EDS-4008 Series

8-port (with options of 4 802.3bt PoE ports or 4 Giga uplink ports) managed Ethernet switches

Features and Benefits

- Developed according to the IEC 62443-4-1 and compliant with the IEC 62443-4-2 industrial cybersecurity standards
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches)[1], and RSTP/STP for network redundancy
- Support for IEEE 802.3bt PoE for up to 90 W output per port
- Wide range of power input options for flexible deployment
- Compact and flexible housing design to fit into confined spaces
- Supports MXstudio for easy, visualized industrial network management

Certifications

Introduction

The EDS-4008 Series is a range of 8-port managed Fast Ethernet switches with the option for four 1 Gbps uplink ports or two 100M ST/SC fiber-optic ports. This Series also offers models with four 10/100BaseT(X) 802.3af (PoE), 802.3at (PoE+), and 802.3bt-compliant Ethernet PoE port options to connect high-bandwidth PoE devices.

Redundant Ethernet technologies such as Turbo Ring, Turbo Chain, and RSTP/STP increase the reliability of your system and improve the availability of your network backbone. The EDS-4008 Series is designed specifically for demanding applications such as video and process monitoring, ITS, and DCS systems, all of which can benefit from a scalable backbone.

The EDS-4008 Series is compliant with the IEC 62443-4-2 and IEC 62443-4-1 Industrial Cybersecurity certifications, which cover both product security and secure development life-cycle requirements, helping our customers meet the compliance requirements of secure industrial network design.

Specifications

Ethernet Interface

10/100BaseT(X) Ports (RJ45 connector)	EDS-4008-LV/-HV/-T models: 8 EDS-4008-2MST-LV/-HV/-T models: 6 EDS-4008-2MSC-LV/-HV/-T models: 6 EDS-4008-2SSC-LV/-HV/-T models: 6 EDS-4008-2GT-2GS-LV/-HV/-T models: 4 Auto negotiation speed Full/Half duplex mode Auto MDI/MDI-X connection
PoE Ports (10/100BaseT(X), RJ45 connector)	EDS-4008-4P-2GT-2GS-LVA/-LVB/-T models: 4
100BaseFX Ports (multi-mode SC connector)	EDS-4008-2MSC-LV/-HV/-T models: 2
100BaseFX Ports (multi-mode ST connector)	EDS-4008-2MST-LV/-HV/-T models: 2
100BaseFX Ports (single-mode SC connector)	EDS-4008-SSC-LV/-HV/-T models: 2
10/100/1000BaseT(X) Ports (RJ45 connector)	EDS-4008-2GT-2GS-LV/-HV-T models: 2 EDS-4008-4P-2GS-2GT-LVA/-LVB/-T models: 2
100/1000BaseSFP Slots	EDS-4008-2GT-2GS-LV/-HV/-T models 2 EDS-4008-4P-2GT-2GS-LVA/-LVB/-T models: 2

1. If the port link speed is 1 Gigabit or higher, the recovery time is < 50 ms.

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 802.3ad 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

Optical Fiber

		100BaseFX		
		Multi-Mode		Single-Mode
Fiber Cable Type		OM1	50/125 µm 800 MHz x km	G.652
Typical Distance		4 km	5 km	40 km
Wavelength	Typical (nm)	1300		1310
	TX Range (nm)	1260 to 1360		1280 to 1340
	RX Range (nm)	1100 to 1600		1100 to 1600
Optical Power	TX Range (dBm)	-10 to -20		0 to -5
	RX Range (dBm)	-3 to -32		-3 to -34
	Link Budget (dB)	12		29
	Dispersion Penalty (dB)	3		1

Note: When connecting a single-mode fiber transceiver, we recommend using an attenuator to prevent damage caused by excessive optical power.
Note: Compute the “typical distance” of a specific fiber transceiver as follows: Link budget (dB) > dispersion penalty (dB) + total link loss (dB).

Ethernet Software Features

Filter	GMRP, GVRP, GARP, 802.1Q VLAN, IGMP Snooping v1/v2/v3, IGMP Querier
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
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
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

Switch Properties

MAC Table Size	16 K
Jumbo Frame Size	9.216 KB
Max. No. of VLANs	256

VLAN ID Range	VID 1 to 4094
IGMP Groups	512
Priority Queues	4
Packet Buffer Size	1 MB

LED Interface

LED Indicators	PWR1, PWR2, STATE, FAULT, MSTR/HEAD, CPLR/TAIL, SYNC

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

Alarm Contact Channels	1, Relay output with current carrying capacity of 1 A @ 24 VDC
Digital Input Channels	1
Digital Inputs	+13 to +30 V for state 1 -30 to +3 V for state 0 Max. input current: 8 mA
Buttons	Reset button

DIP Switch Configuration

DIP Switches	Turbo Ring, Master, Coupler, Reserve

Power Parameters

Connection	2 removable 4-contact terminal block(s)
Pre-installed Power Module	-LV/-LV-T models: PWR-100–LV -HV/-HV-T models: PWR-105-HV-I -LVA/-LVA-T models: PWR-101-LV-BP-I -LVB/-LVB-T models: PWR-103-LV-VB-I
Note	The EDS-4008 Series supports modular power supplies. The model names and power parameters are determined by the installed power module. For example: EDS-4008-T + PWR-100–LV = EDS-4008-LV-T EDS-4008-T + PWR-105-HV-I = EDS-4008-HV-T If you install a different power module, refer to the specifications of the corresponding model. For example, if you replace the power module of the EDS-4008–LV-T with the PWR-105–HV-I, refer to the specifications of the EDS-4008–HV-T.
Input Voltage	-LV/-LV-T models: 12/24/48 VDC, Redundant dual inputs -HV/-HV-T models: 110/220 VDC/VAC, Single input -LVA/-LVA-T models: 48 VDC, Redundant dual inputs -LVB/-LVB-T models: 12/24/48 VDC, Redundant dual inputs
Operating Voltage	-LV/-LV-T models: 9.6 to 60 VDC -HV/-HV-T models: 88 to 300 VDC, 85 to 264 VAC -LVA/-LVA-T models: 44 to 57 VDC (> 52 VDC for PoE+ output recommended) -LVB/-LVB-T models: 12 to 57 VDC (> 52 VDC for PoE+ output recommended)
Input Current	-LV/-LV-T models: 12-48 VDC, 1.50-0.40 A or 24 VDC, 0.70 A -HV/-HV-T models: 110-220 VAC, 50-60 Hz, 0.30-0.20 A or 110-220 VDC, 0.30-0.20 A -LVA/-LVA-T models: 48 VDC, 5.42 A -LVB/-LVB-T models: 12/48 VDC, 7.46/4.27 A or 24 VDC, 7.26 A

Power Consumption (Max.)	EDS-4008-LV(-T) models: 7.20 W EDS-4008-HV(-T) models: 8.13 W EDS-4008-2MST-LV(-T) models: 8.45 W EDS-4008-2MST-HV(-T) models: 11.13 W EDS-4008-2MSC-LV(-T) models: 8.45 W EDS-4008-2MSC-HV(-T) models: 11.09 W EDS-4008-2SSC-LV(-T) models: 8.98 W EDS-4008-2SSC-HV(-T) models: 11.37 W EDS-4008-2GT-2GS-LV(-T) models: 9.41 W EDS-4008-2GT-2GS-HV(-T) models: 11.17 W EDS-4008-4P-2GT-2GS-LVA(-T) models: Without PoE: 11.22 W With PoE: Max. 240 W for total PD power consumption @ 48 VDC input EDS-4008-4P-2GT-2GS-LVB(-T) models: Without PoE: 15.84 W With PoE: Max. 180 W for total PD power consumption @ 48 VDC input; Max. 150 W for total PD power consumption @ 24 VDC input; Max. 62 W for total PD power consumption @ 12 VDC input
Max. PoE Power Output per Port	PoE models: 90 W
Overload Current Protection	Supported
Reverse Polarity Protection	Supported

Physical Characteristics

IP Rating	IP40
Dimensions	EDS-4008(-T), EDS-4008-2MSC(-T), EDS-4008-2SSC(-T) models: 55 x 140 x 120 mm (2.2 x 5.51 x 4.72 in) EDS-4008-2MST(-T) models: 55 x 140 x 132 mm (2.2 x 5.51 x 5.2 in) EDS-4008-2GT-2GS(-T), EDS-4008-4P-2GT-2GS(-T) models: 55 x 140 x 122.5 mm (2.2 x 5.51 x 4.82 in)
Weight	EDS-4008(-T) models: 857 g (1.89 lb) EDS-4008-2MSC(-T) models: 886 g (1.95 lb) EDS-4008-2MST(-T) models: 810 g (1.79 lb) EDS-4008-2SSC(-T) models: 882 g (1.94 lb) EDS-4008-2GT-2GS(-T) models: 795 g (1.75 lb) EDS-4008-4P-2GT-2GS(-T) models: 840 g (1.85 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit)
Housing	Metal

Environmental Limits

Operating Temperature	Standard Models: -10 to 60°C (14 to 140°F) Wide Temp. Models: -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

Industrial Cybersecurity	IEC 62443-4-1 IEC 62443-4-2
Safety	UL 61010-2-201, EN 62368-1 (LVD)
EMC	EN 55032/35, 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

	IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Maritime	-LV/-LV-T, PoE/PoE-T models: DNV, ABS, NK, LR
Vibration	IEC 60068-2-6
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Railway	EN 50121-4
Traffic Control	NEMA TS2
Power Substation	IEC 61850-3, IEEE 1613 Class 1

MTBF

Time	EDS-4008-LV/-LV-T models: 1,121,399 hrs EDS-4008-HV/-HV-T models: 513,575 hrs EDS-4008-2MSC-LV/-LV-T models: 1,014,299 hrs EDS-4008-2MSC-HV/-HV-T models: 492,582 hrs EDS-4008-2MST-LV/-LV-T models: 1,015,718 hrs EDS-4008-2MST-HV/-HV-T models: 492,582 hrs EDS-4008-2SSC-LV/-LV-T models: 1,015,718 hrs EDS-4008-2SSC-HV/-HV-T models: 492,582 hrs EDS-4008-2GT-2GS-LV/-LV-T models: 1,074,099 hrs EDS-4008-2GT-2GS-HV/-HV-T models: 505,936 hrs EDS-4008-4P-2GT-2GS-LVA/-LVA-T models: 923,670 hrs EDS-4008-4P-2GT-2GS-LVB/-LVB-T models: 870,865 hrs hrs
Standards	Telcordia SR332

Warranty

Warranty Period	5 years
Details	See www.moxa.com/warranty

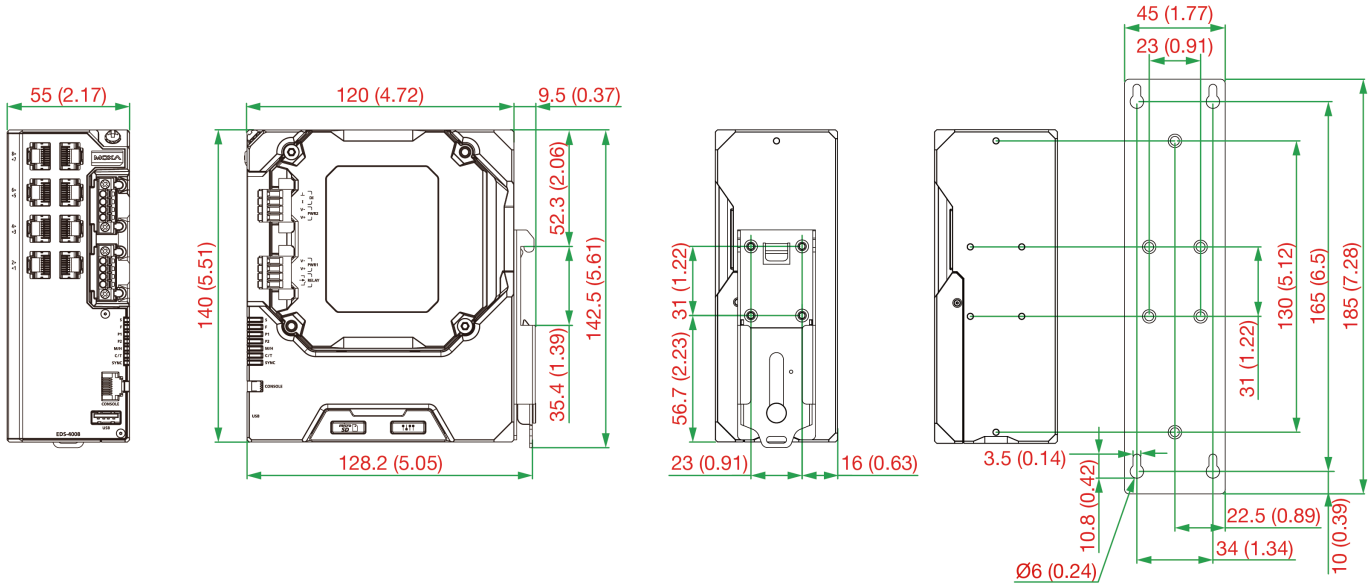
Package Contents

Device	1 x EDS-4008 Series switch
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

Dimensions

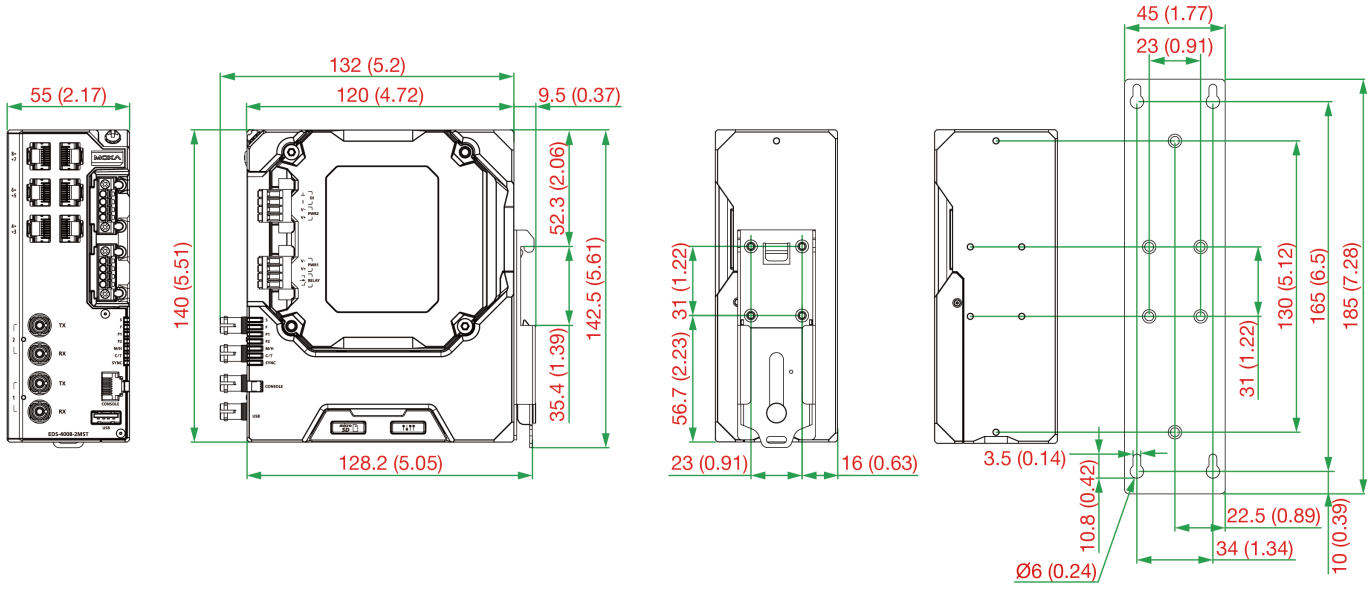
EDS-4008(-T), EDS-4008-2MSC(-T), EDS-4008-2SSC(-T) Models

Unit: mm (inch)



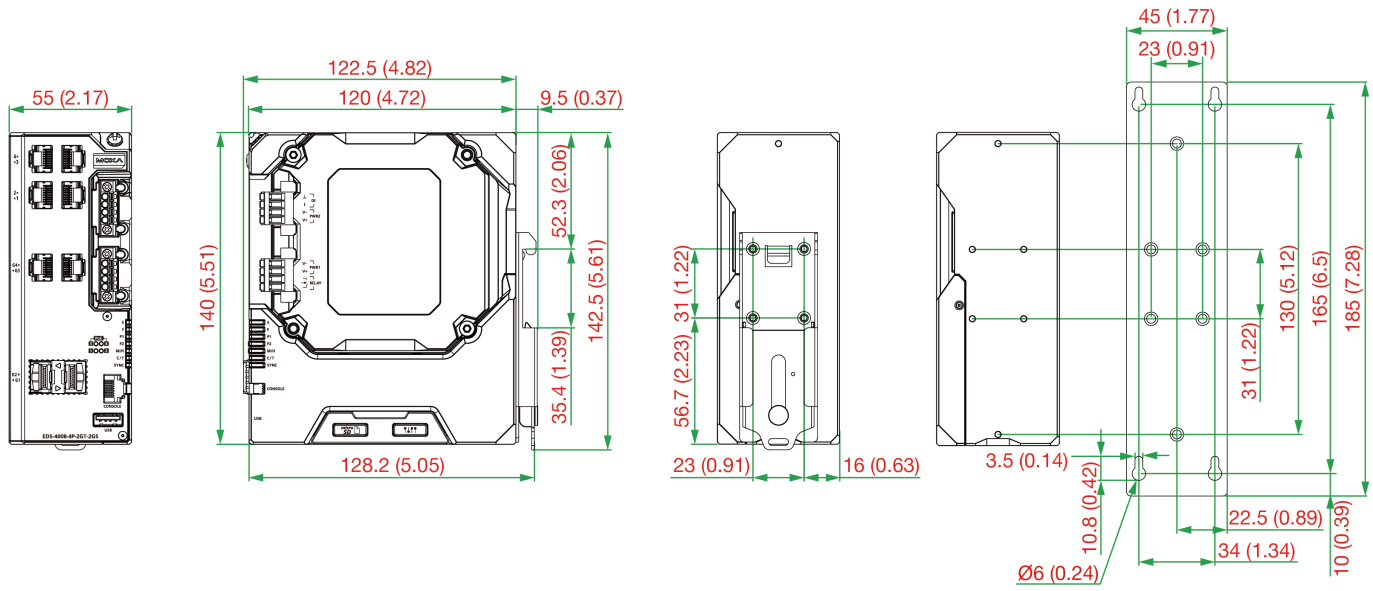
EDS-4008-2MST(-T) Models

Unit: mm (inch)



EDS-4008-2GT-2GS(-T), EDS-4008-4P-2GT-2GS(-T) Models

Unit: mm (inch)



Ordering Information

Model Name	10/100 BaseT(X) Ports (RJ45 Connector)	100 BaseFX Ports (Multi-mode SC Connector)	100 BaseFX Ports (Multi-mode ST Connector)	100 BaseFX Ports (Single-mode SC Connector)	PoE 10/100 BaseT(X) Ports (RJ45 Connector)	10/100/1000 BaseT(X) Ports (RJ45 Connector)	100/1000 BaseSFP Slots	Operating Voltage	Pre-installed Power Module	Operating Temp.
EDS-4008-LV	8	–	–	–	–	–	–	9.6 to 60 VDC	PWR-100-LV	-10 to 60°C
EDS-4008-LV-T	8	–	–	–	–	–	–	9.6 to 60 VDC	PWR-100-LV	-40 to 75°C
EDS-4008-HV	8	–	–	–	–	–	–	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-10 to 60°C
EDS-4008-HV-T	8	–	–	–	–	–	–	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-40 to 75°C
EDS-4008-2MSC-LV	6	2	–	–	–	–	–	9.6 to 60 VDC	PWR-100-LV	-10 to 60°C
EDS-4008-2MSC-LV-T	6	2	–	–	–	–	–	9.6 to 60 VDC	PWR-100-LV	-40 to 75°C
EDS-4008-2MSC-HV	6	2	–	–	–	–	–	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-10 to 60°C
EDS-4008-2MSC-HV-T	6	2	–	–	–	–	–	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-40 to 75°C
EDS-4008-2MST-LV	6	–	2	–	–	–	–	9.6 to 60 VDC	PWR-100-LV	-10 to 60°C
EDS-4008-2MST-LV-T	6	–	2	–	–	–	–	9.6 to 60 VDC	PWR-100-LV	-40 to 75°C
EDS-4008-2MST-HV	6	–	2	–	–	–	–	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-10 to 60°C
EDS-4008-2MST-HV-T	6	–	2	–	–	–	–	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-40 to 75°C

Model Name	10/100 BaseT(X) Ports (RJ45 Connector)	100 BaseFX Ports (Multi-mode SC Connector)	100 BaseFX Ports (Multi-mode ST Connector)	100 BaseFX Ports (Single-mode SC Connector)	PoE 10/100 BaseT(X) Ports (RJ45 Connector)	10/100/1000 BaseT(X) Ports (RJ45 Connector)	100/1000 BaseSFP Slots	Operating Voltage	Pre-installed Power Module	Operating Temp.
EDS-4008-2SSC-LV	6	–	–	2	–	–	–	9.6 to 60 VDC	PWR-100-LV	-10 to 60°C
EDS-4008-2SSC-LV-T	6	–	–	2	–	–	–	9.6 to 60 VDC	PWR-100-LV	-40 to 75°C
EDS-4008-2SSC-HV	6	–	–	2	–	–	–	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-10 to 60°C
EDS-4008-2SSC-HV-T	6	–	–	2	–	–	–	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-40 to 75°C
EDS-4008-2GT-2GS-LV	4	–	–	–	–	2	2	9.6 to 60 VDC	PWR-100-LV	-10 to 60°C
EDS-4008-2GT-2GS-LV-T	4	–	–	–	–	2	2	9.6 to 60 VDC	PWR-100-LV	-40 to 75°C
EDS-4008-2GT-2GS-HV	4	–	–	–	–	2	2	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-10 to 60°C
EDS-4008-2GT-2GS-HV-T	4	–	–	–	–	2	2	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-40 to 75°C
EDS-4008-4P-2GT-2GS-LVA	–	–	–	–	4	2	2	44 to 57 VDC (> 52 VDC for PoE+ output recommended)	PWR-101-LV-BP-I	-10 to 60°C
EDS-4008-4P-2GT-2GS-LVA-T	–	–	–	–	4	2	2	44 to 57 VDC (> 52 VDC for PoE+ output recommended)	PWR-101-LV-BP-I	-40 to 75°C
EDS-4008-4P-2GT-2GS-LVB	–	–	–	–	4	2	2	12 to 57 VDC (> 52 VDC for PoE+ output recommended)	PWR-103-LV-VB-I	-10 to 60°C
EDS-4008-4P-2GT-2GS-LVB-T	–	–	–	–	4	2	2	12 to 57 VDC (> 52 VDC for PoE+ output recommended)	PWR-103-LV-VB-I	-40 to 75°C

Accessories (sold separately)

SFP Modules

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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°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-1GLXLC	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, 0 to 60°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-1GZXLC	SFP module with 1 1000BaseZX port with LC connector for 80 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-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°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-T	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, -40 to 85°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-T	SFP module with 1 1000BaseZX port 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-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-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-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-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-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-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-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-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-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-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-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-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

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
MDR-40-24	DIN-rail 24 VDC power supply with 40W/1.7A, 85 to 264 VAC, or 120 to 370 VDC input, -20 to 70°C operating temperature
MDR-60-24	DIN-rail 24 VDC power supply with 60W/2.5A, 85 to 264 VAC, or 120 to 370 VDC input, -20 to 70°C operating temperature

EDS-4012 Series

8+4G-port (with 8 802.3bt PoE port option) managed Ethernet switches

Features and Benefits

- Developed according to the IEC 62443-4-1 and compliant with the IEC 62443-4-2 industrial cybersecurity standards
- Support for IEEE 802.3bt PoE for up to 90 W output per port
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches)[1], and RSTP/STP for network redundancy
- Wide range of power input options for flexible deployment
- Compact and flexible housing design to fit into confined spaces
- Supports MXstudio for easy, visualized industrial network management

Certifications

Introduction

The EDS-4012 Series is a range of 12-port managed Fast Ethernet switches with the option for four 1 Gbps fiber-optic uplink ports. This Series also offers models with four 10/100BaseT(X) 802.3af (PoE), 802.3at (PoE+), and 802.3bt-compliant Ethernet PoE port options to connect high-bandwidth PoE devices.

Redundant Ethernet technologies such as Turbo Ring, Turbo Chain, and RSTP/STP increase the reliability of your system and improve the availability of your network backbone. The EDS-4012 Series is designed specifically for demanding applications such as video and process monitoring, ITS, and DCS systems, all of which can benefit from a scalable backbone.

The EDS-4012 Series is compliant with the IEC 62443-4-2 and IEC 62443-4-1 Industrial Cybersecurity certifications, which cover both product security and secure development life-cycle requirements, helping our customers meet the compliance requirements of secure industrial network design.

Specifications

Ethernet Interface

10/100BaseT(X) Ports (RJ45 connector)	EDS-4012-4GS-LV/-HV/-T models: 8 EDS-4012-4GC-LV/-HV/-T models: 8 Auto negotiation speed Full/Half duplex mode Auto MDI/MDI-X connection
PoE Ports (10/100BaseT(X), RJ45 connector)	EDS-4012-8P-4GS-LVA/-LVB/-T models: 8
100/1000BaseSFP Ports	EDS-4012-4GS-LV/-HV/-T models: 4 EDS-4012-8P-4GS-LVA/-VB/-T models: 4

1. If the port link speed is 1 Gigabit or higher, the recovery time is < 50 ms.

Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP)	EDS-4012-4GC-LV/-HV/-T models: 4
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 802.3ad 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

Ethernet Software Features

Filter	GMRP, GVRP, GARP, 802.1Q VLAN, IGMP Snooping v1/v2/v3, IGMP Querier
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
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
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

Switch Properties

MAC Table Size	16 K
Jumbo Frame Size	9.216 KB
Max. No. of VLANs	256
VLAN ID Range	VID 1 to 4094
IGMP Groups	512
Priority Queues	4
Packet Buffer Size	1 MB

LED Interface

LED Indicators	PWR1, PWR2, STATE, FAULT, MSTR/HEAD, CPLR/TAIL, SYNC

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

Alarm Contact Channels	1, Relay output with current carrying capacity of 1 A @ 24 VDC
Digital Input Channels	1

Digital Inputs	+13 to +30 V for state 1 -30 to +3 V for state 0 Max. input current: 8 mA
Buttons	Reset button

DIP Switch Configuration

DIP Switches	Turbo Ring, Master, Coupler, Reserve

Power Parameters

Connection	2 removable 4-contact terminal block(s)
Pre-installed Power Module	-LV/-LV-T models: PWR-100–LV -HV/-HV-T models: PWR-105-HV-I -LVA/-LVA-T models: PWR-101-LV-BP-I -LVB/-LVB-T models: PWR-103-LV-VB-I
Note	The EDS-4012 Series supports modular power supplies. The model names and power parameters are determined by the installed power module. For example: EDS-4012-4GS-T + PWR-100–LV = EDS-4012-4GS-LV-T EDS-4012-4GS-T + PWR-105-HV-I = EDS-4012-4GS-HV-T If you install a different power module, refer to the specifications of the corresponding model. For example, if you replace the power module of the EDS-4012-4GS–LV-T with the PWR-105–HV-I, refer to the specifications of the EDS-4012–4GS-HV-T.
Input Voltage	-LV/-LV-T models: 12/24/48 VDC, Redundant dual inputs -HV/-HV-T models: 110/220 VDC/VAC, Single input -LVA/-LVA-T models: 48 VDC, Redundant dual inputs -LVB/-LVB-T models: 12/24/48 VDC, Redundant dual inputs
Operating Voltage	-LV/-LV-T models: 9.6 to 60 VDC -HV/-HV-T models: 88 to 300 VDC, 85 to 264 VAC -LVA/-LVA-T models: 44 to 57 VDC (>52 VDC for PoE+ output recommended) -LVB/-LVB-T models: 12 to 57 VDC (>52 VDC for PoE+ output recommended)
Input Current	-LV/-LV-T models: 12-48 VDC, 1.50-0.40 A or 24 VDC, 0.70 A -HV/-HV-T models: 110-220 VAC, 50-60 Hz, 0.30-0.20 A or 110-220 VDC, 0.30-0.20 A -LVA/-LVA-T models: 48 VDC, 5.42 A -LVB/-LVB-T models: 12/48 VDC, 7.46/4.27 A or 24 VDC, 7.26 A
Power Consumption (Max.)	EDS-4012-4GS-LV/-T models: 10.52 W EDS-4012-4GS-HV-/T models: 12.22 W EDS-4012-4GC-LV/-T models: 10.7 W EDS-4012-4GC-HV/-T models: 13.35 W EDS-4012-8P-4GS-LVA/-T models: Without PoE: 13.34 W With PoE: Max. 240 W for total PD power consumption @ 48 VDC input EDS-4012-8P-4GS-LVB/-T models: Without PoE: 15.32 W With PoE: Max. 180 W for total PD power consumption @ 48 VDC input Max. 150 W for total PD power consumption @ 24 VDC input (Max. 120 W for -T model) Max. 62 W for total PD consumption @ 12 VDC input
Max. PoE Power Output per Port	90 W
Overload Current Protection	Supported
Reverse Polarity Protection	Supported

Physical Characteristics

IP Rating	IP40
Dimensions	55 x 140 x 120 mm (2.17 x 5.51 x 4.72 in)

Weight	827 g (1.82 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit)
Housing	Metal

Environmental Limits

Operating Temperature	Standard Models: -10 to 60°C (14 to 140°F) Wide Temp. Models: -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

Industrial Cybersecurity	IEC 62443-4-1 IEC 62443-4-2
Safety	UL 61010-2-201, EN 62368-1 (LVD)
EMC	EN 55032/35, 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 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Maritime	-LV/-LV-T, PoE/PoE-T models: DNV, ABS, NK, LR
Vibration	IEC 60068-2-6
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Railway	EN 50121-4
Traffic Control	NEMA TS2
Power Substation	IEC 61850-3, IEEE 1613 Class 1

MTBF

Time	EDS-4012-4GC-LV/-T models: 1,036,336 hrs EDS-4012-4GC-HV/-T models: 497,392 hrs EDS-4012-4GS-LV/-T models: 874,838 hrs EDS-4012-4GS-HV/-T models: 456,870 hrs EDS-4012-8P-4GS-LVA/-T models: 799,780 hrs EDS-4012-8P-4GS-LVB/-T models: 759,924 hrs
Standards	Telcordia SR332

Warranty

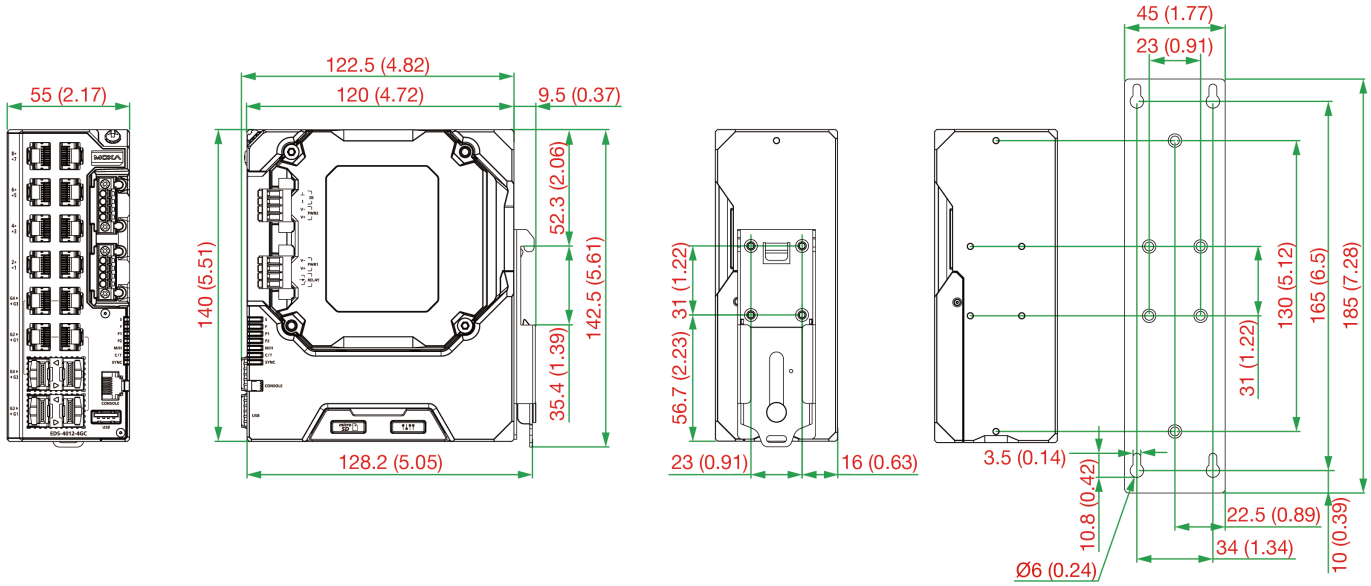
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x EDS-4012 Series switch
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

Dimensions

Unit: mm (inch)



Ordering Information

Model Name	10/100BaseT(X) Ports (RJ45 Connector)	PoE 10/100BaseT(X) Ports (RJ45 Connector)	100/1000BaseSFP Slots	Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP)	Operating Voltage	Pre-installed Power Module	Operating Temp.
EDS-4012-4GS-LV	8	–	4	–	9.6 to 60 VDC	PWR-100-LV	-10 to 60°C
EDS-4012-4GS-LV-T	8	–	4	–	9.6 to 60 VDC	PWR-100-LV	-40 to 75°C
EDS-4012-4GS-HV	8	–	4	–	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-10 to 60°C
EDS-4012-4GS-HV-T	8	–	4	–	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-40 to 75°C
EDS-4012-4GC-LV	8	–	–	4	9.6 to 60 VDC	PWR-100-LV	-10 to 60°C
EDS-4012-4GC-LV-T	8	–	–	4	9.6 to 60 VDC	PWR-100-LV	-40 to 75°C
EDS-4012-4GC-HV	8	–	–	4	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-10 to 60°C
EDS-4012-4GC-HV-T	8	–	–	4	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-40 to 75°C
EDS-4012-8P-4GS-LVA	–	8	4	–	44 to 57 VDC (> 52 VDC for PoE+ output recommended)	PWR-101-LV-BP-I	-10 to 60°C
EDS-4012-8P-4GS-LVA-T	–	8	4	–	44 to 57 VDC (> 52 VDC for PoE+ output recommended)	PWR-101-LV-BP-I	-40 to 75°C

Model Name	10/100BaseT(X) Ports (RJ45 Connector)	PoE 10/100BaseT(X) Ports (RJ45 Connector)	100/1000BaseSFP Slots	Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP)	Operating Voltage	Pre-installed Power Module	Operating Temp.
EDS-4012-8P-4GS-LVB	–	8	4	–	12 to 57 VDC (> 52 VDC for PoE+ output recommended)	PWR-103-LV-VB-I	-10 to 60°C
EDS-4012-8P-4GS-LVB-T	–	8	4	–	12 to 57 VDC (> 52 VDC for PoE+ output recommended)	PWR-103-LV-VB-I	-40 to 75°C

Accessories (sold separately)

SFP Modules

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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°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-1GLXLC	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, 0 to 60°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-1GZXLC	SFP module with 1 1000BaseZX port with LC connector for 80 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-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°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-T	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, -40 to 85°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-T	SFP module with 1 1000BaseZX port 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-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-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-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-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-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-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-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-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-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-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-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-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

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
MDR-40-24	DIN-rail 24 VDC power supply with 40W/1.7A, 85 to 264 VAC, or 120 to 370 VDC input, -20 to 70°C operating temperature
MDR-60-24	DIN-rail 24 VDC power supply with 60W/2.5A, 85 to 264 VAC, or 120 to 370 VDC input, -20 to 70°C operating temperature

EDS-G205A Series

5-port full Gigabit unmanaged Ethernet switches with 4 IEEE 802.3af/at PoE+ ports

Features and Benefits

- Full Gigabit Ethernet ports
- IEEE 802.3af/at, PoE+ standards
- Up to 36 W output per PoE port
- 12/24/48 VDC redundant power inputs
- Supports 9.6 KB jumbo frames
- Intelligent power consumption detection and classification
- Smart PoE overcurrent and short-circuit protection
- -40 to 75°C operating temperature range (-T models)

Certifications

Introduction

The EDS-G205A-4PoE switches are smart, 5-port, unmanaged full Gigabit Ethernet switches supporting Power-over-Ethernet on ports 2 to 5. The switches are classified as power source equipment (PSE), and when used in this way, the EDS-G205A-4PoE switches enable centralization of the power supply, providing up to 36 watts of power per port and reducing the effort needed for installing power.

