with 4 10/100BaseT(X) 802.3af (PoE) compliant Ethernet ports and 3 combo Gigabit Ethernet ports. The EDS-P510 switches provide up to 15.4 watts of power per PoE port, and allow power to be supplied to connected devices (such as surveillance cameras, wireless access points, and IP phones) when AC power is not readily available or is cost-prohibitive to provide locally. The

EDS-P510 switches are highly versatile, and their SFP fiber port can transmit data up to 80 km from the device to the control center with high EMI immunity. The Ethernet switches support advanced management and security features. The EDS-P510 series is designed especially for security automation applications such as IP surveillance, and gate of entry systems, which can benefit from a scalable backbone construction and Power-over-Ethernet support.

### Features and Benefits

- Advanced PoE management function (PoE port setting, PD failure check, and PoE scheduling)
- Command Line Interface (CLI) for quickly configuring major managed functions\*
- IPv6 Ready logo awarded (IPv6 Logo Committee certified)
- IEEE 1588 PTP V2\* (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 protocols for device management and monitoring
- Compatible with EtherNet/IP and PROFINET protocols for transparent data transmission
- Turbo Ring and Turbo Chain (recovery time < 20 ms), 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

\*Available in Q3, 2011

### Specifications

#### Technology

##### Standards:

- IEEE 802.3af 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
  - Protocols:** IGMPv1/v2, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, DHCP Option 66/67/82, BootP, TFTP, SNT, SMTP, RARP, RMON, HTTP, HTTPS, Telnet, SSH, Syslog, EtherNet/IP\*, Modbus/TCP, SNMP Inform, LLDP, IEEE 1588 PTP V2\*, IPv6, NTP Server/Client\*
  - 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
- \*Available in Q3, 2011

### Switch Properties

**Priority Queues:** 4  
**Max. Number of Available VLANs:** 64  
**VLAN ID Range:** VID 1 to 4094  
**IGMP Groups:** 256  
**MAC Table Size:** 8 K  
**Packet Buffer Size:** 1 Mbit

### Interface

**Fiber Ports:** 100/1000BaseSFP slot  
**RJ45 Ports:** 10/100BaseT(X) or 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, 10/100/1000, 10/100, MSTR/HEAD, CPLR/TAIL, PoE  
**Alarm Contact:** 2 relay outputs with current carrying capacity of 0.5 A @ 48 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:** 48 (46 to 50V) VDC, redundant dual inputs  
**Input Current:** Max. 1.62 A @ 48 VDC (supports up to 4 ports at 15.4 W per PoE port)  
**Overload Current Protection:** Present  
**Connection:** 2 removable 6-contact terminal blocks  
**Reverse Polarity Protection:** Present

### Physical Characteristics

**Housing:** Metal, IP30 protection  
**Dimensions:** 80.2 x 135 x 105 mm (3.16 x 5.31 x 4.13 in)  
**Weight:** 1170 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 Operating 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

**Safety:** UL 508  
**EMI:** FCC Part 15 Subpart B Class A, EN 55022 Class A  
**EMS:**  
 EN 61000-4-2 (ESD) Level 3, EN 61000-4-3 (RS) Level 3, EN 61000-4-4 (EFT) Level 3, EN 61000-4-5 (Surge) Level 3, EN 61000-4-6 (CS) Level 3, EN 61000-4-8  
**Marine:** DNV, GL, LR, ABS, NK  
**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.*

