

# MDS-G4028-L3シリーズ

28Gポートレイヤ3フルギガビットモジュールマネージド・イーサネット・スイッチ



## 機能と特長

- 複数のLANセグメントを相互接続するレイヤー3ルーティング
- 汎用性を高める複数のインターフェースタイプの4ポートモジュール
- ツール不要の設計で、スイッチをシャットダウンせずにモジュールを簡単に追加または交換可能
- 超コンパクトなサイズと複数の取り付けオプションにより柔軟な設置が可能
- 過酷な環境での使用に適した頑丈なダイキャスト設計
- さまざまなプラットフォーム間でシームレスなエクスペリエンスを実現する、直感的なHTML5ベースのWebインターフェース

## 認証



## 製品紹介

MDS-G4028-L3シリーズのモジュラー式スイッチは、4つの固定ポート、2つのインターフェースモジュール拡張スロット、および2つの電力モジュールスロットを含む最大28ギガビットポートを提供し、さまざまなアプリケーションで十分な柔軟性を確保します。非常にコンパクトなMDS-G4000-L3シリーズは、進化するネットワーク要件を満たすように設計されており、インストールとメンテナンスが簡単に行えます。また、ホットスワップ可能なモジュール設計を採用しているため、スイッチをシャットダウンしたりネットワーク操作を中断したりすることなく、モジュールを簡単に変更または追加できます。

複数のイーサネットモジュール（RJ45、SFP、PoE）および電源ユニット（24/48 VDC、110/220 VAC/VDC）は、より優れた柔軟性を提供し、異なる動作条件に適合し、イーサネットアグリゲーション/エッジスイッチとして機能するために必要な汎用性と帯域幅を提供する、適応型フルギガビットプラットフォームを提供します。MDS-G4000-L3シリーズスイッチは、限られたスペースに収まるコンパクトな設計、複数の取り付け方法、便利なツール不要のモジュール取り付けを特徴とし、高度なスキルを持つエンジニアを必要とせずに、多用途で簡単な導入を可能にします。MDS-G4000シリーズは、複数の業界認証と非常に耐久性の高いハウジングを備えており、変電所、採掘現場、ITS、石油・ガス用途などの過酷で危険な環境でも確実に動作できます。デュアル電源モジュールのサポートにより、高い信頼性と可用性を実現する冗長性が提供され、LVおよびHV電源モジュールオプションにより、さまざまなアプリケーションの電力要件に対応するための柔軟性がさらに高まります。

レイヤー3ルーティング機能のサポートにより、これらのスイッチはさまざまなネットワーク間でのアプリケーションの展開を容易にし、大規模な産業用ネットワークに最適です。さらに、MDS-G4000-L3シリーズはHTML5ベースのユーザーフレンドリーなWebインターフェースを備えており、さまざまなプラットフォームやブラウザで応答性の高いスムーズなユーザーエクスペリエンスを実現します。

## 仕様

### Ethernet Interface

Pre-installed Modules	4 embedded Gigabit ports
Module	6 slots for optional 4-port 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: Any power module</p> <p>LM-7000H PoE modules: PWR-HV-P48, PWR-LV-P48 only</p>
Standards	<p>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 802.3ad for Port Trunk with LACP IEEE 802.1Q for VLAN Tagging IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1X for authentication IEEE 802.3af/at for PoE/PoE+ output</p>

## Ethernet Software Features

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

	Dynamic ARP Inspection IP Source Guard Rate Limit Trust access control Static Port Lock MAC authentication bypass MAC Sticky HTTPS/SSL SSH RADIUS TACACS+ Login and Password Policy
Time Management	SNTP NTP Server/Client NTP Authentication
Protocols	IPv4 TCP/IP UDP ICMP ARP RARP TFTP DNS NTP Client 802.1X QoS EtherNet/IP HTTPS HTTP Modbus TCP Telnet SMTP SNMPv1/v2c/v3 RMON Syslog
Unicast Routing	OSPF Static Route
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
Power Substation	MMS
<b>Switch Properties</b>	
Jumbo Frame Size	9.216 KB
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
<b>Serial Interface</b>	
Console Port	RS-232 (TxD, RxD, GND), 8-pin RJ45 (115200, n, 8, 1)