The switches can be used to power IEEE 802.3af/at standard devices (power devices), eliminating the need for additional wiring, and they support IEEE 802.3/802.3u/802.3x with 10/100/1000M, full/half-duplex, MDI/MDI-X auto-sensing to provide an economical high-bandwidth solution for your industrial Ethernet network.

Specifications

Ethernet Interface

10/100/1000BaseT(X) Ports (RJ45 connector)	EDS-G205A-4PoE Series: 5 EDS-G205A-4PoE-1GSFP Series: 4 All models support: Auto negotiation speed Full/Half duplex mode Auto MDI/MDI-X connection
100/1000BaseSFP Ports	EDS-G205A-4PoE-1GSFP Series: 1
PoE Ports (10/100/1000BaseT(X), RJ45 connector)	4
Standards	IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3af/at for PoE/PoE+ output IEEE 802.3u for 100BaseT(X) IEEE 802.3x for flow control IEEE 802.3z for 1000BaseX
PoE Pinout	V+, V+, V-, V- for pins 1, 2, 3, 6 (Endspan, MDI, Mode A)

Switch Properties

MAC Table Size	8 K
Packet Buffer Size	1 Mbits

Processing Type	Store and Forward
Jumbo Frame Size	10 KB

Power Parameters

Connection	2 removable 2-contact terminal block(s)
Input Voltage	12/24/48 VDC, Redundant dual inputs
Operating Voltage	12 to 57 VDC
Overload Current Protection	Supported
Power Consumption (Max.)	Max. 11.73 W full loading without PDs' consumption
Reverse Polarity Protection	Supported
Input Current	5.65 A @ 24 VDC
Power Budget	62 W (max.) @ 12 VDC for total PD consumption; 36 W (max.) for each PoE port 120 W (max.) @ 24 VDC for total PD consumption; 36 W (max.) for each PoE port 144 W (max.) @ 48 VDC for total PD consumption; 36 W (max.) for each PoE port

Physical Characteristics

Housing	Metal
IP Rating	IP30
Dimensions	29 x 135 x 105 mm (1.14 x 5.31 x 4.13 in)
Weight	300 g (0.66 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit)

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 (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

Standards and Certifications

Freefall	IEC 60068-2-32
EMC	EN 61000-6-2/-6-4
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Railway	EN 50121-4
Safety	UL 508
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6

MTBF

Time	1,257,910 hrs
Standards	Telcordia (Bellcore), GB

Warranty

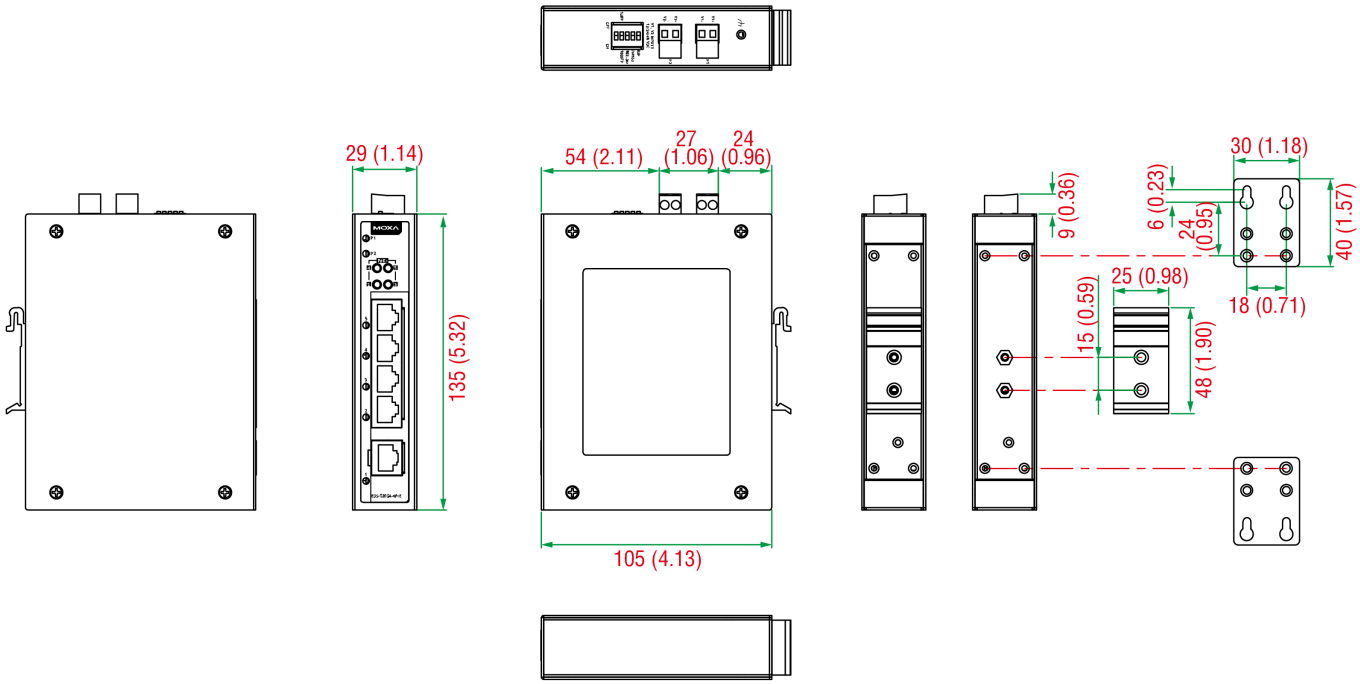
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x EDS-G205A Series switch
Documentation	1 x quick installation guide 1 x warranty card
Note	SFP modules need to be purchased separately for use with this product.

Dimensions

Unit: mm (inch)



Ordering Information

Model Name	10/100/1000BaseT(X) Ports RJ45 Connector	100/1000Base SFP Slots	PoE Ports 10/100/1000BaseT(X), RJ45 Connector	Operating Temp.
EDS-G205A-4PoE	5	–	4	0 to 60°C
EDS-G205A-4PoE-T	5	–	4	-40 to 75°C
EDS-G205A-4PoE-1GSFP	4	1	4	0 to 60°C
EDS-G205A-4PoE-1GSFP-T	4	1	4	-40 to 75°C

Accessories (sold separately)

SFP Modules

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 with LC connector for 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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, 0 to 60°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m 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-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, 0 to 60°C operating temperature

SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m 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

Power Supplies

DR-120-24	120W/2.5A DIN-rail 24 VDC power supply with universal 88 to 132 VAC or 176 to 264 VAC input by switch, or 248 to 370 VDC input, -10 to 60°C operating temperature
DR-75-24	75W/3.2A DIN-rail 24 VDC power supply with universal 85 to 264 VAC or 120 to 370 VDC input, -10 to 60°C operating temperature
DR-120-48	120W/2.5A DIN-rail 48 VDC power supply with universal 88 to 132 VAC or 176 to 264 VAC input by switch, or 248 to 370 VDC input, -10 to 60°C operating temperature
DR-75-48	75W/1.6A DIN-rail 48 VDC power supply with universal 85 to 264 VAC or 120 to 370 VDC input, -10 to 60°C operating temperature
DRP-240-48	DIN-rail 48 VDC power supply with 240W/5A, 85 to 264 VAC, or 120 to 370 VDC input, -10 to 70°C operating temperature

Wall-Mounting Kits

WK-30	Wall-mounting kit, 2 plates, 4 screws, 40 x 30 x 1 mm

Rack-Mounting Kits

RK-4U	19-inch rack-mounting kit

EDS-G512E Series

12G-port (with 8 PoE+ ports option) full Gigabit managed Ethernet switches

Features and Benefits

- 8 IEEE 802.3af and IEEE 802.3at PoE+ standard ports
- 36-watt output per PoE+ port in high-power mode
- Turbo Ring and Turbo Chain (recovery time < 50 ms @ 250 switches), RSTP/STP, and MSTP for network redundancy
- RADIUS, TACACS+, MAB Authentication, SNMPv3, IEEE 802.1X, MAC ACL, HTTPS, SSH, and sticky MAC-addresses to enhance network security
- Security features based on IEC 62443
- EtherNet/IP, PROFINET, and Modbus TCP protocols supported for device management and monitoring
- Supports MXstudio for easy, visualized industrial network management
- V-ON™ ensures millisecond-level multicast data and video network recovery

Certifications

Introduction

The EDS-G512E Series is equipped with 12 Gigabit Ethernet ports and up to 4 fiber-optic ports, making it ideal for upgrading an existing network to Gigabit speed or building a new full Gigabit backbone. It also comes with 8 10/100/1000BaseT(X), 802.3af (PoE), and 802.3at (PoE+)-compliant Ethernet port options to connect high-bandwidth PoE devices. Gigabit transmission increases bandwidth for higher performance and transfers large amounts of triple-play services across a network quickly.

Redundant Ethernet technologies such as Turbo Ring, Turbo Chain, RSTP/STP, and MSTP increase the reliability of your system and improve the availability of your network backbone. The EDS-G512E Series is designed specifically for communication demanding applications, such as video and process monitoring, ITS, and DCS systems, all of which can benefit from a scalable backbone construction.

Additional Features and Benefits

- Command line interface (CLI) for quickly configuring major managed functions
- Advanced PoE management function (PoE port setting, PD failure check, and PoE scheduling)
- DHCP Option 82 for IP address assignment with different policies
- Supports EtherNet/IP, PROFINET, and Modbus TCP protocols for device management and monitoring
- IGMP snooping and GMRP for filtering multicast traffic
- Port-based VLAN, IEEE 802.1Q VLAN, and GVRP to ease network planning
- Supports the ABC-02-USB (Automatic Backup Configurator) for system configuration backup/restore and firmware upgrade
- Port mirroring for online debugging
- QoS (IEEE 802.1p/1Q and TOS/DiffServ) to increase determinism
- Port Trunking for optimum bandwidth utilization
- RADIUS, TACACS+, MAB Authentication, SNMPv3, IEEE 802.1X, MAC ACL, HTTPS, SSH, and sticky MAC address to enhance network security
- SNMPv1/v2c/v3 for different levels of network management
- RMON for proactive and efficient network monitoring
- Bandwidth management to prevent unpredictable network status
- Lock port function for blocking unauthorized access based on MAC address
- Automatic warning by exception through email and relay output

Specifications

Input/Output Interface

Alarm Contact Channels	1, Relay output with current carrying capacity of 1 A @ 24 VDC
Buttons	Reset button
Digital Input Channels	1
Digital Inputs	+13 to +30 V for state 1 -30 to +3 V for state 0 Max. input current: 8 mA

Ethernet Interface

10/100/1000BaseT(X) Ports (RJ45 connector)	EDS-G512E-4GSFP: 8 Auto negotiation speed Full/Half duplex mode Auto MDI/MDI-X connection
PoE Ports (10/100/1000BaseT(X), RJ45 connector)	EDS-G512E-8PoE-4GSFP: 8
100/1000BaseSFP Slots	4
Standards	IEEE 802.3 for 10BaseT IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3ab for 1000BaseT(X) IEEE 802.3z for 1000BaseSX/LX/LHX/ZX 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 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1X for authentication IEEE 802.3ad for Port Trunk with LACP

Ethernet Software Features

Filter	802.1Q VLAN, Port-based VLAN, GVRP, IGMP v1/v2/v3, GMRP
Industrial Protocols	EtherNet/IP, Modbus TCP, PROFINET IO Device (Slave)
Management	LLDP, Back Pressure Flow Control, BOOTP, Port Mirror, DHCP Option 66/67/82, DHCP Server/Client, Fiber check, Flow control, IPv4/IPv6, RARP, RMON, SMTP, SNMP Inform, SNMPv1/v2c/v3, Syslog, Telnet, TFTP
MIB	Ethernet-like MIB, MIB-II, Bridge MIB, P-BRIDGE MIB, Q-BRIDGE MIB, RMON MIB Groups 1, 2, 3, 9, RSTP MIB
Redundancy Protocols	Link Aggregation, MSTP, RSTP, STP, Turbo Chain, Turbo Ring v1/v2
Security	Broadcast storm protection, HTTPS/SSL, TACACS+, SNMPv3, MAB authentication, Sticky MAC, NTP authentication, MAC ACL, Port Lock, RADIUS, SSH, SMTP with TLS
Time Management	NTP Server/Client, SNTP

Switch Properties

IGMP Groups	2048
Jumbo Frame Size	9.6 KB
MAC Table Size	8 K
Max. No. of VLANs	256
Packet Buffer Size	4 Mbits
Priority Queues	4
VLAN ID Range	VID 1 to 4094

USB Interface

Storage Port	USB Type A

LED Interface

LED Indicators	PWR1, PWR2, STATE, FAULT, 10/100M (TP port), 1000M (TP port), 100/1000M (SFP port), MSTR/HEAD, CPLR/TAIL, smart PoE LED (EDS-G512E-8PoE-4GSFP Series only)

Serial Interface

Console Port	USB-serial console (Type B connector)

DIP Switch Configuration

DIP Switches	Turbo Ring, Master, Coupler, Reserve

Power Parameters

Connection	2 removable 4-contact terminal block(s)
Input Current	EDS-G512E-4GSFP Series: 0.34 A @ 24 VDC EDS-G512E-8PoE-4GSFP Series: 5.30 A @ 48 VDC
Input Voltage	Redundant dual inputs: EDS-G512E-4GSFP Series: 12/24/48/-48 VDC EDS-G512E-8PoE-4GSFP Series: 48 VDC, Redundant dual inputs
Operating Voltage	EDS-G512E-4GSFP Series: 9.6 to 60 VDC EDS-G512E-8PoE-4GSFP Series: 44 to 57 VDC (> 50 VDC for PoE+ output recommended)
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Power Budget	EDS-G512E-8PoE-4GSFP: Max. 240 W for total PD consumption EDS-G512E-8PoE-4GSFP: Max. 36 W for each PoE port
Power Consumption (Max.)	EDS-G512E-8PoE-4GSFP: Max. 14.36 W full loading without PDs' consumption Note: When selecting a power supply, check the PD power consumption.

Physical Characteristics

Housing	Metal
IP Rating	IP30
Dimensions	79.2 x 135 x 137 mm (3.1 x 5.3 x 5.4 in)
Weight	EDS-G512E-4GSFP: 1,440 g (3.18 lb) EDS-G512E-8PoE-4GSFP: 1,540 g (3.40 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit)

Environmental Limits

Operating Temperature	Standard Models: -10 to 60°C (14 to 140°F) Wide Temp. Models: -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	EDS-G512E-4GSFP/EDS-G512E-8PoE-4GSFP Series: UL 508 EDS-G512E-8PoE-4GSFP Series: EN 60950-1 (LVD)
EMC	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 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF

Hazardous Locations	EDS-G512E-4GSFP Series: ATEX, Class I Division 2
Maritime	EDS-G512E-4GSFP: DNV-GL, EDS-G512E-4GSFP: LR, EDS-G512E-4GSFP: ABS, EDS-G512E-4GSFP: NK
Power Substation	IEC 61850-3, IEEE 1613
Railway	EN 50121-4
Traffic Control	EDS-G512E-4GSFP: NEMA TS2
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

MTBF

Time	EDS-G512E-4GSFP Series: 816,823 hrs EDS-G512E-8PoE-4GSFP Series: 361,368 hrs
Standards	Telcordia (Bellcore), GB

Warranty

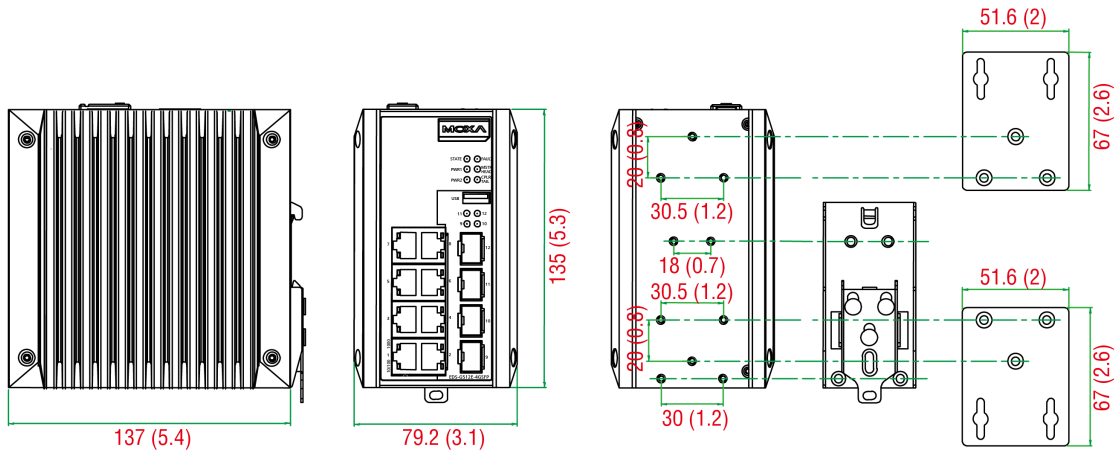
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x EDS-G512E Series switch
Cable	1 x USB type A male to USB type B male
Installation Kit	4 x cap, plastic, for RJ45 port
Documentation	1 x quick installation guide 1 x warranty card 1 x product certificates of quality inspection, Simplified Chinese 1 x product notice, Simplified Chinese
Note	SFP modules need to be purchased separately for use with this product.

Dimensions

Unit: mm (inch)



Side View | Front View | Rear View | DIN-Rail/Panel-Mounting Kit

Ordering Information

Model Name	10/100/1000BaseT(X) Ports, RJ45 Connector	PoE Ports, 10/100/1000BaseT(X), RJ45 Connector	IEEE 802.3af/at for PoE/PoE+ Output	100/1000Base SFP Slots	Operating Temp.
EDS-G512E-4GSFP	8	–	–	4	-10 to 60°C
EDS-G512E-4GSFP-T	8	–	–	4	-40 to 75°C
EDS-G512E-8PoE-4GSFP	–	8	✓	4	-10 to 60°C
EDS-G512E-8PoE-4GSFP-T	–	8	✓	4	-40 to 75°C

Accessories (sold separately)

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

SFP Modules

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 with LC connector for 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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, 0 to 60°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m 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-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, 0 to 60°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m 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

Wall-Mounting Kits

WK-51-01	Wall-mounting kit, 2 plates, 6 screws, 51.6 x 67 x 2 mm

Rack-Mounting Kits

RK-4U	19-inch rack-mounting kit

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)

EDS-G4012 Series

12G-port (with 8 802.3bt PoE port option) full Gigabit managed Ethernet switches

Features and Benefits

- Developed according to the IEC 62443-4-1 and compliant with the IEC 62443-4-2 industrial cybersecurity standards
- Support for IEEE 802.3bt PoE for up to 90 W output per port
- Increased bandwidth capabilities with fiber SFP slots supporting up to 2.5 Gbps
- Turbo Ring and Turbo Chain (recovery time < 50 ms @ 250 switches), and RSTP/STP for network redundancy
- Wide range of power input options for flexible deployment
- Compact and flexible housing design to fit into confined spaces
- Supports MXstudio for easy, visualized industrial network management

Certifications

Introduction

The EDS-G4012 Series is equipped with 12 Gigabit Ethernet ports and up to four 1 Gbps or 2.5 Gbps fiber-optic ports, making it ideal for upgrading an existing network to Gigabit speed or building a new full Gigabit backbone. Gigabit transmission speed increases bandwidth for higher performance and transfers large amounts of triple-play services across a network quickly. This Series also comes with eight 10/100/1000BaseT(X) 802.3af (PoE), 802.3at (PoE+), and 802.3bt-compliant Ethernet port options to connect high-bandwidth PoE devices.

Redundant Ethernet technologies such as Turbo Ring, Turbo Chain, and RSTP/STP increase the reliability of your system and improve the availability of your network backbone. The EDS-G4012 Series is designed specifically for demanding applications such as video and process monitoring, ITS, and DCS systems, all of which can benefit from a scalable backbone construction.

The EDS-G4012 Series is compliant with the IEC 62443-4-2 and IEC 62443-4-1 Industrial Cybersecurity certifications, which cover both product security and secure development life-cycle requirements, helping our customers meet the compliance requirements of secure industrial network design.

Specifications

Ethernet Interface

10/100/1000BaseT(X) Ports (RJ45 connector)	EDS-G4012-4GC-HV/-LV/-T models: 8 Auto MDI/MDI-X connection Auto negotiation speed Full/Half duplex mode
Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP)	EDS-G4012-4GC-LV/-HV/-T models: 4
PoE Ports (10/100/1000BaseT(X), RJ45 connector)	EDS-G4012-8P-4QGS-LVA/-LVB/-T models: 8

1000/2500BaseSFP Ports	EDS-G4012-8P-4QGS-LVA/-LVB/-T models: 4
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 802.3bz for 2.5GBaseX 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

Ethernet Software Features

Filter	GMRP, GVRP, GARP, 802.1Q VLAN, IGMP Snooping v1/v2/v3, IGMP Querier
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
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
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

Switch Properties

MAC Table Size	16 K
Jumbo Frame Size	9.216 KB
Max. No. of VLANs	256
VLAN ID Range	VID 1 to 4094
IGMP Groups	512
Priority Queues	4
Packet Buffer Size	1 MB

LED Interface

LED Indicators	PWR1, PWR2, STATE, FAULT, MSTR/HEAD, CPLR/TAIL, SYNC

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

Alarm Contact Channels	1, Relay output with current carrying capacity of 1 A @ 24 VDC
Digital Input Channels	1

Digital Inputs	+13 to +30 V for state 1 -30 to +3 V for state 0 Max. input current: 8 mA
Buttons	Reset button

DIP Switch Configuration

DIP Switches	Turbo Ring, Master, Coupler, Reserve

Power Parameters

Connection	2 removable 4-contact terminal block(s)
Pre-installed Power Module	-LV/-LV-T models: PWR-100–LV -HV/-HV-T models: PWR-105-HV-I -LVA/-LVA-T models: PWR-101-LV-BP-I -LVB/-LVB-T models: PWR-103-LV-VB-I
Note	The EDS-G4012 Series supports modular power supplies. The model names and power parameters are determined by the installed power module. For example: EDS-G4012-4GC-T + PWR-100–LV = EDS-G4012-4GC-LV-T EDS-G4012-4GC-T + PWR-105-HV-I = EDS-G4012-4GC-HV-T If you install a different power module, refer to the specifications of the corresponding model. For example, if you replace the power module of the EDS-G4012-4GC-LV-T with the PWR-105–HV-I, refer to the specifications of the EDS-G4012-4GC-HV-T.
Input Voltage	-LV/-LV-T models: 12/24/48 VDC, Redundant dual inputs -HV/-HV-T models: 110/220 VDC/VAC, Single input -LVA/-LVA-T models: 48 VDC, Redundant dual inputs -LVB/-LVB-T models: 12/24/48 VDC, Redundant dual inputs
Operating Voltage	-LV/-LV-T models: 9.6 to 60 VDC -HV/-HV-T models: 88 to 300 VDC, 85 to 264 VAC -LVA/-LVA-T models: 44 to 57 VDC (>52 VDC for PoE+ output recommended) -LVB/-LVB-T models: 12 to 57 VDC (>52 VDC for PoE+ output recommended)
Input Current	-LV/-LV-T models: 12-48 VDC, 1.50-0.40 A or 24 VDC, 0.70 A -HV/-HV-T models: 110-220 VAC, 50-60 Hz, 0.30-0.20 A or 110-220 VDC, 0.30-0.20 A -LVA/-LVA-T models: 48 VDC, 5.42 A -LVB/-LVB-T models: 12/48 VDC, 7.46/4.27 A or 24 VDC, 7.26 A
Power Consumption (Max.)	EDS-G4012-4GC-LV(-T) models: 12.68 W EDS-G4012-4GC-HV(-T) models: 15.8 W EDS-G4012-8P-4QGS-LVA(-T) models: Without PoE: 15.58 W With PoE: Max. 240 W for total PD power consumption @ 48 VDC input EDS-G4012-8P-4QGS-LVB(-T) models: Without PoE: 17.96 W With PoE: Max. 180 W for total PD power consumption @ 48 VDC input; Max. 150 W for total PD power consumption @ 24 VDC input; Max. 62 W for total PD power consumption @ 12 VDC input
Max. PoE Power Output per Port	90 W
Overload Current Protection	Supported
Reverse Polarity Protection	Supported

Physical Characteristics

IP Rating	IP40
Dimensions	55 x 140 x 122.5 mm (2.17 x 5.51 x 4.82 in)

Weight	EDS-G4012-4GC(-T) models: 881.5 g (1.94 lb) EDS-G4012-8P-4QGS(-T) models: 972 g (2.14 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit)
Housing	Metal

Environmental Limits

Operating Temperature	Standard Models: -10 to 60°C (14 to 140°F) Wide Temp. Models: -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

Industrial Cybersecurity	IEC 62443-4-1 IEC 62443-4-2
Safety	UL 61010-2-201, EN 62368-1 (LVD)
EMC	EN 55032/35, 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 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Maritime	-LV/-LV-T, PoE/PoE-T models: DNV, ABS, NK, LR
Vibration	IEC 60068-2-6
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Railway	EN 50121-4
Traffic Control	NEMA TS2
Power Substation	IEC 61850-3, IEEE 1613 Class 1

MTBF

Time	EDS-G4012-4GC-HV/HV-T: 456,870 hrs EDS-G4012-4GC-LV/LV-T: 867,981 hrs EDS-G4012-8P-4QGS-LVA/LVA-T: 799,780 hrs EDS-G4012-8P-4QGS-LVB/LVB-T: 759,924 hrs
Standards	Telcordia SR332

Warranty

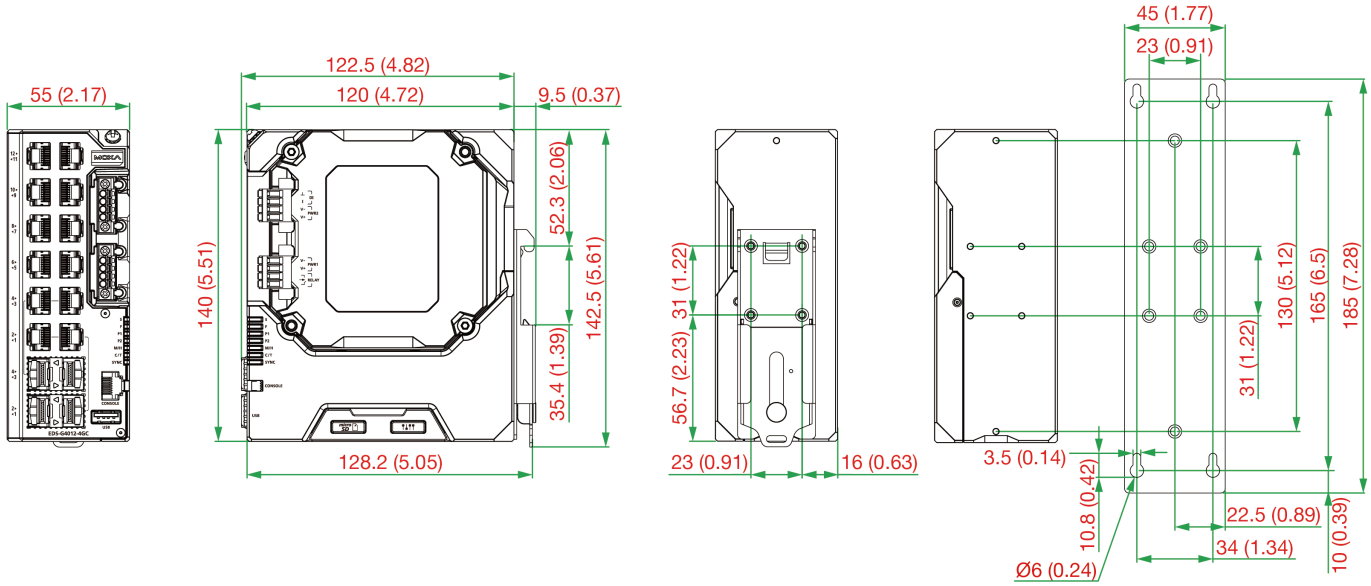
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x EDS-G4012 Series switch
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

Dimensions

Unit: mm (inch)



Ordering Information

Model Name	10/100/1000BaseT(X) Ports, RJ45 Connector	Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP)	PoE 10/100/1000BaseT(X) Ports, RJ45 Connector	100/1000/2500BaseSFP Ports	Operating Voltage	Pre-installed Power Module	Operating Temp.
EDS-G4012-4GC-LV	8	4	–	–	9.6 to 60 VDC	PWR-100-LV	-10 to 60°C
EDS-G4012-4GC-LV-T	8	4	–	–	9.6 to 60 VDC	PWR-100-LV	-40 to 85°C
EDS-G4012-4GC-HV	8	4	–	–	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-10 to 60°C
EDS-G4012-4GC-HV-T	8	4	–	–	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-40 to 85°C
EDS-G4012-8P-4QGS-LVA	–	–	8	4	44 to 57 VDC (> 52 VDC for PoE+ input recommended)	PWR-101-LV-BP-I	-10 to 60°C
EDS-G4012-8P-4QGS-LVA-T	–	–	8	4	44 to 57 VDC (> 52 VDC for PoE+ input recommended)	PWR-101-LV-BP-I	-40 to 85°C
EDS-G4012-8P-4QGS-LVB	–	–	8	4	12 to 57 VDC (> 52 VDC for PoE+ input recommended)	PWR-103-LV-VB-I	-10 to 60°C
EDS-G4012-8P-4QGS-LVB-T	–	–	8	4	12 to 57 VDC (> 52 VDC for PoE+ input recommended)	PWR-103-LV-VB-I	-40 to 85°C

Accessories (sold separately)

SFP Modules

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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°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-1GLXLC	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, 0 to 60°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-1GZXLC	SFP module with 1 1000BaseZX port with LC connector for 80 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-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°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-T	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, -40 to 85°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-T	SFP module with 1 1000BaseZX port 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-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-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-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-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-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-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-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-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-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-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-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-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-2.5GSLHLC-T	SFP module with 1 2.5GBaseFX port with LC connector, single-mode, for 45 km transmission, -40 to 85 °C operating temperature
SFP-2.5GSLC-T	SFP module with 1 2.5GBaseFX port with LC connector, single-mode, for 5 km transmission, -40 to 85 °C operating temperature
SFP-2.5GMLC-T	SFP module with 1 2.5GBaseFX port with LC connector, multi-mode, for 170, 200, 550, 600 m transmission, -40 to 85 °C operating temperature
SFP-2.5GLSLC-T	SFP module with 1 2.5GBaseFX port with LC connector, single-mode, for 20 km transmission, -40 to 85 °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
MDR-40-24	DIN-rail 24 VDC power supply with 40W/1.7A, 85 to 264 VAC, or 120 to 370 VDC input, -20 to 70°C operating temperature
MDR-60-24	DIN-rail 24 VDC power supply with 60W/2.5A, 85 to 264 VAC, or 120 to 370 VDC input, -20 to 70°C operating temperature

EDS-P206A Series

6-port unmanaged Ethernet switches with 4 IEEE 802.3af/at PoE+ ports

Features and Benefits

- IEEE 802.3af/at compliant PoE and Ethernet combo ports
- Up to 30 W output per PoE port
- 12/24/48 VDC redundant power inputs
- Intelligent power consumption detection and classification
- Redundant dual VDC power inputs
- -40 to 75°C operating temperature range (-T models)

Certifications

Introduction

The EDS-P206A-4PoE switches are smart, 6-port, unmanaged Ethernet switches supporting PoE (Power-over-Ethernet) on ports 1 to 4. The switches are classified as power source equipment (PSE), and when used in this way, the EDS-P206A-4PoE switches enable centralization of the power supply and provide up to 30 watts of power per port.

The switches can be used to power IEEE 802.3af/at-compliant powered devices (PD), eliminating the need for additional wiring, and support IEEE 802.3/802.3u/802.3x with 10/100M, full/half-duplex, MDI/MDI-X auto-sensing to provide an economical solution for your industrial Ethernet network.

Specifications

Ethernet Interface

10/100BaseT(X) Ports (RJ45 connector)	EDS-P206A-4PoE Series: 2 EDS-P206A-4PoE-M-SC/M-ST/S-SC Series: 1 Supported functions: Auto negotiation speed Full/Half duplex mode Auto MDI/MDI-X connection
100BaseFX Ports (multi-mode SC connector)	EDS-P206A-4PoE-M-SC Series: 1 EDS-P206A-4PoE-MM-SC Series: 2
100BaseFX Ports (multi-mode ST connector)	EDS-P206A-4PoE-M-ST Series: 1 EDS-P206A-4PoE-MM-ST Series: 2
100BaseFX Ports (single-mode SC connector)	EDS-P206A-4PoE-S-SC/P206A-4PoE-S-SC-T: 1 EDS-P206A-4PoE-SS-SC/P206A-4PoE-SS-SC-T: 2
PoE Ports (10/100BaseT(X), RJ45 connector)	4
Standards	IEEE 802.3 for 10BaseT IEEE 802.3af/at for PoE/PoE+ output IEEE 802.3x for flow control IEEE 802.3u for 100BaseT(X)

PoE Pinout	V+, V+, V-, V- for pins 1, 2, 3, 6 (Endspan, MDI, Mode A)

Optical Fiber

		100BaseFX		
		Multi-Mode		Single-Mode
Fiber Cable Type		OM1	50/125 µm 800 MHz x km	G.652
Typical Distance		4 km	5 km	40 km
Wavelength	Typical (nm)	1300		1310
	TX Range (nm)	1260 to 1360		1280 to 1340
	RX Range (nm)	1100 to 1600		1100 to 1600
Optical Power	TX Range (dBm)	-10 to -20		0 to -5
	RX Range (dBm)	-3 to -32		-3 to -34
	Link Budget (dB)	12		29
	Dispersion Penalty (dB)	3		1

Note: When connecting a single-mode fiber transceiver, we recommend using an attenuator to prevent damage caused by excessive optical power.
Note: Compute the “typical distance” of a specific fiber transceiver as follows: Link budget (dB) > dispersion penalty (dB) + total link loss (dB).

