

# MDS-G4028-4XGS Series

24 GbE + 4 10GbE-port Layer 2 full Gigabit modular managed Ethernet switches



### Features and Benefits

- Multiple interface type modules for greater versatility
- Up to 24 Gigabit Ethernet ports or SFP slots plus 4 embedded 10G Ethernet ports
- Tool-free design for effortlessly adding or replacing modules without shutting down the switch
- Ultra-compact size and multiple mounting options for flexible installation
- Passive backplane to minimize maintenance efforts
- Rugged die-cast design for use in harsh environments
- Intuitive, HTML5-based web interface for a seamless experience across different platforms
- High EMC immunity compliant with IEC 61850-3 and IEEE 1613
- Hardware-based IEEE 1588 PTP for high-precision time synchronization

### Certifications



**EN 50121-4**

### Introduction

The MDS-G4028-4XGS Series modular switches support 4 10GbE + 24 Gigabit ports, including 4 embedded ports, 6 interface module expansion slots, and 2 power module slots to ensure sufficient flexibility for a variety of applications. The highly compact MDS-G4028-4XGS Series is designed to meet evolving network requirements, ensuring effortless installation and maintenance, and features a hot-swappable module design that enables you to easily change or add modules without shutting down the switch or interrupting network operations.

The multiple types of interface modules (RJ45, SFP, and PoE+) and power units (24/48 VDC and 110/220 VAC/VDC) provide even greater flexibility as well as suitability for different operating conditions, delivering an adaptive full Gigabit platform that provides the versatility and bandwidth necessary to serve as an Ethernet aggregation/edge switch. Featuring a compact design that fits in confined spaces, multiple mounting methods, and convenient tool-free module installation, the MDS-G4028-4XGS Series switches enable versatile and effortless deployment without the need for highly skilled engineers. With multiple industry certifications and a highly durable housing, the MDS-G4028-4XGS Series can reliably operate in tough and hazardous environments such as power substations, mining sites, ITS, and oil and gas applications. Support for dual LV or HV power modules provides redundancy for high reliability and availability and also offers flexibility to accommodate the power requirements of different applications.

In addition, the MDS-G4028-4XGS Series features an HTML5-based, user-friendly web interface providing a responsive, smooth user experience across different platforms and browsers.

### Specifications

#### Ethernet Interface

|                       |                                    |
|-----------------------|------------------------------------|
| Pre-installed Modules | 4 embedded 10Gigabit ports         |
| Module                | 6 slots for optional FE/GE modules |

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Slot Combination | <p>See the LM-7000H module series datasheet for more information.</p> <p>Note: The required power module depends on the choice of LM-7000H module. Refer to the following power/module combination requirements.</p> <p>LM-7000H non-PoE modules:<br/>Any power module</p> <p>LM-7000H PoE modules:<br/>PWR-HV-P48-A, PWR-LV-P48-A only</p>                                                                                      |
| Standards        | <p>IEEE 802.3 for 10BaseT<br/>IEEE 802.3u for 100BaseT(X) and 100BaseFX<br/>IEEE 802.3ab for 1000BaseT(X)<br/>IEEE 802.3z for 1000BaseX<br/>IEEE 802.3x for flow control<br/>IEEE 802.3ad for Port Trunk with LACP<br/>IEEE 802.1Q for VLAN Tagging<br/>IEEE 802.1D-2004 for Spanning Tree Protocol<br/>IEEE 802.1w for Rapid Spanning Tree Protocol<br/>IEEE 802.1p for Class of Service<br/>IEEE 802.1X for authentication</p> |

## Ethernet Software Features

|                      |                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Management           | <p>ARP<br/>Back Pressure Flow Control<br/>IPv4/IPv6<br/>Flow control<br/>DHCP Server/Client<br/>DHCP Relay Agent (Option 82)<br/>Fiber check<br/>RARP<br/>LLDP<br/>Linkup Delay<br/>Port Mirroring (SPAN, RSPAN)<br/>SMTP<br/>SNMP Trap<br/>SNMP Inform<br/>SNMPv1/v2c/v3<br/>RMON<br/>TFTP<br/>SFTP<br/>HTTP<br/>HTTPS<br/>Telnet<br/>Syslog<br/>Private MIB</p> |
| Filter               | <p>GMRP<br/>GVRP<br/>GARP<br/>802.1Q VLAN<br/>IGMP Snooping v1/v2/v3<br/>IGMP Querier</p>                                                                                                                                                                                                                                                                         |
| Redundancy Protocols | <p>STP<br/>RSTP<br/>Turbo Ring v2<br/>Turbo Chain<br/>Ring Coupling<br/>Link Aggregation<br/>MRP<br/>MSTP<br/>Network Loop Protection<br/>MRP Interconnection<br/>Multiple Dual Homing<br/>Multiple Network Coupling<br/>Tracking</p>                                                                                                                             |
| Security             | <p>Access control list<br/>Broadcast storm protection<br/>DHCP Snooping</p>                                                                                                                                                                                                                                                                                       |