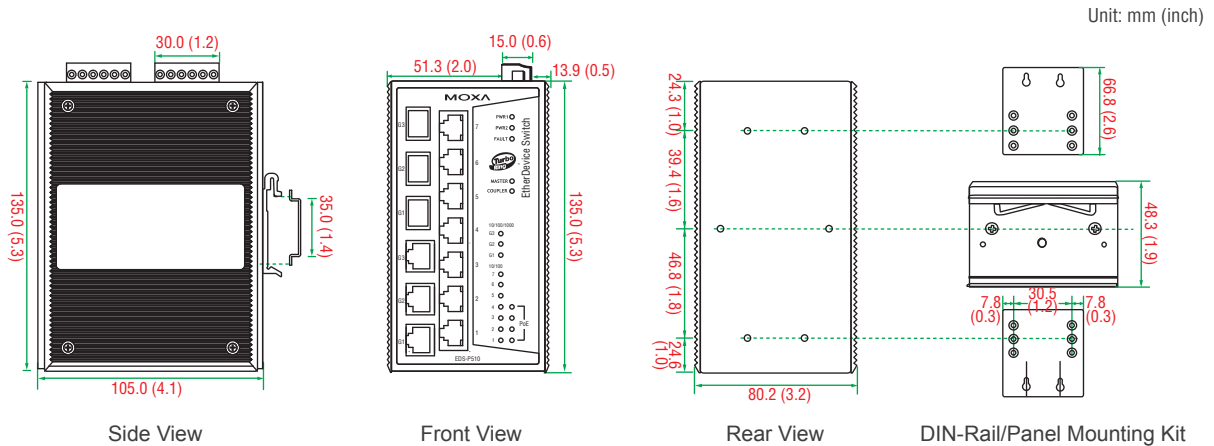
### MTBF (mean time between failures)

**Time:** 200,000 hrs  
**Database:** Telcordia (Bellcore), GB

### Warranty

**Warranty Period:** 5 years  
**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

### Dimensions



### Ordering Information

Available Models		Port Interface		
		Gigabit Ethernet	Fast Ethernet	
Standard Temperature (0 to 60°C)	Wide Temperature (-40 to 75°C)	Combo Port, 10/100/1000BaseT(X) or 100/1000BaseSFP*	PoE, 10/100BaseT(X)	10/100BaseT(X)
EDS-P510	EDS-P510-T	3	4	3

\*The EDS-P510 series supports 3 100/1000BaseSFP slots. See page pages 1-87 and 1-89 for SFP-1G/1FE series Gigabit/fast Ethernet SFP module product information.

### Optional Accessories (can be purchased separately)

**DR-75-48/120-48:** 75/120 W DIN-Rail 48 VDC power supplies  
**MXview:** Moxa industrial network management software with 50, 100, 250, 500, or 1000 nodes  
**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  
**WK-46:** Wall mounting kit  
**RK-4U:** 4U-high 19" rack mounting kit

### Package Checklist

- EDS-P510 switch
- RJ45 to DB9 console port cable
- Protective caps for unused ports
- Documentation and software CD
- Hardware installation guide (printed)
- Warranty card

# SFP-1G Series

## 1-port Gigabit Ethernet SFP modules



- > 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)

**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-EZX-120	SFP-10A	SFP-10B	SFP-20A	SFP-20B	SFP-40A	SFP-40B
Wavelength	850 nm	1310 nm	1310 nm	1310 nm	1310 nm	1550 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	-3 dBm	-2 dBm	-2 dBm	-2 dBm	2 dBm	2 dBm
Min. TX	-9.5 dBm	-9 dBm	-9.5 dBm	-8 dBm	-4 dBm	0 dBm	0 dBm	-2 dBm	-9 dBm	-8 dBm	-8 dBm	-8 dBm	-3 dBm	-3 dBm
RX Sensitivity	-18 dBm	-19 dBm	-20 dBm	-23 dBm	-24 dBm	-24 dBm	-30 dBm	-33 dBm	-21 dBm	-21 dBm	-23 dBm	-23 dBm	-23 dBm	-23 dBm
Link Budget	8.5 dB	10 dB	10.5 dB	15 dB	20 dB	24 dB	30 dB	31 dB	12 dB	12 dB	15 dB	15 dB	20 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>	120 km <sup>c</sup>	10 km <sup>c</sup>	10 km <sup>c</sup>	20 km <sup>c</sup>	20 km <sup>c</sup>	40 km <sup>c</sup>	40 km <sup>c</sup>
Saturation	0 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-8 dBm	-1 dBm	-1 dBm	-1 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

**Note:** The actual communication distance depends on many factors, including connector loss, cable deployment, and the age of the cabling system. We recommend doing a link budget analysis and reserving a 3 dB margin for such factors.