Switch Properties

Packet Buffer Size	768 kbits
MAC Table Size	2 K
Processing Type	Store and Forward

Power Parameters

Input Current	5.55 A @ 24 VDC
Connection	1 removable 4-contact terminal block(s)
Operating Voltage	12 to 57 VDC
Input Voltage	12/24/48 VDC, Redundant dual inputs
Power Budget	Max. 120 W for total PD consumption Max. 30 W for each PoE port
Power Consumption (Max.)	Max. 13.2 W full loading without PDs’ consumption
Reverse Polarity Protection	Supported
Overload Current Protection	Supported

Physical Characteristics

Housing	Metal
IP Rating	IP30
Dimensions	50.3 x 114 x 70 mm (1.98 x 4.53 x 2.76 in)
Weight	375 g (0.83 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit)

Environmental Limits

Operating Temperature	Standard Models: -10 to 60°C (14 to 140°F) Wide Temp. Models: -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

EMI	CISPR 32, FCC Part 15B Class A
EMC	EN 55032/24
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Safety	UL 508

MTBF

Time	1,398,743 hrs
Standards	Telcordia (Bellcore), GB

Warranty

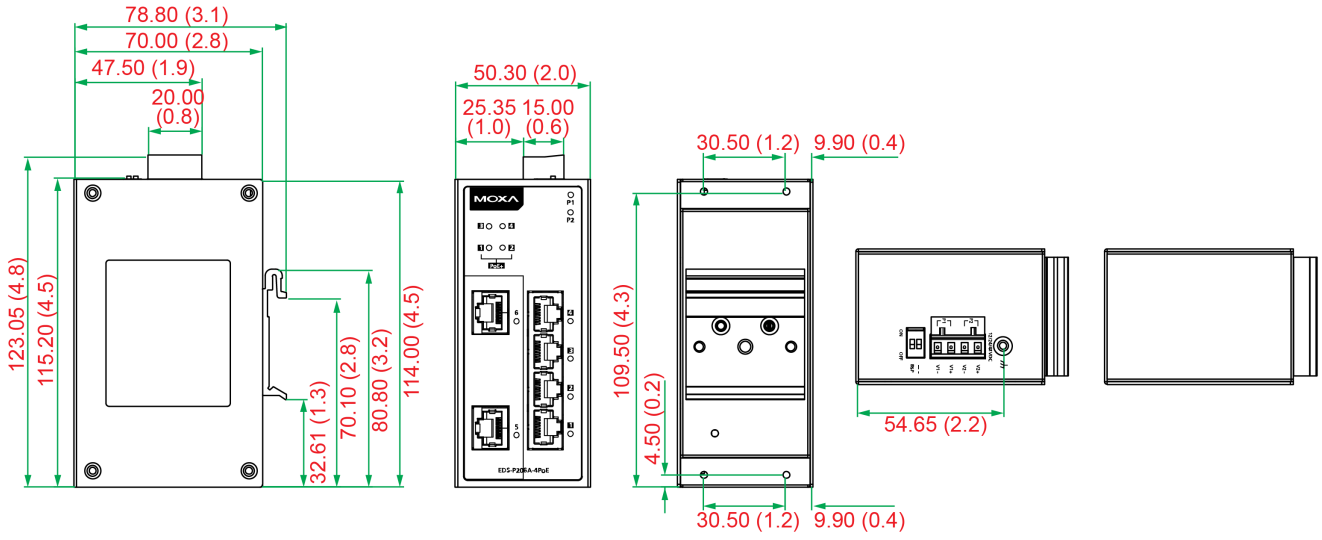
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x EDS-P206A Series switch
Installation Kit	4 x cap, plastic, for RJ45 port
Documentation	1 x quick installation guide 1 x warranty card

Dimensions

Unit: mm (inch)



Side View | Front View | Rear View | Top and Bottom Views

Ordering Information

Model Name	10/100BaseT(X) Ports RJ45 Connector	PoE Ports, 10/100BaseT(X) RJ45 Connector	100BaseFX Ports Multi-Mode, SC Connector	100BaseFX Ports Multi-Mode, ST Connector	100BaseFX Ports Single-Mode, SC Connector	Operating Temp.
EDS-P206A-4PoE	2	4	–	–	–	-10 to 60°C
EDS-P206A-4PoE-T	2	4	–	–	–	-40 to 75°C
EDS-P206A-4PoE-M-SC	1	4	1	–	–	-10 to 60°C
EDS-P206A-4PoE-M-SC-T	1	4	1	–	–	-40 to 75°C
EDS-P206A-4PoE-M-ST	1	4	–	1	–	-10 to 60°C
EDS-P206A-4PoE-M-ST-T	1	4	–	1	–	-40 to 75°C
EDS-P206A-4PoE-MM-SC	–	4	2	–	–	-10 to 60°C
EDS-P206A-4PoE-MM-SC-T	–	4	2	–	–	-40 to 75°C
EDS-P206A-4PoE-MM-ST	–	4	–	2	–	-10 to 60°C
EDS-P206A-4PoE-MM-ST-T	–	4	–	2	–	-40 to 75°C
EDS-P206A-4PoE-S-SC	1	4	–	–	1	-10 to 60°C
EDS-P206A-4PoE-S-SC-T	1	4	–	–	1	-40 to 75°C
EDS-P206A-4PoE-SS-SC	–	4	–	–	2	-10 to 60°C
EDS-P206A-4PoE-SS-SC-T	–	4	–	–	2	-40 to 75°C

Accessories (sold separately)

Power Supplies

DR-120-24	120W/2.5A DIN-rail 24 VDC power supply with universal 88 to 132 VAC or 176 to 264 VAC input by switch, or 248 to 370 VDC input, -10 to 60°C operating temperature
DR-75-24	75W/3.2A DIN-rail 24 VDC power supply with universal 85 to 264 VAC or 120 to 370 VDC input, -10 to 60°C operating temperature
DR-120-48	120W/2.5A DIN-rail 48 VDC power supply with universal 88 to 132 VAC or 176 to 264 VAC input by switch, or 248 to 370 VDC input, -10 to 60°C operating temperature
DR-75-48	75W/1.6A DIN-rail 48 VDC power supply with universal 85 to 264 VAC or 120 to 370 VDC input, -10 to 60°C operating temperature
DRP-240-48	DIN-rail 48 VDC power supply with 240W/5A, 85 to 264 VAC, or 120 to 370 VDC input, -10 to 70°C operating temperature

Wall-Mounting Kits

WK-46	Wall-mounting kit, 2 plates, 8 screws, 46.5 x 66.8 x 1 mm

Rack-Mounting Kits

RK-4U	19-inch rack-mounting kit

EDS-P506E Series

4+2G-port Gigabit PoE+ managed Ethernet switches with 4 IEEE 802.3af/at PoE+ ports

Features and Benefits

- Built-in 4 PoE+ ports support up to 60 W output per port
- Wide-range 12/24/48 VDC power inputs for flexible deployment
- Smart PoE functions for remote power device diagnosis and failure recovery
- 2 Gigabit combo ports for high-bandwidth communication
- Supports MXstudio for easy, visualized industrial network management

Certifications

EN 50121-4

Introduction

The EDS-P506E Series includes Gigabit managed PoE+ Ethernet switches that come standard with 4 10/100BaseT(X), 802.3af (PoE), and 802.3at (PoE+)-compliant Ethernet ports, and 2 combo Gigabit Ethernet ports. The EDS-P506E Series provides up to 30 watts of power per PoE+ port in standard mode and allows a high-power output of up to 4-pair 60 W for industrial heavy-duty PoE devices, such as weather-proof IP surveillance cameras with wipers/heaters, high-performance wireless access points, and rugged IP phones.

The EDS-P506E Series is highly versatile, and the SFP fiber ports can transmit data up to 120 km from the device to the control center with high EMI immunity. The Ethernet switches support a variety of management functions, including STP/RSTP, Turbo Ring, Turbo Chain, PoE power management, PoE device auto-checking, PoE power scheduling, PoE diagnostic, IGMP, VLAN, QoS, RMON, bandwidth management, and port mirroring. The EDS-P506E Series is designed especially for harsh outdoor applications with 4 kV surge protection to ensure uninterrupted reliability of PoE systems.

Additional Features and Benefits

- Supports different PoE output settings (High-power 36 W and 60 W, Force and Legacy modes) to maximize powered device compatibility
- Supports Smart PoE functions (PoE diagnosis, PD failure check, PoE scheduling, and PoE Event Warning) to enhance PoE operational efficiency
- Command line interface (CLI) for quickly configuring major managed functions
- Supports EtherNet/IP, PROFINET, and Modbus TCP protocols for device management and monitoring
- Supports V-ON™ to ensure millisecond-level Layer2/Layer3 network recovery
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches),[1] RSTP/STP, and MSTP for network redundancy
- Automatic warning by exception through email and relay output
- Port mirroring for online debugging
- 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
- RADIUS, TACACS+, MAB Authentication, SNMPv3, IEEE 802.1x, MAC ACL, HTTPS, SSH, and sticky MAC address to enhance network security
- SNMPv1/v2c/v3 for different levels of network management
- Fiber Check™ provides a comprehensive fiber Digital Diagnostic Monitoring (DDM) function and event warning on SFP fiber ports
- Bandwidth management to prevent unpredictable network status
- ABC-02-USB (Automatic Backup Configurator) for system configuration backup/restore and firmware upgrade

1. Gigabit Ethernet recovery time < 50 ms

Specifications

Ethernet Interface

Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP+)	2 Full/Half duplex mode Auto MDI/MDI-X connection Auto negotiation speed
PoE Ports (10/100BaseT(X), RJ45 connector)	4 Full/Half duplex mode Auto MDI/MDI-X connection Auto negotiation speed
Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1X for authentication IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3ad for Port Trunk with LACP IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3x for flow control IEEE 802.3z for 1000BaseSX/LX/LHX/ZX

Ethernet Software Features

Filter	802.1Q VLAN, GMRP, GVRP, IGMP v1/v2/v3, Port-based VLAN
Industrial Protocols	EtherNet/IP, Modbus TCP, PROFINET
Management	Back Pressure Flow Control, BOOTP, DDM, DHCP Option 66/67/82, DHCP Server/Client, Fiber check, Flow control, IPv4/IPv6, RARP, RMON, SMTP, SNMP Inform, SNMPv1/v2c/v3, Syslog, Telnet, TFTP
MIB	Bridge MIB, Ethernet-like MIB, MIB-II, P-BRIDGE MIB, Q-BRIDGE MIB, RMON MIB Groups 1, 2, 3, 9, RSTP MIB
Redundancy Protocols	Link Aggregation, MSTP, RSTP, STP, Turbo Chain, Turbo Ring v1/v2
Security	Broadcast storm protection, HTTPS/SSL, MAC ACL, TACACS+, MAB authentication, Sticky MAC, NTP authentication, Port Lock, RADIUS, SSH
Time Management	IEEE 1588v2 PTP (software-based), NTP Server/Client, SNTP

Switch Properties

IGMP Groups	256
Jumbo Frame Size	9.6 KB
MAC Table Size	8 K
Max. No. of VLANs	4096
Packet Buffer Size	12 Mbits
Priority Queues	4
VLAN ID Range	VID 1 to 4094

USB Interface

Storage Port	USB Type A

LED Interface

LED Indicators	PWR1, PWR2, STATE, FAULT, 10/100M (TP port), 10/100/1000M (Gigabit Combo port), MSTR/HEAD, CPLR/TAIL, PoE

Serial Interface

Console Port	USB-serial console (Type B connector)

Input/Output Interface

Digital Input Channels	1
Digital Inputs	Max. input current: 8 mA +13 to +30 V for state 1 -30 to +3 V for state 0
Alarm Contact Channels	1, Relay output with current carrying capacity of 0.5 A @ 48 VDC
Buttons	Reset button

DIP Switch Configuration

Ethernet Interface	Turbo Ring, Master, Coupler, Reserve

Power Parameters

Input Voltage	12/24/48 VDC, Redundant dual inputs
Operating Voltage	12 to 57 VDC (> 50 VDC for PoE+ output recommended)
Input Current	4.08 A @ 48 VDC
Max. PoE Power Output per Port	60 W
Connection	2 removable 4-contact terminal block(s)
Power Consumption (Max.)	Max. 18.96 W full loading without PDs' consumption
Total PoE Power Budget	Max. 180 W for total PD's consumption @ 48 VDC input Max. 150 W for total PD's consumption @ 24 VDC input Max. 62 W for total PD's consumption @ 12 VDC input
Overload Current Protection	Supported
Reverse Polarity Protection	Supported

Physical Characteristics

Housing	Metal
IP Rating	IP40
Dimensions	49.1 x 135 x 116 mm (1.93 x 5.31 x 4.57 in)
Weight	910 g (2.00 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit)

Environmental Limits

Operating Temperature	EDS-P506E-4PoE-2GTXSFP: -10 to 60°C (14 to 140°F) EDS-P506E-4PoE-2GTXSFP-T: -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	UL 61010-2-201, EN 61010-2-201
EMC	EN 61000-6-2/-6-4
EMI	CISPR 32, FCC Part 15B Class A

EMS	IEC 61000-4-6 CS: 10 V IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-11 DIPs IEC 61000-4-8 PFMF
Power Substation	IEEE 1613, IEC 61850-3 Edition 2.0
Railway	EN 50121-4
Traffic Control	NEMA TS2
Vibration	IEC 60068-2-6
Bump	IEC 61850-3 Edition 2.0
Freefall	IEC 60068-2-31
Shock	IEC 60068-2-27

MTBF

Time	755,167 hrs
Standards	Telcordia (Bellcore), GB

Warranty

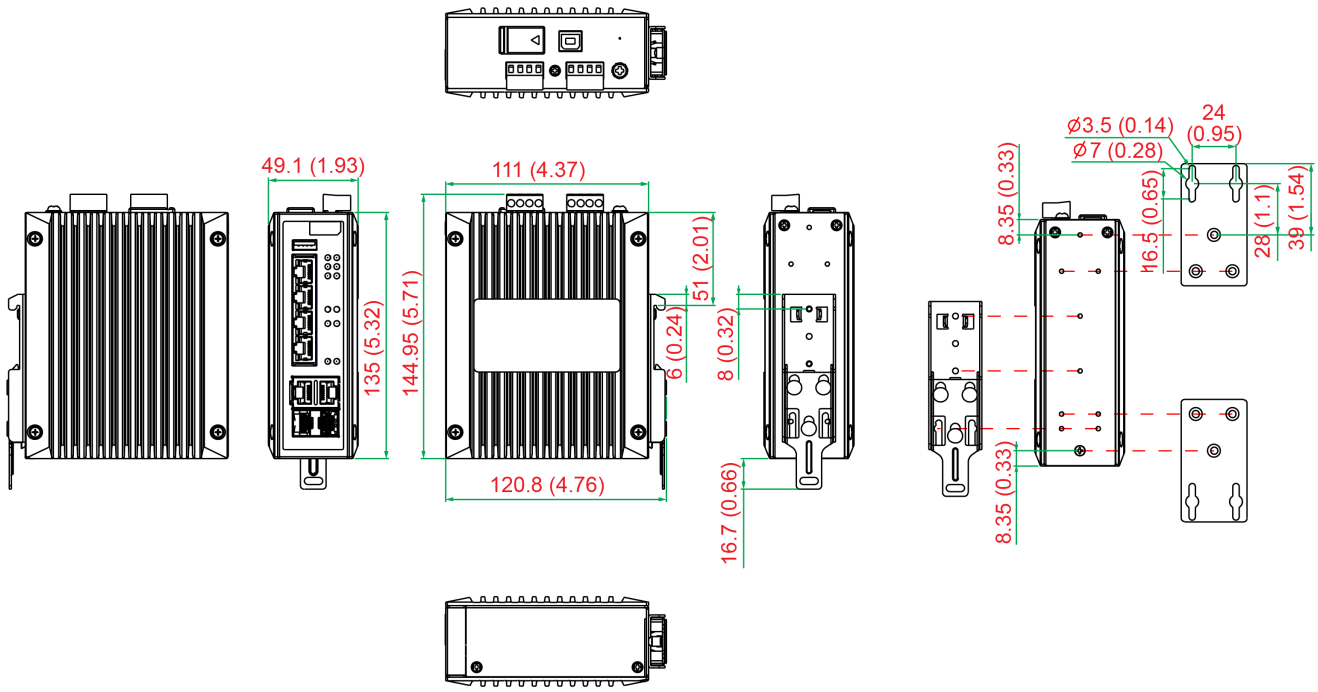
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x EDS-P506E Series switch
Cable	1 x USB type A male to USB type B male
Installation Kit	4 x cap, plastic, for RJ45 port 2 x cap, plastic, for SFP slot
Documentation	1 x quick installation guide 1 x product certificates of quality inspection, Simplified Chinese 1 x product notice, Simplified Chinese 1 x warranty card
Note	SFP modules need to be purchased separately for use with this product.

Dimensions

Unit: mm (inch)



Ordering Information

Model Name	Combo Ports 10/100/1000BaseT(X) or 100/1000BaseSFP+	PoE Ports 10/100BaseT(X), RJ45 Connector	Operating Temp.
EDS-P506E-4PoE-2GTXSFP	2	4	-10 to 60°C
EDS-P506E-4PoE-2GTXSFP-T	2	4	-40 to 75°C

Accessories (sold separately)

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

SFP Modules

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 with LC connector for 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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, 0 to 60°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m 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-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, 0 to 60°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m 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

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)

EDS-P510 Series

7+3G-port Gigabit PoE managed Ethernet switches with 4 IEEE 802.3af PoE ports

Features and Benefits

- 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 and Turbo Chain (recovery time < 20 ms @ 250 switches), RSTP/STP, and MSTP for network redundancy
- Supports MXstudio for easy, visualized industrial network management
- V-ON™ ensures millisecond-level multicast data and video network recovery

Certifications

Introduction

The EDS-P510 Series Gigabit managed redundant Ethernet switches have 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 entry system gates, which can benefit from a scalable backbone construction and PoE.

Additional 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
- DHCP Option 82 for IP address assignment with different policies
- Support EtherNet/IP and Modbus/TCP protocols for device management and monitoring
- 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
- 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

Specifications

Ethernet Interface

Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP+)	3 Auto negotiation speed Full/Half duplex mode Auto MDI/MDI-X connection
10/100BaseT(X) Ports (RJ45 connector)	3 Auto negotiation speed Full/Half duplex mode Auto MDI/MDI-X connection

PoE Ports (10/100BaseT(X), RJ45 connector)	4 Auto negotiation speed Full/Half duplex mode Auto MDI/MDI-X connection
Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1X for authentication IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3ad for Port Trunk with LACP IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3x for flow control IEEE 802.3z for 1000BaseSX/LX/LHX/ZX IEEE 802.3af for PoE

Ethernet Software Features

Filter	GMRP, GVRP, IGMP v1/v2, Port-based VLAN
Industrial Protocols	EtherNet/IP, Modbus TCP
Management	Back Pressure Flow Control, BOOTP, DDM, DHCP Option 66/67/82, DHCP Server/Client, Flow control, IPv4/IPv6, LLDP, Port Mirror, RARP, RMON, SMTP, SNMP Inform, SNMPv1/v2c/v3, Syslog, Telnet, TFTP
MIB	Bridge MIB, Ethernet-like MIB, MIB-II, P-BRIDGE MIB, Q-BRIDGE MIB, RMON MIB Groups 1, 2, 3, 9, RSTP MIB
Redundancy Protocols	LACP, Link Aggregation, MSTP, RSTP, STP, Turbo Chain, Turbo Ring v1/v2
Security	TACACS+, HTTPS/SSL, Port Lock, RADIUS, SSH
Time Management	NTP Server/Client, SNTP

Input/Output Interface

Alarm Contact Channels	2, Relay output with current carrying capacity of 1 A @ 24 VDC
Digital Input Channels	2
Digital Inputs	-30 to +3 V for state 0 +13 to +30 V for state 1 Max. input current: 8 mA

Switch Properties

IGMP Groups	1024
MAC Table Size	8 K
Max. No. of VLANs	64
Packet Buffer Size	1 Mbits
Priority Queues	4
VLAN ID Range	VID 1 to 4094

Serial Interface

Console Port	RS-232 (TxD, RxD, GND), 10-pin RJ45 (19200, n, 8, 1)

DIP Switch Configuration

Ethernet Interface	Turbo Ring, Master, Coupler, Reserve

Power Parameters

Connection	2 removable 6-contact terminal block(s)
Input Current	1.5 A @ 48 VDC
Input Voltage	48 VDC, Redundant dual inputs
Operating Voltage	44 to 57 VDC
Overload Current Protection	Supported
Power Budget	Max. 15.4 W for each PoE port Max. 61.6 W for total PD consumption
Power Consumption (Max.)	Max. 14.24 W full loading without PDs' consumption
Reverse Polarity Protection	Supported

Physical Characteristics

Dimensions	80.2 x 135 x 105 mm (3.16 x 5.31 x 4.13 in)
Housing	Metal
Installation	DIN-rail mounting, Wall mounting (with optional kit)
IP Rating	IP30
Weight	1,170 g (2.58 lb)

Environmental Limits

Ambient Relative Humidity	5 to 95% (non-condensing)
Operating Temperature	EDS-P510: 0 to 60°C (32 to 140°F) EDS-P510-T: -40 to 75°C (-40 to 167°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)

Standards and Certifications

Safety	UL 508
EMC	EN 55032/24
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Maritime	ABS, DNV-GL, LR, NK
Freefall	IEC 60068-2-31
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6

MTBF

Time	205,384 hrs
Standards	Telcordia (Bellcore), GB

Warranty

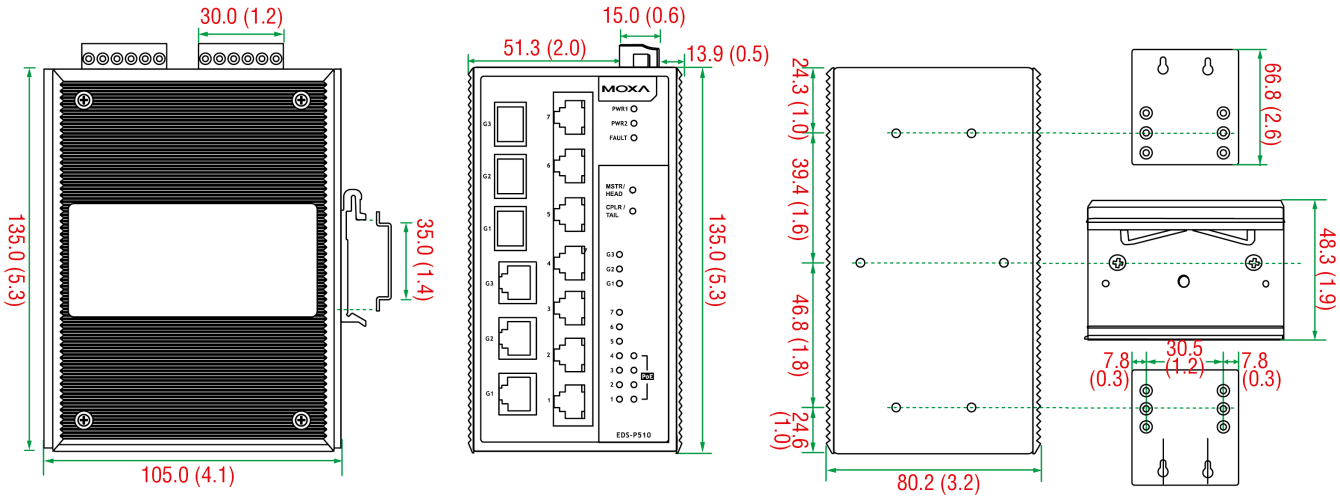
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x EDS-P510 Series switch
Cable	1 x DB9 female to RJ45 10-pin
Installation Kit	8 x cap, plastic, for RJ45 port 3 x cap, plastic, for SFP slot
Documentation	1 x product certificates of quality inspection, Simplified Chinese 1 x product notice, Simplified Chinese 1 x quick installation guide 1 x warranty card
Note	SFP modules need to be purchased separately for use with this product.

Dimensions

Unit: mm (inch)



Side View | Front View | Rear View | DIN-Rail/Panel-Mounting Kit

Ordering Information

Model Name	Combo Ports 10/100/1000BaseT(X) or 100/1000BaseSFP	PoE Ports 10/100BaseT(X)	non-PoE Ports 10/100BaseT(X)	Operating Temp.
EDS-P510	3	4	3	-10 to 60°C
EDS-P510-T	3	4	3	-40 to 75°C

Accessories (sold separately)

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

SFP Modules

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 with LC connector for 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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, 0 to 60°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m 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-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, 0 to 60°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m 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

Power Supplies

DR-120-48	120W/2.5A DIN-rail 48 VDC power supply with universal 88 to 132 VAC or 176 to 264 VAC input by switch, or 248 to 370 VDC input, -10 to 60°C operating temperature
DR-75-48	75W/1.6A DIN-rail 48 VDC power supply with universal 85 to 264 VAC or 120 to 370 VDC input, -10 to 60°C operating temperature
DRP-240-48	DIN-rail 48 VDC power supply with 240W/5A, 85 to 264 VAC, or 120 to 370 VDC input, -10 to 70°C operating temperature
SDR-480P-48	DIN-rail 48 VDC power supply with 480W/10A, 90 to 264 VAC, or 127 to 370 VDC input, (current sharing up to 3840 W), -25 to 70°C operating temperature

Wall-Mounting Kits

WK-46-01	Wall-mounting kit, 2 plates, 8 screws, 46 x 66.8 x 2 mm

Rack-Mounting Kits

RK-4U	19-inch rack-mounting kit

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)

EDS-P510A Series

8+2G-port Gigabit PoE+ managed Ethernet switches with 8 IEEE 802.3af/at PoE+ ports

Features and Benefits

- 8 built-in PoE+ ports compliant with IEEE 802.3af/at
- Up to 36 W output per PoE+ port
- 3 kV LAN surge protection for extreme outdoor environments
- PoE diagnostics for powered-device mode analysis
- 2 Gigabit combo ports for high-bandwidth and long-distance communication
- Operates with 240 watts full PoE+ loading at -40 to 75°C
- Supports MXstudio for easy, visualized industrial network management
- V-ON™ ensures millisecond-level multicast data and video network recovery

Certifications

Introduction

Moxa's EDS-P510A Series has 8 10/100BaseT(X), 802.3af (PoE), and 802.3at (PoE+)-compliant Ethernet ports, and 2 combo Gigabit Ethernet ports. The EDS-P510A-8PoE Ethernet switches provide up to 30 watts of power per PoE+ port in standard mode and allow high-power output of up to 36 watts for industrial heavy-duty PoE devices, such as weather-proof IP surveillance cameras with wipers/heaters, high-performance wireless access points, and IP phones. The EDS-P510A Ethernet Series is highly versatile, and the SFP fiber ports can transmit data up to 120 km from the device to the control center with high EMI immunity.

The Ethernet switches support a variety of management functions, as well as STP/RSTP, Turbo Ring, Turbo Chain, PoE power management, PoE device auto-checking, PoE power scheduling, PoE diagnostic, IGMP, VLAN, QoS, RMON, bandwidth management, and port mirroring. The EDS-P510A Series is designed with 3 kV surge protection for harsh outdoor applications to increase the reliability of PoE systems.

Additional Features and Benefits

- Supports different PoE output settings (High-power 36 W, Force and Legacy modes) to maximize powered device compatibility
- Supports Smart PoE functions (PoE diagnosis, PD failure check, PoE scheduling, PoE Event Warning) to enhance PoE operational efficiency
- Command line interface (CLI) for quickly configuring major managed functions
- DHCP Option 82 for IP address assignment with different policies
- Supports EtherNet/IP and Modbus TCP protocols for device management and monitoring
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches),[1] RSTP/STP, and MSTP for network redundancy
- Compatible with PROFINET protocol for transparent data transmission
- 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 proactive and efficient network monitoring
- Bandwidth management to prevent unpredictable network status
- Port mirroring for online debugging
- Automatic warning by exception through email and relay output

1. Gigabit Ethernet recovery time < 50 ms

Specifications

Ethernet Interface

Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP+)	2 Full/Half duplex mode Auto MDI/MDI-X connection Auto negotiation speed
PoE Ports (10/100BaseT(X), RJ45 connector)	8 Full/Half duplex mode Auto MDI/MDI-X connection Auto negotiation speed
Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1X for authentication IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3ad for Port Trunk with LACP IEEE 802.3af/at for PoE/PoE+ output IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3x for flow control IEEE 802.3z for 1000BaseSX/LX/LHX/ZX

Ethernet Software Features

Filter	GMRP, GVRP, IGMP v1/v2, Port-based VLAN
Industrial Protocols	EtherNet/IP, Modbus TCP
Management	Back Pressure Flow Control, BOOTP, DDM, DHCP Option 66/67/82, DHCP Server/Client, Fiber check, Flow control, IPv4/IPv6, LLDP, Port Mirror, RARP, RMON, SMTP, SNMP Inform, SNMPv1/v2c/v3, Syslog, Telnet, TFTP
MIB	Bridge MIB, Ethernet-like MIB, MIB-II, P-BRIDGE MIB, Q-BRIDGE MIB, RMON MIB Groups 1, 2, 3, 9, RSTP MIB
Redundancy Protocols	LACP, Link Aggregation, MSTP, RSTP, STP, Turbo Chain, Turbo Ring v1/v2
Security	HTTPS/SSL, Port Lock, RADIUS, TACACS+, SSH
Time Management	NTP Server/Client, SNTP

Switch Properties

IGMP Groups	1024
MAC Table Size	8 K
Max. No. of VLANs	64
Packet Buffer Size	1 Mbits
Priority Queues	4
VLAN ID Range	VID 1 to 4094

Serial Interface

Console Port	RS-232 (TxD, RxD, GND), 10-pin RJ45 (19200, n, 8, 1)

DIP Switch Configuration

Ethernet Interface	Turbo Ring, Master, Coupler, Reserve

Input/Output Interface

Alarm Contact Channels	1, Relay output with current carrying capacity of 0.5 A @ 48 VDC
Digital Input Channels	1
Digital Inputs	Max. input current: 8 mA +13 to +30 V for state 1 -30 to +3 V for state 0

Power Parameters

Input Voltage	48 VDC, Redundant dual inputs
Operating Voltage	44 to 57 VDC
Input Current	5.36 A @ 48 VDC
Power Consumption (Max.)	Max. 17.28 W full loading without PDs' consumption
Power Budget	Max. 240 W for total PD consumption Max. 36 W for each PoE port
Connection	2 removable 2-contact terminal block(s)
Overload Current Protection	Supported
Reverse Polarity Protection	Supported

Physical Characteristics

Housing	Metal
IP Rating	IP30
Dimensions	79.2 x 135 x 105 mm (3.12 x 5.31 x 4.13 in)
Weight	1030 g (2.28 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit)

Environmental Limits

Operating Temperature	EDS-P510A-8PoE-2GTXSFP: -10 to 60°C (14 to 140°F) EDS-P510A-8PoE-2GTXSFP-T: -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	UL 508
EMC	EN 55032/24
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Hazardous Locations	Class I Division 2
Railway	EN 50121-4
Traffic Control	NEMA TS2

Freefall	IEC 60068-2-31
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6

MTBF

Time	708,972 hrs
Standards	Telcordia (Bellcore), GB

Warranty

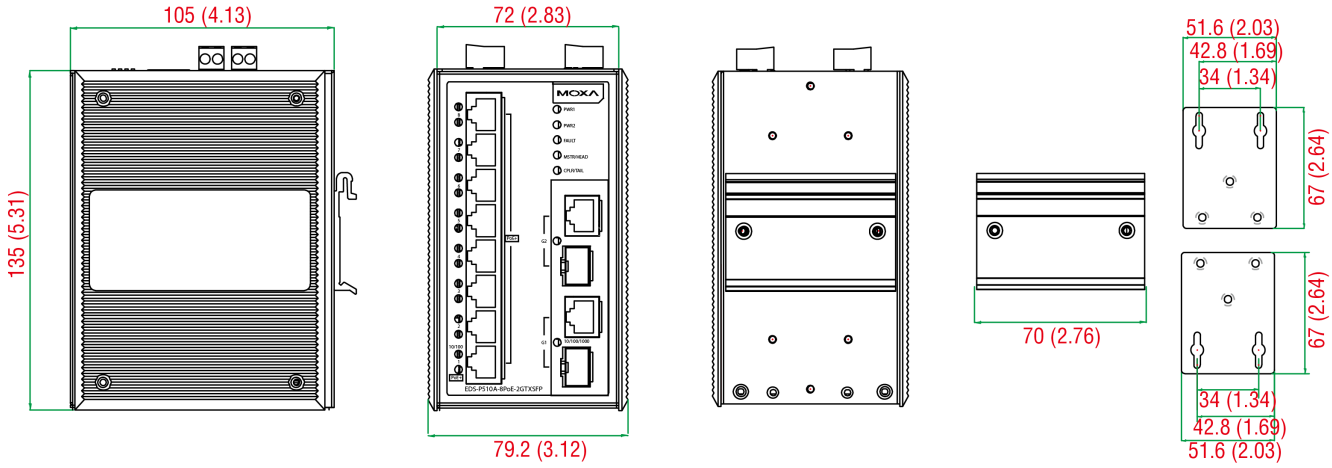
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x EDS-P510A Series switch
Cable	1 x DB9 female to RJ45 10-pin
Installation Kit	4 x cap, plastic, for RJ45 port 2 x cap, plastic, for SFP slot
Documentation	1 x quick installation guide 1 x product certificates of quality inspection, Simplified Chinese 1 x product notice, Simplified Chinese 1 x warranty card
Note	SFP modules need to be purchased separately for use with this product.

Dimensions

Unit: mm (inch)



Side View | Front View | Rear View | DIN-Rail/Panel-Mounting Kit

Ordering Information

Model Name	Combo Ports 10/100/1000BaseT(X) or 100/1000BaseSFP+	PoE Ports 10/100BaseT(X), RJ45 Connector	Operating Temp.
EDS-P510A-8PoE-2GTXSFP	2	8	-10 to 60°C
EDS-P510A-8PoE-2GTXSFP-T	2	8	-40 to 75°C

Accessories (sold separately)

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

SFP Modules

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 with LC connector for 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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, 0 to 60°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m 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-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, 0 to 60°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m 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

Power Supplies

DR-120-48	120W/2.5A DIN-rail 48 VDC power supply with universal 88 to 132 VAC or 176 to 264 VAC input by switch, or 248 to 370 VDC input, -10 to 60°C operating temperature
DR-75-48	75W/1.6A DIN-rail 48 VDC power supply with universal 85 to 264 VAC or 120 to 370 VDC input, -10 to 60°C operating temperature
DRP-240-48	DIN-rail 48 VDC power supply with 240W/5A, 85 to 264 VAC, or 120 to 370 VDC input, -10 to 70°C operating temperature
SDR-480P-48	DIN-rail 48 VDC power supply with 480W/10A, 90 to 264 VAC, or 127 to 370 VDC input, (current sharing up to 3840 W), -25 to 70°C operating temperature

Wall-Mounting Kits

WK-46-01	Wall-mounting kit, 2 plates, 8 screws, 46 x 66.8 x 2 mm

Rack-Mounting Kits

RK-4U	19-inch rack-mounting kit

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)

ICS-G7748A Series

48G-port Layer 2 full Gigabit modular managed Ethernet switches

Features and Benefits

- Up to 48 Gigabit Ethernet ports
- Up to 48 optical fiber connections (SFP slots)
- Up to 48 PoE+ ports with external power supply (with IM-G7000A-4PoE module)
- Fanless, -10 to 60°C operating temperature range
- Modular design for maximum flexibility and hassle-free future expansion
- Hot-swappable interface and power modules for continuous operation
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), and STP/RSTP/MSTP for network redundancy
- Isolated redundant power inputs with universal 110/220 VAC power supply range
- Supports MXstudio for easy, visualized industrial network management
- V-ON™ ensures millisecond-level multicast data and video network recovery

Certifications

EN 50121-4

Introduction

Process automation and transportation automation applications combine data, voice, and video, and consequently require high performance and high reliability. The ICS-G7748A Series full Gigabit backbone switches' modular design makes network planning easy, and allows greater flexibility by letting you install up to 48 Gigabit Ethernet ports.

The ICS-G7748A's full Gigabit capability increases bandwidth to provide high performance and the ability to quickly transfer large amounts of video, voice, and data across a network. The fanless switches support the Turbo Ring, Turbo Chain, and RSTP/STP redundancy technologies, and come with an isolated redundant power supply to increase system reliability and the availability of your network backbone.

Additional Features and Benefits

- Advanced PoE management functions: PoE output setting, PD failure check, PoE scheduling, and PoE diagnostics (with IM-G7000A-4PoE module)
- Command line interface (CLI) for quickly configuring major managed functions
- DHCP Option 82 for IP address assignment with different policies
- Supports EtherNet/IP and Modbus TCP protocols for device management and monitoring
- Compatible with PROFINET protocol for transparent data transmission
- Port mirroring for online debugging
- Automatic warning by exception through email and relay output
- Redundant, dual AC power inputs
- Digital inputs for integrating sensors and alarms with IP networks
- 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
- Access control lists (ACL) increase the flexibility and security of network management
- SNMPv1/v2c/v3 for different levels of network management
- RMON for proactive and efficient network monitoring
- Bandwidth management to prevent unpredictable network status
- Lock port function for blocking unauthorized access based on MAC address

Specifications

Input/Output Interface

Alarm Contact Channels	Relay output with current carrying capacity of 2 A @ 30 VDC
Digital Inputs	+13 to +30 V for state 1 -30 to +1 V for state 0 Max. input current: 8 mA

Ethernet Interface

Slot Combination	12 slots for 4-port interface modules (10/100/1000BaseT(X), or PoE+ 10/100/1000BaseT (X), or 100/1000BaseSFP slots). See the IM-G7000A datasheet for Gigabit Ethernet module product information.
Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1X for authentication IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3ad for Port Trunk with LACP IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3x for flow control IEEE 802.3z for 1000BaseSX/LX/LHX/ZX IEEE 802.3af/at for PoE/PoE+ output

Ethernet Software Features

Management	ARP, Back Pressure Flow Control, BOOTP, DDM, DHCP Option 66/67/82, DHCP Server/Client, IPv4/IPv6, LLDP, Port Mirror, RMON, SNMP Inform, SNMPv1/v2c/v3, Syslog, Telnet, TFTP, SMTP, RARP, Flow control
Filter	802.1Q, GMRP, GVRP, IGMP v1/v2/v3
Redundancy Protocols	Link Aggregation, MSTP, RSTP, Turbo Chain, Turbo Ring v1/v2, V-ON
Security	Access control list, Broadcast storm protection, HTTPS/SSL, MAB authentication, Sticky MAC, NTP authentication, Port Lock, RADIUS, SSH, TACACS+
Time Management	NTP Server/Client, SNTP
Industrial Protocols	EtherNet/IP, Modbus TCP
MIB	Bridge MIB, Ethernet-like MIB, MIB-II, P-BRIDGE MIB, Q-BRIDGE MIB, RMON MIB Groups 1, 2, 3, 9, RSTP MIB

Switch Properties

DRAM	128 MB
Flash	16 MB
IGMP Groups	4096
Jumbo Frame Size	9.6 KB
MAC Table Size	16 K
Max. No. of VLANs	256
Packet Buffer Size	12 Mbits
VLAN ID Range	VID 1 to 4094
Priority Queues	8

USB Interface

Storage Port	USB Type A

Serial Interface

Console Port	USB-serial console (Type B connector)

Power Parameters

Input Voltage	110 to 220 VAC, Redundant dual inputs
Operating Voltage	85 to 264 VAC
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Input Current	0.87/0.51 A @ 110/220 VAC

Physical Characteristics

IP Rating	IP30
Dimensions	440 x 176 x 523.8 mm (17.32 x 6.93 x 20.62 in)
Weight	12,900 g (28.5 lb)
Installation	Rack mounting

Environmental Limits

Operating Temperature	-10 to 60°C (14 to 140°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 60950-1, UL 60950-1
EMC	EN 55032/24
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Railway	EN 50121-4
Freefall	IEC 60068-2-32
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6

MTBF

Time	314,973 hrs
Standards	Telcordia (Bellcore), GB

Warranty

Warranty Period	5 years
Details	See www.moxa.com/warranty

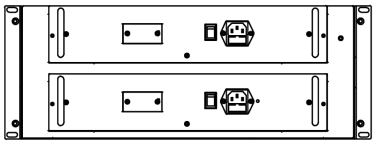
Package Contents

Device	1 x ICS-G7748A Series switch
Cable	1 x USB type A male to USB type B male

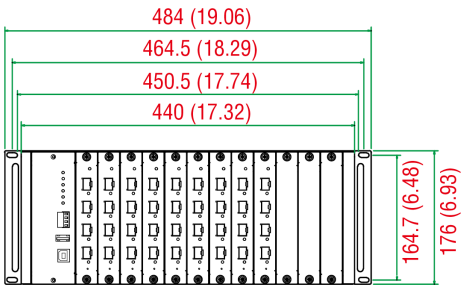
Installation Kit	2 x rack-mounting ear 4 x cap, plastic, for SFP slot
Power Supply	1 x power cord, EU type 1 x power cord, US type
Documentation	1 x document and software CD 1 x warranty card
Note	48 V external power supply, SFP modules and/or modules from the IM-G7000A Module Series need to be purchased separately for use with this product.