|                          |                                                                                                                                                                                                                                                                  |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          | Dynamic ARP Inspection<br>IP Source Guard<br>Rate Limit<br>Trust access control<br>Static Port Lock<br>MAC Authentication Bypass<br>MAC Sticky<br>HTTPS/SSL<br>SSH<br>RADIUS<br>TACACS+<br>Login and Password Policy<br>Secure Boot<br>IEEE 802.1AE MAC security |
| Time Management          | SNTP<br>IEEE 1588v2 PTP (hardware-based)<br>Supported power profiles: IEEE 1588 Default 2008, IEC 61850-9-3-2016, IEEE C37.238-2017<br>NTP Server/Client<br>NTP Authentication                                                                                   |
| Protocols                | IPv4/IPv6<br>TCP/IP<br>UDP<br>ICMP<br>ARP<br>RARP<br>TFTP<br>DNS<br>NTP Client<br>DHCP Server<br>DHCP Client<br>802.1X<br>QoS<br>HTTPS<br>HTTP<br>Telnet<br>SMTP<br>SNMPv1/v2c/v3<br>RMON<br>Syslog<br>VLAN Assignment                                           |
| Industrial Protocols     | EtherNet/IP<br>Modbus TCP<br>PROFINET                                                                                                                                                                                                                            |
| MIB                      | P-BRIDGE MIB<br>Q-BRIDGE MIB<br>IEEE8021-SPANNING-TREE-MIB<br>IEEE8021-PAE-MIB<br>IEEE8023-LAG-MIB<br>LLDP-EXT-DOT1-MIB<br>LLDP-EXT-DOT3-MIB<br>SNMPv2-MIB<br>RMON MIB Groups 1, 2, 3, 9                                                                         |
| Power Substation         | GOOSE Check<br>MMS<br>1588 PTP Power Profile IEC 61850-9-3<br>1588 PTP Power Profile C37.238-2017                                                                                                                                                                |
| <b>Switch Properties</b> |                                                                                                                                                                                                                                                                  |
| MAC Table Size           | 16 K                                                                                                                                                                                                                                                             |
| Max. No. of VLANs        | 256                                                                                                                                                                                                                                                              |
| VLAN ID Range            | VID 1 to 4094                                                                                                                                                                                                                                                    |
| IGMP Groups              | 1024                                                                                                                                                                                                                                                             |

