

EDS-728

▶ Award-winning Product



reddot design award
honourable mention 2008



24+4G-port Gigabit modular managed Ethernet switches



- > 4 Gigabit plus 24 fast Ethernet ports for copper and fiber
- > Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), 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 Q2, 2012



IndustrialIT
▶▶ enabled



Introduction

The EDS-728 modular Gigabit Ethernet switch features a versatile modular design that allows different combinations of fiber and copper modules, creating a wide array of connection options ideal for any automation network. The modular design lets you install up to 4 Gigabit ports and 24 fast Ethernet ports. The EDS-728 is specially designed for redundant Gigabit network backbones and uses a modular configuration to provide a high degree of flexibility for

network expansion. Top network performance, security, and reliability is assured through the EDS-728's advanced management and security features. The EDS-728 also features industrial-grade construction, a console port for automatic configuration backup, and an angled LED troubleshooting panel that can be conveniently viewed from both horizontal and vertical orientations.

Features and Benefits

- Command line interface (CLI) for quickly configuring major managed functions*
- Supports advanced VLAN capability with Q-in-Q tagging*
- Software based 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
- Redundant Gigabit 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
- IEEE 802.1Q VLAN and GVRP protocol to ease network planning
- QoS (IEEE 802.1p/1Q and TOS/DiffServ) to increase determinism
- Port Trunking for optimum bandwidth utilization
- TACACS+*, 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
- Digital inputs for integrating sensors and alarms with IP networks
- Redundant, dual DC power inputs
- Configurable by Web browser, Telnet/Serial console, CLI, Windows utility, and ABC-01 automatic backup configurator

*Available in Q2, 2012

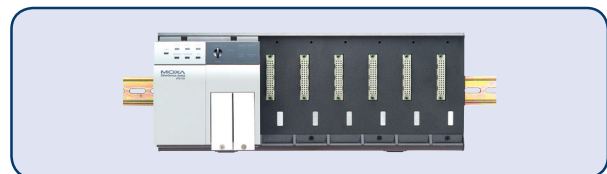
Specifications

Technology

Standards:

- 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 Spanning Tree Protocol
- 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

Modular Managed Ethernet Switch System, EDS-72810G



Protocols: IGMPv1/v2, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, BootP, TFTP, SNTP, SMTP, RARP, RMON, HTTP, HTTPS, Telnet, Syslog, DHCP Option 66/67/82, SSH, LLDP, IEEE 1588 PTP V2*, EtherNet/IP*, Modbus/TCP, SNMP Inform, NTP Server/Client*

MIB: MIB-II, Ethernet-like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Groups 1, 2, 3, 9

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

*Available in Q2, 2012

Switch Properties

Priority Queues: 4

Max. Number of Available VLANs: 64

VLAN ID Range: VID 1 to 4094

IGMP Groups: 256

MAC Table Size: 16 K

Packet Buffer Size: 32 MB

Interface

Fast Ethernet: 6 slots for any combination of 4-port interface modules, 10/100BaseT(X) or 100BaseFX

Gigabit Ethernet: 2 slots for any combination of 2-port interface modules, 10/100/1000BaseT(X) or 1000BaseSFP slot

Console Port: RS-232 (RJ45 connector)

System LED Indicators: STAT, PWR1, PWR2, FAULT, MSTR/HEAD, CPLR/TAIL, T.RING

Mode LED Indicators: LNK/ACT, FDX/HDX, RING PORT, COUPLER PORT, SPEED

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: 24 VDC (12 to 45 VDC), redundant dual inputs

Input Current: 0.96 A @ 24 V

Overload Current Protection: Present

Connection: 2 removable 6-contact terminal blocks

Reverse Polarity Protection: Present

Physical Characteristics

Housing: IP30 protection

Dimensions: 362.4 x 142.5 x 128 mm (14.27 x 5.61 x 5.04 in)

Weight: 1950 g

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

Environmental Limits

Operating Temperature: 0 to 60°C (32 to 140°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, UL 60950-1, CSA C22.2 No. 60950-1, EN 60950-1