Dimensions

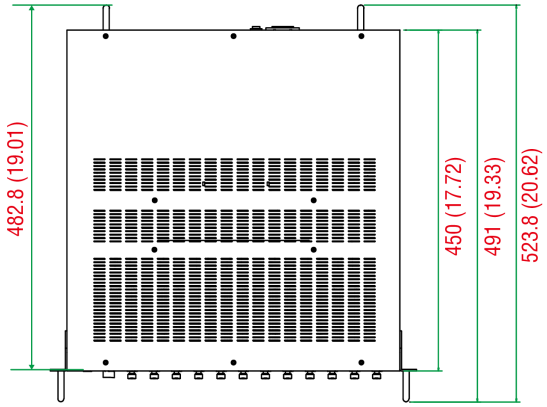
Unit: mm (inch)



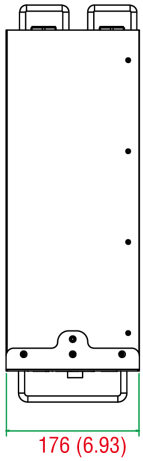
Rear View



Front View



Top View



Side View

Ordering Information

Model Name	Layer	10GbE SFP+ Slots	100/1000Base SFP Slots	10/100/1000BaseT(X) Ports RJ45 Connector	Operating Temp.
ICS-G7748A-HV-HV	2	0	Up to 48	Up to 48	-10 to 60°C

Accessories (sold separately)

IM-G7000A Module Series

IM-G7000A-4GSFP	Gigabit Ethernet interface module with 4 100/1000BaseSFP slots, -10 to 60°C operating temperature
IM-G7000A-4GTX	Gigabit Ethernet interface module with 4 10/100/1000BaseT(X) ports, -10 to 60°C operating temperature
IM-G7000A-4PoE	Gigabit Ethernet PoE+ interface module with 4 10/100/1000BaseT(X) ports, -10 to 60°C operating temperature

Power Supplies

PWR-G7000A-AC	85 to 264 VAC power supply module for the ICS-G7748A/G7750A/G7752A/G7848A/G7850A/G7852A Series

SFP Modules

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 with LC connector for 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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, 0 to 60°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m 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-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, 0 to 60°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m 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-10GERLC	SFP+ module with 1 10GBase-ER port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-10GLRLC	SFP+ module with 1 10GBase-LR port with LC connector for 10 km transmission, 0 to 60°C operating temperature
SFP-10GSRLC	SFP+ module with 1 10GBase-SR port with LC connector for 33 m transmission, 0 to 60°C operating temperature

Power Cords

PWC-C13AU-3B-183	Power cord with Australian (AU) plug, 1.83 m
PWC-C13CN-3B-183	Power cord with three-prong China (CN) plug, 1.83 m
PWC-C13EU-3B-183	Power cord with Continental Europe (EU) plug, 1.83 m
PWC-C13UK-3B-183	Power cord with United Kingdom (UK) plug, 1.83 m
PWC-C13US-3B-183	Power cord with United States (US) plug, 1.83 m
PWC-C7AU-2B-183	Power cord with Australian (AU) plug, 2.5A/250V, 1.83 m
PWC-C7EU-2B-183	Power cord with Continental Europe (EU) plug, 2.5A/250V, 1.83 m
PWC-C7UK-2B-183	Power cord with United Kingdom (UK) plug, 2.5A/250V, 1.83 m
PWC-C7US-2B-183	Power cord with United States (US) plug, 10A/125V, 1.83 m

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)

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

ICS-G7750A Series

48G/48G+2 10GbE/48G+2 10GbE-port Layer 2/Layer 3 full Gigabit modular managed Ethernet switches

Features and Benefits

- Up to 48 Gigabit Ethernet ports plus 2 10G Ethernet ports
- Up to 50 optical fiber connections (SFP slots)
- Up to 48 PoE+ ports with external power supply (with IM-G7000A-4PoE module)
- Fanless, -10 to 60°C operating temperature range
- Modular design for maximum flexibility and hassle-free future expansion
- Hot-swappable interface and power modules for continuous operation
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), and STP/RSTP/MSTP for network redundancy
- Isolated redundant power inputs with universal 110/220 VAC power supply range
- Supports MXstudio for easy, visualized industrial network management
- V-ON™ ensures millisecond-level multicast data and video network recovery

Certifications

EN 50121-4

Introduction

Process automation and transportation automation applications combine data, voice, and video, and consequently require high performance and high reliability. The ICS-G7750A Series full Gigabit backbone switches' modular design makes network planning easy, and allows greater flexibility by letting you install up to 48 Gigabit Ethernet ports plus 2 10 Gigabit Ethernet ports.

The ICS-G7750A's full Gigabit capability increases bandwidth to provide high performance and the ability to quickly transfer large amounts of video, voice, and data across a network. The fanless switches support the Turbo Ring, Turbo Chain, and RSTP/STP redundancy technologies, come with an isolated redundant power supply to increase system reliability and the availability of your network backbone.

Additional Features and Benefits

- Advanced PoE management functions: PoE output setting, PD failure check, PoE scheduling, and PoE diagnostics (with IM-G7000A-4PoE module)
- Command line interface (CLI) for quickly configuring major managed functions
- DHCP Option 82 for IP address assignment with different policies
- Supports EtherNet/IP and Modbus TCP protocols for device management and monitoring
- Compatible with PROFINET protocol for transparent data transmission
- Port mirroring for online debugging
- Automatic warning by exception through email and relay output
- Digital inputs for integrating sensors and alarms with IP networks
- 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
- Access control lists (ACL) increase the flexibility and security of network management
- SNMPv1/v2c/v3 for different levels of network management
- RMON for proactive and efficient network monitoring
- Bandwidth management to prevent unpredictable network status
- Lock port function for blocking unauthorized access based on MAC address
- Redundant, dual AC power inputs

Specifications

Input/Output Interface

Alarm Contact Channels	Relay output with current carrying capacity of 2 A @ 30 VDC
Digital Inputs	+13 to +30 V for state 1 -30 to +1 V for state 0 Max. input current: 8 mA

Ethernet Interface

10GbE SFP+ Slots	2
Slot Combination	12 slots for 4-port interface modules (10/100/1000BaseT(X), or PoE+ 10/100/1000BaseT(X), or 100/1000BaseSFP slots). See the IM-G7000A datasheet for Gigabit Ethernet module product information.
Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1X for authentication IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3ad for Port Trunk with LACP IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3x for flow control IEEE 802.3z for 1000BaseSX/LX/LHX/ZX IEEE 802.3af/at for PoE/PoE+ output IEEE 802.3ae for 10 Gigabit Ethernet

Ethernet Software Features

Management	ARP, Back Pressure Flow Control, BOOTP, DDM, DHCP Option 66/67/82, DHCP Server/Client, IPv4/IPv6, LLDP, Port Mirror, RMON, SNMP Inform, SNMPv1/v2c/v3, Syslog, Telnet, TFTP, SMTP, RARP, Flow control
Filter	802.1Q, GMRP, GVRP, IGMP v1/v2/v3
Redundancy Protocols	Link Aggregation, MSTP, RSTP, Turbo Chain, Turbo Ring v1/v2, V-ON
Security	Access control list, Broadcast storm protection, HTTPS/SSL, MAB authentication, Sticky MAC, NTP authentication, Port Lock, RADIUS, SSH, TACACS+
Time Management	NTP Server/Client, SNTP
Industrial Protocols	EtherNet/IP, Modbus TCP
MIB	Bridge MIB, Ethernet-like MIB, MIB-II, P-BRIDGE MIB, Q-BRIDGE MIB, RMON MIB Groups 1, 2, 3, 9, RSTP MIB

Switch Properties

DRAM	128 MB
Flash	16 MB
IGMP Groups	4096
Jumbo Frame Size	9.6 KB
MAC Table Size	16 K
Max. No. of VLANs	256
Packet Buffer Size	12 Mbits

VLAN ID Range	VID 1 to 4094
Priority Queues	8

USB Interface

Storage Port	USB Type A

Serial Interface

Console Port	USB-serial console (Type B connector)

Power Parameters

Input Voltage	110 to 220 VAC, Redundant dual inputs
Operating Voltage	85 to 264 VAC
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Input Current	0.94/0.55 A @ 110/220 VAC

Physical Characteristics

IP Rating	IP30
Dimensions	440 x 176 x 523.8 mm (17.32 x 6.93 x 20.62 in)
Weight	12,900 g (28.5 lb)
Installation	Rack mounting

Environmental Limits

Operating Temperature	-10 to 60°C (14 to 140°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 60950-1, UL 60950-1
EMC	EN 55032/24
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Railway	EN 50121-4
Freefall	IEC 60068-2-32
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6

MTBF

Time	282,329 hrs
Standards	Telcordia (Bellcore), GB

Warranty

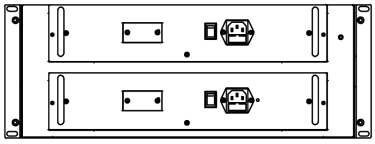
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

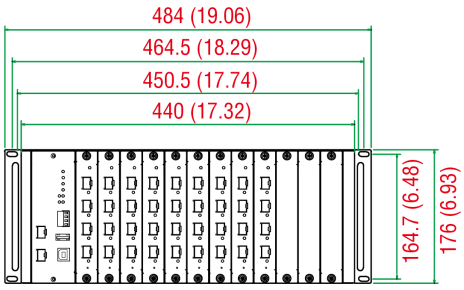
Device	1 x ICS-G7750A Series switch
Cable	1 x USB type A male to USB type B male
Installation Kit	2 x rack-mounting ear 6 x cap, plastic, for SFP slot
Power Supply	1 x power cord, EU type 1 x power cord, US type
Documentation	1 x document and software CD 1 x warranty card
Note	48 V external power supply, SFP modules and/or modules from the IM-G7000A Module Series need to be purchased separately for use with this product.

Dimensions

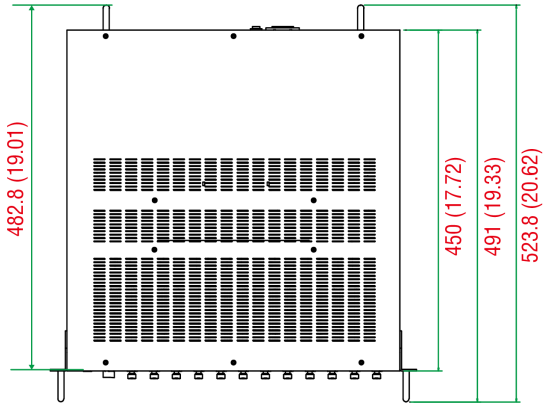
Unit: mm (inch)



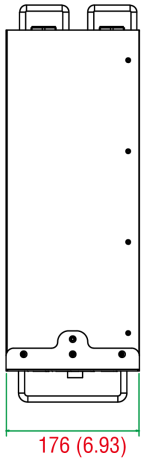
Rear View



Front View



Top View



Side View

Ordering Information

Model Name	Layer	10GbE SFP+ Slots	100/1000Base SFP Slots	10/100/1000BaseT(X) Ports RJ45 Connector	Operating Temp.
ICS-G7750A-2XG-HV-HV	2	2	Up to 48	Up to 48	-10 to 60°C

Accessories (sold separately)

IM-G7000A Module Series

IM-G7000A-4GSFP	Gigabit Ethernet interface module with 4 100/1000BaseSFP slots, -10 to 60°C operating temperature
IM-G7000A-4GTX	Gigabit Ethernet interface module with 4 10/100/1000BaseT(X) ports, -10 to 60°C operating temperature
IM-G7000A-4PoE	Gigabit Ethernet PoE+ interface module with 4 10/100/1000BaseT(X) ports, -10 to 60°C operating temperature

Power Supplies

PWR-G7000A-AC	85 to 264 VAC power supply module for the ICS-G7748A/G7750A/G7752A/G7848A/G7850A/G7852A Series

SFP Modules

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 with LC connector for 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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, 0 to 60°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m 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-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, 0 to 60°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m 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-10GERLC	SFP+ module with 1 10GBase-ER port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-10GLRLC	SFP+ module with 1 10GBase-LR port with LC connector for 10 km transmission, 0 to 60°C operating temperature
SFP-10GSRLC	SFP+ module with 1 10GBase-SR port with LC connector for 33 m 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 Cords

PWC-C13AU-3B-183	Power cord with Australian (AU) plug, 1.83 m
PWC-C13CN-3B-183	Power cord with three-prong China (CN) plug, 1.83 m
PWC-C13EU-3B-183	Power cord with Continental Europe (EU) plug, 1.83 m
PWC-C13UK-3B-183	Power cord with United Kingdom (UK) plug, 1.83 m
PWC-C13US-3B-183	Power cord with United States (US) plug, 1.83 m
PWC-C7AU-2B-183	Power cord with Australian (AU) plug, 2.5A/250V, 1.83 m
PWC-C7EU-2B-183	Power cord with Continental Europe (EU) plug, 2.5A/250V, 1.83 m
PWC-C7UK-2B-183	Power cord with United Kingdom (UK) plug, 2.5A/250V, 1.83 m
PWC-C7US-2B-183	Power cord with United States (US) plug, 10A/125V, 1.83 m

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)

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

ICS-G7752A Series

48G+4 10GbE-port Layer 2 full Gigabit modular managed Ethernet switches

Features and Benefits

- Up to 48 Gigabit Ethernet ports plus 4 10G Ethernet ports
- Up to 52 optical fiber connections (SFP slots)
- Up to 48 PoE+ ports with external power supply (with IM-G7000A-4PoE module)
- Fanless, -10 to 60°C operating temperature range
- Modular design for maximum flexibility and hassle-free future expansion
- Hot-swappable interface and power modules for continuous operation
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), and STP/RSTP/MSTP for network redundancy
- Isolated redundant power inputs with universal 110/220 VAC power supply range
- Supports MXstudio for easy, visualized industrial network management
- V-ON™ ensures millisecond-level multicast data and video network recovery

Certifications

EN 50121-4

Introduction

Process automation and transportation automation applications combine data, voice, and video, and consequently require high performance and high reliability. The ICS-G7752A Series full Gigabit backbone switches' modular design makes network planning easy, and allows greater flexibility by letting you install up to 48 Gigabit Ethernet ports plus 4 10 Gigabit Ethernet ports.

The ICS-G7752A's full Gigabit capability increases bandwidth to provide high performance and the ability to quickly transfer large amounts of video, voice, and data across a network. The fanless switches support the Turbo Ring, Turbo Chain, and RSTP/STP redundancy technologies, and come with an isolated redundant power supply to increase system reliability and the availability of your network backbone.

Additional Features and Benefits

- Advanced PoE management functions: PoE output setting, PD failure check, PoE scheduling, and PoE diagnostics (with IM-G7000A-4PoE module)
- Command line interface (CLI) for quickly configuring major managed functions
- DHCP Option 82 for IP address assignment with different policies
- Supports EtherNet/IP and Modbus TCP protocols for device management and monitoring
- Compatible with PROFINET protocol for transparent data transmission
- Automatic warning by exception through email and relay output
- Digital inputs for integrating sensors and alarms with IP networks
- Redundant, dual AC power inputs
- 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
- Access control lists (ACL) increase the flexibility and security of network management
- SNMPv1/v2c/v3 for different levels of network management
- RMON for proactive and efficient network monitoring
- Bandwidth management to prevent unpredictable network status
- Lock port function for blocking unauthorized access based on MAC address
- Port mirroring for online debugging

Specifications

Input/Output Interface

Alarm Contact Channels	Relay output with current carrying capacity of 2 A @ 30 VDC
Digital Inputs	+13 to +30 V for state 1 -30 to +1 V for state 0 Max. input current: 8 mA

Ethernet Interface

10GbE SFP+ Slots	4
Slot Combination	12 slots for 4-port interface modules (10/100/1000BaseT(X), or PoE+ 10/100/1000BaseT (X), or 100/1000BaseSFP slots)[1]
Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1X for authentication IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3ad for Port Trunk with LACP IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3x for flow control IEEE 802.3z for 1000BaseSX/LX/LHX/ZX IEEE 802.3af/at for PoE/PoE+ output IEEE 802.3ae for 10 Gigabit Ethernet

Ethernet Software Features

Management	ARP, Back Pressure Flow Control, BOOTP, DDM, DHCP Option 66/67/82, DHCP Server/ Client, IPv4/IPv6, LLDP, Port Mirror, RMON, SNMP Inform, SNMPv1/v2c/v3, Syslog, Telnet, TFTP, SMTP, RARP, Flow control
Filter	802.1Q, GMRP, GVRP, IGMP v1/v2/v3
Redundancy Protocols	Link Aggregation, MSTP, RSTP, Turbo Chain, Turbo Ring v1/v2, V-ON
Security	Access control list, Broadcast storm protection, HTTPS/SSL, MAB authentication, Sticky MAC, NTP authentication, Port Lock, RADIUS, SSH, TACACS+
Time Management	NTP Server/Client, SNTP
Industrial Protocols	EtherNet/IP, Modbus TCP
MIB	Bridge MIB, Ethernet-like MIB, MIB-II, P-BRIDGE MIB, Q-BRIDGE MIB, RMON MIB Groups 1, 2, 3, 9, RSTP MIB

Switch Properties

DRAM	128 MB
Flash	16 MB
IGMP Groups	4096
Jumbo Frame Size	9.6 KB
MAC Table Size	16 K
Max. No. of VLANs	256
Packet Buffer Size	12 Mbits
VLAN ID Range	VID 1 to 4094
Priority Queues	8

USB Interface

Storage Port	USB Type A

Serial Interface

Console Port	USB-serial console (Type B connector)

1. See the IM-G7000A datasheet for Gigabit Ethernet module product information.

Power Parameters

Input Voltage	110 to 220 VAC, Redundant dual inputs
Operating Voltage	85 to 264 VAC
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Input Current	1.01/0.58 A @ 110/220 VAC

Physical Characteristics

IP Rating	IP30
Dimensions	440 x 176 x 523.8 mm (17.32 x 6.93 x 20.62 in)
Weight	12,900 g (28.5 lb)
Installation	Rack mounting

Environmental Limits

Operating Temperature	-10 to 60°C (14 to 140°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 60950-1, UL 60950-1
EMC	EN 55032/24
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Railway	EN 50121-4
Freefall	IEC 60068-2-32
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6

MTBF

Time	274,488 hrs
Standards	Telcordia (Bellcore), GB

Warranty

Warranty Period	5 years
Details	See www.moxa.com/warranty

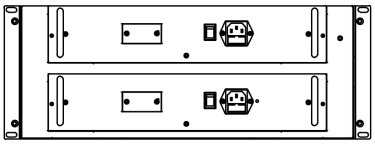
Package Contents

Device	1 x ICS-G7752A Series switch
Cable	1 x USB type A male to USB type B male

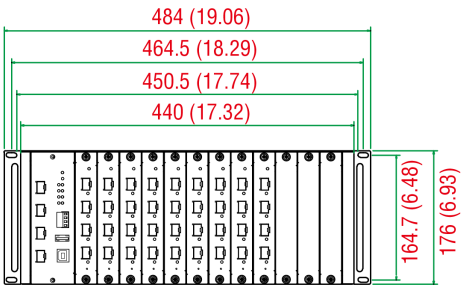
Installation Kit	2 x rack-mounting ear 8 x cap, plastic, for SFP slot
Power Supply	1 x power cord, EU type 1 x power cord, US type
Documentation	1 x document and software CD 1 x warranty card
Note	48 V external power supply, SFP modules and/or modules from the IM-G7000A Module Series need to be purchased separately for use with this product.

Dimensions

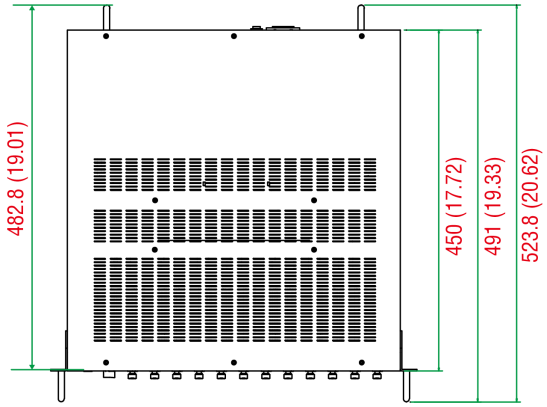
Unit: mm (inch)



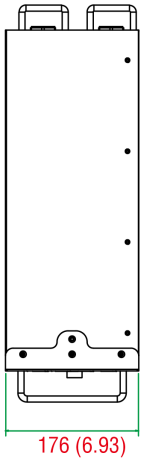
Rear View



Front View



Top View



Side View

Ordering Information

Model Name	Layer	10GbE SFP+ Slots	100/1000Base SFP Slots	10/100/1000BaseT(X) Ports RJ45 Connector	Operating Temp.
ICS-G7752A-4XG-HV-HV	2	4	Up to 48	Up to 48	-10 to 60°C

Accessories (sold separately)

IM-G7000A Module Series

IM-G7000A-4GSFP	Gigabit Ethernet interface module with 4 100/1000BaseSFP slots, -10 to 60°C operating temperature
IM-G7000A-4GTX	Gigabit Ethernet interface module with 4 10/100/1000BaseT(X) ports, -10 to 60°C operating temperature
IM-G7000A-4PoE	Gigabit Ethernet PoE+ interface module with 4 10/100/1000BaseT(X) ports, -10 to 60°C operating temperature

Power Supplies

PWR-G7000A-AC	85 to 264 VAC power supply module for the ICS-G7748A/G7750A/G7752A/G7848A/G7850A/G7852A Series

SFP Modules

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 with LC connector for 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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, 0 to 60°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m 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-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, 0 to 60°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m 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-10GERLC	SFP+ module with 1 10GBase-ER port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-10GLRLC	SFP+ module with 1 10GBase-LR port with LC connector for 10 km transmission, 0 to 60°C operating temperature
SFP-10GSRLC	SFP+ module with 1 10GBase-SR port with LC connector for 33 m 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 Cords

PWC-C13AU-3B-183	Power cord with Australian (AU) plug, 1.83 m
PWC-C13CN-3B-183	Power cord with three-prong China (CN) plug, 1.83 m
PWC-C13EU-3B-183	Power cord with Continental Europe (EU) plug, 1.83 m
PWC-C13UK-3B-183	Power cord with United Kingdom (UK) plug, 1.83 m
PWC-C13US-3B-183	Power cord with United States (US) plug, 1.83 m
PWC-C7AU-2B-183	Power cord with Australian (AU) plug, 2.5A/250V, 1.83 m
PWC-C7EU-2B-183	Power cord with Continental Europe (EU) plug, 2.5A/250V, 1.83 m
PWC-C7UK-2B-183	Power cord with United Kingdom (UK) plug, 2.5A/250V, 1.83 m
PWC-C7US-2B-183	Power cord with United States (US) plug, 10A/125V, 1.83 m

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)

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

ICS-G7848A Series

48G Layer 3 full Gigabit modular managed Ethernet switches

Features and Benefits

- Up to 48 Gigabit Ethernet ports
- Up to 48 optical fiber connections (SFP slots)
- Up to 48 PoE+ ports with external power supply (with IM-G7000A-4PoE module)
- Fanless, -10 to 60°C operating temperature range
- Modular design for maximum flexibility and hassle-free future expansion
- Hot-swappable interface and power modules for continuous operation
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), and STP/RSTP/MSTP for network redundancy
- Isolated redundant power inputs with universal 110/220 VAC power supply range
- Supports MXstudio for easy, visualized industrial network management
- V-ON™ ensures millisecond-level multicast data and video network recovery

Certifications

Introduction

Process automation and transportation automation applications combine data, voice, and video, and consequently require high performance and high reliability. The ICS-G7848A Series full Gigabit backbone switches' modular design makes network planning easy, and allows greater flexibility by letting you install up to 48 Gigabit Ethernet ports. The ICS-G7848A Series also supports Layer 3 routing functionality to facilitate the deployment of applications across networks, making them ideal for large-scale industrial networks.

The ICS-G7848A's full Gigabit capability increases bandwidth to provide high performance and the ability to quickly transfer large amounts of video, voice, and data across a network. The fanless switches support the Turbo Ring, Turbo Chain, and RSTP/STP redundancy technologies, and come with an isolated redundant power supply to increase system reliability and the availability of your network backbone.

Additional Features and Benefits

- Layer 3 switching functionality to move data and information across networks (ICS-G7800A Series)
- Advanced PoE management functions: PoE output setting, PD failure check, PoE scheduling, and PoE diagnostics (with IM-G7000A-4PoE module)
- Command line interface (CLI) for quickly configuring major managed functions
- Supports advanced VLAN capability with Q-in-Q tagging
- DHCP Option 82 for IP address assignment with different policies
- Supports EtherNet/IP and Modbus TCP protocols for device management and monitoring
- Compatible with PROFINET protocol for transparent data transmission
- Digital inputs for integrating sensors and alarms with IP networks
- Redundant, dual AC power inputs
- 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
- Access control lists (ACL) increase the flexibility and security of network management
- SNMPv1/v2c/v3 for different levels of network management
- RMON for proactive and efficient network monitoring
- Bandwidth management to prevent unpredictable network status
- Lock port function for blocking unauthorized access based on MAC address
- Port mirroring for online debugging
- Automatic warning by exception through email and relay output

Specifications

Ethernet Interface

Slot Combination	12 slots for 4-port interface modules (10/100/1000BaseT(X), or PoE+ 10/100/1000BaseT (X), or 100/1000BaseSFP slots)[1]

Input/Output Interface

Alarm Contact Channels	Relay output with current carrying capacity of 2 A @ 30 VDC
Digital Inputs	+13 to +30 V for state 1 -30 to +1 V for state 0 Max. input current: 8 mA

Ethernet Interface

Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1X for authentication IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3ad for Port Trunk with LACP IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3x for flow control IEEE 802.3z for 1000BaseSX/LX/LHX/ZX IEEE 802.3af/at for PoE/PoE+ output

Ethernet Software Features

Management	ARP, Back Pressure Flow Control, BOOTP, DDM, DHCP Option 66/67/82, DHCP Server/ Client, IPv4, LLDP, Port Mirror, RMON, SNMP Inform, SNMPv1/v2c/v3, Syslog, Telnet, TFTP, SMTP, RARP, Flow control
Filter	802.1Q, GMRP, GVRP, IGMP v1/v2/v3, QinQ VLAN
Multicast Routing	DVMRP, PIM-DM, PIM-SM, PIM-SSM
Redundancy Protocols	Link Aggregation, MSTP, RSTP, Turbo Chain, Turbo Ring v1/v2, V-ON
Routing Redundancy	VRRP
Security	Access control list, Broadcast storm protection, HTTPS/SSL, MAB authentication, Sticky MAC, NTP authentication, Port Lock, RADIUS, SSH, TACACS+
Time Management	NTP Server/Client, SNTP
Unicast Routing	OSPF, RIPV1/V2, Static Route
Industrial Protocols	EtherNet/IP, Modbus TCP
MIB	Bridge MIB, Ethernet-like MIB, MIB-II, P-BRIDGE MIB, Q-BRIDGE MIB, RMON MIB Groups 1, 2, 3, 9, RSTP MIB

Switch Properties

DRAM	128 MB
Flash	16 MB
IGMP Groups	4096
Jumbo Frame Size	9.6 KB
MAC Table Size	16 K
Max. No. of VLANs	256

1. See the IM-G7000A datasheet for Gigabit Ethernet module product information.

Packet Buffer Size	12 Mbits
VLAN ID Range	VID 1 to 4094
Priority Queues	8

USB Interface

Storage Port	USB Type A

Serial Interface

Console Port	USB-serial console (Type B connector)

Power Parameters

Input Voltage	110 to 220 VAC, Redundant dual inputs
Operating Voltage	85 to 264 VAC
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Input Current	0.87/0.51 A @ 110/220 VAC

Physical Characteristics

IP Rating	IP30
Dimensions	440 x 176 x 523.8 mm (17.32 x 6.93 x 20.62 in)
Weight	12,900 g (28.5 lb)
Installation	Rack mounting

Environmental Limits

Operating Temperature	-10 to 60°C (14 to 140°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 60950-1, UL 60950-1
EMC	EN 55032/24
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Railway	EN 50121-4
Freefall	IEC 60068-2-32
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6

MTBF

Time	314,973 hrs
Standards	Telcordia (Bellcore), GB

Warranty

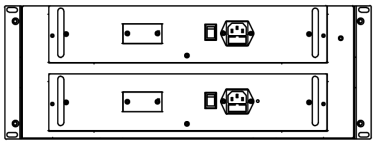
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

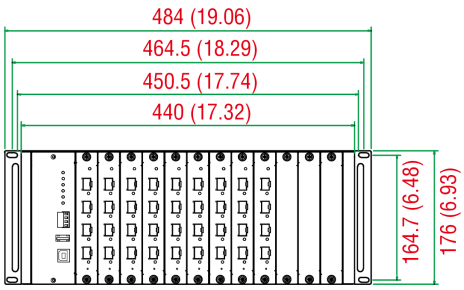
Device	1 x ICS-G7848A Series switch
Cable	1 x USB type A male to USB type B male
Installation Kit	2 x rack-mounting ear 4 x cap, plastic, for SFP slot
Power Supply	1 x power cord, EU type 1 x power cord, US type
Documentation	1 x document and software CD 1 x warranty card
Note	48 V external power supply, SFP modules and/or modules from the IM-G7000A Module Series need to be purchased separately for use with this product.

Dimensions

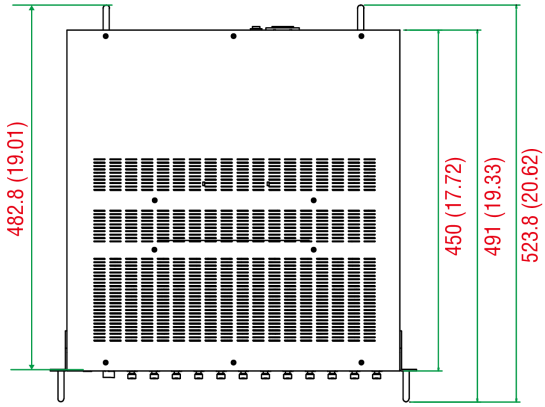
Unit: mm (inch)



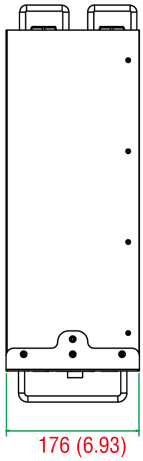
Rear View



Front View



Top View



Side View

Ordering Information

Model Name	Layer	10GbE SFP+ Slots	100/1000Base SFP Slots	10/100/1000BaseT(X) Ports RJ45 Connector	Operating Temp.
ICS-G7848A-HV-HV	3	0	Up to 48	Up to 48	-10 to 60°C

Accessories (sold separately)

IM-G7000A Module Series

IM-G7000A-4GSFP	Gigabit Ethernet interface module with 4 100/1000BaseSFP slots, -10 to 60°C operating temperature
IM-G7000A-4GTX	Gigabit Ethernet interface module with 4 10/100/1000BaseT(X) ports, -10 to 60°C operating temperature
IM-G7000A-4PoE	Gigabit Ethernet PoE+ interface module with 4 10/100/1000BaseT(X) ports, -10 to 60°C operating temperature

Power Supplies

PWR-G7000A-AC	85 to 264 VAC power supply module for the ICS-G7748A/G7750A/G7752A/G7848A/G7850A/G7852A Series

SFP Modules

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 with LC connector for 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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature

SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, 0 to 60°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m 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-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, 0 to 60°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m 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-10GERLC	SFP+ module with 1 10GBase-ER port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-10GLRLC	SFP+ module with 1 10GBase-LR port with LC connector for 10 km transmission, 0 to 60°C operating temperature
SFP-10GSRLC	SFP+ module with 1 10GBase-SR port with LC connector for 33 m transmission, 0 to 60°C operating temperature

Power Cords

PWC-C13AU-3B-183	Power cord with Australian (AU) plug, 1.83 m
PWC-C13CN-3B-183	Power cord with three-prong China (CN) plug, 1.83 m
PWC-C13EU-3B-183	Power cord with Continental Europe (EU) plug, 1.83 m
PWC-C13UK-3B-183	Power cord with United Kingdom (UK) plug, 1.83 m
PWC-C13US-3B-183	Power cord with United States (US) plug, 1.83 m
PWC-C7AU-2B-183	Power cord with Australian (AU) plug, 2.5A/250V, 1.83 m
PWC-C7EU-2B-183	Power cord with Continental Europe (EU) plug, 2.5A/250V, 1.83 m
PWC-C7UK-2B-183	Power cord with United Kingdom (UK) plug, 2.5A/250V, 1.83 m
PWC-C7US-2B-183	Power cord with United States (US) plug, 10A/125V, 1.83 m

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)

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

ICS-G7850A Series

48G+2 10GbE Layer 3 full Gigabit modular managed Ethernet switches

Features and Benefits

- Up to 48 Gigabit Ethernet ports plus 2 10G Ethernet ports
- Up to 50 optical fiber connections (SFP slots)
- Up to 48 PoE+ ports with external power supply (with IM-G7000A-4PoE module)
- Fanless, -10 to 60°C operating temperature range
- Modular design for maximum flexibility and hassle-free future expansion
- Hot-swappable interface and power modules for continuous operation
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), and STP/RSTP/MSTP for network redundancy
- Isolated redundant power inputs with universal 110/220 VAC power supply range
- Supports MXstudio for easy, visualized industrial network management
- V-ON™ ensures millisecond-level multicast data and video network recovery

Certifications

EN 50121-4

Introduction

Process automation and transportation automation applications combine data, voice, and video, and consequently require high performance and high reliability. The ICS-G7850A Series full Gigabit backbone switches' modular design makes network planning easy, and allows greater flexibility by letting you install up to 48 Gigabit Ethernet ports plus 2 10 Gigabit Ethernet ports.

The fanless switches support the Turbo Ring, Turbo Chain, and RSTP/STP redundancy technologies, and come with an isolated redundant power supply to increase system reliability and the availability of your network backbone.