|                               |                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Jumbo Frame Size              | 9.216 KB                                                                                                                                                                                                                                                                                                                                                                                                    |
| Priority Queues               | 8                                                                                                                                                                                                                                                                                                                                                                                                           |
| Packet Buffer Size            | 12 Mbits                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>LED Interface</b>          |                                                                                                                                                                                                                                                                                                                                                                                                             |
| LED Indicators                | PWR, EPS, STATE, SYNC, FAULT, MSTR/HEAD, CPLR/TAIL                                                                                                                                                                                                                                                                                                                                                          |
| <b>Serial Interface</b>       |                                                                                                                                                                                                                                                                                                                                                                                                             |
| Console Port                  | RS-232 (RJ45)                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>USB Interface</b>          |                                                                                                                                                                                                                                                                                                                                                                                                             |
| USB Connector                 | USB Type A                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Input/Output Interface</b> |                                                                                                                                                                                                                                                                                                                                                                                                             |
| Digital Input Channels        | 1 (On MGMT Module)                                                                                                                                                                                                                                                                                                                                                                                          |
| Digital Inputs                | +13 to +30 V for state 1<br>-30 to +3 V for state 0<br>Max. input current: 8 mA                                                                                                                                                                                                                                                                                                                             |
| Alarm Contact Channels        | 3 (On MGMT, PWR1, PWR2 Module)<br>Relay output with current carrying capacity of 2 A @ 30 VDC                                                                                                                                                                                                                                                                                                               |
| Buttons                       | Reset button                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Power Parameters</b>       |                                                                                                                                                                                                                                                                                                                                                                                                             |
| Input Voltage                 | With PWR-HV-P48-A installed:<br>110/220 VDC, 110 VAC, 60 HZ, 220 VAC, 50 Hz, PoE: 48 VDC<br><br>With PWR-LV-P48-A installed:<br>24/48 VDC, PoE: 48 VDC<br><br>With PWR-HV-NP installed:<br>110/220 VDC, 110 VAC, 60 HZ, 220 VAC, 50 Hz<br><br>With PWR-LV-NP installed:<br>24/48 VDC                                                                                                                        |
| Operating Voltage             | With PWR-HV-P48-A installed:<br>88 to 300 VDC, 90 to 264 VAC, 47 to 63 Hz, PoE: 46 to 57 VDC<br><br>With PWR-LV-P48-A installed:<br>18 to 72 VDC, PoE: 46 to 57 VDC<br><br>With PWR-HV-NP installed:<br>88 to 300 VDC, 90 to 264 VAC, 47 to 63 Hz<br><br>With PWR-LV-NP installed:<br>18 to 72 VDC                                                                                                          |
| Input Current                 | With PWR-HV-P48-A/PWR-HV-NP installed:<br>Max. 0.38 A @ 110 VDC<br>Max. 0.20 A @ 220 VDC<br>Max. 0.75 A @ 110 VAC<br>Max. 0.48 A @ 220 VAC<br><br>With PWR-LV-P48-A/PWR-LV-NP installed:<br>Max. 1.90 A @ 24 VDC<br>Max. 0.95 A @ 48 VDC<br><br>EPS (PoE models only):<br>Max. 8.2 A @ 48 VDC<br><br>Note: These are the input current ratings for the device with the maximum number of modules installed. |

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Consumption (Max.)       | <p>With PWR-HV-P48-A/PWR-HV-NP:<br/> Max. 41.8 W @ 110 VDC<br/> Max. 44.2 W @ 220 VDC<br/> Max. 46.6 W @ 110 VAC<br/> Max. 46.5 W @ 220 VAC</p> <p>With PWR-LV-P48-A/PWR-LV-NP:<br/> Max. 45.8 W @ 24 VDC<br/> Max. 45.8 W @ 48 VDC</p> <p>Note: These are the maximum power consumption ratings for the device with the maximum number of modules installed.</p>                                                             |
| Overload Current Protection    | Supported                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Reverse Polarity Protection    | Supported                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Max. PoE Power Output per Port | 36 W                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Total PoE Power Budget         | <p>Max. 360 W (with one power supply) for total PD consumption at 48 VDC input for PoE systems</p> <p>Max. 360 W (with one power supply) for total PD consumption at 53 to 57 VDC input for PoE+ systems</p> <p>Max. 720 W (with two power supplies) for total PD consumption at 48 VDC input for PoE systems</p> <p>Max. 720 W (with two power supplies) for total PD consumption at 53 to 57 VDC input for PoE+ systems</p> |

#### Physical Characteristics

|              |                                                                                                                                                              |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IP Rating    | IP40                                                                                                                                                         |
| Dimensions   | 281 x 115 x 163.25 mm (11.06 x 4.53 x 6.43 in)<br>296 x 115 x 163.25 mm (11.65 x 4.53 x 6.43 in) with dual PWR-HV-P48-A/PWR-LV-P48-A power modules installed |
| Weight       | 3,790 g (8.36 lb)                                                                                                                                            |
| Installation | DIN-rail mounting<br>Wall mounting (with optional kit)<br>Rack mounting (with optional kit)                                                                  |

#### Environmental Limits

|                                        |                            |
|----------------------------------------|----------------------------|
| Operating Temperature                  | -40 to 75°C (-40 to 167°F) |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F) |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)  |