### 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)

### Standards and Certifications

**Safety:** UL 60950-1, TÜV

### Warranty

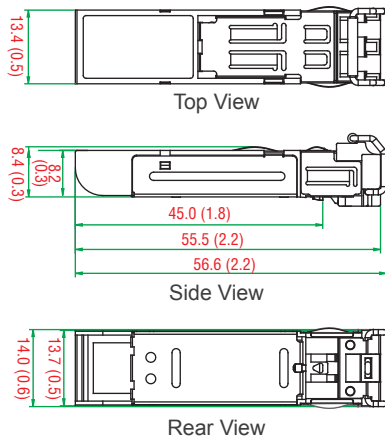
**Warranty Period:** 5 years

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

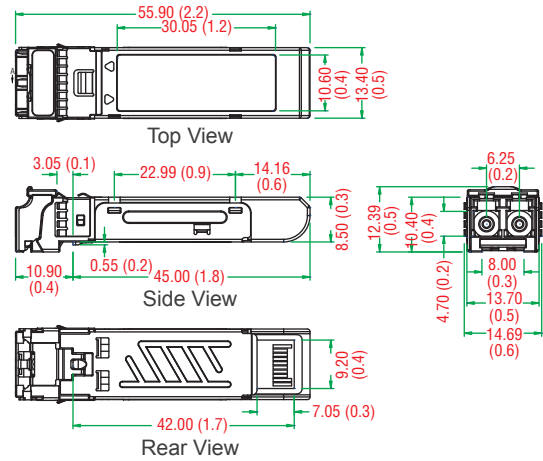
**Dimensions**

Unit: mm (inch)

**SFP-1G Series**



**SFP-1GEZXC-120**



**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	1000BaseEZ, LC Connector, 120 km
SFP-1GSXLC	SFP-1GSXLC-T*	1	-	-	-	-	-	-	-
SFP-1GLSXL	SFP-1GLSXL-T	-	1	-	-	-	-	-	-
SFP-1GLXL	SFP-1GLXL-T	-	-	1	-	-	-	-	-
SFP-1GLHL	SFP-1GLHL-T	-	-	-	1	-	-	-	-
SFP-1GLHLX	SFP-1GLHLX-T	-	-	-	-	1	-	-	-
SFP-1GZXL	SFP-1GZXL-T	-	-	-	-	-	1	-	-
SFP-1GEZXL	-	-	-	-	-	-	-	1	-
SFP-1GEZXL-120	-	-	-	-	-	-	-	-	1

\* 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:

IM-2GSFP, EDS-611/619 series, EDS-G509 series, EDS-518A series, EDS-510A series, EDS-P510 series, ICS-G7826/G7828 series, ICS-G7526/G7528 series, IM-G7000-4GSFP, IKS-G6824 series, IKS-G6524 series, IKS-6526-2GTXSFP series, PM-7200-2G/4G series, EDS-G308 series, EDR-G903 series, IMC-101G series, PT-G7509

**Package Checklist**

- SFP-1G module
- Warranty card

# SFP-1FE Series

## 1-port fast Ethernet SFP modules



- > 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-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

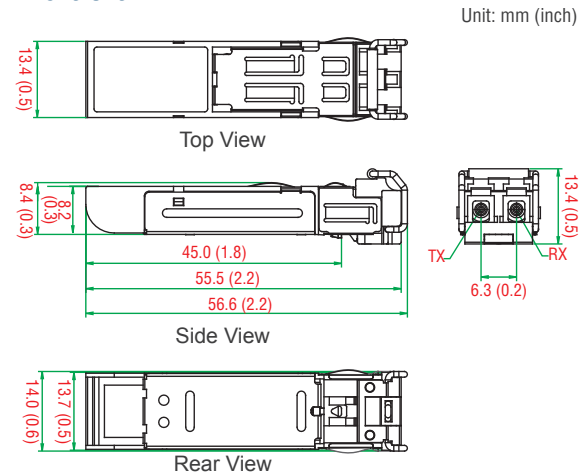
#### Environmental Limits

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)