## USB Interface

USB Connector	USB Type A (Reserved)
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## Input/Output Interface

Digital Input Channels	1 (On MGMT Module)
Digital Inputs	+13 to +30 V for state 1 -30 to +3 V for state 0 Max. input current: 8 mA
Alarm Contact Channels	3 (On MGMT, PWR1, PWR2 Module) Relay output with current carrying capacity of 2 A @ 30 VDC

## Power Parameters

Input Voltage	With PWR-HV-P48 installed: 110/220 VDC, 110 VAC, 60 HZ, 220 VAC, 50 Hz, PoE: 48 VDC  With PWR-LV-P48 installed: 24/48 VDC, PoE: 48 VDC  With PWR-HV-NP installed: 110/220 VDC, 110 VAC, 60 HZ, 220 VAC, 50 Hz  With PWR-LV-NP installed: 24/48 VDC
Operating Voltage	With PWR-HV-P48 installed: 88 to 300 VDC, 90 to 264 VAC, 47 to 63 Hz, PoE: 46 to 57 VDC  With PWR-LV-P48 installed: 18 to 72 VDC (24/48 VDC for hazardous location), PoE: 46 to 57 VDC (48 VDC for hazardous location)  With PWR-HV-NP installed: 88 to 300 VDC, 90 to 264 VAC, 47 to 63 Hz  With PWR-LV-NP installed: 18 to 72 VDC
Input Current	With PWR-HV-P48/PWR-HV-NP installed: Max. 0.30 A @ 110 VDC Max. 0.15 A @ 220 VDC Max. 0.60 A @ 110 VAC Max. 0.40 A @ 220 VAC  With PWR-LV-P48/PWR-LV-NP installed: Max. 1.5 A @ 24 VDC Max. 0.75 A @ 48 VDC  EPS (PoE models only): Max. 8.2 A @ 48 VDC  Note: These are the input current ratings for the device with the maximum number of modules installed.
Power Consumption (Max.)	With PWR-HV-P48/PWR-HV-NP installed: Max. 33.0 W @ 110 VDC Max. 34.0 W @ 220 VDC Max. 35.8 W @ 110 VAC Max. 38.0 W @ 220 VAC  With PWR-LV-P48/PWR-LV-NP installed: Max. 36.0 W @ 24 VDC Max. 36.0 W @ 48 VDC  Note: These are the maximum power consumption ratings for the device with the maximum number of modules installed.
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>
Overload Current Protection	Supported
Reverse Polarity Protection	Supported

### Physical Characteristics

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	<p>DIN-rail mounting</p> <p>Wall mounting (with optional kit)</p> <p>Rack mounting (with optional kit)</p>

### Environmental Limits

Operating Temperature	<p>Standard Temp Models: -10 to 60°C (-14 to 140°F)</p> <p>Wide Temp Models: -40 to 75°C (-40 to 167°F)</p>
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

### Standards and Certifications

Safety	<p>EN 62368-1</p> <p>IEC 62368-1</p> <p>UL 62368-1</p> <p>IEC 60950-1</p>
EMC	<p>EN 55032/35</p> <p>EN 61000-6-2/-6-4</p>
EMI	CISPR 32, FCC Part 15B Class A
EMS	<p>IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV</p> <p>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m</p> <p>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV</p> <p>IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV</p> <p>IEC 61000-4-6 CS: 10 V</p> <p>IEC 61000-4-8 PFMF</p> <p>IEC 61000-4-11: Voltage Dips and Voltage Interruptions</p>
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	Class I Division 2 ATEX
Power Substation	IEEE 1613 IEC 61850-3