#### Standards and Certifications

|        |                                                                                                                                                                                             |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety | EN IEC 62368-1<br>IEC 62368-1<br>UL 62368-1<br>IEC 60950-1<br>UL 61010-2-201<br>EN 61010-2-201                                                                                              |
| EMC    | EN 55032/35<br>EN 61000-6-2/-6-4                                                                                                                                                            |
| EMI    | CISPR 32, FCC Part 15B Class A                                                                                                                                                              |
| EMS    | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV<br>IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV |

|                  |                                                                                             |
|------------------|---------------------------------------------------------------------------------------------|
|                  | IEC 61000-4-6 CS: 10 V<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 Voltage Dips & Interruptions |
| Railway          | EN 50121-4                                                                                  |
| Traffic Control  | NEMA TS2                                                                                    |
| Shock            | IEC 60068-2-27                                                                              |
| Freefall         | IEC 60068-2-31                                                                              |
| Vibration        | IEC 60068-2-6                                                                               |
| Power Substation | IEC 61850-3<br>IEEE 1613                                                                    |

#### MTBF

|           |                           |
|-----------|---------------------------|
| Time      | 794,073 hrs               |
| Standards | Telcordia Standard SR-332 |

#### Warranty

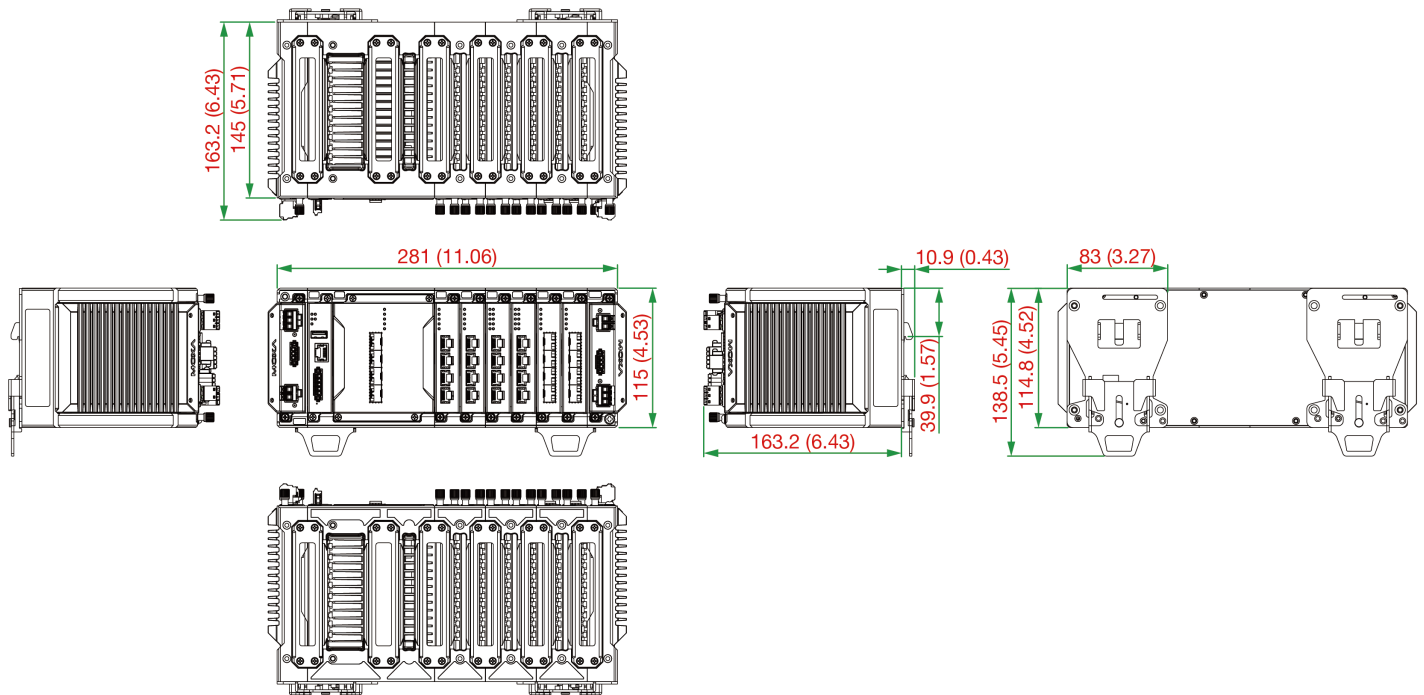
|                 |                                                                      |
|-----------------|----------------------------------------------------------------------|
| Warranty Period | 5 years                                                              |
| Details         | See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a> |