#### Standards and Certifications

Safety: UL 60950-1, TÜV  
Warranty  
Warranty Period: 5 years  
Details: See [www.moxa.com/warranty](http://www.moxa.com/warranty)

#### Dimensions



### 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-611/619 series, EDS-G509 series, EDS-G308-2SFP, EDS-P510 series, ICS-G7826/G7828 series, ICS-G7526/G7528 series, IM-G7000-4GSFP, IKS-G6824 series, IKS-G6524 series, IKS-6524-8SFP series, PM-7200-8SFP, EDR-G903 series

#### Package Checklist

- SFP-1FE module
- Warranty card

# INJ-24 Series

## IEEE 802.3af/at Gigabit PoE+ Injectors



- > PoE injector for 10/100/1000M networks; inject power and data to PD (Power Device) equipment
- > IEEE 802.3af/at compliant; supports a full 30 watt output
- > 24/48 VDC wide range power input
- > -40 to 75°C operating temperature range (T model)



### Specifications

#### Technology

##### Standards:

- IEEE 802.3af/at for Power-over-Ethernet
- IEEE 802.3 for 10BaseT
- IEEE 802.3u for 100BaseT(X)
- IEEE 802.3ab for 1000BaseT(X)

##### Interface

**RJ45 Ports:** 10/100/1000BaseT(X) for PoE OUT and DATA IN

**LED Indicators:** Power, PoE

##### Power Requirements

**Input Voltage:** 24/48 (20 to 60 V) VDC, redundant inputs

**Input Current:** Max. 1.3 A @ 24 VDC (supports up to 4 ports at 30 watts per PoE port)

**Overload Current Protection:** Present

**Connection:** 1 removable 3-contact terminal block

**Reverse Polarity Protection:** Present

##### Physical Characteristics

**Housing:** Plastic, IP30 protection

**Dimensions:** 24.9 × 100 × 86.2 mm (0.98 × 3.93 × 3.39 in)

**Weight:** 115 g

**Installation:** DIN-Rail mounting

#### 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)

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

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

##### Standards and Certifications

**Safety:** UL 508

**EMI:** FCC Part 15 Subpart B Class A, EN 55022 Class A

**EMS:**

EN 61000-4-2 (ESD) Level 3, EN 61000-4-3 (RS) Level 3,

EN 61000-4-4 (EFT) Level 3, EN 61000-4-5 (Surge) Level 3,

EN 61000-4-6 (CS) Level 3, EN 61000-4-8

**Rail Traffic:** EN 50121-4 (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.*

##### MTBF (mean time between failures)

**Time:** 2,500,000 hrs

**Database:** Telcordia (Bellcore), GB

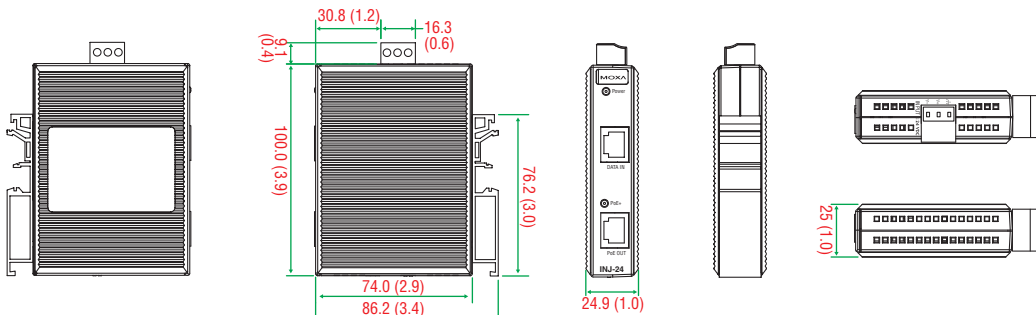
##### Warranty

**Warranty Period:** 5 years

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

### Dimensions

Unit: mm (inch)



