

# MDS-G4028 Series

28G-port Layer 2 full Gigabit modular managed Ethernet switches



## Features and Benefits

- Multiple interface type 4-port modules for greater versatility
- 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

## Certifications



## Introduction

The MDS-G4028 Series modular switches support up to 28 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-G4000 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 Ethernet modules (RJ45, SFP, and PoE+) and power units (24/48 VDC, 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-G4000 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-G4000 Series can reliably operate in tough and hazardous environments such as power substations, mining sites, ITS, and oil and gas applications. Support for dual power modules provides redundancy for high reliability and availability while LV and HV power module options offer additional flexibility to accommodate the power requirements of different applications.

In addition, the MDS-G4000 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 Gigabit ports  |
| Module                | 6 slots for optional 4-port FE/GE modules   |
| Slot Combination      | See the LM-7000H module series datasheet for more information   |
| Standards             | 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 |

## Ethernet Software Features

|                      |  |
|----------------------|--|
| Management           | IPv4/IPv6, Flow control, Back Pressure Flow Control, DHCP Server/Client, ARP, RARP, LLDP, Port Mirror, Linkup Delay, SMTP, SNMP Trap, SNMP Inform, SNMPv1/v2c/v3, RMON, TFTP, SFTP, HTTP, HTTPS, Telnet, Syslog, Private MIB |
| Filter               | GMRP, GVRP, GARP, 802.1Q VLAN, IGMP Snooping v1/v2/v3, IGMP Querier  |
| Redundancy Protocols | STP, RSTP, Turbo Ring v2, Turbo Chain, Ring Coupling, Dual-Homing, Link Aggregation  |
| Security             | Broadcast storm protection, Rate Limit, Trust access control, Static Port Lock, MAC Sticky, HTTPS/SSL, SSH, RADIUS, TACACS+, Login and Password Policy   |
| Time Management      | SNTP, NTP Server/Client, NTP Authentication  |
| Protocols            | IPv4/IPv6, TCP/IP, UDP, ICMP, ARP, RARP, TFTP, DNS, NTP Client, DHCP Server, DHCP Client, 802.1X, QoS, HTTPS, HTTP, Telnet, SMTP, SNMPv1/v2c/v3, RMON, Syslog  |
| MIB                  | P-BRIDGE MIB, Q-BRIDGE MIB, IEEE8021-SPANNING-TREE-MIB, IEEE8021-PAE-MIB, IEEE8023-LAG-MIB, LLDP-EXT-DOT1-MIB, LLDP-EXT-DOT3-MIB, SNMPv2-MIB, RMON MIB Groups 1, 2, 3, 9   |

## Switch Properties

|                    |               |
|--------------------|---------------|
| MAC Table Size     | 16 K          |
| Max. No. of VLANs  | 256           |
| VLAN ID Range      | VID 1 to 4094 |
| IGMP Groups        | 1024          |
| Priority Queues    | 8             |
| Packet Buffer Size | 12 Mbits      |

## Serial Interface

|              |  |
|--------------|--|
| Console Port | RS-232 (TxD, RxD, GND), 8-pin RJ45 (115200, n, 8, 1) |
|--------------|--|

## USB Interface

|               |                       |
|---------------|-----------------------|
| USB Connector | USB Type A (Reserved) |
|---------------|-----------------------|

## Input/Output Interface

|                        |   |
|------------------------|---|
| 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 |

## Power Parameters

|                   |  |
|-------------------|--|
| Input Voltage     | with PWR-HV-P48 installed:<br>110/220 VDC, 110 VAC, 60 HZ, 220 VAC, 50 Hz, PoE: 48 VDC<br><br>with PWR-LV-P48 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 installed:<br>88 to 300 VDC, 90 to 264 VAC, 47 to 63 Hz, PoE: 46 to 57 VDC   |