#### Package Contents

|                  |                                                                                                                                                                   |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Device           | 1 x MDS-G4028-4XGS Series switch                                                                                                                                  |
| Installation Kit | Preinstalled, 2 x DIN-rail kit<br>4 x cap, plastic, for SFP+ slots                                                                                                |
| Documentation    | 1 x quick installation guide<br>1 x product notice, Simplified Chinese<br>1 x product certificates of quality inspection, Simplified Chinese<br>1 x warranty card |
| Note             | This product requires additional modules (sold separately) to function.                                                                                           |

## Dimensions

Unit: mm (inch)



## Ordering Information

| Model Name       | Layer | Total No. of Ports | 10G SFP+ Slots | 100/1000Base SFP Slots | 10/100/1000BaseT(X) Ports RJ45 Connector | 10/100BaseT(X) Ports RJ45 Connector | Operating Temp. |
|------------------|-------|--------------------|----------------|------------------------|------------------------------------------|-------------------------------------|-----------------|
| MDS-G4028-4XGS-T | 2     | 28                 | 4              | Up to 24               | Up to 24                                 | Up to 24                            | -40 to 75°C     |

## Accessories (sold separately)

### LM-7000H Module Series

|                |                                                                               |
|----------------|-------------------------------------------------------------------------------|
| LM-7000H-4GTX  | Gigabit Ethernet module with 4 10/100/1000BaseT(X) ports                      |
| LM-7000H-4GPoE | Gigabit Ethernet module with 4 10/100/1000BaseT(X) IEEE 802.3af/at PoE+ ports |
| LM-7000H-4GSFP | Gigabit Ethernet module with 4 100/1000BaseSFP slots                          |
| LM-7000H-4TX   | Fast Ethernet module with 4 10/100BaseT(X) ports                              |
| LM-7000H-4PoE  | Fast Ethernet module with 4 10/100BaseT(X) IEEE 802.3af/at PoE+ ports         |

### Power Modules

|              |                                                                                                   |
|--------------|---------------------------------------------------------------------------------------------------|
| PWR-LV-P48-A | 24/48 VDC power supply module with system power, relay, PoE power input, advanced heat sink       |
| PWR-HV-P48-A | 110/220 VAC/VDC power supply module with system power, relay, PoE power input, advanced heat sink |
| PWR-LV-NP    | Power supply module (24/48 VDC) with system power input, relay                                    |
| PWR-HV-NP    | Power supply module (110/220 VAC/VDC) with system power input, relay                              |

### Wall-Mounting Kits

|           |                                       |
|-----------|---------------------------------------|
| WK-112-01 | Wall-mounting kit, 2 plates, 8 screws |
|-----------|---------------------------------------|

### Rack-Mounting Kits

|          |                                                                                      |
|----------|--------------------------------------------------------------------------------------|
| RK-3U-02 | Rack-mounting kit with 4 L-shaped plates for the MDS-G4000 and MDS-G4000-4XGS Series |
|----------|--------------------------------------------------------------------------------------|