Side View

Side View

Front View

Rear View

Top and Bottom Views

### Ordering Information

#### Available Models

**INJ-24:** PoE+ Injector, maximum output of 30 W at 24/48 VDC, 0 to 60°C operating temperature

**INJ-24-T:** PoE+ Injector, maximum output of 30 W at 24/48 VDC, -40 to 75°C operating temperature

#### Package Checklist

- INJ-24 PoE+ injector
- Hardware installation guide (printed)
- Warranty card

# SPL-24 Series

## PoE splitters



- > IEEE 802.3af compliant; splits power and data from PoE equipment
- > Supports output power up to 12.95 W at 24 VDC
- > Short circuit protection for power output
- > -40 to 75°C operating temperature range (T model)
- > DIN-Rail mounting ability



## Specifications

### Technology

#### Standards:

IEEE 802.3af for Power-over-Ethernet  
 IEEE 802.3 for 10BaseT  
 IEEE 802.3u for 100BaseT(X)

#### Interface

**RJ45 Ports:** 10/100BaseT(X) for PoE IN and DATA OUT

**LED Indicators:** Power

#### Power Requirements

**Input Voltage:** 44 to 75 VDC (PoE)

**Output Voltage:** 24 VDC

**Overload Current Protection:** 400 mA @ 48 VDC input

**Connection:** 1 removable 3-contact terminal block for output

**Output Power:** Max. 12.95 watts (0.54 A @ 24 VDC)

#### Physical Characteristics

**Housing:** Plastic, IP30 protection

**Dimensions:** 24.9 × 100 × 86.2 mm (0.98 × 3.93 × 3.39 in)

**Weight:** 95 g

**Installation:** DIN-Rail mounting

#### 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)

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

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

#### Standards and Certifications

**Safety:** UL 508 (Pending)

**EMI:** FCC Part 15 Subpart B Class B, EN 55022 Class A

#### EMS:

EN 61000-4-2 (ESD) Level 3, EN 61000-4-3 (RS) Level 3,  
 EN 61000-4-4 (EFT) Level 3, EN 61000-4-5 (Surge) Level 3,  
 EN 61000-4-6 (CS) Level 3, EN 61000-4-8

**Marine:** DNV, GL, LR, ABS, NK

**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.

### MTBF (mean time between failures)

**Time:** 5,100,000 hrs

**Database:** MIL-HDBK-217F, GB 25°C

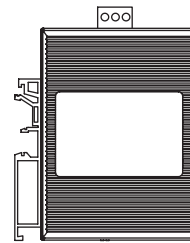
### Warranty

**Warranty Period:** 5 years

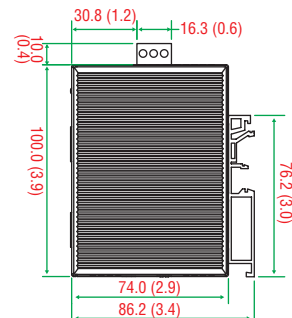
**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

### Dimensions

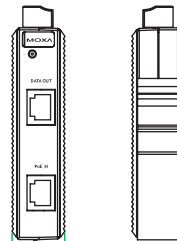
Unit: mm (inch)



Side View

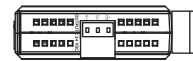


Side View



Front View

Rear View



Top and Bottom Views

## Ordering Information

### Available Models

**SPL-24:** PoE splitter, maximum output of 12.95 W at 24 VDC, 0 to 60°C operating temperature

**SPL-24-T:** PoE splitter, maximum output of 12.95 W at 24 VDC, -40 to 75°C operating temperature

### Package Checklist

- SPL-24 PoE splitter
- Hardware installation guide (printed)
- Warranty card