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

EN 61000-4-6 (CS) Level 3, EN 61000-4-8, EN 61000-4-12

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: 191,203 hrs

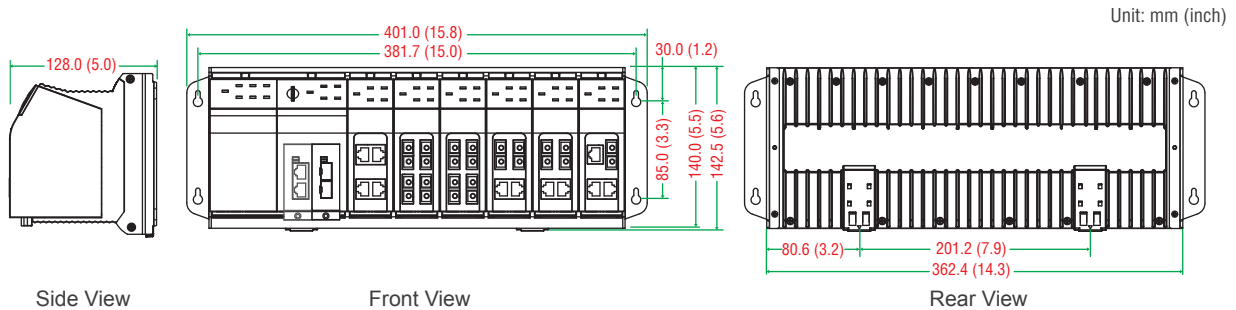
Database: Telcordia (Bellcore), GB

Warranty

Warranty Period: 5 years

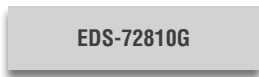
Details: See www.moxa.com/warranty

Dimensions



Ordering Information

Step 1: Select Ethernet switch system



Step 2: Select interface modules



Note: The EDS-72810G switch system is delivered without interface modules. See the IM series product information below to determine which Gigabit and Fast Ethernet interface modules are right for your application.

Available Models

EDS-72810G: Modular managed Ethernet switch system with 6 slots for 4-port Fast Ethernet interface modules and 2 slots for 2-port Gigabit interface modules, for up to 24+4G ports

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-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-32: Wall mounting kit for the EDS-728/828 series

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

Package Checklist

- EDS-728 switch
- RJ45 to DB9 console port cable
- Documentation and software CD
- Hardware installation guide (printed)
- Warranty card

IM Series

2-port Gigabit Ethernet and 4-port Fast Ethernet interface modules for EDS-728/828 series Ethernet switches

Specifications

Gigabit Ethernet Interface Modules, IM-2G Series



IM-2GTX

IM-2GSFP

Interface

Fiber Ports: 1000BaseSFP slot

RJ45 Ports: 10/100/1000BaseT(X) auto negotiation speed and auto MDI/MDI-X connection

LED Indicators: Port status

Note: See below for product information related to the SFP-1G series of Gigabit Ethernet SFP modules.

Power Requirements

Power Consumption (@ 24 V):

IM-2GTX: 2.96 W

IM-2GSFP: 3.04 W

Physical Characteristics

Dimensions: 24 x 65.9 x 101.1 mm (0.94 x 2.59 x 3.98 in)

Weight:

IM-2GTX: 150 g

IM-2GSFP: 148 g

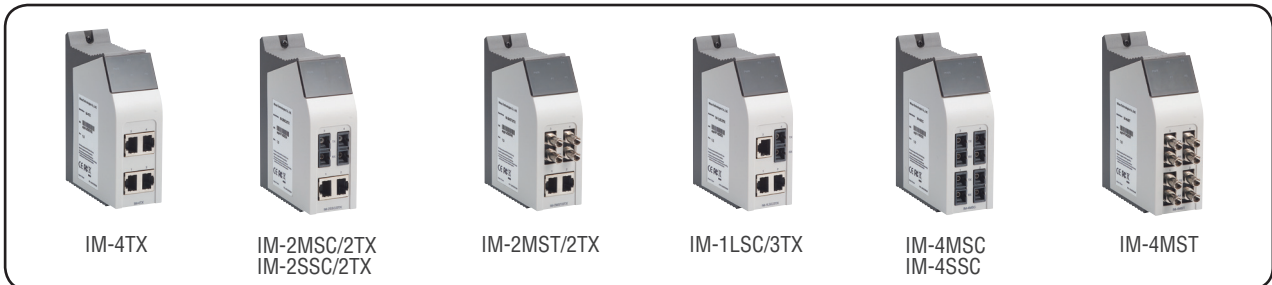
Time:

IM-2GTX: 417,521 hrs

IM-2GSFP: 424,955 hrs

Database: Telcordia (Bellcore), GB

Fast Ethernet Interface Modules, IM Series



IM-4TX

IM-2MSC/2TX
IM-2SSC/2TX

IM-2MST/2TX

IM-1LSC/3TX

IM-4MSC
IM-4SSC

IM-4MST

Interface

Fiber Ports: 100BaseFX ports (SC/ST connector)

RJ45 Ports: 10/100BaseT(X) auto negotiation speed, Full/Half duplex mode, and auto MDI/MDI-X connection

LED Indicators: PWR, P1, P2, P3, P4 port status

Optical Fiber

| | 100BaseFX | | |
|------------------|--|--------------------|-----------------------|
| | Multi Mode | Single Mode | Single Mode, 80 km |
| Wavelength | 1300 nm | 1310 nm | 1550 nm |
| Max. TX | -10 dBm | 0 dBm | 0 dBm |
| Min. TX | -20 dBm | -5 dBm | -5 dBm |
| RX Sensitivity | -32 dBm | -34 dBm | -34 dBm |
| Link Budget | 12 dB | 29 dB | 29 dB |
| Typical Distance | 5 km ^a 4 km ^b | 40 km ^c | 80 km ^d |
| Saturation | -6 dBm | -3 dBm | -3 dBm |

a. 50/125 μm, 800 MHz*km fiber optic cable

b. 62.5/125 μm, 500 MHz*km fiber optic cable

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

d. 9/125 μm single-mode fiber optic cable (80 km)

Power Requirements

Power Consumption (@ 24 V):

IM-4TX: 1.52 W

IM-2MSC/2TX: 2.43 W

IM-2MST/2TX: 2.43 W

IM-2SSC/2TX: 2.43 W

IM-1LSC/3TX: 2.5 W

IM-4MSC: 6.6 W

IM-4MST: 6.6 W

IM-4SSC: 6.6 W

Physical Characteristics

Housing: IP30 protection

Dimensions: 40 x 127.8 x 100 mm (1.57 x 5.03 x 3.94 in)

Weight:

IM-4TX: 215 g

IM-2MSC/2TX: 245 g

IM-2MST/2TX: 250 g

IM-2SSC/2TX: 245 g

IM-1LSC/3TX: 235 g

IM-4MSC: 250 g

IM-4MST: 270 g

IM-4SSC: 270 g

MTBF (mean time between failures)

Time:

IM-4TX: 4,403,579 hrs
 IM-2MSC/2TX, IM-2MST/2TX, IM-2SSC/2TX: 1,011,453 hrs
 IM-1LSC/3TX: 3,924,924 hrs
 IM-4MSC, IM-4MST, IM-4SSC: 696,138 hrs

Database: Telcordia (Bellcore), GB

Warranty

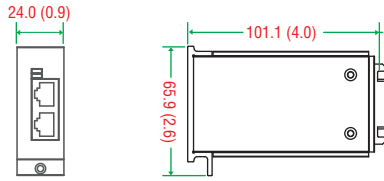
Warranty Period: 5 years

Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)