Additional Features and Benefits

- Layer 3 switching functionality to move data and information across networks (ICS-G7800A Series)
- Advanced PoE management functions: PoE output setting, PD failure check, PoE scheduling, and PoE diagnostics (with IM-G7000A-4PoE module)
- Command line interface (CLI) for quickly configuring major managed functions
- Supports advanced VLAN capability with Q-in-Q tagging
- DHCP Option 82 for IP address assignment with different policies
- Supports EtherNet/IP and Modbus TCP protocols for device management and monitoring
- Compatible with PROFINET protocol for transparent data transmission
- Digital inputs for integrating sensors and alarms with IP networks
- Redundant, dual AC power inputs
- 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
- Access control lists (ACL) increase the flexibility and security of network management
- SNMPv1/v2c/v3 for different levels of network management
- RMON for proactive and efficient network monitoring
- Bandwidth management to prevent unpredictable network status
- Lock port function for blocking unauthorized access based on MAC address
- Port mirroring for online debugging
- Automatic warning by exception through email and relay output

Specifications

Input/Output Interface

Alarm Contact Channels	Relay output with current carrying capacity of 2 A @ 30 VDC
Digital Inputs	+13 to +30 V for state 1 -30 to +1 V for state 0 Max. input current: 8 mA

Ethernet Interface

10GbE SFP+ Slots	2
Slot Combination	12 slots for 4-port interface modules (10/100/1000BaseT(X), or PoE+ 10/100/1000BaseT (X), or 100/1000BaseSFP slots)[1]
Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1X for authentication IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3ad for Port Trunk with LACP IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3x for flow control IEEE 802.3z for 1000BaseSX/LX/LHX/ZX IEEE 802.3af/at for PoE/PoE+ output IEEE 802.3ae for 10 Gigabit Ethernet

Ethernet Software Features

Management	ARP, Back Pressure Flow Control, BOOTP, DDM, DHCP Option 66/67/82, DHCP Server/ Client, IPv4, LLDP, Port Mirror, RMON, SNMP Inform, SNMPv1/v2c/v3, Syslog, Telnet, TFTP, SMTP, RARP, Flow control
Filter	802.1Q, GMRP, GVRP, IGMP v1/v2/v3, QinQ VLAN
Multicast Routing	DVMRP, PIM-DM, PIM-SM, PIM-SSM
Redundancy Protocols	Link Aggregation, MSTP, RSTP, Turbo Chain, Turbo Ring v1/v2, V-ON
Routing Redundancy	VRRP
Security	Access control list, Broadcast storm protection, HTTPS/SSL, MAB authentication, Sticky MAC, NTP authentication, Port Lock, RADIUS, SSH, TACACS+
Time Management	NTP Server/Client, SNTP
Unicast Routing	OSPF, RIPV1/V2, Static Route
Industrial Protocols	EtherNet/IP, Modbus TCP
MIB	Bridge MIB, Ethernet-like MIB, MIB-II, P-BRIDGE MIB, Q-BRIDGE MIB, RMON MIB Groups 1, 2, 3, 9, RSTP MIB

Switch Properties

DRAM	128 MB
Flash	16 MB
IGMP Groups	4096
Jumbo Frame Size	9.6 KB
MAC Table Size	16 K
Max. No. of VLANs	256
Packet Buffer Size	12 Mbits
VLAN ID Range	VID 1 to 4094
Priority Queues	8

1. See the IM-G7000A datasheet for Gigabit Ethernet module product information.

USB Interface

Storage Port	USB Type A

Serial Interface

Console Port	USB-serial console (Type B connector)

Power Parameters

Input Voltage	110 to 220 VAC, Redundant dual inputs
Operating Voltage	85 to 264 VAC
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Input Current	0.94/0.55 A @ 110/220 VAC

Physical Characteristics

IP Rating	IP30
Dimensions	440 x 176 x 523.8 mm (17.32 x 6.93 x 20.62 in)
Weight	12900 g (28.5 lb)
Installation	Rack mounting

Environmental Limits

Operating Temperature	-10 to 60°C (14 to 140°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

Standards and Certifications

EMC	EN 55032/24
Safety	EN 60950-1, UL 60950-1
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Railway	EN 50121-4
Freefall	IEC 60068-2-32
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6

MTBF

Time	282,329 hrs
Standards	Telcordia (Bellcore), GB

Warranty

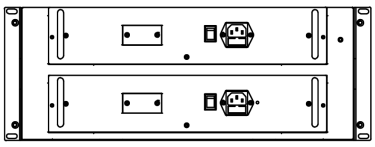
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

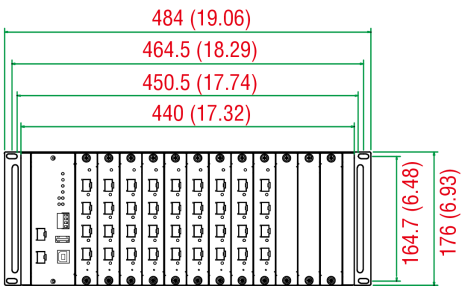
Device	1 x ICS-G7850A Series switch
Cable	1 x USB type A male to USB type B male
Installation Kit	2 x rack-mounting ear 6 x cap, plastic, for SFP slot
Power Supply	1 x power cord, EU type 1 x power cord, US type
Documentation	1 x document and software CD 1 x warranty card
Note	48 V external power supply, SFP modules and/or modules from the IM-G7000A Module Series need to be purchased separately for use with this product.

Dimensions

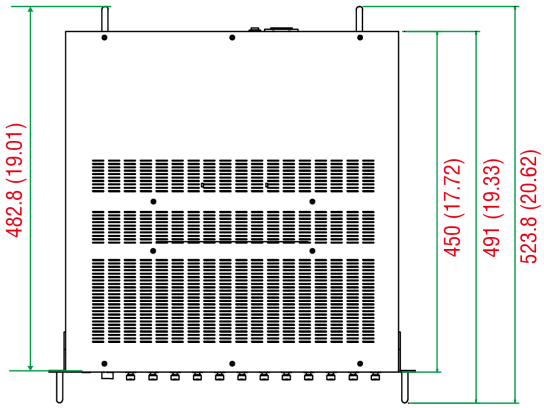
Unit: mm (inch)



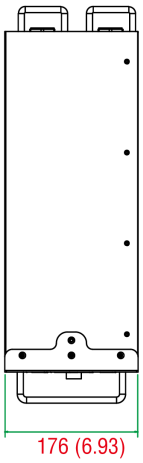
Rear View



Front View



Top View



Side View

Ordering Information

Model Name	Layer	10GbE SFP+ Slots	100/1000Base SFP Slots	10/100/1000BaseT(X) Ports RJ45 Connector	Operating Temp.
ICS-G7850A-2XG-HV-HV	3	2	Up to 48	Up to 48	-10 to 60°C

Accessories (sold separately)

IM-G7000A Module Series

IM-G7000A-4GSFP	Gigabit Ethernet interface module with 4 100/1000BaseSFP slots, -10 to 60°C operating temperature
IM-G7000A-4GTX	Gigabit Ethernet interface module with 4 10/100/1000BaseT(X) ports, -10 to 60°C operating temperature
IM-G7000A-4PoE	Gigabit Ethernet PoE+ interface module with 4 10/100/1000BaseT(X) ports, -10 to 60°C operating temperature

Power Supplies

PWR-G7000A-AC	85 to 264 VAC power supply module for the ICS-G7748A/G7750A/G7752A/G7848A/G7850A/G7852A Series

SFP Modules

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 with LC connector for 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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, 0 to 60°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m 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-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, 0 to 60°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m 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-10GERLC	SFP+ module with 1 10GBase-ER port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-10GLRLC	SFP+ module with 1 10GBase-LR port with LC connector for 10 km transmission, 0 to 60°C operating temperature
SFP-10GSRLC	SFP+ module with 1 10GBase-SR port with LC connector for 33 m 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 Cords

PWC-C13AU-3B-183	Power cord with Australian (AU) plug, 1.83 m
PWC-C13CN-3B-183	Power cord with three-prong China (CN) plug, 1.83 m
PWC-C13EU-3B-183	Power cord with Continental Europe (EU) plug, 1.83 m
PWC-C13UK-3B-183	Power cord with United Kingdom (UK) plug, 1.83 m
PWC-C13US-3B-183	Power cord with United States (US) plug, 1.83 m
PWC-C7AU-2B-183	Power cord with Australian (AU) plug, 2.5A/250V, 1.83 m
PWC-C7EU-2B-183	Power cord with Continental Europe (EU) plug, 2.5A/250V, 1.83 m
PWC-C7UK-2B-183	Power cord with United Kingdom (UK) plug, 2.5A/250V, 1.83 m
PWC-C7US-2B-183	Power cord with United States (US) plug, 10A/125V, 1.83 m

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)

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

ICS-G7852A Series

48G+4 10GbE-port Layer 3 full Gigabit modular managed Ethernet switches

Features and Benefits

- Up to 48 Gigabit Ethernet ports plus 4 10G Ethernet ports
- Up to 52 optical fiber connections (SFP slots)
- Up to 48 PoE+ ports with external power supply (with IM-G7000A-4PoE module)
- Fanless, -10 to 60°C operating temperature range
- Modular design for maximum flexibility and hassle-free future expansion
- Hot-swappable interface and power modules for continuous operation
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), and STP/RSTP/MSTP for network redundancy
- Isolated redundant power inputs with universal 110/220 VAC power supply range
- Supports MXstudio for easy, visualized industrial network management
- V-ON™ ensures millisecond-level multicast data and video network recovery

Certifications

EN 50121-4

Introduction

Process automation and transportation automation applications combine data, voice, and video, and consequently require high performance and high reliability. The ICS-G7852A Series full Gigabit backbone switches' modular design makes network planning easy, and allows greater flexibility by letting you install up to 48 Gigabit Ethernet ports plus 4 10 Gigabit Ethernet ports.

The ICS-G7852A's full Gigabit capability increases bandwidth to provide high performance and the ability to quickly transfer large amounts of video, voice, and data across a network. The fanless switches support the Turbo Ring, Turbo Chain, and RSTP/STP redundancy technologies, and come with an isolated redundant power supply to increase system reliability and the availability of your network backbone.

Additional Features and Benefits

- Layer 3 switching functionality to move data and information across networks (ICS-G7800A Series)
- Advanced PoE management functions: PoE output setting, PD failure check, PoE scheduling, and PoE diagnostics (with IM-G7000A-4PoE module)
- Command line interface (CLI) for quickly configuring major managed functions
- Supports advanced VLAN capability with Q-in-Q tagging
- DHCP Option 82 for IP address assignment with different policies
- Supports EtherNet/IP and Modbus TCP protocols for device management and monitoring
- Compatible with PROFINET protocol for transparent data transmission
- Digital inputs for integrating sensors and alarms with IP networks
- Redundant, dual AC power inputs
- 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
- Access control lists (ACL) increase the flexibility and security of network management
- SNMPv1/v2c/v3 for different levels of network management
- RMON for proactive and efficient network monitoring
- Bandwidth management to prevent unpredictable network status
- Lock port function for blocking unauthorized access based on MAC address
- Port mirroring for online debugging
- Automatic warning by exception through email and relay output

Specifications

Input/Output Interface

Alarm Contact Channels	Relay output with current carrying capacity of 2 A @ 30 VDC
Digital Inputs	+13 to +30 V for state 1 -30 to +1 V for state 0 Max. input current: 8 mA

Ethernet Interface

10GbE SFP+ Slots	4
Slot Combination	12 slots for 4-port interface modules (10/100/1000BaseT(X), or PoE+ 10/100/1000BaseT(X), or 100/1000BaseSFP slots)[1]
Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1X for authentication IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3ad for Port Trunk with LACP IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3x for flow control IEEE 802.3z for 1000BaseSX/LX/LHX/ZX IEEE 802.3af/at for PoE/PoE+ output IEEE 802.3ae for 10 Gigabit Ethernet

Ethernet Software Features

Management	ARP, Back Pressure Flow Control, BOOTP, DDM, DHCP Option 66/67/82, DHCP Server/Client, IPv4, LLDP, Port Mirror, RMON, SNMP Inform, SNMPv1/v2c/v3, Syslog, Telnet, TFTP, SMTP, RARP, Flow control
Filter	802.1Q, GMRP, GVRP, IGMP v1/v2/v3, QinQ VLAN
Multicast Routing	DVMRP, PIM-DM, PIM-SM, PIM-SSM
Redundancy Protocols	Link Aggregation, MSTP, RSTP, Turbo Chain, Turbo Ring v1/v2, V-ON
Routing Redundancy	VRRP
Security	Access control list, Broadcast storm protection, HTTPS/SSL, MAB authentication, Sticky MAC, NTP authentication, Port Lock, RADIUS, SSH, TACACS+
Time Management	NTP Server/Client, SNTP
Unicast Routing	OSPF, RIPV1/V2, Static Route
Industrial Protocols	EtherNet/IP, Modbus TCP
MIB	Bridge MIB, Ethernet-like MIB, MIB-II, P-BRIDGE MIB, Q-BRIDGE MIB, RMON MIB Groups 1, 2, 3, 9, RSTP MIB

Switch Properties

DRAM	128 MB
Flash	16 MB
IGMP Groups	4096
Jumbo Frame Size	9.6 KB
MAC Table Size	16 K

1. See the IM-G7000A datasheet for Gigabit Ethernet module product information.

Max. No. of VLANs	256
Packet Buffer Size	12 Mbits
VLAN ID Range	VID 1 to 4094
Priority Queues	8

USB Interface

Storage Port	USB Type A

Serial Interface

Console Port	USB-serial console (Type B connector)

Power Parameters

Input Voltage	110 to 220 VAC, Redundant dual inputs
Operating Voltage	85 to 264 VAC
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Input Current	1.01/0.58 A @ 110/220 VAC

Physical Characteristics

IP Rating	IP30
Dimensions	440 x 176 x 523.8 mm (17.32 x 6.93 x 20.62 in)
Weight	12,900 g (28.5 lb)
Installation	Rack mounting

Environmental Limits

Operating Temperature	-10 to 60°C (14 to 140°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 60950-1, UL 60950-1
EMC	EN 55032/24
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Railway	EN 50121-4
Freefall	IEC 60068-2-32
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6

MTBF

Time	274,488 hrs
Standards	Telcordia (Bellcore), GB

Warranty

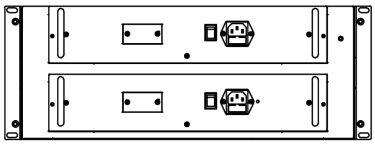
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

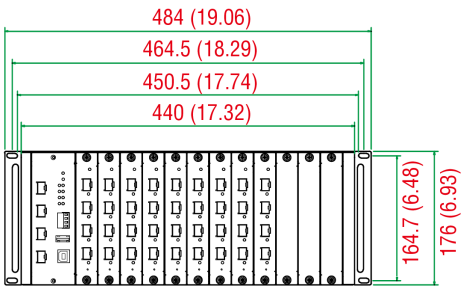
Device	1 x ICS-G7852A Series switch
Cable	1 x USB type A male to USB type B male
Installation Kit	2 x rack-mounting ear 8 x cap, plastic, for SFP slot
Power Supply	1 x power cord, EU type 1 x power cord, US type
Documentation	1 x document and software CD 1 x warranty card
Note	48 V external power supply, SFP modules and/or modules from the IM-G7000A Module Series need to be purchased separately for use with this product.

Dimensions

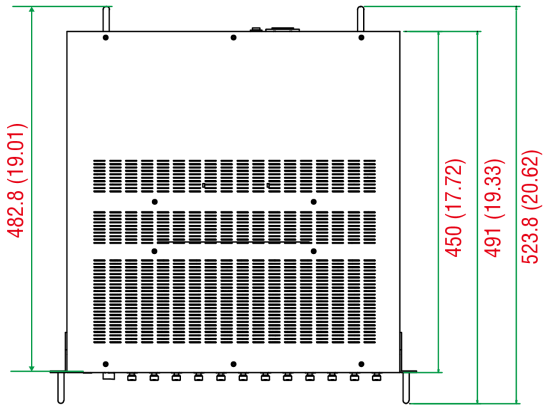
Unit: mm (inch)



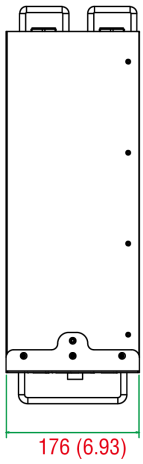
Rear View



Front View



Top View



Side View

Ordering Information

Model Name	Layer	10GbE SFP+ Slots	100/1000Base SFP Slots	10/100/1000BaseT(X) Ports RJ45 Connector	Operating Temp.
ICS-G7852A-4XG-HV-HV	3	4	Up to 48	Up to 48	-10 to 60°C

Accessories (sold separately)

IM-G7000A Module Series

IM-G7000A-4GSFP	Gigabit Ethernet interface module with 4 100/1000BaseSFP slots, -10 to 60°C operating temperature
IM-G7000A-4GTX	Gigabit Ethernet interface module with 4 10/100/1000BaseT(X) ports, -10 to 60°C operating temperature
IM-G7000A-4PoE	Gigabit Ethernet PoE+ interface module with 4 10/100/1000BaseT(X) ports, -10 to 60°C operating temperature

Power Supplies

PWR-G7000A-AC	85 to 264 VAC power supply module for the ICS-G7748A/G7750A/G7752A/G7848A/G7850A/G7852A Series

SFP Modules

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 with LC connector for 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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature

SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, 0 to 60°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m 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-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, 0 to 60°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m 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-10GERLC	SFP+ module with 1 10GBase-ER port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-10GLRLC	SFP+ module with 1 10GBase-LR port with LC connector for 10 km transmission, 0 to 60°C operating temperature
SFP-10GSRLC	SFP+ module with 1 10GBase-SR port with LC connector for 33 m 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 Cords

PWC-C13AU-3B-183	Power cord with Australian (AU) plug, 1.83 m
PWC-C13CN-3B-183	Power cord with three-prong China (CN) plug, 1.83 m
PWC-C13EU-3B-183	Power cord with Continental Europe (EU) plug, 1.83 m
PWC-C13UK-3B-183	Power cord with United Kingdom (UK) plug, 1.83 m
PWC-C13US-3B-183	Power cord with United States (US) plug, 1.83 m
PWC-C7AU-2B-183	Power cord with Australian (AU) plug, 2.5A/250V, 1.83 m
PWC-C7EU-2B-183	Power cord with Continental Europe (EU) plug, 2.5A/250V, 1.83 m
PWC-C7UK-2B-183	Power cord with United Kingdom (UK) plug, 2.5A/250V, 1.83 m
PWC-C7US-2B-183	Power cord with United States (US) plug, 10A/125V, 1.83 m

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-500	Industrial network management software with a license for 500 nodes (by IP address)
MXview-250	Industrial network management software with a license for 250 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)

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

IKS-6728A Series

24+4G-port Gigabit modular managed PoE+ Ethernet switches

Features and Benefits

- 8 built-in PoE+ ports compliant with IEEE 802.3af/at (IKS-6728A-8PoE)
- Up to 36 W output per PoE+ port (IKS-6728A-8PoE)
- 1 kV LAN surge protection for extreme outdoor environments
- PoE diagnostics for powered-device mode analysis
- 4 Gigabit combo ports for high-bandwidth communication
- -40 to 75°C operating temperature range at 720 W full loading
- Supports MXstudio for easy, visualized industrial network management
- V-ON™ ensures millisecond-level multicast data and video network recovery

Certifications

EN 50121-4

Introduction

The IKS-6728A Series is designed to meet the demands of mission-critical applications for business and industry. The IKS-6728A and IKS-6728A-8PoE come with up to 24 10/100BaseT(X), or PoE/PoE+, and 4 combo Gigabit Ethernet ports. The IKS-6728A-8PoE Ethernet switches provide up to 30 watts of power per PoE+ port in standard mode, and also support high-power output of up to 36 watts for heavy-duty industrial PoE devices, such as weather-proof IP surveillance cameras with wipers/heaters, high-performance wireless access points, and rugged IP phones.

IKS-6728A-8PoE Ethernet switches support two types of power input sources: 48 VDC for PoE+ ports and system power, and 110/220 VAC for system power. These Ethernet switches also support a variety of management functions, including STP/RSTP, Turbo Ring, Turbo Chain, PoE power management, PoE device auto-checking, PoE power scheduling, PoE diagnostic, IGMP, VLAN, QoS, RMON, bandwidth management, and port mirroring. The IKS-6728A-8PoE is designed especially for harsh outdoor applications with 3kV surge protection to ensure the uninterrupted reliability of PoE systems.

Additional Features and Benefits

- Advanced PoE management functions: PoE output setting, PD failure check, PoE scheduling, and PoE diagnostics
- Command line interface (CLI) for quickly configuring major managed functions
- DHCP Option 82 for IP address assignment with different policies
- Supports EtherNet/IP, PROFINET, and Modbus TCP protocols for device management and monitoring
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), and STP/RSTP/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
- IEEE 802.3ad, LACP for optimum bandwidth utilization
- TACACS+, IEEE 802.1X, SNMPv3, HTTPS, and SSH to enhance network security
- SNMPv1/v2c/v3 for different levels of network management
- RMON for proactive and efficient network monitoring
- Bandwidth management prevents unpredictable network status with “Lock port” to restrict access to authorized MAC addresses
- Port mirroring for online debugging
- Automatic warning by exception through email and relay output
- Automatic recovery of connected device’s IP addresses
- Line-swap fast recovery
- Configurable by web browser, Telnet/serial console, CLI, Windows utility, and ABC-02-USB automatic backup configurator

Specifications

Input/Output Interface

Alarm Contact Channels	1 relay output with current carrying capacity of 1 A @ 24 VDC

Ethernet Interface

10/100BaseT(X) Ports (RJ45 connector)	8
Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP)	4

Module	2 modular slots for any 8-port or 6-port Interface Modules with 10/100BaseT(X), 100BaseFX (SC/ST connector), 100Base PoE/PoE+, or 100Base SFP[1]
Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1X for authentication IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3ad for Port Trunk with LACP IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3x for flow control IEEE 802.3z for 1000BaseSX/LX/LHX/ZX

Ethernet Software Features

Management	Back Pressure Flow Control, BOOTP, DDM, DHCP Option 66/67/82, DHCP Server/Client, Flow control, IPv4/IPv6, LLDP, Port Mirror, RARP, RMON, SMTP, SNMP Inform, SNMPv1/v2c/v3, Syslog, Telnet, TFTP
Filter	802.1Q, GMRP, GVRP, IGMP v1/v2/v3
Redundancy Protocols	Link Aggregation, MSTP, RSTP, STP, Turbo Chain, Turbo Ring v1/v2, V-ON
Security	Access control list, Broadcast storm protection, HTTPS/SSL, MAB authentication, NTP authentication, Port Lock, RADIUS, SSH, TACACS+
Time Management	NTP Server/Client, SNTP
Industrial Protocols	EtherNet/IP, Modbus TCP, PROFINET
MIB	Ethernet-like MIB, MIB-II, P-BRIDGE MIB, Q-BRIDGE MIB, RMON MIB Groups 1, 2, 3, 9, RSTP MIB

Switch Properties

IGMP Groups	2048
Jumbo Frame Size	9.6 KB
MAC Table Size	16 K
Max. No. of VLANs	64
Packet Buffer Size	12 Mbits
Priority Queues	4
VLAN ID Range	VID 1 to 4094

USB Interface

Storage Port	USB Type A

Serial Interface

Console Port	USB-serial console (Type B connector)

1. See the IM-6700A datasheet for Fast Ethernet module product information.

Power Parameters

Input Voltage	IKS-6728A-4GTXSFP-24-T: 24 VDC IKS-6728A-4GTXSFP-24-24-T: 24 VDC (redundant dual inputs) IKS-6728A-4GTXSFP-48-T: 48 VDC IKS-6728A-4GTXSFP-48-48-T: 48 VDC (redundant dual inputs) IKS-6728A-4GTXSFP-HV-T: 110/220 VAC IKS-6728A-4GTXSFP-HV-HV-T: 110/220 VAC (redundant dual inputs) IKS-6728A-8PoE-4GTXSFP-48-T: 48 VDC IKS-6728A-8PoE-4GTXSFP-48-48-T: 48 VDC (redundant dual inputs) IKS-6728A-8PoE-4GTXSFP-HV-T: 110/220 VAC IKS-6728A-8PoE-4GTXSFP-HV-HV-T: 110/220 VAC (redundant dual inputs)
Operating Voltage	IKS-6728A-4GTXSFP-HV-T: 85 to 264 VAC IKS-6728A-4GTXSFP-HV-HV-T: 85 to 264 VAC IKS-6728A-4GTXSFP-24-T: 18 to 36 VDC IKS-6728A-4GTXSFP-24-24-T: 18 to 36 VDC IKS-6728A-4GTXSFP-48-T: 36 to 72 VDC IKS-6728A-4GTXSFP-48-48-T: 36 to 72 VDC IKS-6728A-8PoE-4GTXSFP-48-T: 36 to 72 VDC IKS-6728A-8PoE-4GTXSFP-48-48-T: 36 to 72 VDC IKS-6728A-8PoE-4GTXSFP-HV-T: 85 to 264 VAC IKS-6728A-8PoE-4GTXSFP-HV-HV-T: 85 to 264 VAC
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Input Current	IKS-6728A-4GTXSFP-24-T/4GTXSFP-24-24-T: 0.36 A @ 24 VDC IKS-6728A-4GTXSFP-48-T/4GTXSFP-48-48-T: 0.19 A @ 48 VDC IKS-6728A-8PoE-4GTXSFP-48-T/8PoE-4GTXSFP-48-48-T: 0.53 A @ 48 VDC IKS-6728A-4GTXSFP-HV-T/4GTXSFP-HV-HV-T: 0.28/0.14 A @ 110/220 VAC IKS-6728A-8PoE-4GTXSFP-HV-T/8PoE-4GTXSFP-HV-HV-T: 0.33/0.24 A @ 110/220 VAC

Physical Characteristics

IP Rating	IP30
Dimensions	440 x 44 x 280 mm (17.32 x 1.37 x 11.02 in)
Weight	4100 g (9.05 lb)
Installation	Rack mounting

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

Freefall	IEC 60068-2-32
EMC	EN 55032/24
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Railway	EN 50121-4
Maritime	IKS-6728A Series non-PoE models: ABS, CCS, DNV-GL, LR, NK
Safety	EN 60950-1, UL 60950-1

Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6

MTBF

Time	120,731 hrs
Standards	Telcordia (Bellcore), GB

Warranty

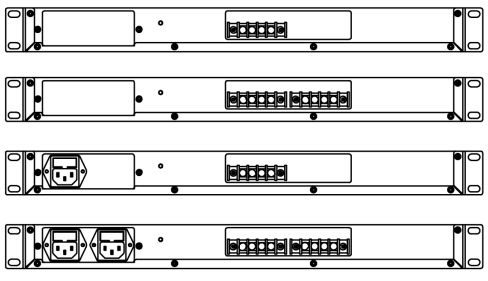
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

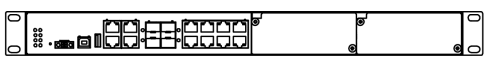
Device	1 x IKS-6728A Series switch
Cable	1 x USB type A male to USB type B male
Installation Kit	2 x rack-mounting ear 8 x cap, plastic, for SFP slot
Power Supply	IKS-6728A-4GTXSFP-HV-T: 1 x power cord, EU type IKS-6728A-4GTXSFP-HV-HV-T: 2 x power cord, EU type IKS-6728A-8PoE-4GTXSFP-HV-T: 1 x power cord, EU type IKS-6728A-8PoE-4GTXSFP-HV-HV-T: 2 x power cord, EU type IKS-6728A-4GTXSFP-HV-T: 1 x power cord, US type IKS-6728A-4GTXSFP-HV-HV-T: 2 x power cord, US type IKS-6728A-8PoE-4GTXSFP-HV-T: 1 x power cord, US type IKS-6728A-8PoE-4GTXSFP-HV-HV-T: 2 x power cord, US type
Documentation	1 x document and software CD 1 x quick installation guide 1 x warranty card
Note	1. If you want to turn on PoE, please add a 48 V external power supply. 2. 48 V external power supply, SFP modules and/or modules from the IM-6700A Module Series need to be purchased separately for use with this product.

Dimensions

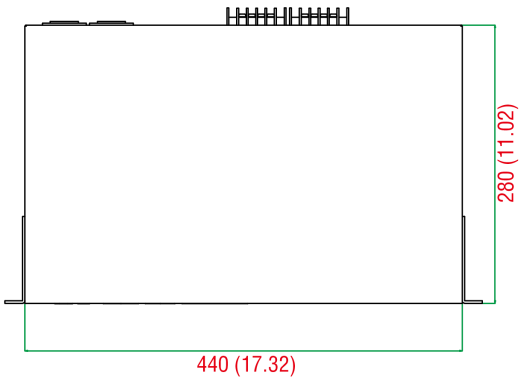
Unit: mm (inch)



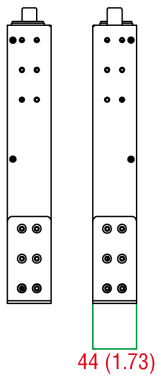
Rear View



Front View



Top View



Side View

Ordering Information

Model Name	Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP)	100BaseSFP Slots	10/100BaseT(X) Ports RJ45 Connector	100BaseFX Ports	Operating Temp.	Input Voltage	Redundant Dual Input	PoE Support
IKS-6728A-4GTXSFP-HV-T	4	Up to 18	Up to 24	Up to 12	-45 to 75°C	110/220 VAC power supply	–	–
IKS-6728A-4GTXSFP-HV-HV-T	4	Up to 18	Up to 24	Up to 12	-45 to 75°C	110/220 VAC power supply	✓	–
IKS-6728A-4GTXSFP-24-T	4	Up to 18	Up to 24	Up to 12	-45 to 75°C	24 VDC power supply	–	–
IKS-6728A-4GTXSFP-24-24-T	4	Up to 18	Up to 24	Up to 12	-45 to 75°C	24 VDC power supply	✓	–
IKS-6728A-4GTXSFP-48-T	4	Up to 18	Up to 24	Up to 12	-45 to 75°C	48 VDC power supply	–	–
IKS-6728A-4GTXSFP-48-48-T	4	Up to 18	Up to 24	Up to 12	-45 to 75°C	48 VDC power supply	✓	–
IKS-6728A-8PoE-4GTXSFP-HV-T	4	Up to 18	Up to 24	Up to 12	-45 to 75°C	110/220 VAC power supply	–	Up to 24 PoE ports
IKS-6728A-8PoE-4GTXSFP-HV-HV-T	4	Up to 18	Up to 24	Up to 12	-45 to 75°C	110/220 VAC power supply	✓	Up to 24 PoE ports
IKS-6728A-8PoE-4GTXSFP-48-T	4	Up to 18	Up to 24	Up to 12	-45 to 75°C	48 VDC power supply	–	Up to 24 PoE ports
IKS-6728A-8PoE-4GTXSFP-48-48-T	4	Up to 18	Up to 24	Up to 12	-45 to 75°C	48 VDC power supply	✓	Up to 24 PoE ports

Accessories (sold separately)

IM-6700A Module Series

IM-6700A-2MSC4TX	Fast Ethernet module with 2 multi-mode 100BaseFX ports with SC connectors and 4 10/100BaseT(X) ports
IM-6700A-2MST4TX	Fast Ethernet module with 2 multi-mode 100BaseFX ports with ST connectors and 4 10/100BaseT(X) ports
IM-6700A-2SSC4TX	Fast Ethernet module with 2 single-mode 100BaseFX ports with SC connectors and 4 10/100BaseT(X) ports
IM-6700A-4MSC2TX	Fast Ethernet module with 4 multi-mode 100BaseFX ports with SC connectors and 2 10/100BaseT(X) ports
IM-6700A-4MST2TX	Fast Ethernet module with 4 multi-mode 100BaseFX ports with ST connectors and 2 10/100BaseT(X) ports
IM-6700A-4SSC2TX	Fast Ethernet module with 4 single-mode 100BaseFX ports with SC connectors and 2 10/100BaseT(X) ports
IM-6700A-6MSC	Fast Ethernet module with 6 multi-mode 100BaseFX ports with SC connectors
IM-6700A-6MST	Fast Ethernet module with 6 multi-mode 100BaseFX ports with ST connectors
IM-6700A-6SSC	Fast Ethernet module with 6 single-mode 100BaseFX ports with SC connectors
IM-6700A-8PoE	Fast Ethernet PoE+ module with 8 100BaseT(X) PoE/PoE+ ports (for IKS-6728A-8PoE Series only)
IM-6700A-8SFP	Fast Ethernet module with 8 100BaseSFP slots
IM-6700A-8TX	Fast Ethernet module with 8 10/100T(X) ports

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

SFP Modules

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 with LC connector for 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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, 0 to 60°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m 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-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, 0 to 60°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m 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

Power Cords

PWC-C13AU-3B-183	Power cord with Australian (AU) plug, 1.83 m
PWC-C13CN-3B-183	Power cord with three-prong China (CN) plug, 1.83 m
PWC-C13EU-3B-183	Power cord with Continental Europe (EU) plug, 1.83 m
PWC-C13UK-3B-183	Power cord with United Kingdom (UK) plug, 1.83 m
PWC-C13US-3B-183	Power cord with United States (US) plug, 1.83 m
PWC-C7AU-2B-183	Power cord with Australian (AU) plug, 2.5A/250V, 1.83 m
PWC-C7EU-2B-183	Power cord with Continental Europe (EU) plug, 2.5A/250V, 1.83 m
PWC-C7UK-2B-183	Power cord with United Kingdom (UK) plug, 2.5A/250V, 1.83 m
PWC-C7US-2B-183	Power cord with United States (US) plug, 10A/125V, 1.83 m

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)

IM-6700A Module Series

Fast Ethernet modules for IKS-6726A-2GTXSFP/6728A-4GTXSFP/6728A-8PoE-4GTXSFP modular managed switches

Features and Benefits

- Modular design lets you choose from a variety of media combinations

Introduction

IM-6700A fast Ethernet modules are designed for the modular, managed, rack-mountable IKS-6700A Series switches. Each slot of an IKS-6700A switch can accommodate up to 8 ports, with each port supporting the TX, MSC, SSC, and MST media types. As an added plus, the IM-6700A-8PoE module is designed to give IKS-6728A-8PoE Series switches PoE capability. The modular design of the IKS-6700A Series ensures that the switches meet multiple application requirements.

Specifications

Ethernet Interface

100BaseFX Ports (multi-mode SC connector)	IM-6700A-2MSC4TX: 2 IM-6700A-4MSC2TX: 4 IM-6700A-6MSC: 6
100BaseFX Ports (multi-mode ST connector)	IM-6700A-2MST4TX: 2 IM-6700A-4MST2TX: 4 IM-6700A-6MST: 6
100BaseFX Ports (single-mode SC connector)	IM-6700A-2SSC4TX: 2 IM-6700A-4SSC2TX: 4 IM-6700A-6SSC: 6
100BaseSFP Slots	IM-6700A-8SFP: 8
10/100BaseT(X) Ports (RJ45 connector)	IM-6700A-4MSC2TX/4MST2TX/4SSC2TX: 2 IM-6700A-2MSC4TX/2MST4TX/2SSC4TX: 4 IM-6700A-8TX: 8 Supported functions: Auto negotiation speed Full/Half duplex mode Auto MDI/MDI-X connection
PoE Ports (10/100BaseT(X), RJ45 connector)	IM-6700A-8PoE: Auto negotiation speed, Full/Half duplex mode

Standards	IM-6700A-8PoE: IEEE 802.3af/at for PoE/PoE+ output

Optical Fiber

		100BaseFX		
		Multi-Mode		Single-Mode
Fiber Cable Type		OM1	50/125 µm 800 MHz x km	G.652
Typical Distance		4 km	5 km	40 km
Wavelength	Typical (nm)	1300		1310
	TX Range (nm)	1260 to 1360		1280 to 1340
	RX Range (nm)	1100 to 1600		1100 to 1600
Optical Power	TX Range (dBm)	-10 to -20		0 to -5
	RX Range (dBm)	-3 to -32		-3 to -34
	Link Budget (dB)	12		29
	Dispersion Penalty (dB)	3		1

Note: When connecting a single-mode fiber transceiver, we recommend using an attenuator to prevent damage caused by excessive optical power.
Note: Compute the “typical distance” of a specific fiber transceiver as follows: Link budget (dB) > dispersion penalty (dB) + total link loss (dB).

Power Parameters

Power Consumption	IM-6700A-8TX/8PoE: 1.21 W (max.) IM-6700A-8SFP: 0.92 W (max.) IM-6700A-2MSC4TX/2MST4TX/2SSC4TX: 3.19 W (max.) IM-6700A-6MST/6SSC/6MSC: 7.57 W (max.) IM-6700A-4SSC2TX/4MSC2TX/4MST2TX: 5.28 W (max.)