### SFP Modules

|                 |                                                                                                                                                        |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| SFP-10GERLC-T   | SFP+ module with 1 10GBase-ER port, LC connector for 40 km transmission, -40 to 85°C operating temperature                                             |
| SFP-10GLRLC-T   | SFP+ module with 1 10GBase-LR port, LC connector for 10 km transmission, -40 to 85°C operating temperature                                             |
| SFP-10GSRLC-T   | SFP+ module with 1 10GBase-SR port, LC connector for 33m/82m/300m/400m transmission, -40 to 85°C operating temperature                                 |
| SFP-10GZRLC-T   | SFP+ module with 1 10GBase-ZR port, LC connector for 80 km transmission, -40 to 85°C operating temperature                                             |
| SFP-1FELLC-T    | SFP module with 1 100Base single-mode with LC connector for 80 km transmission, -40 to 85°C operating temperature                                      |
| SFP-1FEMLC-T    | SFP module with 1 100Base multi-mode, LC connector for 2/4 km transmission, -40 to 85°C operating temperature                                          |
| SFP-1FESLC-T    | SFP module with 1 100Base single-mode with LC connector for 40 km transmission, -40 to 85°C operating temperature                                      |
| SFP-1G10ALC     | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature   |
| SFP-1G10ALC-T   | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature |
| SFP-1G10BLC     | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1550 nm, RX 1310 nm, 0 to 60°C operating temperature   |
| SFP-1G10BLC-T   | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature |
| SFP-1G20ALC     | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature   |
| SFP-1G20ALC-T   | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature |
| SFP-1G20BLC     | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1550 nm, RX 1310 nm, 0 to 60°C operating temperature   |
| SFP-1G20BLC-T   | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature |
| SFP-1G40ALC     | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature   |
| SFP-1G40ALC-T   | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature |
| SFP-1G40BLC     | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1550 nm, RX 1310 nm, 0 to 60°C operating temperature   |
| SFP-1G40BLC-T   | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature |
| SFP-1GEZXLC     | SFP module with 1 1000BaseEZX port with LC connector for 110 km transmission, 0 to 60°C operating temperature                                          |
| SFP-1GEZXLC-120 | SFP module with 1 1000BaseEZX port with LC connector for 120 km transmission, 0 to 60°C operating temperature                                          |
| SFP-1GLHLC      | SFP module with 1 1000BaseLH port with LC connector for 30 km transmission, 0 to 60°C operating temperature                                            |
| SFP-1GLHLC-T    | SFP module with 1 1000BaseLH port with LC connector for 30 km transmission, -40 to 85°C operating temperature                                          |
| SFP-1GLHXL      | SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature                                           |
| SFP-1GLHXL-T    | SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature                                         |
| SFP-1GLSXL      | SFP module with 1 1000BaseLSX port with LC connector for 1km/2km transmission, 0 to 60°C operating temperature                                         |
| SFP-1GLSXL-T    | SFP module with 1 1000BaseLSX port with LC connector for 1km/2km transmission, -40 to 85°C operating temperature                                       |
| SFP-1GLXL       | SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, 0 to 60°C operating temperature                                            |



|                |                                                                                                                   |
|----------------|-------------------------------------------------------------------------------------------------------------------|
| SFP-1GLXLC-T   | SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, -40 to 85°C operating temperature     |
| SFP-1GSXLC     | SFP module with 1 1000BaseSX port with LC connector for 300m/550m transmission, 0 to 60°C operating temperature   |
| SFP-1GSXLC-T   | SFP module with 1 1000BaseSX port with LC connector for 300m/550m transmission, -40 to 85°C operating temperature |
| SFP-1GZXLC     | SFP module with 1 1000BaseZX port with LC connector for 80 km transmission, 0 to 60°C operating temperature       |
| SFP-1GZXLC-T   | SFP module with 1 1000BaseZX port with LC connector for 80 km transmission, -40 to 85°C operating temperature     |
| SFP-1GTXRJ45-T | SFP module with 1 1000BaseT port with RJ45 connector for 100 m transmission, -40 to 75°C operating temperature    |

#### Power Supplies

|            |                                                                                                                                      |
|------------|--------------------------------------------------------------------------------------------------------------------------------------|
| HDR-60-24  | 60 W/2.5 A DIN-rail 24 VDC power supply, universal 85 to 264 VAC or 120 to 370 VDC input voltage, -30 to 70°C operating temperature  |
| NDR-120-24 | 120 W/5.0 A DIN-rail 24 VDC power supply, universal 90 to 264 VAC or 127 to 370 VDC input voltage, -20 to 70°C operating temperature |
| NDR-120-48 | 120 W/2.5 A DIN-rail 48 VDC power supply, universal 90 to 264 VAC or 127 to 370 VDC input voltage, -20 to 70°C operating temperature |
| NDR-240-48 | 240 W/5.0 A DIN-rail 48 VDC power supply, universal 90 to 264 VAC or 127 to 370 VDC input voltage, -20 to 70°C operating temperature |

#### Cables

|         |                                        |
|---------|----------------------------------------|
| CN20070 | 10-pin RJ45 to DB9 female serial cable |
|---------|----------------------------------------|

#### Storage Kits

|              |                                                                                                                                                                     |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ABC-02-USB   | Configuration backup and restoration tool, firmware upgrade, and log file storage tool for managed Ethernet switches and routers, 0 to 60°C operating temperature   |
| ABC-02-USB-T | Configuration backup and restoration tool, firmware upgrade, and log file storage tool for managed Ethernet switches and routers, -40 to 75°C operating temperature |

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