|  |   |
|--|---|
|  | <p>with PWR-LV-P48 installed:<br/>18 to 72 VDC (24/48 VDC for hazardous location), PoE: 46 to 57 VDC (48 VDC for hazardous location)</p> <p>with PWR-HV-NP installed:<br/>88 to 300 VDC, 90 to 264 VAC, 47 to 63 Hz</p> <p>with PWR-LV-NP installed:<br/>18 to 72 VDC</p>   |
| Input Current                          | <p>with PWR-HV-P48 installed:<br/>PWR input current (switch system)<br/>Max. 0.11 A @ 110 VDC<br/>Max. 0.06 A @ 220 VDC<br/>Max. 0.29 A @ 110 VAC<br/>Max. 0.18 A @ 220 VAC<br/>EPS input current (PoE system)<br/>Max. 0.53 A @ 48 VDC<br/>(excluding the power consumption of PoE devices)</p> <p>with PWR-LV-P48 installed:<br/>PWR input current (switch system)<br/>Max. 0.53 A @ 24 VDC<br/>Max. 0.28 A @ 48 VDC<br/>EPS input current (PoE system)<br/>Max. 0.53 A @ 48 VDC<br/>(excluding the power consumption of PoE devices)</p> <p>with PWR-HV-NP installed:<br/>PWR input current (switch system)<br/>Max. 0.11 A @ 110 VDC<br/>Max. 0.06 A @ 220 VDC<br/>Max. 0.29 A @ 110 VAC<br/>Max. 0.18 A @ 220 VAC</p> <p>with PWR-LV-NP installed:<br/>PWR input current (switch system)<br/>Max. 0.53 A @ 24 VDC<br/>Max. 0.28 A @ 48 VDC</p> |
| Overload Current Protection            | Supported   |
| Reverse Polarity Protection            | Supported   |
| <b>Physical Characteristics</b>        |   |
| IP Rating                              | IP40  |
| Dimensions                             | 218 x 115 x 163.25 mm (8.59 x 4.53 x 6.44 in)   |
| Weight                                 | 2840 g (6.27 lb)  |
| Installation                           | DIN-rail mounting, Wall mounting (with optional kit), Rack mounting (with optional kit)   |
| <b>Environmental Limits</b>            |   |
| Operating Temperature                  | Standard Temperature: -10 to 60°C (-14 to 140°F)<br>Wide 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)   |
| <b>Standards and Certifications</b>    |   |
| Safety                                 | EN 62368-1, IEC 62368-1, UL 62368-1, IEC 60950-1  |
| EMC                                    | EN 55032/35   |
| 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<br>IEC 61000-4-6 CS: 10 V<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 |
| Railway             | EN 50121-4  |
| Traffic Control     | NEMA TS2  |
| Shock               | IEC 60068-2-27  |
| Freefall            | IEC 60068-2-31  |
| Vibration           | IEC 60068-2-6   |
| Hazardous Locations | ATEX, Class I Division 2  |
| Power Substation    | IEEE 1613, IEC 61850-3  |

#### MTBF

|           |                 |
|-----------|-----------------|
| Time      | 966,801 hrs     |
| Standards | Telcordia SR332 |

#### Warranty

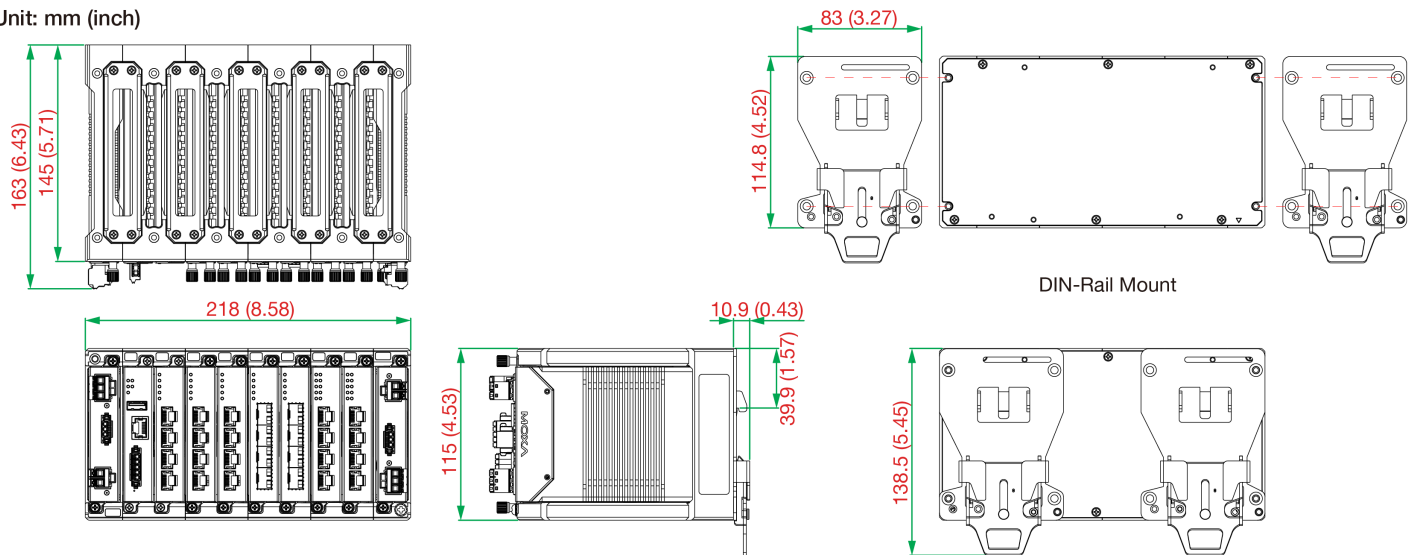
|                 |  |
|-----------------|--|
| Warranty Period | 5 years  |
| Details         | See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a> |