Physical Characteristics

Weight	IM-6700A-8TX: 225 g (0.50 lb) IM-6700A-8SFP: 295 g (0.65 lb) IM-6700A-2MSC4TX/2MST4TX/2SSC4TX/4MSC2TX/4MST2TX/4SSC2TX: 270 g (0.60 lb) IM-6700A-6MSC/6SSC/6MSC: 390 g (0.86 lb) IM-6700A-8PoE: 260 g (0.58 lb)

MTBF

Time	IM-6700A-2MSC4TX/2MST4TX/2SSC4TX: 1,031,180 hrs IM-6700A-4MSC2TX: 530,268 hrs IM-6700A-4MST2TX: 537,942 hrs IM-6700A-4SSC2TX: 4,359,518 hrs IM-6700A-6MSC: 366,119 hrs IM-6700A-6MST/6SSC: 365,741 hrs IM-6700A-8PoE: 338,800 hrs IM-6700A-8SFP: 3,510,110 hrs IM-6700A-8TX: 10,412,400 hrs
Standards	Telcordia (Bellcore), GB

Warranty

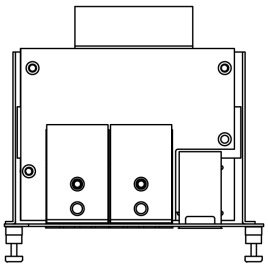
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

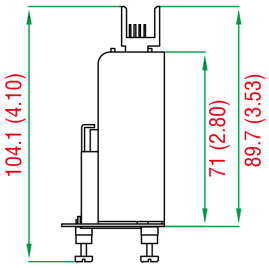
Device	1 x IM-6700A Module Series module
Documentation	1 x warranty card

Dimensions

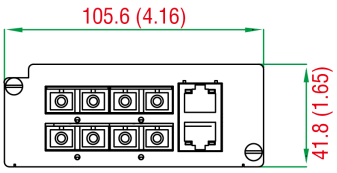
Unit: mm (inch)



Top View



Side View



Front View

Ordering Information

Model Name	10/100BaseT(X) Ports	100BaseFX Ports Multi-Mode, SC Connector	100BaseFX Ports Multi-Mode, ST Connector	100BaseFX Ports Single-Mode, SC Connector	100Base SFP Ports
IM-6700A-2MSC4TX	4	2	–	–	–
IM-6700A-2MST4TX	4	–	2	–	–
IM-6700A-2SSC4TX	4	–	–	2	–
IM-6700A-4MSC2TX	2	4	–	–	–
IM-6700A-4MST2TX	2	–	4	–	–
IM-6700A-4SSC2TX	2	–	–	4	–
IM-6700A-6MSC	–	6	–	–	–
IM-6700A-6MST	–	–	6	–	–
IM-6700A-6SSC	–	–	–	6	–
IM-6700A-8PoE	8 (PoE+ ports)	–	–	–	–
IM-6700A-8SFP	–	–	–	–	8
IM-6700A-8TX	8	–	–	–	–

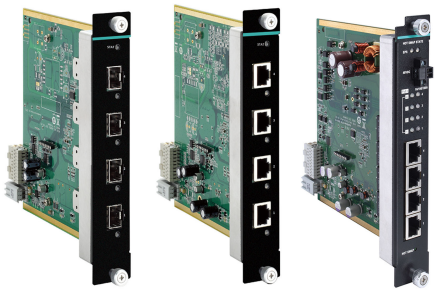
Accessories (sold separately)

SFP Modules

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 with LC connector for 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

IM-G7000A Module Series

4G-port Gigabit Ethernet interface modules for ICS-G7700A/G7800A modular managed Ethernet switches



Features and Benefits

- Full Gigabit Ethernet ports
- IEEE 802.3af/at, PoE+ standards (PoE model)

Introduction

The IM-G7000A Module Series includes 4G-port Ethernet interface modules designed for ICS-G7748A, ICS-G7750A, ICS-G7752A, ICS-G7848A, ICS-G7850A, and ICS-G7852A modular managed switches. In particular, the IM-G7000A-4PoEA module is a PoE-enabled interface module that centralizes the power supply and provides up to 36 watts of power per port, reducing the effort required to provide power to connected devices.

Specifications

Ethernet Interface	
10/100/1000BaseT(X) Ports (RJ45 connector)	IM-G7000A-4GTX: 4 IM-G7000A-4GTX: Auto negotiation speed Full/Half duplex mode Auto MDI/MDI-X connection
100/1000BaseSFP Ports	IM-G7000A-4GSFP: 4
PoE Ports (10/100/1000BaseT(X), RJ45 connector)	IM-G7000A-4PoE: 4, Compliant with IEEE 802.3af/at high power mode up to 36 W IM-G7000A-4PoE: Auto negotiation speed
LED Interface	
LED Indicators	State, Hot-swap, 10/100/1000 for TP port, 100/1000 for fiber port, PoE and EPS for PoE module
Power Parameters	
Power Consumption	IM-G7000A-4GSFP: 1.32 W (max.) IM-G7000A-4GTX: 3.47 W (max.) IM-G7000A-4PoE: 5.14 W (max.)
Physical Characteristics	
Dimensions	28.8 x 174.7 x 166.8 mm (1.13 x 6.88 x 6.57 in)
Weight	220 g (0.49 lb)

MTBF

Time	IM-G7000A-4GTX: 1,569,520 hrs IM-G7000A-4GSFP: 1,544,084 hrs IM-G7000A-4PoE: 394,348 hrs
Standards	Telcordia (Bellcore), GB

Warranty

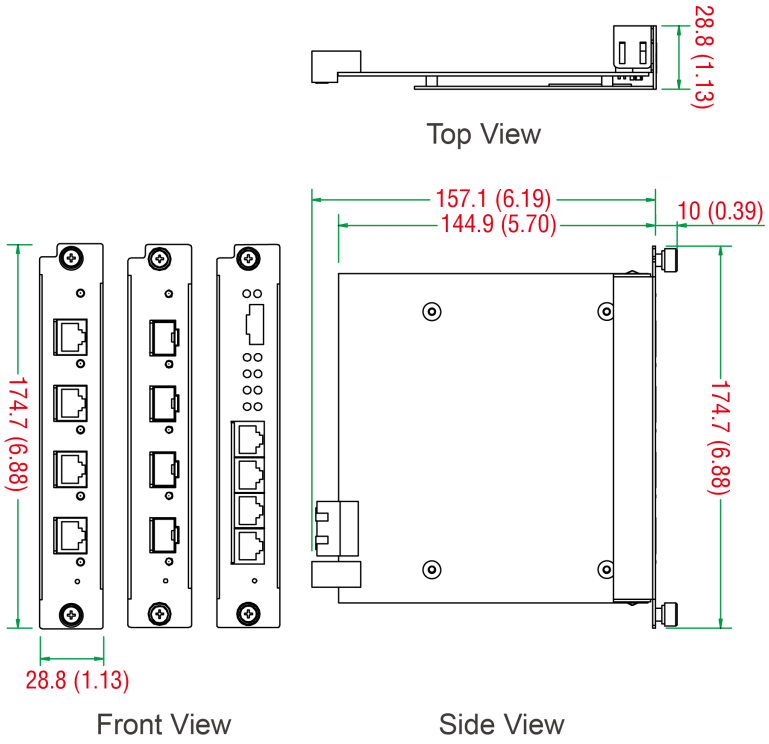
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x IM-G7000A Series module
Documentation	1 x warranty card

Dimensions

Unit: mm (inch)



Ordering Information

Model Name	10/100/1000BaseT(X) Ports RJ45 Connector	100/1000Base SFP Slots	PoE Ports 10/100/1000BaseT(X), RJ45 Connector	Operating Temp.
IM-G7000A-4GTX	4	–	–	-10 to 60°C
IM-G7000A-4GSFP	–	4	–	-10 to 60°C
IM-G7000A-4PoE	–	–	4	-10 to 60°C

Accessories (sold separately)

SFP Modules

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 with LC connector for 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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, 0 to 60°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m 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-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, 0 to 60°C operating temperature

SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m 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

LM-7000H Module Series

Ethernet and PoE+ modules for PT-G7728/G7828 Series switches

Features and Benefits

- -40 to 85°C wide operating temperature
- IEC 61850-3 and IEEE 1613 compliant

Certifications

Introduction

The LM-7000H Module Series hot-swappable line modules are designed for the PT-G7828 Layer 3 and PT-G7728 Layer 2 IEC 61850-3 Ethernet switches. The line modules allow greater flexibility by letting you to add 4 Gigabit Ethernet ports or PoE ports per module.

Specifications

Ethernet Interface	
10/100/1000BaseT(X) Ports (RJ45 connector)	LM-7000H-4GTX: 4
100/1000BaseSFP Slots	LM-7000H-4GSFP: 4
PoE Ports (100/1000BaseT(X), RJ45 connector)	LM-7000H-4GPoE: 4
Power Parameters	
Power Consumption	LM-7000H-4GTX/4GPoE: 1.98 W (max.) LM-7000H-4GSFP: 1.56 W (max.)
Physical Characteristics	
Weight	LM-7000H-4GTX/4GPoE: 240 g (0.53 lb) LM-7000H-4GSFP: 300 g (0.66 lb)
MTBF	
Time	LM-7000H-4GPoE: 1,280,518 hrs LM-7000H-4GSFP: 2,475,903 hrs LM-7000H-4GTX: 2,641,729 hrs
Standards	Telcordia (Bellcore), GB
Warranty	
Warranty Period	5 years
Details	See www.moxa.com/warranty

Ordering Information

Model Name	10/100/1000BaseT(X) Ports RJ45 Connector	100/1000BaseT(X) PoE Ports RJ45 Connector	100/1000Base SFP Slots
LM-7000H-4GTX	4	–	–
LM-7000H-4GSFP	–	–	4
LM-7000H-4GPoE	–	4	–

Accessories (sold separately)

SFP Modules

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 with LC connector for 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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, 0 to 60°C operating temperature

SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m 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-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, 0 to 60°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m 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

MDS-G4012-4XGS Series

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

Features and Benefits

- Multiple interface type 4-port modules for greater versatility
- Up to 8 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

Certifications

CE FC NEMA TS2 EN 50121-4

Introduction

The MDS-G4012-4XGS Series modular switches support 4 10GbE + 8 Gigabit ports, including 4 embedded ports, 2 interface module expansion slots, and 2 power module slots to ensure sufficient flexibility for a variety of applications. The highly compact MDS-G4012-4XGS 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 Ethernet modules (RJ45 and SFP) 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-G4012-4XGS 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-G4012-4XGS 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-G4012-4XGS 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	2 slots for optional 4-port FE/GE modules

Slot Combination	See the LM-7000H module series datasheet for more information. Note: The required power module depends on the choice of LM-7000H module. Refer to the following power/module combination requirements. LM-7000H non-PoE modules: Any power module LM-7000H PoE modules: PWR-HV-P48-A, PWR-LV-P48-A only
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 802.3ad 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

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, Loop Protection, MSTP
Security	Broadcast storm protection, Rate Limit, Trust access control, Static Port Lock, MAC Sticky, HTTPS/SSL, SSH, RADIUS, TACACS+, Login and Password Policy, Secure Boot, MAC Authentication Bypass, Access control list
Time Management	SNTP, IEEE 1588v2 PTP (hardware-based), 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
Power Substation	MMS

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

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–A installed: 110/220 VDC, 110 VAC, 60 HZ, 220 VAC, 50 Hz, PoE: 48 VDC With PWR-LV-P48–A 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–A installed: 88 to 300 VDC, 90 to 264 VAC, 47 to 63 Hz, PoE: 46 to 57 VDC With PWR-LV-P48–A installed: 18 to 72 VDC, PoE: 46 to 57 VDC 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–A/PWR-HV-NP installed: Max. 0.11 A @ 110 VDC Max. 0.06 A @ 220 VDC Max. 0.29 A @ 110 VAC Max. 0.18 A @ 220 VAC With PWR-LV-P48–A/PWR-LV-NP installed: Max. 0.53 A @ 24 VDC Max. 0.28 A @ 48 VDC
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Max. PoE Power Output per Port	36 W
Total PoE Power Budget	Max. 360 W (with one power supply) for total PD consumption at 48 VDC input for PoE systems Max. 360 W (with one power supply) for total PD consumption at 53 to 57 VDC input for PoE+ systems Max. 720 W (with two power supplies) for total PD consumption at 48 VDC input for PoE systems Max. 720 W (with two power supplies) for total PD consumption at 53 to 57 VDC input for PoE+ systems

Physical Characteristics

IP Rating	IP40
Dimensions	197 x 115 x 163.25 mm (7.76 x 4.53 x 6.43 in) 212 x 115 x 163.25 mm (8.35 x 4.53 x 6.43 in) with dual PWR-HV-P48-A/PWR-LV-P48-A power modules installed

Weight	3,030 g (6.68 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit), 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 62368-1, IEC 62368-1, UL 62368-1, IEC 60950-1, UL 61010-2-201, EN 61010-2-201
EMC	EN 55032/35, 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 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF 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
Power Substation	IEC 61850-3, IEEE 1613

MTBF

Time	794,532 hrs
Standards	Telcordia SR332

Warranty

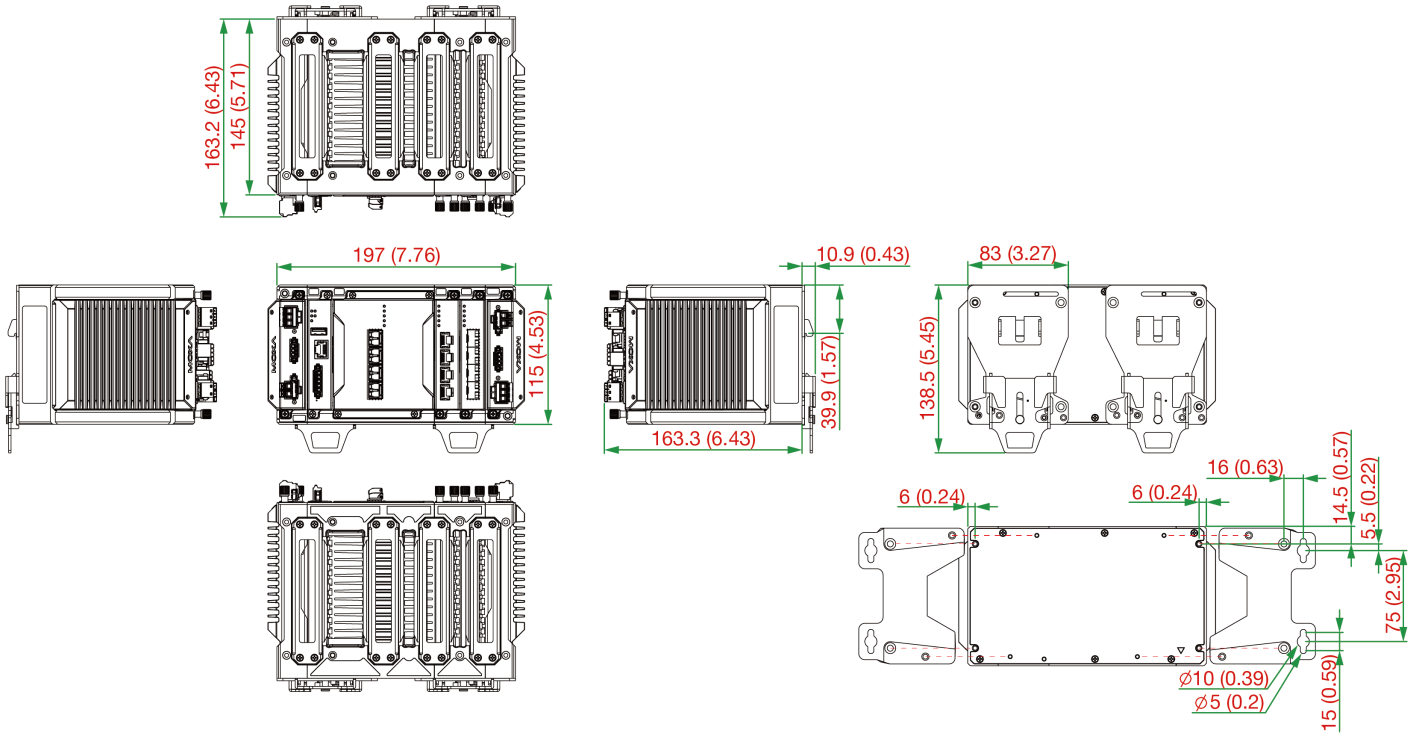
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x MDS-G4012-4XGS Series switch
Installation Kit	Preinstalled, 2 x DIN-rail kit 4 x cap, plastic, for SFP+ slots
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.

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-G4012-4XGS-T	2	12	4	Up to 8	Up to 8	Up to 8	-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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km 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-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

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

MDS-G4012-L3-4XGS Series

8 GbE + 4 10GbE-port Layer 3 full Gigabit modular managed Ethernet switches

Features and Benefits

- Layer 3 routing interconnects multiple LAN segments
- Multiple interface type 4-port modules for greater versatility
- Up to 8 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

Certifications

Introduction

The MDS-G4012-L3-4XGS Series modular switches support 4 10GbE + 8 Gigabit ports, including 4 embedded ports, 2 interface module expansion slots, and 2 power module slots to ensure sufficient flexibility for a variety of applications. The highly compact MDS-G4012-L3-4XGS 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 Ethernet modules (RJ45 and SFP) 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-G4012-L3-4XGS 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-G4012-L3-4XGS 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.

Support for Layer 3 routing functionality enables these switches to facilitate the deployment of applications across different networks, making them ideal for large-scale industrial networks. In addition, the MDS-G4012-L3-4XGS 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	2 slots for optional 4-port FE/GE modules

Slot Combination	See the LM-7000H module series datasheet for more information. Note: The required power module depends on the choice of LM-7000H module. Refer to the following power/module combination requirements. LM-7000H non-PoE modules: Any power module LM-7000H PoE modules: PWR-HV-P48-A, PWR-LV-P48-A only
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 802.3ad 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

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, Loop Protection, MSTP
Routing Redundancy	VRRP
Security	Broadcast storm protection, Rate Limit, Trust access control, Static Port Lock, MAC Sticky, HTTPS/SSL, SSH, RADIUS, TACACS+, Login and Password Policy, Secure Boot, MAC Authentication Bypass, Access control list
Time Management	SNTP, IEEE 1588v2 PTP (hardware-based), 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
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

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

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–A installed: 110/220 VDC, 110 VAC, 60 HZ, 220 VAC, 50 Hz, PoE: 48 VDC With PWR-LV-P48–A 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–A installed: 88 to 300 VDC, 90 to 264 VAC, 47 to 63 Hz, PoE: 46 to 57 VDC With PWR-LV-P48–A installed: 18 to 72 VDC, PoE: 46 to 57 VDC 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–A/PWR-HV-NP installed: Max. 0.11 A @ 110 VDC Max. 0.06 A @ 220 VDC Max. 0.29 A @ 110 VAC Max. 0.18 A @ 220 VAC With PWR-LV-P48–A/PWR-LV-NP installed: Max. 0.53 A @ 24 VDC Max. 0.28 A @ 48 VDC
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Max. PoE Power Output per Port	36 W
Total PoE Power Budget	Max. 360 W (with one power supply) for total PD consumption at 48 VDC input for PoE systems Max. 360 W (with one power supply) for total PD consumption at 53 to 57 VDC input for PoE+ systems Max. 720 W (with two power supplies) for total PD consumption at 48 VDC input for PoE systems Max. 720 W (with two power supplies) for total PD consumption at 53 to 57 VDC input for PoE+ systems

Physical Characteristics

IP Rating	IP40
Dimensions	197 x 115 x 163.25 mm (7.76 x 4.53 x 6.43 in) 212 x 115 x 163.25 mm (8.35 x 4.53 x 6.43 in) with dual PWR-HV-P48-A/PWR-LV-P48-A power modules installed
Weight	3,030 g (6.68 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit), 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 62368-1, IEC 62368-1, UL 62368-1, IEC 60950-1, EN 61010-2-201, UL 61010-2-201
EMC	EN 55032/35, 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 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF 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
Power Substation	IEC 61850-3, IEEE 1613

MTBF

Time	794,532 hrs
Standards	Telcordia SR332

Warranty

Warranty Period	5 years
Details	See www.moxa.com/warranty

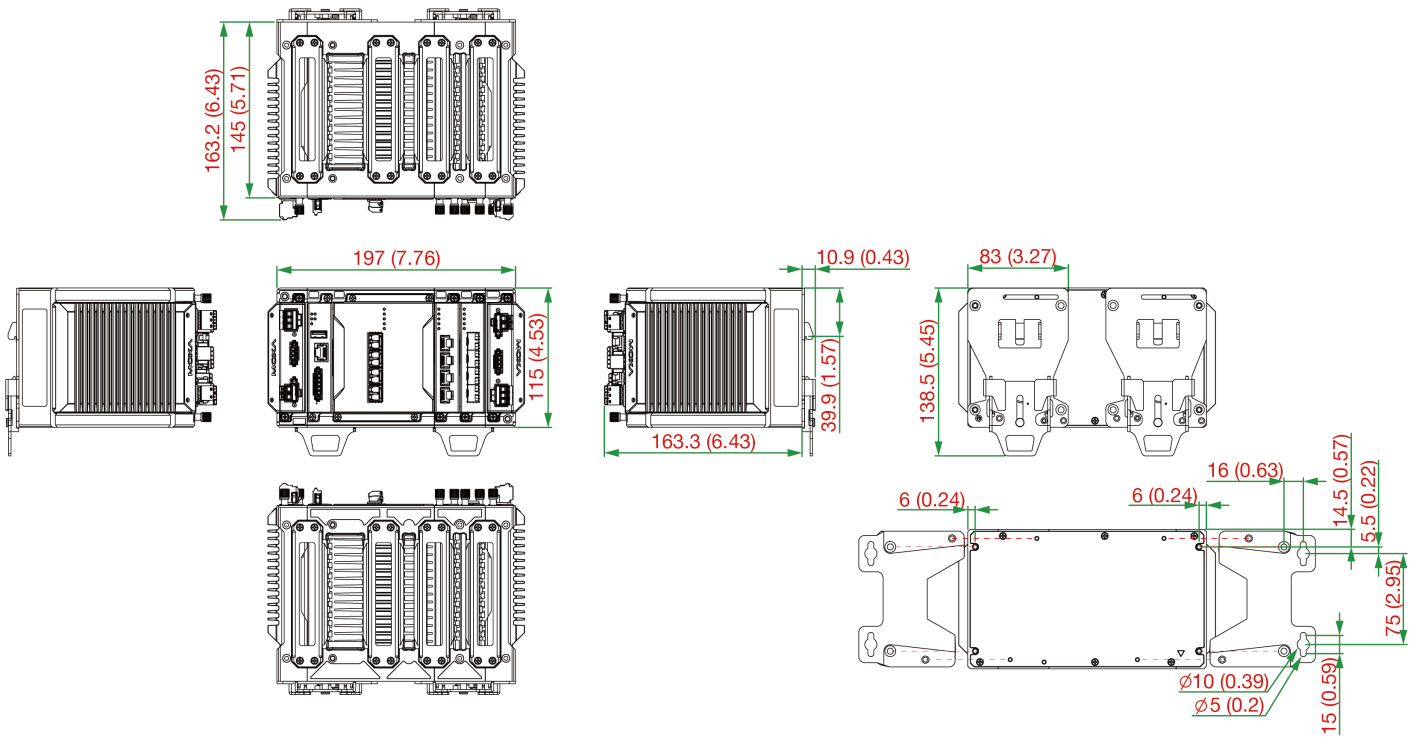
Package Contents

Device	1 x MDS-G4012-L3-4XGS Series switch
Installation Kit	Preinstalled, 2 x DIN-rail kit 4 x cap, plastic, for SFP+ slots

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.

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-G4012-L3-4XGS-T	3	12	4	Up to 8	Up to 8	Up to 8	-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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km 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-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

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

MDS-G4012-L3 Series

12G-port Layer 3 full Gigabit modular managed Ethernet switches

Features and Benefits

- Layer 3 routing interconnects multiple LAN segments
- 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
- 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-G4012–L3 Series modular switches support up to 12 Gigabit ports, including 4 embedded ports, 2 interface module expansion slots, and 2 power module slots to ensure sufficient flexibility for a variety of applications. The highly compact MDS-G4000–L3 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–L3 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–L3 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.

Support for Layer 3 routing functionality enables these switches to facilitate the deployment of applications across different networks, making them ideal for large-scale industrial networks. In addition, the MDS-G4000–L3 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	2 slots for optional 4-port FE/GE modules

Slot Combination	See the LM-7000H module series datasheet for more information. Note: The required power module depends on the choice of LM-7000H module. Refer to the following power/module combination requirements. LM-7000H non-PoE modules: Any power module LM-7000H PoE modules: PWR-HV-P48, PWR-LV-P48 only
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 802.3ad 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

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, Loopback interface
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
Routing Redundancy	VRRP
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
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

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 -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. 0.11 A @ 110 VDC Max. 0.06 A @ 220 VDC Max. 0.29 A @ 110 VAC Max. 0.18 A @ 220 VAC with PWR-LV-P48/PWR-LV-NP installed: Max. 0.53 A @ 24 VDC Max. 0.28 A @ 48 VDC
Max. PoE Power Output per Port	36 W
Total PoE Power Budget	Max. 360 W (with one power supply) for total PD consumption at 48 VDC input for PoE systems Max. 360 W (with one power supply) for total PD consumption at 53 to 57 VDC input for PoE+ systems Max. 720 W (with two power supplies) for total PD consumption at 48 VDC input for PoE systems Max. 720 W (with two power supplies) for total PD consumption at 53 to 57 VDC input for PoE+ systems
Overload Current Protection	Supported
Reverse Polarity Protection	Supported

Physical Characteristics

IP Rating	IP40
Dimensions	134 x 115 x 163.25 mm (5.28 x 4.53 x 6.44 in)
Weight	2000 g (4.41 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit), Rack mounting (with optional kit)

Environmental Limits

Operating Temperature	Standard Temp Models: -10 to 60°C (-14 to 140°F) Wide Temp Models: -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 62368-1, IEC 62368-1, UL 62368-1, IEC 60950-1
EMC	EN 55032/35, 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 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF IEC 61000-4-11: Voltage Dips and Voltage Interruptions
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	1,008,160 hrs
Standards	Telcordia SR332

Warranty

Warranty Period	5 years
Details	See www.moxa.com/warranty

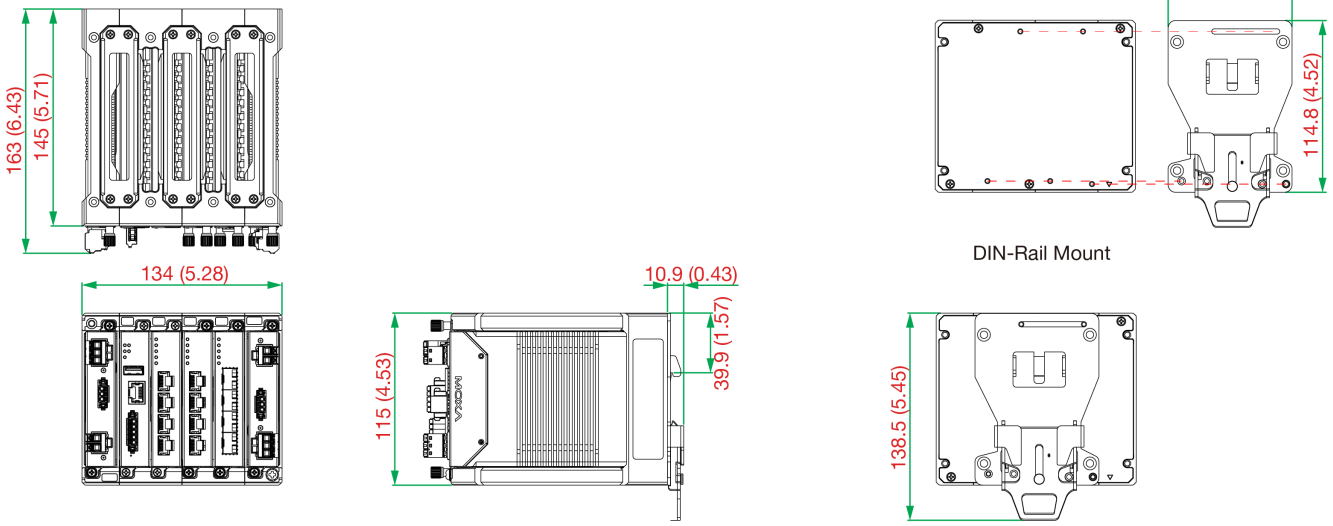
Package Contents

Device	1 x MDS-G4012-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.

Dimensions

Unit: mm (inch)



Ordering Information

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-G4012-L3	3	12	Up to 8	Up to 12	Up to 8	Up to 8	Up to 8	-10 to 60°C
MDS-G4012-L3-T	3	12	Up to 8	Up to 12	Up to 8	Up to 8	Up to 8	-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-02	Rack-mounting kit with 4 L-shaped plates for the MDS-G4000 and MDS-G4000-4XGS Series

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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-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 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-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

MDS-G4012 Series

12G-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

EN 50121-4

Introduction

The MDS-G4012 Series modular switches support up to 12 Gigabit ports, including 4 embedded ports, 2 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	2 slots for optional 4-port FE/GE modules

Slot Combination	See the LM-7000H module series datasheet for more information. Note: The required power module depends on the choice of LM-7000H module. Refer to the following power/module combination requirements. LM-7000H non-PoE modules: Any power module LM-7000H PoE modules: PWR-HV-P48, PWR-LV-P48 only
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 802.3ad 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

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 -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. 0.11 A @ 110 VDC Max. 0.06 A @ 220 VDC Max. 0.29 A @ 110 VAC Max. 0.18 A @ 220 VAC with PWR-LV-P48/PWR-LV-NP installed: Max. 0.53 A @ 24 VDC Max. 0.28 A @ 48 VDC
Max. PoE Power Output per Port	36 W
Total PoE Power Budget	Max. 360 W (with one power supply) for total PD consumption at 48 VDC input for PoE systems Max. 360 W (with one power supply) for total PD consumption at 53 to 57 VDC input for PoE+ systems Max. 720 W (with two power supplies) for total PD consumption at 48 VDC input for PoE systems Max. 720 W (with two power supplies) for total PD consumption at 53 to 57 VDC input for PoE+ systems
Overload Current Protection	Supported
Reverse Polarity Protection	Supported

Physical Characteristics

IP Rating	IP40
Dimensions	134 x 115 x 163.25 mm (5.28 x 4.53 x 6.44 in)

Weight	2000 g (4.41 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit)

Environmental Limits

Operating Temperature	Standard Temperature: -10 to 60°C (-14 to 140°F) 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)

Standards and Certifications

Safety	EN 62368-1, IEC 62368-1, UL 62368-1, IEC 60950-1
EMC	EN 55032/35, 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 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF 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	IEC 61850-3, IEEE 1613

MTBF

Time	1,008,160 hrs
Standards	Telcordia SR332

Warranty

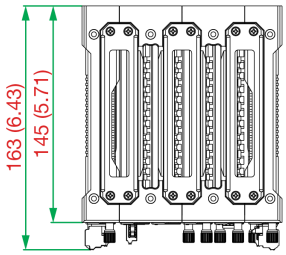
Warranty Period	5 years
Details	See www.moxa.com/warranty

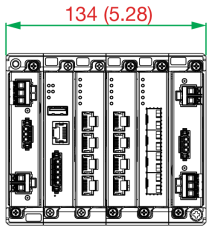
Package Contents

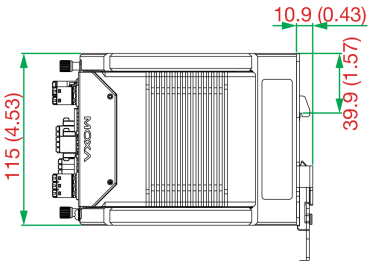
Device	1 x MDS-G4012 Series switch
Cable	1 x RJ45-to-DB9 console cable
Installation Kit	Pre-install 1 x DIN-rail kit 2 x cap, plastic, for RJ45 port
Documentation	1 x quick installation guide 1 x product notice, Simplified Chinese 1 x product certificates of quality inspection, Simplified Chinese 1 x warranty card
Note	This product requires additional modules (sold separately) to function.

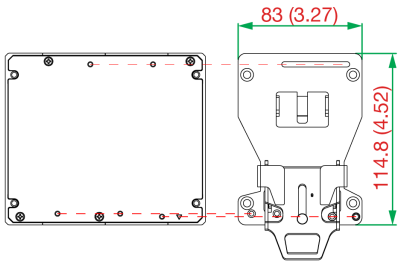
Dimensions

Unit: mm (inch)

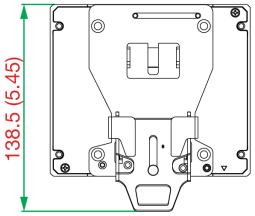








DIN-Rail Mount



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-G4012	2	12	Up to 8	Up to 12	Up to 8	Up to 8	Up to 8	-10 to 60°C
MDS-G4012-T	2	12	Up to 8	Up to 12	Up to 8	Up to 8	Up to 8	-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-02	Rack-mounting kit with 4 L-shaped plates for the MDS-G4000 and MDS-G4000-4XGS Series

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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-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 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-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

MDS-G4020-4XGS Series

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

Features and Benefits

- Multiple interface type 4-port modules for greater versatility
- Up to 16 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

Certifications

CE FC NEMA TS2 EN 50121-4

Introduction

The MDS-G4020-4XGS Series modular switches support 4 10GbE + 16 Gigabit ports, including 4 embedded ports, 4 interface module expansion slots, and 2 power module slots to ensure sufficient flexibility for a variety of applications. The highly compact MDS-G4020-4XGS 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 Ethernet modules (RJ45 and SFP) 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-G4020-4XGS 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-G4020-4XGS 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-G4020-4XGS 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	4 slots for optional 4-port FE/GE modules

Slot Combination	See the LM-7000H module series datasheet for more information. Note: The required power module depends on the choice of LM-7000H module. Refer to the following power/module combination requirements. LM-7000H non-PoE modules: Any power module LM-7000H PoE modules: PWR-HV-P48-A, PWR-LV-P48-A only
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 802.3ad 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

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, Loop Protection, MSTP
Security	Broadcast storm protection, Rate Limit, Trust access control, Static Port Lock, MAC Sticky, HTTPS/SSL, SSH, RADIUS, TACACS+, Login and Password Policy, Secure Boot, MAC Authentication Bypass, Access control list
Time Management	SNTP, IEEE 1588v2 PTP (hardware-based), 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
Power Substation	MMS

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

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–A installed: 110/220 VDC, 110 VAC, 60 HZ, 220 VAC, 50 Hz, PoE: 48 VDC With PWR-LV-P48–A 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–A installed: 88 to 300 VDC, 90 to 264 VAC, 47 to 63 Hz, PoE: 46 to 57 VDC With PWR-LV-P48–A installed: 18 to 72 VDC, PoE: 46 to 57 VDC 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–A/PWR-HV-NP installed: Max. 0.11 A @ 110 VDC Max. 0.06 A @ 220 VDC Max. 0.29 A @ 110 VAC Max. 0.18 A @ 220 VAC With PWR-LV-P48–A/PWR-LV-NP installed: Max. 0.53 A @ 24 VDC Max. 0.28 A @ 48 VDC
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Max. PoE Power Output per Port	36 W
Total PoE Power Budget	Max. 360 W (with one power supply) for total PD consumption at 48 VDC input for PoE systems Max. 360 W (with one power supply) for total PD consumption at 53 to 57 VDC input for PoE+ systems Max. 720 W (with two power supplies) for total PD consumption at 48 VDC input for PoE systems Max. 720 W (with two power supplies) for total PD consumption at 53 to 57 VDC input for PoE+ systems

Physical Characteristics

IP Rating	IP40
Dimensions	239 x 115 x 163.25 mm (9.41 x 4.53 x 6.43 in) 254 x 115 x 163.25 mm (10 x 4.53 x 6.43 in) with dual PWR-HV-P48-A/PWR-LV-P48-A power modules installed

Weight	3,400 g (7.50 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit), 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 62368-1, IEC 62368-1, UL 62368-1, IEC 60950-1, UL 61010-2-201, EN 61010-2-201
EMC	EN 55032/35, 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 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF 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
Power Substation	IEC 61850-3, IEEE 1613

MTBF

Time	794,302 hrs
Standards	Telcordia SR332

Warranty

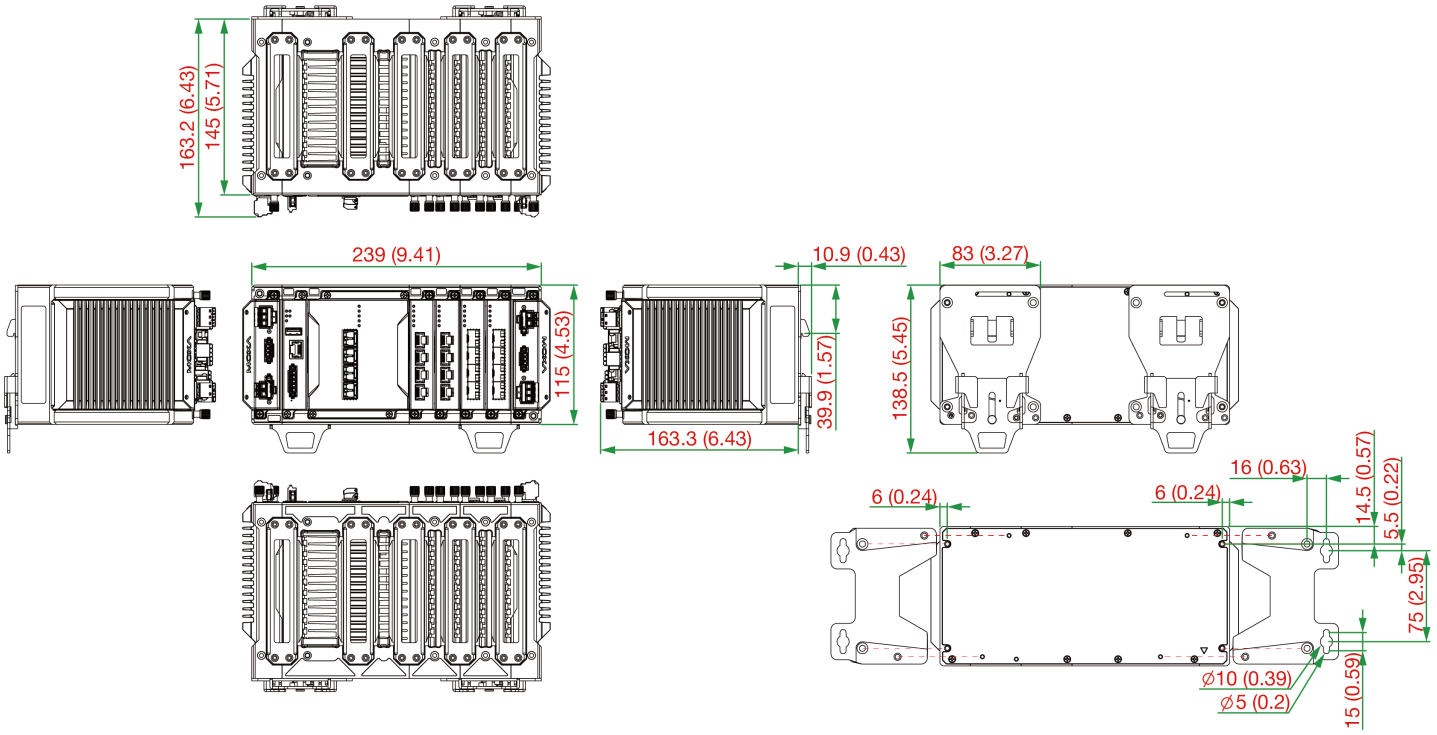
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x MDS-G4020-4XGS Series switch
Installation Kit	Preinstalled, 2 x DIN-rail kit 4 x cap, plastic, for SFP+ slots
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.