### MTBF

Time	966,801 hrs
Standards	Telcordia SR332

### Warranty

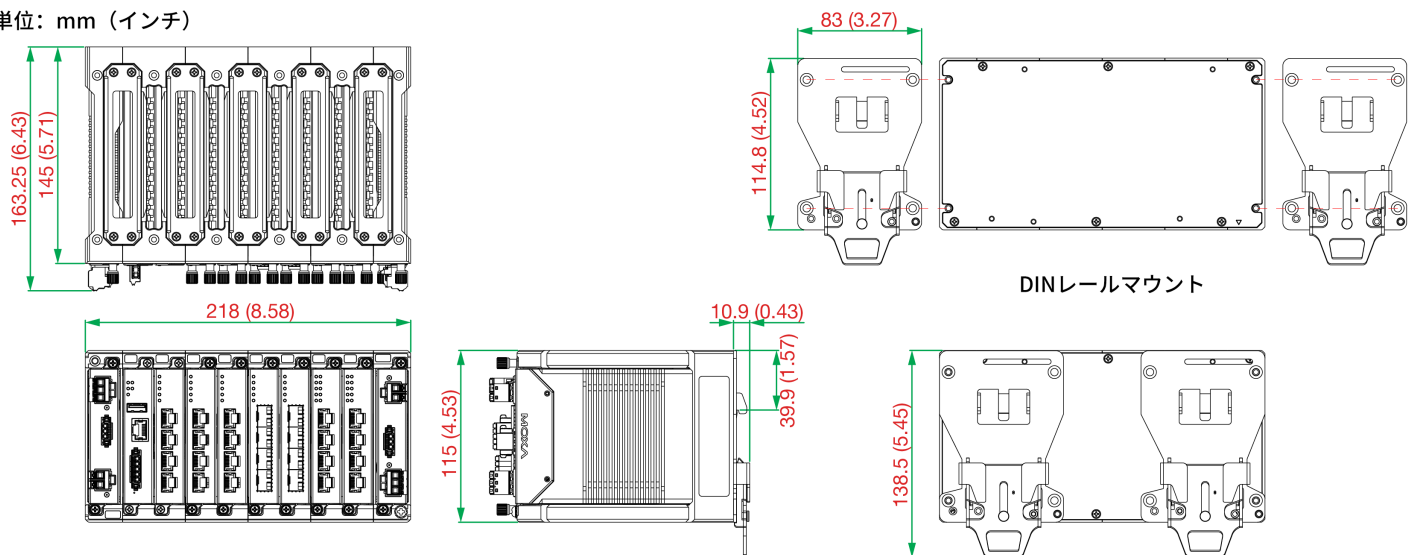
Warranty Period	5 years
Details	See <a href="http://www.moxa.com/jp/warranty">www.moxa.com/jp/warranty</a>

### Package Contents

Device	1 x MDS-G4028-L3 Series switch
Cable	1 x RJ45-to-DB9 console cable
Installation Kit	(Pre-installed) 2 x DIN-rail kit 2 x cap, plastic, for RJ45 port
Documentation	1 x quick installation guide 1 x product notice, Simplified Chinese 1 x product certificates of quality inspection, Simplified Chinese 1 x warranty card
Note	This product requires additional modules (sold separately) to function.

## 寸法

単位: mm (インチ)



## 注文情報

Model Name	Layer	Total No. of Ports	100/1000BaseSFP 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-L3	3	28	Up to 24	Up to 28	Up to 24	Up to 24	Up to 24	-10 to 60°C
MDS-G4028-L3-T	3	28	Up to 24	Up to 28	Up to 24	Up to 24	Up to 24	-40 to 75°C

## アクセサリ（別売）

### 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
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### Rack-Mounting Kits

RK-3U-02	Rack-mounting kit with 4 L-shaped plates for the MDS-G4000 and MDS-G4000-4XGS Series
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### 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-1GLHXC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXC-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-1GEZXC	SFP module with 1 1000BaseEZX port with LC connector for 110 km transmission, 0 to 60°C operating temperature
SFP-1GEZXC-120	SFP module with 1 1000BaseEZX 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	MXview license for 50 nodes
MXview-100	MXview license for 100 nodes
MXview-250	MXview license for 250 nodes
MXview-500	MXview license for 500 nodes
MXview-1000	MXview license for 1000 nodes
MXview-2000	MXview license for 2000 nodes
MXview Upgrade-50	MXview license expansion for 50 nodes

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