#### Package Contents

|                  |   |
|------------------|---|
| Device           | 1 x MDS-G4028 Series switch   |
| Cable            | 1 x RJ45-to-DB9 console cable   |
| Installation Kit | Pre-install 2 x DIN-rail kit<br>2 x cap, plastic, for RJ45 port   |
| 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 | 100/1000Base SFP Slots | 10/100/1000BaseT(X) Ports RJ45 Connector | PoE 10/100/1000BaseT(X) Ports RJ45 Connector | 10/100BaseT(X) Ports RJ45 Connector | PoE 10/100BaseT(X) Ports RJ45 Connector | Operating Temp. |
|-------------|-------|--------------------|------------------------|--|--|-------------------------------------|---|-----------------|
| MDS-G4028   | 2     | 28                 | Up to 24               | Up to 28                                 | Up to 24                                     | Up to 24                            | Up to 24                                | -10 to 60°C     |
| MDS-G4028-T | 2     | 28                 | Up to 24               | Up to 28                                 | 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 | Power supply module (24/48 VDC) with system power input, relay, PoE power input       |
| PWR-HV-P48 | Power supply module (110/220 VAC/VDC) with system power input, relay, PoE power input |
| 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-01 | Rack-mounting kit, 4 L-shaped plates, and 2 plates with 32 screws for combining two MDS-G4028 |
|----------|---|

### SFP Modules

|              |   |
|--------------|---|
| 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-1FELLC-T    | SFP module with 1 100Base single-mode with LC connector for 80 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-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-1GLSXLC     | SFP module with 1 1000BaseLSX port with LC connector for 1km/2km transmission, 0 to 60°C operating temperature   |
| SFP-1GLSXLC-T   | SFP module with 1 1000BaseLSX port with LC connector for 1km/2km transmission, -40 to 85°C operating temperature                                       |
| SFP-1GLXLC      | 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-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-1GLHLC      | SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature   |
| SFP-1GLHLC-T    | SFP module with 1 1000BaseLHX port with LC connector for 40 km 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-1GEZXLC     | SFP module with 1 1000BaseEZXC port with LC connector for 110 km transmission, 0 to 60°C operating temperature   |
| SFP-1GEZXLC-120 | SFP module with 1 1000BaseEZXC port with LC connector for 120 km transmission, 0 to 60°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 |

## Software

|                   |  |
|-------------------|--|
| MXview-50         | Industrial network management software with a license for 50 nodes (by IP address)             |
| MXview-100        | Industrial network management software with a license for 100 nodes (by IP address)            |
| MXview-250        | Industrial network management software with a license for 250 nodes (by IP address)            |
| MXview-500        | Industrial network management software with a license for 500 nodes (by IP address)            |
| MXview-1000       | Industrial network management software with a license for 1000 nodes (by IP address)           |
| MXview-2000       | Industrial network management software with a license for 2000 nodes (by IP address)           |
| MXview Upgrade-50 | License expansion of MXview industrial network management software by 50 nodes (by IP address) |

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