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-G4020-4XGS-T	2	20	4	Up to 16	Up to 16	Up to 16	-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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km 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-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

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

MDS-G4020-L3-4XGS Series

16 GbE + 4 10GbE-port Layer 3 full Gigabit modular managed Ethernet switches

Features and Benefits

- Layer 3 routing interconnects multiple LAN segments
- Multiple interface type 4-port modules for greater versatility
- Up to 16 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

Certifications

EN 50121-4

Introduction

The MDS-G4020-L3-4XGS Series modular switches support 4 10GbE + 16 Gigabit ports, including 4 embedded ports, 4 interface module expansion slots, and 2 power module slots to ensure sufficient flexibility for a variety of applications. The highly compact MDS-G4020-L3-4XGS 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 Ethernet modules (RJ45 and SFP) 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-G4020-L3-4XGS 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-G4020-L3-4XGS 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.

Support for Layer 3 routing functionality enables these switches to facilitate the deployment of applications across different networks, making them ideal for large-scale industrial networks. In addition, the MDS-G4020-L3-4XGS 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	4 slots for optional 4-port FE/GE modules

Slot Combination	See the LM-7000H module series datasheet for more information. Note: The required power module depends on the choice of LM-7000H module. Refer to the following power/module combination requirements. LM-7000H non-PoE modules: Any power module LM-7000H PoE modules: PWR-HV-P48-A, PWR-LV-P48-A only
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 802.3ad 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

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, Loop Protection, MSTP
Routing Redundancy	VRRP
Security	Broadcast storm protection, Rate Limit, Trust access control, Static Port Lock, MAC Sticky, HTTPS/SSL, SSH, RADIUS, TACACS+, Login and Password Policy, Secure Boot, MAC Authentication Bypass, Access control list
Time Management	SNTP, IEEE 1588v2 PTP (hardware-based), 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
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

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

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–A installed: 110/220 VDC, 110 VAC, 60 HZ, 220 VAC, 50 Hz, PoE: 48 VDC With PWR-LV-P48–A 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–A installed: 88 to 300 VDC, 90 to 264 VAC, 47 to 63 Hz, PoE: 46 to 57 VDC With PWR-LV-P48–A installed: 18 to 72 VDC, PoE: 46 to 57 VDC 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–A/PWR-HV-NP installed: Max. 0.11 A @ 110 VDC Max. 0.06 A @ 220 VDC Max. 0.29 A @ 110 VAC Max. 0.18 A @ 220 VAC With PWR-LV-P48–A/PWR-LV-NP installed: Max. 0.53 A @ 24 VDC Max. 0.28 A @ 48 VDC
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Max. PoE Power Output per Port	36 W
Total PoE Power Budget	Max. 360 W (with one power supply) for total PD consumption at 48 VDC input for PoE systems Max. 360 W (with one power supply) for total PD consumption at 53 to 57 VDC input for PoE+ systems Max. 720 W (with two power supplies) for total PD consumption at 48 VDC input for PoE systems Max. 720 W (with two power supplies) for total PD consumption at 53 to 57 VDC input for PoE+ systems

Physical Characteristics

IP Rating	IP40
Dimensions	239 x 115 x 163.25 mm (9.41 x 4.53 x 6.43 in) 254 x 115 x 163.25 mm (10 x 4.53 x 6.43 in) with dual PWR-HV-P48-A/PWR-LV-P48-A power modules installed
Weight	3,400 g (7.50 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit), 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 62368-1, IEC 62368-1, UL 62368-1, IEC 60950-1, UL 61010-2-201, EN 61010-2-201
EMC	EN 55032/35, 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 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF 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
Power Substation	IEC 61850-3, IEEE 1613

MTBF

Time	794,302 hrs
Standards	Telcordia SR332

Warranty

Warranty Period	5 years
Details	See www.moxa.com/warranty

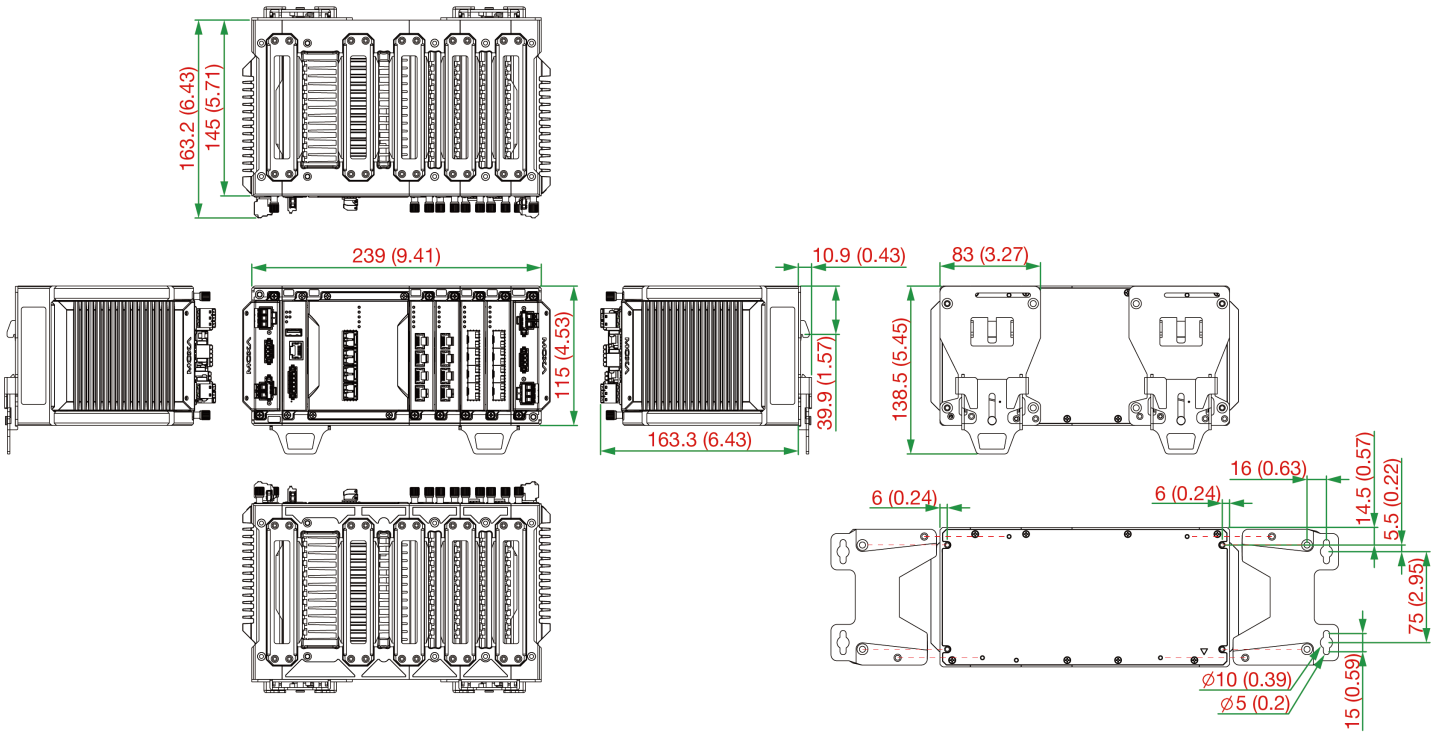
Package Contents

Device	1 x MDS-G4020-L3-4XGS Series switch
Installation Kit	Preinstalled, 2 x DIN-rail kit 4 x cap, plastic, for SFP+ slots

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.

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-G4020-L3-4XGS-T	3	20	4	Up to 16	Up to 16	Up to 16	-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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km 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-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

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

MDS-G4020-L3 Series

20G-port Layer 3 full Gigabit modular managed Ethernet switches

Features and Benefits

- Layer 3 routing interconnects multiple LAN segments
- 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
- Rugged die-cast design for use in harsh environments
- Intuitive, HTML5-based web interface for a seamless experience across different platforms

Certifications

CE FC NEMA TS2 EN 50121-4

Introduction

The MDS-G4020–L3 Series modular switches support up to 20 Gigabit ports, including 4 embedded ports, 4 interface module expansion slots, and 2 power module slots to ensure sufficient flexibility for a variety of applications. The highly compact MDS-G4000–L3 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–L3 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.

Support for Layer 3 routing functionality enables these switches to facilitate the deployment of applications across different networks, making them ideal for large-scale industrial networks. In addition, the MDS-G4000–L3 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	4 slots for optional 4-port FE/GE modules

Slot Combination	See the LM-7000H module series datasheet for more information. Note: The required power module depends on the choice of LM-7000H module. Refer to the following power/module combination requirements. LM-7000H non-PoE modules: Any power module LM-7000H PoE modules: PWR-HV-P48, PWR-LV-P48 only
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 802.3ad 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

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, Loopback interface
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
Routing Redundancy	VRRP
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
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

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 -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. 0.11 A @ 110 VDC Max. 0.06 A @ 220 VDC Max. 0.29 A @ 110 VAC Max. 0.18 A @ 220 VAC with PWR-LV-P48/PWR-LV-NP installed: Max. 0.53 A @ 24 VDC Max. 0.28 A @ 48 VDC
Max. PoE Power Output per Port	36 W
Total PoE Power Budget	Max. 360 W (with one power supply) for total PD consumption at 48 VDC input for PoE systems Max. 360 W (with one power supply) for total PD consumption at 53 to 57 VDC input for PoE+ systems Max. 720 W (with two power supplies) for total PD consumption at 48 VDC input for PoE systems Max. 720 W (with two power supplies) for total PD consumption at 53 to 57 VDC input for PoE+ systems
Overload Current Protection	Supported
Reverse Polarity Protection	Supported

Physical Characteristics

IP Rating	IP40
Dimensions	176 x 115 x 163.25 mm (6.93 x 4.53 x 6.44 in)
Weight	2500 g (5.51 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit), Rack mounting (with optional kit)

Environmental Limits

Operating Temperature	Standard Temp Models: -10 to 60°C (-14 to 140°F) Wide Temp Models: -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 62368-1, IEC 62368-1, UL 62368-1, IEC 60950-1
EMC	EN 55032/35, 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 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF IEC 61000-4-11: Voltage Dips and Voltage Interruptions
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	1,007,790 hrs
Standards	Telcordia SR332

Warranty

Warranty Period	5 years
Details	See www.moxa.com/warranty

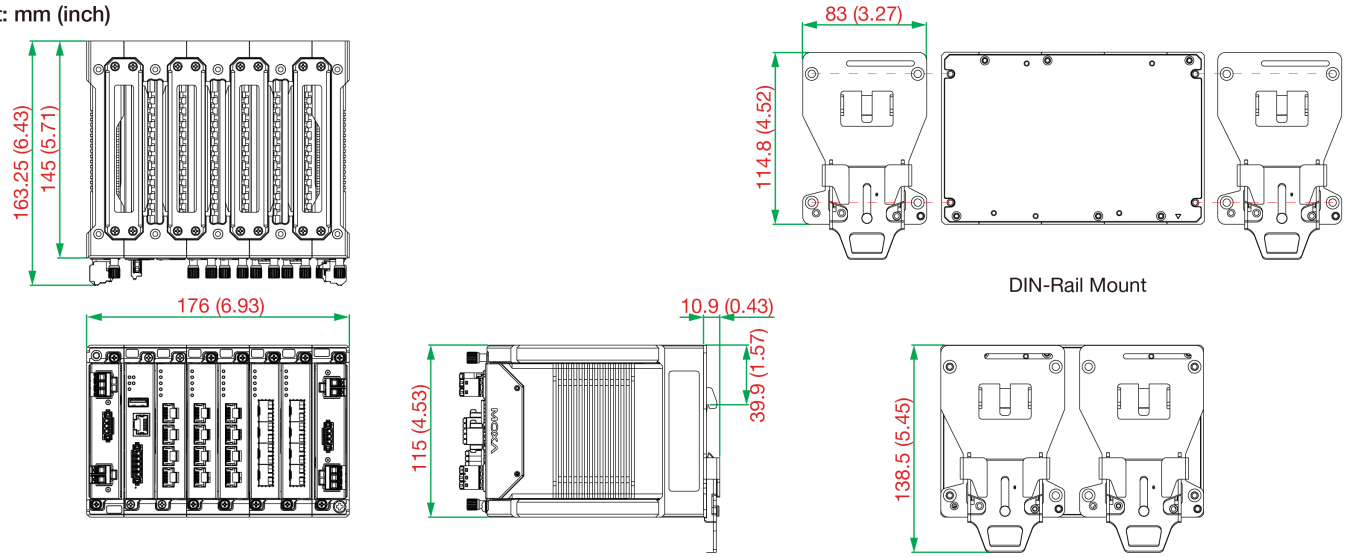
Package Contents

Device	1 x MDS-G4020-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.

Dimensions

Unit: mm (inch)



Ordering Information

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-G4020-L3	3	20	Up to 16	Up to 20	Up to 16	Up to 16	Up to 16	-10 to 60°C
MDS-G4020-L3-T	3	20	Up to 16	Up to 20	Up to 16	Up to 16	Up to 16	-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-02	Rack-mounting kit with 4 L-shaped plates for the MDS-G4000 and MDS-G4000-4XGS Series

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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-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 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-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

MDS-G4020 Series

20G-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

CE FC NEMA TS2 EN 50121-4

Introduction

The MDS-G4020 Series modular switches support up to 20 Gigabit ports, including 4 embedded ports, 4 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	4 slots for optional 4-port FE/GE modules

Slot Combination	See the LM-7000H module series datasheet for more information. Note: The required power module depends on the choice of LM-7000H module. Refer to the following power/module combination requirements. LM-7000H non-PoE modules: Any power module LM-7000H PoE modules: PWR-HV-P48, PWR-LV-P48 only
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 802.3ad 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

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 -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. 0.11 A @ 110 VDC Max. 0.06 A @ 220 VDC Max. 0.29 A @ 110 VAC Max. 0.18 A @ 220 VAC with PWR-LV-P48/PWR-LV-NP installed: Max. 0.53 A @ 24 VDC Max. 0.28 A @ 48 VDC
Max. PoE Power Output per Port	36 W
Total PoE Power Budget	Max. 360 W (with one power supply) for total PD consumption at 48 VDC input for PoE systems Max. 360 W (with one power supply) for total PD consumption at 53 to 57 VDC input for PoE+ systems Max. 720 W (with two power supplies) for total PD consumption at 48 VDC input for PoE systems Max. 720 W (with two power supplies) for total PD consumption at 53 to 57 VDC input for PoE+ systems
Overload Current Protection	Supported
Reverse Polarity Protection	Supported

Physical Characteristics

IP Rating	IP40
Dimensions	176 x 115 x 163.25 mm (6.93 x 4.53 x 6.44 in)

Weight	2500 g (5.51 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit)

Environmental Limits

Operating Temperature	Standard Temperature: -10 to 60°C (-14 to 140°F) 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)

Standards and Certifications

Safety	EN 62368-1, IEC 62368-1, UL 62368-1, IEC 60950-1
EMC	EN 55032/35, 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 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF 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	1,007,790 hrs
Standards	Telcordia SR332

Warranty

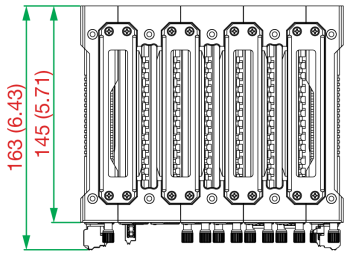
Warranty Period	5 years
Details	See www.moxa.com/warranty

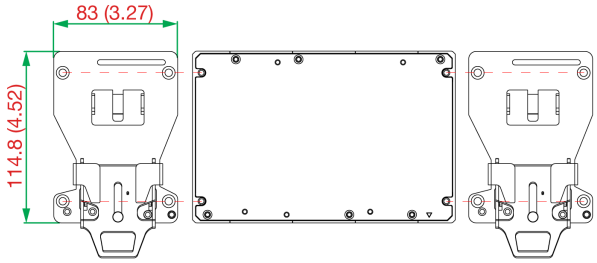
Package Contents

Device	1 x MDS-G4020 Series switch
Cable	1 x RJ45-to-DB9 console cable
Installation Kit	Pre-install 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.

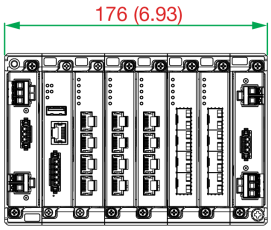
Dimensions

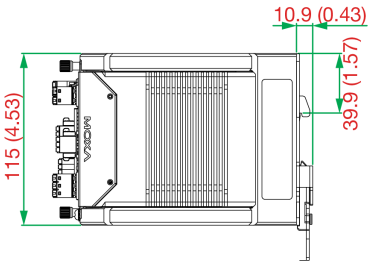
Unit: mm (inch)

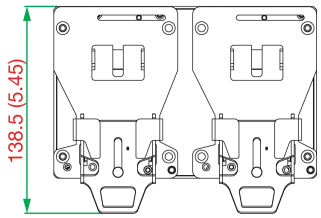




DIN-Rail Mount







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-G4020	2	20	Up to 16	Up to 20	Up to 16	Up to 16	Up to 16	-10 to 60°C
MDS-G4020-T	2	20	Up to 16	Up to 20	Up to 16	Up to 16	Up to 16	-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-02	Rack-mounting kit with 4 L-shaped plates for the MDS-G4000 and MDS-G4000-4XGS Series

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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-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 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-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

MDS-G4028-4XGS Series

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

Features and Benefits

- Multiple interface type 4-port 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

Certifications

CE FC NEMA TS2 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 Ethernet modules (RJ45 and SFP) 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 4-port FE/GE modules

Slot Combination	See the LM-7000H module series datasheet for more information. Note: The required power module depends on the choice of LM-7000H module. Refer to the following power/module combination requirements. LM-7000H non-PoE modules: Any power module LM-7000H PoE modules: PWR-HV-P48-A, PWR-LV-P48-A only
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 802.3ad 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

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, Loop Protection, MSTP
Security	Broadcast storm protection, Rate Limit, Trust access control, Static Port Lock, MAC Sticky, HTTPS/SSL, SSH, RADIUS, TACACS+, Login and Password Policy, Secure Boot, MAC Authentication Bypass, Access control list
Time Management	SNTP, IEEE 1588v2 PTP (hardware-based), 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
Power Substation	MMS

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

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–A installed: 110/220 VDC, 110 VAC, 60 HZ, 220 VAC, 50 Hz, PoE: 48 VDC With PWR-LV-P48–A 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–A installed: 88 to 300 VDC, 90 to 264 VAC, 47 to 63 Hz, PoE: 46 to 57 VDC With PWR-LV-P48–A installed: 18 to 72 VDC, PoE: 46 to 57 VDC 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–A/PWR-HV-NP installed: Max. 0.11 A @ 110 VDC Max. 0.06 A @ 220 VDC Max. 0.29 A @ 110 VAC Max. 0.18 A @ 220 VAC With PWR-LV-P48–A/PWR-LV-NP installed: Max. 0.53 A @ 24 VDC Max. 0.28 A @ 48 VDC
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Max. PoE Power Output per Port	36 W
Total PoE Power Budget	Max. 360 W (with one power supply) for total PD consumption at 48 VDC input for PoE systems Max. 360 W (with one power supply) for total PD consumption at 53 to 57 VDC input for PoE+ systems Max. 720 W (with two power supplies) for total PD consumption at 48 VDC input for PoE systems Max. 720 W (with two power supplies) for total PD consumption at 53 to 57 VDC input for PoE+ systems

Physical Characteristics

IP Rating	IP40
Dimensions	281 x 115 x 163.25 mm (11.06 x 4.53 x 6.43 in) 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, Wall mounting (with optional kit), 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 62368-1, IEC 62368-1, UL 62368-1, IEC 60950-1, UL 61010-2-201, EN 61010-2-201
EMC	EN 55032/35, 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 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF 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
Power Substation	IEC 61850-3, IEEE 1613

MTBF

Time	794,073 hrs
Standards	Telcordia SR332

Warranty

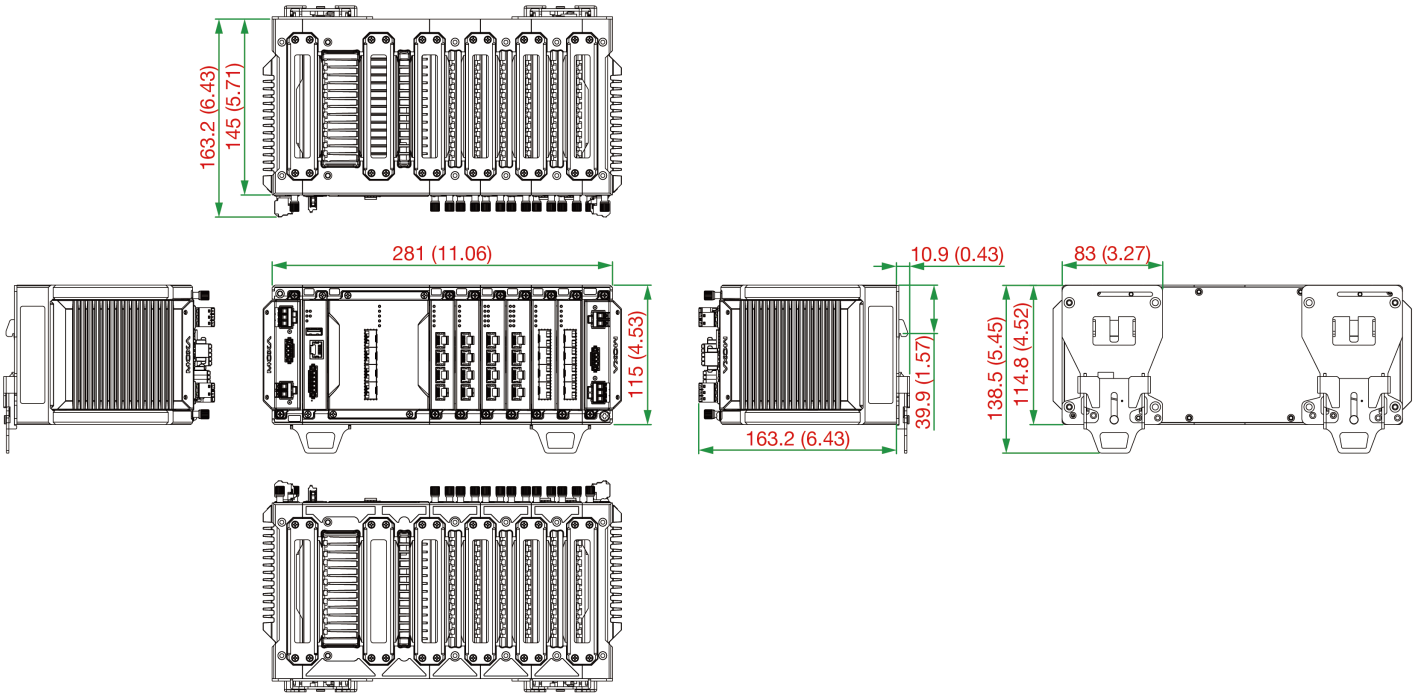
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x MDS-G4028-4XGS Series switch
Installation Kit	Preinstalled, 2 x DIN-rail kit 4 x cap, plastic, for SFP+ slots
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.

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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km 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-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

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

MDS-G4028-L3-4XGS Series

24 GbE + 4 10GbE-port Layer 3 full Gigabit modular managed Ethernet switches

Features and Benefits

- Layer 3 routing interconnects multiple LAN segments
- Multiple interface type 4-port 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

Certifications

Introduction

The MDS-G4028-L3-4XGS 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-L3-4XGS 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 Ethernet modules (RJ45 and SFP) 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-L3-4XGS 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-L3-4XGS 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.

Support for Layer 3 routing functionality enables these switches to facilitate the deployment of applications across different networks, making them ideal for large-scale industrial networks. In addition, the MDS-G4028-L3-4XGS 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 4-port FE/GE modules

Slot Combination	See the LM-7000H module series datasheet for more information. Note: The required power module depends on the choice of LM-7000H module. Refer to the following power/module combination requirements. LM-7000H non-PoE modules: Any power module LM-7000H PoE modules: PWR-HV-P48-A, PWR-LV-P48-A only
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 802.3ad 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

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, Loop Protection, MSTP
Routing Redundancy	VRRP
Security	Broadcast storm protection, Rate Limit, Trust access control, Static Port Lock, MAC Sticky, HTTPS/SSL, SSH, RADIUS, TACACS+, Login and Password Policy, Secure Boot, MAC Authentication Bypass, Access control list
Time Management	SNTP, IEEE 1588v2 PTP (hardware-based), 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
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

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

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–A installed: 110/220 VDC, 110 VAC, 60 HZ, 220 VAC, 50 Hz, PoE: 48 VDC With PWR-LV-P48–A 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–A installed: 88 to 300 VDC, 90 to 264 VAC, 47 to 63 Hz, PoE: 46 to 57 VDC With PWR-LV-P48–A installed: 18 to 72 VDC, PoE: 46 to 57 VDC 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–A/PWR-HV-NP installed: Max. 0.11 A @ 110 VDC Max. 0.06 A @ 220 VDC Max. 0.29 A @ 110 VAC Max. 0.18 A @ 220 VAC With PWR-LV-P48–A/PWR-LV-NP installed: Max. 0.53 A @ 24 VDC Max. 0.28 A @ 48 VDC
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Max. PoE Power Output per Port	36 W
Total PoE Power Budget	Max. 360 W (with one power supply) for total PD consumption at 48 VDC input for PoE systems Max. 360 W (with one power supply) for total PD consumption at 53 to 57 VDC input for PoE+ systems Max. 720 W (with two power supplies) for total PD consumption at 48 VDC input for PoE systems Max. 720 W (with two power supplies) for total PD consumption at 53 to 57 VDC input for PoE+ systems

Physical Characteristics

IP Rating	IP40
Dimensions	281 x 115 x 163.25 mm (11.06 x 4.53 x 6.43 in) 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, Wall mounting (with optional kit), 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 62368-1, IEC 62368-1, UL 62368-1, IEC 60950-1, EN 61010-2-201, UL 61010-2-201
EMC	EN 55032/35, 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 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF 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
Power Substation	IEC 61850-3, IEEE 1613

MTBF

Time	794,073 hrs
Standards	Telcordia SR332

Warranty

Warranty Period	5 years
Details	See www.moxa.com/warranty

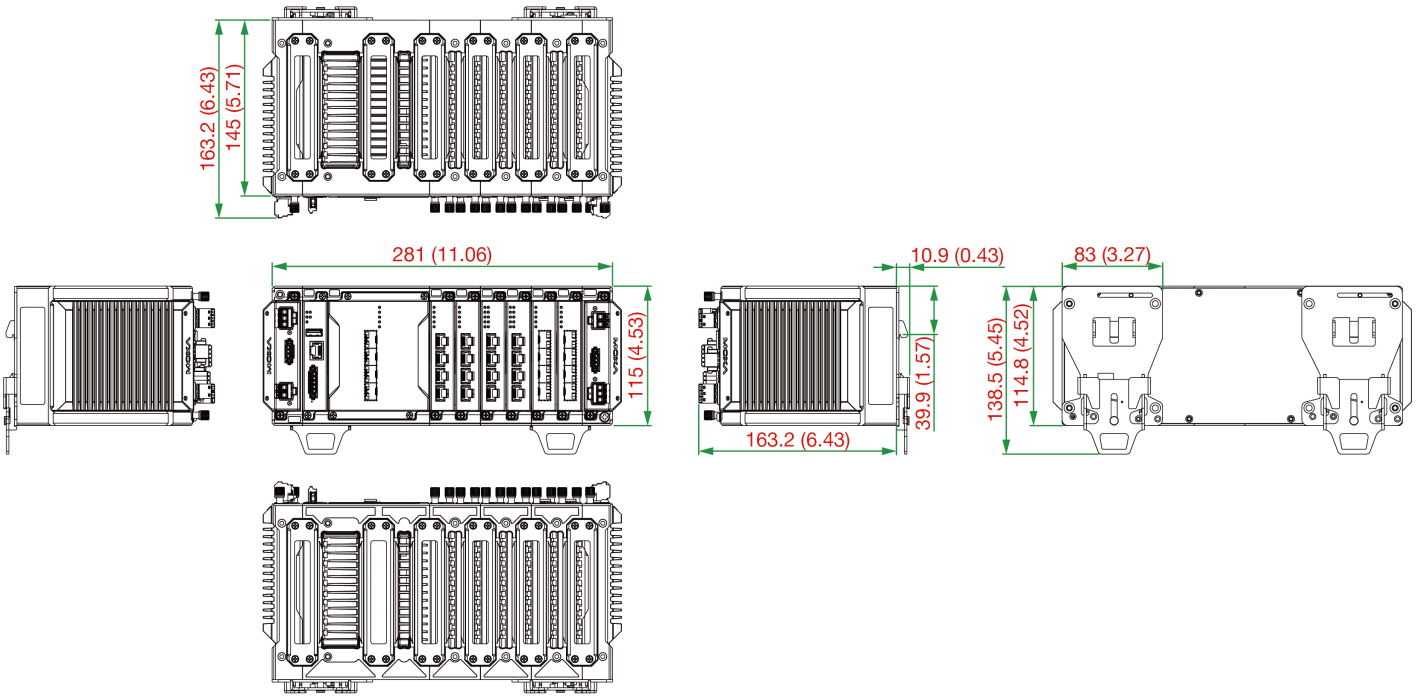
Package Contents

Device	1 x MDS-G4028-L3-4XGS Series switch
Installation Kit	Preinstalled, 2 x DIN-rail kit 4 x cap, plastic, for SFP+ slots

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.

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-L3-4XGS-T	3	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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature

SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km 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-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

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

MDS-G4028-L3 Series

28G-port Layer 3 full Gigabit modular managed Ethernet switches

Features and Benefits

- Layer 3 routing interconnects multiple LAN segments
- 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
- Rugged die-cast design for use in harsh environments
- Intuitive, HTML5-based web interface for a seamless experience across different platforms

Certifications

CE FC NEMA TS2 EN 50121-4

Introduction

The MDS-G4028–L3 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–L3 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–L3 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.

Support for Layer 3 routing functionality enables these switches to facilitate the deployment of applications across different networks, making them ideal for large-scale industrial networks. In addition, the MDS-G4000–L3 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. Note: The required power module depends on the choice of LM-7000H module. Refer to the following power/module combination requirements. LM-7000H non-PoE modules: Any power module LM-7000H PoE modules: PWR-HV-P48, PWR-LV-P48 only
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 802.3ad 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

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, Loopback interface
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
Routing Redundancy	VRRP
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
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

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 -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. 0.11 A @ 110 VDC Max. 0.06 A @ 220 VDC Max. 0.29 A @ 110 VAC Max. 0.18 A @ 220 VAC with PWR-LV-P48/PWR-LV-NP installed: Max. 0.53 A @ 24 VDC Max. 0.28 A @ 48 VDC
Max. PoE Power Output per Port	36 W
Total PoE Power Budget	Max. 360 W (with one power supply) for total PD consumption at 48 VDC input for PoE systems Max. 360 W (with one power supply) for total PD consumption at 53 to 57 VDC input for PoE+ systems Max. 720 W (with two power supplies) for total PD consumption at 48 VDC input for PoE systems Max. 720 W (with two power supplies) for total PD consumption at 53 to 57 VDC input for PoE+ systems
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	DIN-rail mounting, Wall mounting (with optional kit), Rack mounting (with optional kit)

Environmental Limits

Operating Temperature	Standard Temp Models: -10 to 60°C (-14 to 140°F) Wide Temp Models: -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 62368-1, IEC 62368-1, UL 62368-1, IEC 60950-1
EMC	EN 55032/35, 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 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF IEC 61000-4-11: Voltage Dips and Voltage Interruptions
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 www.moxa.com/warranty

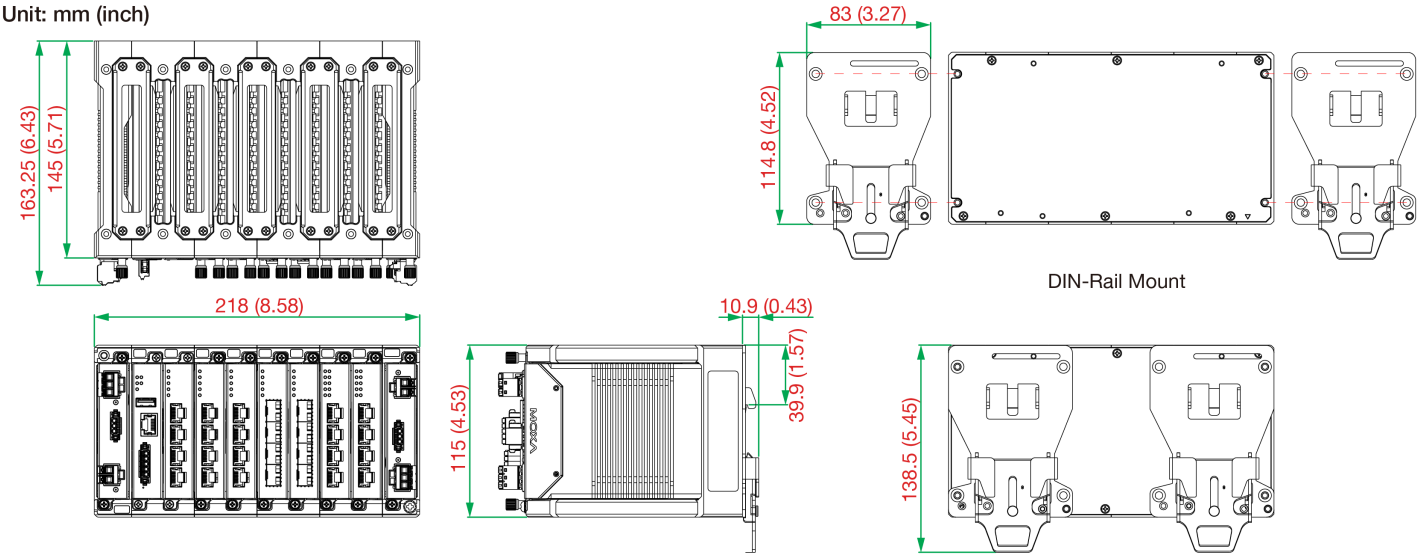
Package Contents

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.