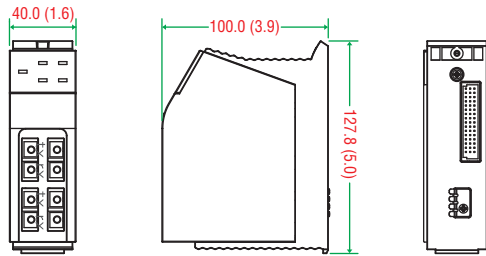
Gigabit Ethernet Interface Modules



Front View

Side View

Fast Ethernet Interface Modules



Front View

Side View

Rear View

: Ordering Information

| Available Models (0 to 60°C) | Port Interface | | | | | | |
|---------------------------------|---------------------|--------------|----------------|-----------------------------|------------------------------|---|--|
| | Gigabit Ethernet | | Fast Ethernet | | | | |
| | 10/100/1000BaseT(X) | 1000BaseSFP* | 10/100BaseT(X) | 100BaseFX | | | Single-mode, SC Connector, 80 km |
| Multi-mode, SC Connector | | | | Multi-mode, ST Connector | Single-mode, SC Connector | | |
| IM-2G Series | | | | | | | |
| IM-2GTX | 2 | - | - | - | - | - | - |
| IM-2GSFP | - | 2 | - | - | - | - | - |
| IM Series | | | | | | | |
| IM-4TX | - | - | 4 | - | - | - | - |
| IM-4MSC | - | - | - | 4 | - | - | - |
| IM-4MST | - | - | - | - | 4 | - | - |
| IM-2MSC/2TX | - | - | 2 | 2 | - | - | - |
| IM-2MST/2TX | - | - | 2 | - | 2 | - | - |
| IM-4SSC | - | - | - | - | - | 4 | - |
| IM-2SSC/2TX | - | - | 2 | - | - | 2 | - |
| IM-1LSC/3TX | - | - | 3 | - | - | - | 1 |

*See below for product information related to the SFP-1G series Gigabit Ethernet SFP modules.

Package Checklist

- IM series interface modules
- 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)

Note: When connecting long distance SFP (SFP-ZX, EZX or EZX-120), please ensure at least 5 dB attenuation between both ends. Without attenuation, excessive optical power may damage the transceivers.

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 | |
| Min. TX | -9.5 dBm | -9 dBm | -9.5 dBm | -8 dBm | -4 dBm | 0 dBm | 0 dBm | -2 dBm | -9 dBm | | -8 dBm | | -3 dBm | |
| RX Sensitivity | -18 dBm | -19 dBm | -20 dBm | -23 dBm | -24 dBm | -24 dBm | -30 dBm | -33 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 | 31 dB | 12 dB | | 15 dB | | 20 dB | |
| Typical Distance | 550 m ^a | 2 km ^b | 10 km ^c | 30 km ^c | 40 km ^c | 80 km ^c | 110 km ^c | 120 km ^c | 10 km ^c | | 20 km ^c | | 40 km ^c | |
| Saturation | 0 dBm | -3 dBm | -3 dBm | -3 dBm | -3 dBm | -3 dBm | -3 dBm | -8 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 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

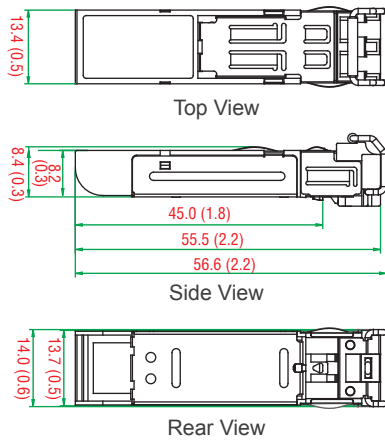
Warranty Period: 5 years

Details: See www.moxa.com/warranty

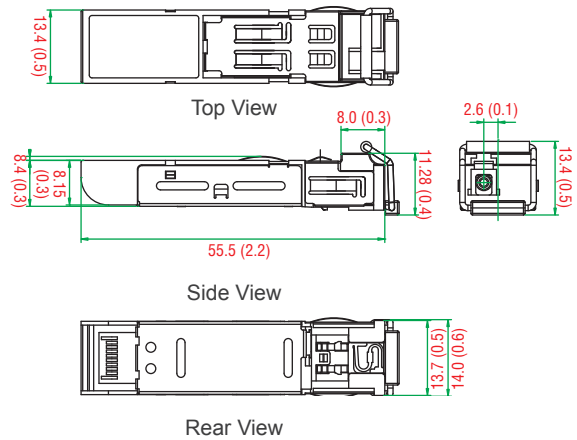
Dimensions

Unit: mm (inch)

SFP-1G Series



SFP-1G Series (WDM Type)



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 |

Available Models

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

ICS-G7826/G7828 series, ICS-G7526/G7528 series, IKS-G6524/G6824 series, IKS-6726/6728 series, EDS-611/619 series, EDS-G509 series, EDS-518A series, EDS-510A series, EDS-G308 series, EDS-P510 series, EDS-G205-4PoE series, IM-G7000-4GSFP, IM-2GSFP, PM-7200-2G/4G series, PT-G7509, EDR-G903/G902 series, IMC-101G series

Package Checklist

- SFP-1G module
- Warranty card