Dimensions

Unit: mm (inch)



Ordering Information

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

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

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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-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 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-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

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

CE FC NEMA TS2 EN 50121-4

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. Note: The required power module depends on the choice of LM-7000H module. Refer to the following power/module combination requirements. LM-7000H non-PoE modules: Any power module LM-7000H PoE modules: PWR-HV-P48, PWR-LV-P48 only
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 802.3ad 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

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 -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. 0.11 A @ 110 VDC Max. 0.06 A @ 220 VDC Max. 0.29 A @ 110 VAC Max. 0.18 A @ 220 VAC with PWR-LV-P48/PWR-LV-NP installed: Max. 0.53 A @ 24 VDC Max. 0.28 A @ 48 VDC
Max. PoE Power Output per Port	36 W
Total PoE Power Budget	Max. 360 W (with one power supply) for total PD consumption at 48 VDC input for PoE systems Max. 360 W (with one power supply) for total PD consumption at 53 to 57 VDC input for PoE+ systems Max. 720 W (with two power supplies) for total PD consumption at 48 VDC input for PoE systems Max. 720 W (with two power supplies) for total PD consumption at 53 to 57 VDC input for PoE+ systems
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	DIN-rail mounting, Wall mounting (with optional kit), Rack mounting (with optional kit)

Environmental Limits

Operating Temperature	Standard Temperature: -10 to 60°C (-14 to 140°F) 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)

Standards and Certifications

Safety	EN 62368-1, IEC 62368-1, UL 62368-1, IEC 60950-1
EMC	EN 55032/35, 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 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF 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

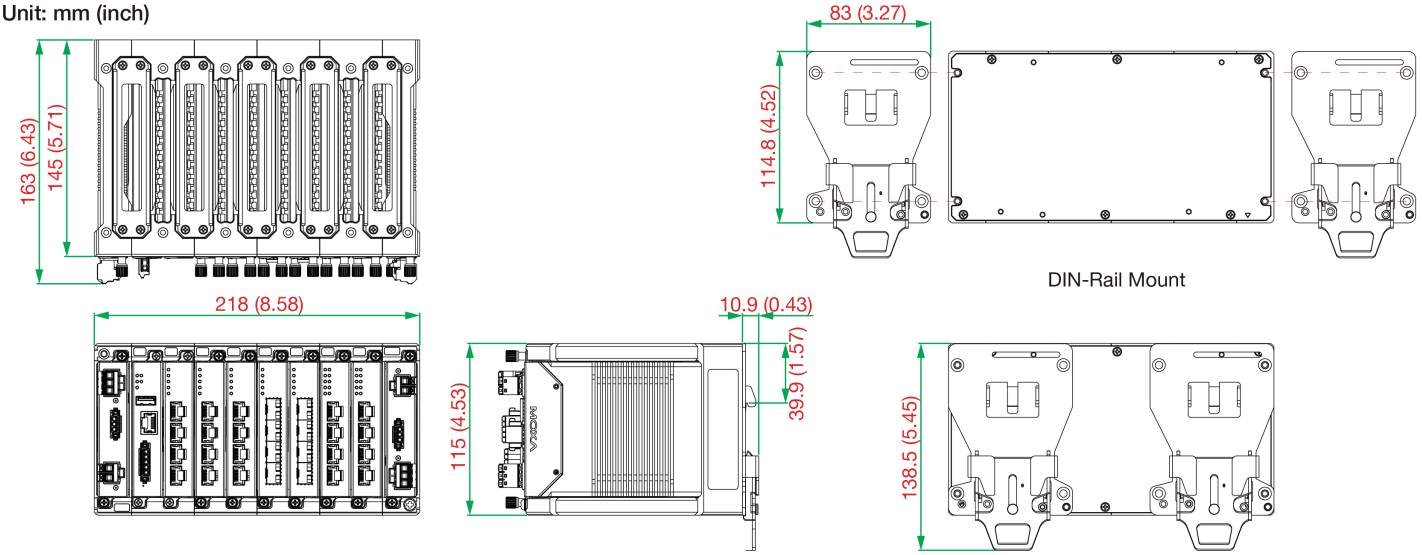
Warranty Period	5 years
Details	See www.moxa.com/warranty

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 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.

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

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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-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 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-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

RKS-G4028 Series

28G-port (with 802.3bt PoE option) full Gigabit modular managed Ethernet switches

Features and Benefits

- Meets a wide range of demands from Fast Ethernet to full Gigabit industrial networks (up to 28 Gigabit ports)
- Modular interfaces for flexible connector type combinations
- Support for IEEE 802.3bt PoE for up to 90 W output per port
- High EMC immunity compliant with IEC 61850-3 and IEEE 1613
- Hardware-based IEEE 1588 PTP for high-precision time synchronization
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches)[1], and STP/RSTP/MSTP for network redundancy
- -40 to 75°C operating temperature range
- Supports MXstudio for easy, visualized industrial network management
- Developed according to the IEC 62443-4-1 and compliant with the IEC 62443-4-2 industrial cybersecurity standards

Certifications

CE FC EN 50121-4 IEC 61850-3 IEEE 1613

Introduction

The RKS-G4028 Series is designed to meet the rigorous demands of mission-critical applications for industry and business, such as power substation automation systems (IEC 61850-3, IEEE 1613), railway applications (EN 50121-4), and factory automation systems. The RKS-G4028 Series' Gigabit and Fast Ethernet backbone, redundant ring, and 24 VDC, 48 VDC, or 110/220 VDC/VAC dual isolated redundant power supplies increase the reliability of your communications and save on wiring costs.

The modular design of the RKS-G4028 Series also makes network planning easy, and allows greater flexibility by letting you install up to 28 Gigabit ports with various connector types.

Additional Features and Benefits

- Layer 3 switching functionality to move data and information across networks (L3 models only)
- IEEE 1588v2 PTP (Precision Time Protocol) for network time synchronization
- Command line interface (CLI) for quickly configuring major managed functions
- DHCP Option 82 for IP address assignment with different policies
- 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
- IEEE 802.3ad, LACP for optimum bandwidth utilization
- Line-swap fast recovery
- TACACS+, IEEE 802.1X, SNMPv3, HTTPS, and SSH to enhance network security
- SNMPv1/v2c/v3 for different levels of network management
- RMON for proactive and efficient network monitoring
- Bandwidth management prevents unpredictable network status with "Lock port" to restrict access to authorized MAC addresses
- Port mirroring for online debugging
- Automatic warning by exception through email and relay output
- Automatic recovery of connected device's IP addresses
- Configurable by web browser, Telnet/serial console, CLI, Windows utility, and ABC-02-USB automatic backup configurator

Specifications

Input/Output Interface

Alarm Contact Channels	1 relay output with current carrying capacity of 2 A @ 24 VDC

1. If the port link speed is 1 Gigabit or higher, the recovery time is < 50 ms.

Ethernet Interface

10/100/1000BaseT(X) Ports (RJ45 connector)	RKS-G4028-4GT models: 4 RKS-G4028-L3-4GT models: 4
100/1000BaseSFP Slots	RKS-G4028-4GS models: 4 RKS-G4028-L3-4GS models: 4 RKS-G4028-PoE-4GS models: 4 RKS-G4028-L3-PoE-4GS models: 4
Module	There are 3 module slots on the switch. Users can select different types of modules to insert into the switch. The modules that can be selected include 8-port/6-port modules with 10/100/1000BaseT(X), 10/100BaseT(X), 100/1000BaseSFP, or 100BaseFX (SC/ST connector) interfaces. Refer to Expansion Modules in the Accessories section for a full list of supported interface modules.
Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1X for authentication IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3ad for Port Trunk with LACP IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3x for flow control IEEE 802.3z for 1000BaseSX/LX/LHX/ZX IEEE 802.3bt for Power over Ethernet

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, IGMP Snooping v1/v2/v3, IGMP Querier
Redundancy Protocols	STP, RSTP, Turbo Ring v2, Turbo Chain, Ring Coupling, Dual-Homing, Link Aggregation, Loop Protection, MSTP
Routing Redundancy	L3 models: VRRP
Security	Broadcast storm protection, Rate Limit, Access control list, Static port lock, Sticky MAC, HTTPS/SSL, SSH, RADIUS, TACACS+, Login and password policy, Secure boot, MAC authentication bypass, Trust access control
Time Management	SNTP, IEEE 1588v2 PTP (hardware-based), 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
Unicast Routing	L3 models: 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

Switch Properties

IGMP Groups	2048
Jumbo Frame Size	9.6 KB
MAC Table Size	16 K
Max. No. of VLANs	256

Packet Buffer Size	1.5 Mbits
Priority Queues	8
VLAN ID Range	VID 1 to 4094

USB Interface

Storage Port	USB Type A

MicroSD Interface

Storage Port	MicroSD card

Serial Interface

Console Port	RS-232 (RJ45)

Power Parameters

Total PoE Power Budget	PoE models: 300 W
Max. PoE Power Output per Port	PoE models: IEEE 802.3af: 15.4 W IEEE 802.3at: 30 W IEEE 802.3bt: 90 W
Input Voltage	RKS-G4028-LV models: 24/48 VDC RKS-G4028-2LV models: 24/48 VDC (redundant dual inputs) RKS-G4028-HV models: 110/220 VAC, 110/220 VDC RKS-G4028-2HV models: 110/220 VAC, 110/220 VDC (redundant dual inputs) PoE models: 48 VDC (for the PoE system)
Operating Voltage	RKS-G4028-LV/2LV models: 18 to 72 VDC RKS-G4028-HV/2HV models: 88 to 300 VDC, 85 to 264 VAC PoE models: 46 to 57 VDC (for the PoE system)
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Input Current	RKS-G4028-LV/2LV models: Max. 2.53 A @ 24 VDC Max. 1.25 A @ 48 VDC RKS-G4028-HV/2HV models: Max. 0.55 A @ 110 VDC Max. 0.29 A @ 220 VDC Max. 1.01 A @ 110 VAC Max. 0.62 A @ 220 VAC EPS (PoE models only): Max. 7.50 A @ 48 VDC

Physical Characteristics

IP Rating	IP30
Dimensions	440 x 44 x 300 mm (17.32 x 1.37 x 11.81 in)
Weight	RKS-G4028-LV/HV models: 4900 g (10.80 lb) RKS-G4028-2LV/2HV models: 5200 g (11.46 lb) RKS-G4028-PoE-LV/HV models: 5000 g (11.02 lb) RKS-G4028-PoE-2LV/2HV models: 5300 g (11.68 lb)
Installation	Rack mounting

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 62368-1, UL 62368-1, UL 61010
EMC	EN 55032/35
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 35 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF IEC 61000-4-11 DIPs
Power Substation	IEC 61850-3, IEEE 1613
Railway	EN 50121-4
Freefall	IEC 60068-2-32
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6

MTBF

Time	RKS-G4028-4GT-HV models: 572,888 hours RKS-G4028-4GT-2HV models: 518,894 hours RKS-G4028-4GS-HV models: 529,925 hours RKS-G4028-4GS-2HV models: 483,436 hours RKS-G4028-4GT-LV models: 548,589 hours RKS-G4028-4GT-2LV models: 479,574 hours RKS-G4028-4GS-LV models: 508,639 hours RKS-G4028-4GS-2LV models: 449,160 hours RKS-G4028-PoE-4GS-HV models: 508,190 hours RKS-G4028-PoE-4GS-2HV models: 465,282 hours RKS-G4028-PoE-4GS-LV models: 488,598 hours RKS-G4028-PoE-4GS-2LV models: 433,472 hours
Standards	Telcordia (Bellcore), GB

Warranty

Warranty Period	5 years
Details	See www.moxa.com/warranty

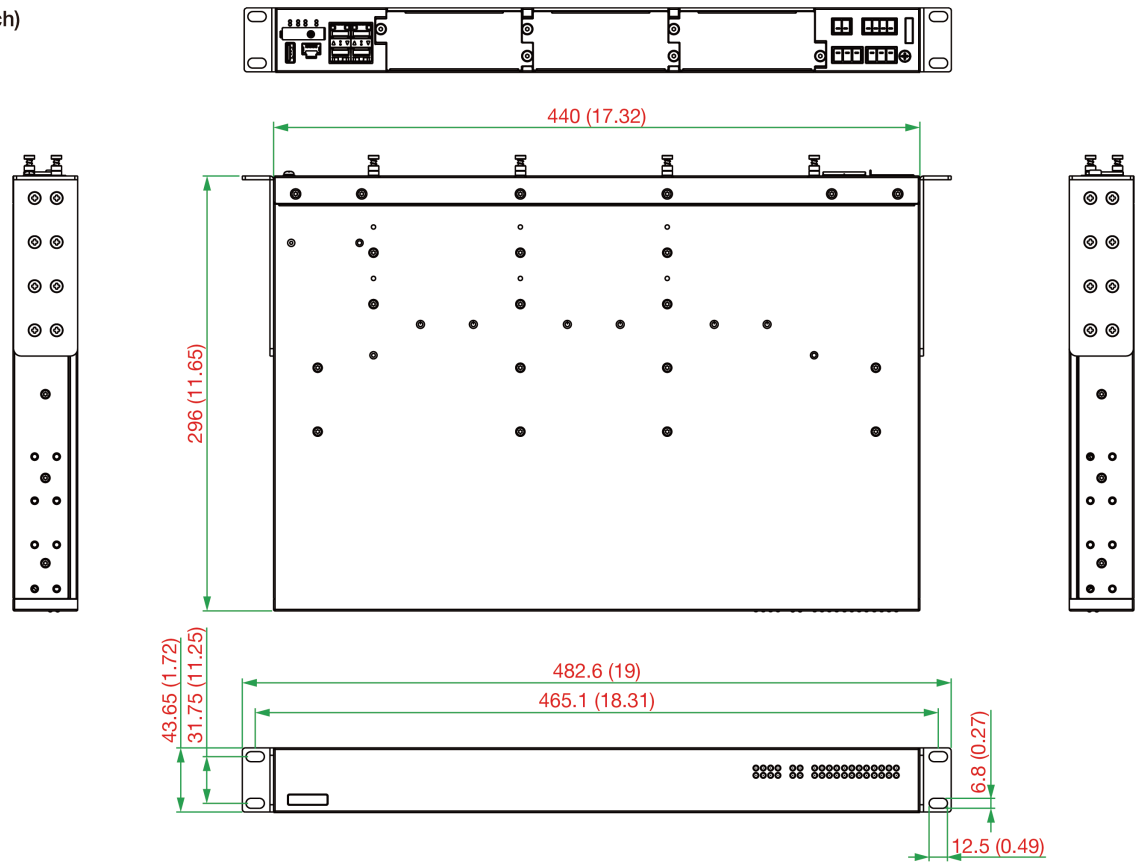
Package Contents

Device	1 x RKS-G4028 Series switch
Installation Kit	2 x rack-mounting ear 4 x protective caps for unused SFP ports (for RKS-G4028-GS models only) 8 x round stickers for module screws

Documentation	1 x quick installation guide 1 x warranty card
Note	1. Only the RKS-G4028-PoE Series and RKS-G4028-L3-PoE models support PoE functionality with RM-G4000-8GPoE and/or RM-G4000-8PoE modules. 2. Power over Ethernet requires the 48 VDC external power supply (46 to 57 VDC). 3. The 48 VDC external power supply, SFP modules, and modules from the RM-G4000 Module Series need to be purchased separately for use with this product.

Dimensions

Unit: mm (inch)



Ordering Information

Model Name	Max. No. of Ports	PoE Support	L3 Functionality	Input Voltage	Redundant Dual Input	External Power Supply	Operating Temp.
RKS-G4028-4GT-HVT	28	–	–	110/220 VAC/ VDC	–	–	-40 to 75°C
RKS-G4028-4GT-2HV-T	28	–	–	110/220 VAC/ VDC	✓	–	-40 to 75°C
RKS-G4028-4GS-HV-T	28	–	–	110/220 VAC/ VDC	–	–	-40 to 75°C
RKS-G4028-4GS-2HV-T	28	–	–	110/220 VAC/ VDC	✓	–	-40 to 75°C
RKS-G4028-4GT-LV-T	28	–	–	24/48 VDC	–	–	-40 to 75°C
RKS-G4028-4GT-2LV-T	28	–	–	24/48 VDC	✓	–	-40 to 75°C
RKS-G4028-4GS-LVT	28	–	–	24/48 VDC	–	–	-40 to 75°C
RKS-G4028-4GS-2LV-T	28	–	–	24/48 VDC	✓	–	-40 to 75°C
RKS-G4028-L3-4GT-HV-T	28	–	✓	110/220 VAC/ VDC	–	–	-40 to 75°C

Model Name	Max. No. of Ports	PoE Support	L3 Functionality	Input Voltage	Redundant Dual Input	External Power Supply	Operating Temp.
RKS-G4028-L3-4GT-2HV-T	28	–	✓	110/220 VAC/VDC	✓	–	-40 to 75°C
RKS-G4028-L3-4GS-HV-T	28	–	✓	110/220 VAC/VDC	–	–	-40 to 75°C
RKS-G4028-L3-4GS-2HV-T	28	–	✓	110/220 VAC/VDC	✓	–	-40 to 75°C
RKS-G4028-L3-4GT-LV-T	28	–	✓	24/48 VDC	–	–	-40 to 75°C
RKS-G4028-L3-4GT-2LV-T	28	–	✓	24/48 VDC	✓	–	-40 to 75°C
RKS-G4028-L3-4GS-LV-T	28	–	✓	24/48 VDC	–	–	-40 to 75°C
RKS-G4028-L3-4GS-2LV-T	28	–	✓	24/48 VDC	✓	–	-40 to 75°C
RKS-G4028-PoE-4GS-HV-T	28	✓	–	110/220 VAC/VDC	–	✓	-40 to 75°C
RKS-G4028-PoE-4GS-2HV-T	28	✓	–	110/220 VAC/VDC	✓	✓	-40 to 75°C
RKS-G4028-PoE-4GS-LV-T	28	✓	–	24/48 VDC	–	✓	-40 to 75°C
RKS-G4028-PoE-4GS-2LV-T	28	✓	–	24/48 VDC	✓	✓	-40 to 75°C
RKS-G4028-L3-PoE-4GS-HV-T	28	✓	✓	110/220 VAC/VDC	–	✓	-40 to 75°C
RKS-G4028-L3-PoE-4GS-2HV-T	28	✓	✓	110/220 VAC/VDC	✓	✓	-40 to 75°C
RKS-G4028-L3-PoE-4GS-LV-T	28	✓	✓	24/48 VDC	–	✓	-40 to 75°C
RKS-G4028-L3-PoE-4GS-2LV-T	28	✓	✓	24/48 VDC	✓	✓	-40 to 75°C

Accessories (sold separately)

Expansion Modules

RM-G4000-8TX	Fast Ethernet module with 8 10/100BaseT(X) ports
RM-G4000-8SFP	Fast Ethernet module with 8 100BaseSFP slots
RM-G4000-8PoE	Fast Ethernet module with 8 10/100BaseT(X) IEEE 802.3bt PoE ports
RM-G4000-8GTX	Gigabit Ethernet module with 8 10/100/1000BaseT(X) ports
RM-G4000-8GSFP	Gigabit Ethernet module with 8 100/1000BaseSFP slots
RM-G4000-8GPoE	Gigabit Ethernet module with 8 10/100/1000BaseT(X) IEEE 802.3bt PoE ports
RM-G4000-6MSC	Fast Ethernet module with 6 multi-mode 100BaseFX ports with SC connectors
RM-G4000-6MST	Fast Ethernet module with 6 multi-mode 100BaseFX ports with ST connectors
RM-G4000-6SSC	Fast Ethernet module with 6 single-mode 100BaseFX ports with SC connectors
RM-G4000-4MSC2TX	Fast Ethernet module with 4 multi-mode 100BaseFX ports with SC connectors, 2 10/100BaseT(X) ports
RM-G4000-4MST2TX	Fast Ethernet module with 4 multi-mode 100BaseFX ports with ST connectors, 2 10/100BaseT(X) ports
RM-G4000-4SSC2TX	Fast Ethernet module with 4 single-mode 100BaseFX ports with SC connectors, 2 10/100BaseT(X) ports
RM-G4000-2MSC4TX	Fast Ethernet module with 2 multi-mode 100BaseFX ports with SC connectors, 4 10/100BaseT(X) ports
RM-G4000-2MST4TX	Fast Ethernet module with 2 multi-mode 100BaseFX ports with ST connectors, 4 10/100BaseT(X) ports

RM-G4000-2SSC4TX	Fast Ethernet module with 2 single-mode 100BaseFX ports with SC connectors, 4 10/100BaseT(X) ports

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
ABC-03-microSD-T	MicroSD-based configuration backup and restoration tool, firmware upgrades, and log file storage tool for managed Ethernet switches and WLAN products, -40 to 85°C operating temperature

SFP Modules

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-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-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-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-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-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-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-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-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-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-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-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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°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-1GLXLC	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, 0 to 60°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-1GZXLC	SFP module with 1 1000BaseZX port with LC connector for 80 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-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°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-T	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, -40 to 85°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-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

Software

MXview-100	MXview license for 100 nodes
MXview-50	MXview license for 50 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

RM-G4000 Module Series

Fast Ethernet and Gigabit modules for RKS-G4028 Series rackmount Ethernet switches

Features and Benefits

- -40 to 75°C operating temperature range
- IEC 61850-3 and IEEE 1613 compliant

Certifications

Introduction

The RM-G4000 Module Series includes Gigabit and Fast Ethernet modules for the RKS-G4000 Series rack-mount Ethernet switches. Each RM-G4000 Series module supports up to 8 ports with a variety of interface types including TX, MSC, SSC, and MST media types. Additionally, the RM-G4000-8GPoE and RM-G4000-8PoE modules provide the RKS-G4000 Series PoE models with high-capacity PoE functionality. IEEE 1588 interface modules provide hardware-based PTP functions for precise time synchronization across the network.

Specifications

Ethernet Interface

10/100/1000BaseT(X) Ports (RJ45 connector)	RM-G4000-8GTX: 8
10/100BaseT(X) Ports (RJ45 connector)	RM-G4000-8TX: 8 RM-G4000-4MSC2TX: 2 RM-G4000-2MSC4TX: 4 RM-G4000-4MST2TX: 2 RM-G4000-2MST4TX: 4 RM-G4000-4SSC2TX: 2 RM-G4000-2SSC4TX: 4
100/1000BaseSFP Slots	RM-G4000-8GSFP: 8
100BaseSFP Slots	RM-G4000-8SFP: 8
100BaseFX Ports (multi-mode SC connector)	RM-G4000-6MSC: 6 RM-G4000-4MSC2TX: 4 RM-G4000-2MSC4TX: 2
100BaseFX Ports (multi-mode ST connector)	RM-G4000-6MST: 6 RM-G4000-4MST2TX: 4 RM-G4000-2MST4TX: 2
100BaseFX Ports (single-mode ST connector)	RM-G4000-6SSC: 6 RM-G4000-4SSC2TX: 4 RM-G4000-2SSC4TX: 2
PoE Ports (10/100/1000BaseT(X), RJ45 connector)	RM-G4000-8GPoE: 8

PoE Ports (10/100BaseT(X), RJ45 connector)	RM-G4000-8PoE: 8

Optical Fiber

		100BaseFX		
		Multi-Mode		Single-Mode
Fiber Cable Type		OM1	50/125 µm 800 MHz x km	G.652
Typical Distance		4 km	5 km	40 km
Wavelength	Typical (nm)	1300		1310
	TX Range (nm)	1260 to 1360		1280 to 1340
	RX Range (nm)	1100 to 1600		1100 to 1600
Optical Power	TX Range (dBm)	-10 to -20		0 to -5
	RX Range (dBm)	-3 to -32		-3 to -34
	Link Budget (dB)	12		29
	Dispersion Penalty (dB)	3		1

Note: When connecting a single-mode fiber transceiver, we recommend using an attenuator to prevent damage caused by excessive optical power.
Note: Compute the “typical distance” of a specific fiber transceiver as follows: Link budget (dB) > dispersion penalty (dB) + total link loss (dB).

Physical Characteristics

Weight	RM-G4000-2SSC4TX: 400 g (0.88 lb) RM-G4000-6MST: 400 g (0.88 lb) RM-G4000-8TX: 300 g (0.66 lb) RM-G4000-8SFP: 400 g (0.88 lb) RM-G4000-8GTX: 300 g (0.66 lb) RM-G4000-2MSC4TX: 400 g (0.88 lb) RM-G4000-4SSC2TX: 400 g (0.88 lb) RM-G4000-4MST2TX: 400 g (0.88 lb) RM-G4000-2MST4TX: 400 g (0.88 lb) RM-G4000-4MSC2TX: 400 g (0.88 lb) RM-G4000-8GSFP: 400 g (0.88 lb) RM-G4000-6MSC: 400 g (0.88 lb) RM-G4000-6SSC: 400 g (0.88 lb) RM-G4000-8PoE: 500 g (1.10 lb) RM-G4000-8GPoE: 500 g (1.10 lb)

MTBF

Time	RM-G4000-8TX: 12,132,675 hrs RM-G4000-8SFP: 3,005,803 hrs RM-G4000-8GTX: 12,132,675 hrs RM-G4000-8GSFP: 3,005,803 hrs RM-G4000-6MSC: 2,183,161 hrs RM-G4000-6MST: 2,183,161 hrs RM-G4000-6SSC: 2,183,161 hrs RM-G4000-4MSC2TX: 2,469,891 hrs RM-G4000-4MST2TX: 2,469,891 hrs RM-G4000-4SSC2TX: 2,469,891 hrs RM-G4000-2MSC4TX: 2,891,502 hrs RM-G4000-2MST4TX: 2,891,502 hrs RM-G4000-2SSC4TX: 2,891,502 hrs RM-G4000-8PoE: 2,063,404 hrs RM-G4000-8GPoE: 2,063,404 hrs
Standards	Telcordia (Bellcore), GB

Warranty

Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x RM-G4000 Series module
Documentation	1 x warranty card

Ordering Information

Model Name	10/100/1000BaseT(X) Ports	10/100BaseT(X) Ports	100/1000BaseSFP Ports	100BaseSFP Ports	100BaseFX Ports Multi-mode, SC Connector	100BaseFX Port Multi-mode, ST Connector	100BaseFX Port Single-mode, SC Connector
RM-G4000-8GTX	8	–	–	–	–	–	–
RM-G4000-8TX	–	8	–	–	–	–	–
RM-G4000-8GSFP	–	–	8	–	–	–	–
RM-G4000-8SFP	–	–	–	8	–	–	–
RM-G4000-6MSC	–	–	–	–	6	–	–
RM-G4000-6MST	–	–	–	–	–	6	–
RM-G4000-6SSC	–	–	–	–	–	–	6
RM-G4000-4MSC2TX	–	2	–	–	4	–	–
RM-G4000-4MST2TX	–	2	–	–	–	4	–
RM-G4000-4SSC2TX	–	2	–	–	–	–	4
RM-G4000-2MSC4TX	–	4	–	–	2	–	–
RM-G4000-2MST4TX	–	4	–	–	–	2	–
RM-G4000-2SSC4TX	–	4	–	–	–	–	2
RM-G4000-8GPoE	8 (IEEE 802.3bt PoE)	–	–	–	–	–	–
RM-G4000-8PoE	–	8 (IEEE 802.3bt PoE)	–	–	–	–	–

Accessories (sold separately)

SFP Modules

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 with LC connector for 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-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, 0 to 60°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m 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-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, 0 to 60°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m 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

TN-5308 Series

EN 50155 8-port unmanaged Ethernet switches

Features and Benefits

- M12 connectors and IP40 metal housing
- Up to 8 IEEE 802.3af compliant PoE and Ethernet combo ports
- Supports IEEE 802.3/802.3u/802.3x
- Complies with all EN 50155 mandatory test items[1]
- -40 to 75°C operating temperature range (-T models)

Certifications

EN 50155 EN 50121-4 CE FC

Introduction

The ToughNet TN-5308 Series M12 unmanaged Ethernet switches are designed for industrial applications in harsh environments. TN-5308 Series switches use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. The TN-5308 Series Ethernet switches provide 8 Fast Ethernet M12 ports, support IEEE 802.3/802.3u/802/3x with 10/100M, full/half-duplex, MDI/MDI-X auto-sensing, and provide an economical solution for your industrial Ethernet network.

Models with an extended operating temperature range of -40 to 75°C are also available. TN-5308 Ethernet switches comply with those EN 50155 requirements that make products more suitable for rolling stock applications, including operating temperature, power input voltage, surge, ESD, and vibration, making the switches suitable for a variety of industrial applications. TN-5308 PoE Ethernet switches provide 4 or 8 IEEE 802.3af compliant PoE ports. These switches are classified as power source equipment (PSE) and provide up to 15.4 watts of power per port.

Specifications

Ethernet Interface	
10/100BaseT(X) Ports (M12 D-coded 4-pin female connector)	TN-5308 Series non-PoE models: 8
PoE Ports (10/100BaseT(X), M12 D-coded 4-pin female connector)	TN-5308-4PoE Series: 4 TN-5308-8PoE Series: 8
Standards	IEEE 802.3 for 10BaseT IEEE 802.3u for 100BaseT(X) IEEE 802.3x for flow control TN-5308 Series PoE models: IEEE 802.3af for PoE
Power Parameters	
Input Current	TN-5308-LV Series: 0.19 A @ 12 VDC, 0.10 A @ 24 VDC, 0.05 A @ 48 VDC TN-5308-MV Series: 0.033 A @ 72 VDC, 0.024 A @ 96 VDC, 0.021 A @ 110 VDC TN-5308-4PoE Series: 1.6 A @ 48 VDC TN-5308-8PoE Series: 2.9 A @ 48 VDC
Input Voltage	TN-5308-LV Series: 12 to 48 VDC TN-5308-MV Series: 72 to 110 VDC PoE models: 48 VDC
Max. PoE Power Output per Port	TN-5308 Series PoE models: 15.4 W
No. of Power Inputs	1

1. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed statement, click here: www.moxa.com/doc/specs/EN_50155_Compliance.pdf

Operating Voltage	TN-5308-LV Series: 8.4 to 60 VDC TN-5308-MV Series: 50.4 to 137.5 VDC TN-5308 Series PoE models: 46 to 50 VDC
Power Connector	TN-5308-LV Series and TN-5308 Series PoE models: M12 A-coded male connector TN-5308-MV Series: M23 connector

Physical Characteristics

Housing	Metal
IP Rating	IP40
Dimensions	TN-5308-LV Series: 60 x 216.6 x 36.1 mm (2.36 x 8.53 x 1.42 in) TN-5308-MV Series: 60 x 216.6 x 53.8 mm (2.36 x 8.53 x 2.12 in) TN-5308-4PoE Series: 60 x 216.6 x 48.7 mm (2.36 x 8.53 x 1.91 in) TN-5308-8PoE Series: 60 x 216.6 x 52.9 mm (2.36 x 8.53 x 2.1 in)
Weight	TN-5308-LV Series: 485 g (1.07 lb) TN-5308-MV Series: 685 g (1.51 lb) TN-5308-4PoE Series: 675 g (1.49 lb) TN-5308-8PoE Series: 970 g (2.14 lb)
Installation	DIN-rail mounting (with optional kit), Wall mounting
Protection	TN-5308 Series -CT models: PCB conformal coating

Environmental Limits

Operating Temperature	Standard Models: -25 to 60°C (-13 to 140°F) Wide Temp. Models: -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)
Altitude	2000 m

Standards and Certifications

Freefall	IEC 60068-2-32
EMC	EN 55032/24
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Environmental Testing	IEC 60068-2-1, EN 50155 IEC 60068-2-14, EN 50155 IEC 60068-2-2, EN 50155 IEC 60068-2-30, EN 50155
International Approval	RCM
Railway	EN 50121-4, EN 50155
Railway Fire Protection	EN 45545-2
Safety	EN 60950-1, UL 508
Salt Spray Test	IEC 60068-2-11, EN 50155

Shock	IEC 60068-2-27, IEC 61373, EN 50155
Vibration	IEC 60068-2-64, IEC 61373, EN 50155

Declaration

Green Product	RoHS, CRoHS, WEEE

MTBF

Time	TN-5308-LV Series: 2,099,286 hrs TN-5308-MV Series: 2,590,858 hrs TN-5308-4PoE Series: 252,075 hrs TN-5308-8PoE Series: 308,392 hrs
Standards	Telcordia SR332

Warranty

Warranty Period	5 years
Details	See www.moxa.com/warranty

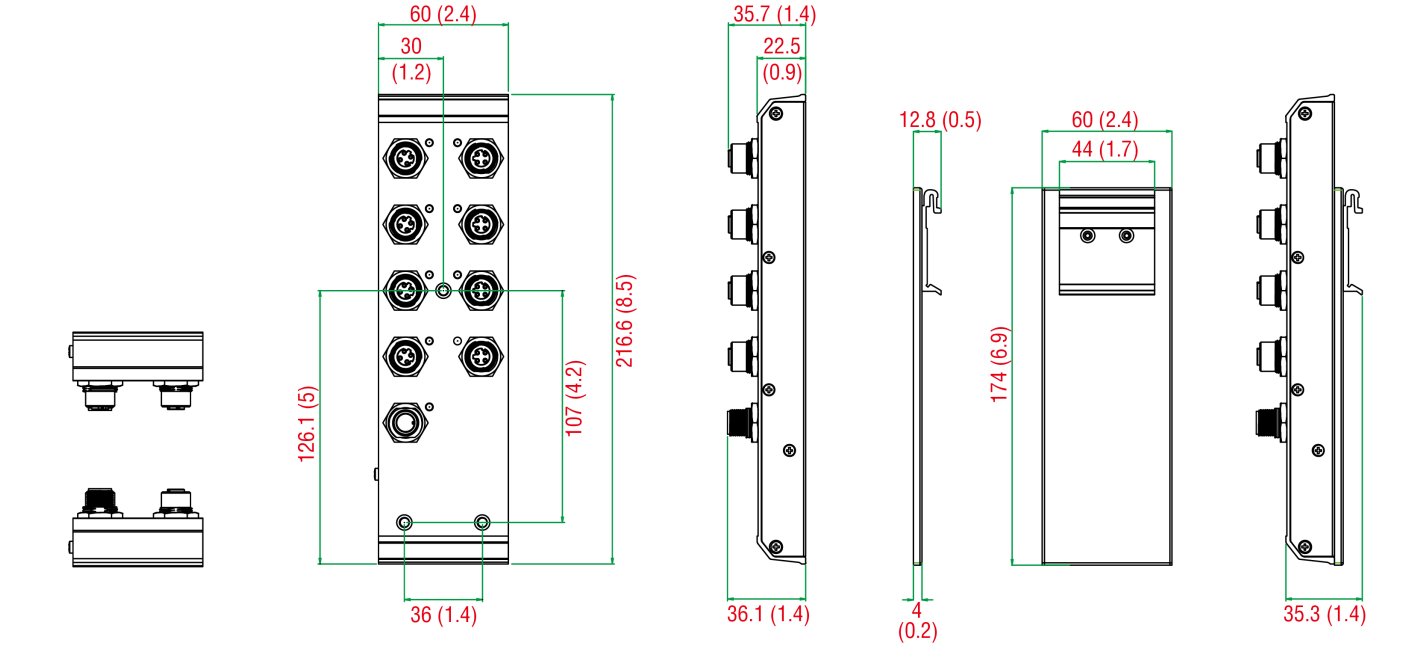
Package Contents

Device	1 x TN-5308 Series switch
Installation Kit	1 x panel-mounting kit
Documentation	1 x quick installation guide 1 x warranty card

Dimensions

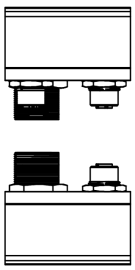
TN-5308-LV Series

Unit: mm (inch)

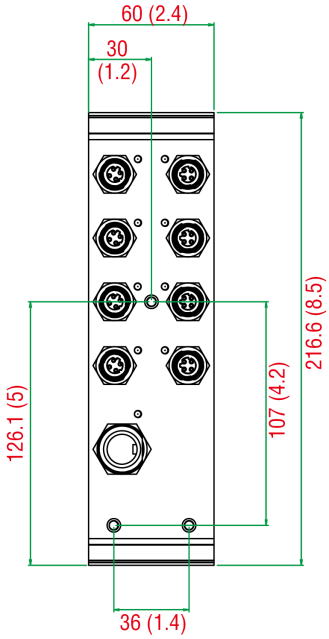


Top and Bottom Views | Front View | Side View | DIN-Rail Mounting Kit | Side View (including DIN-Rail)

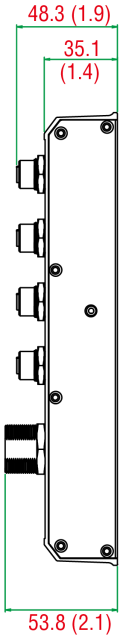
Unit: mm (inch)



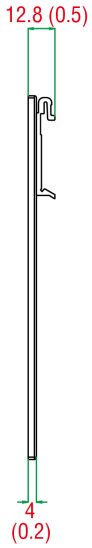
Top and Bottom Views

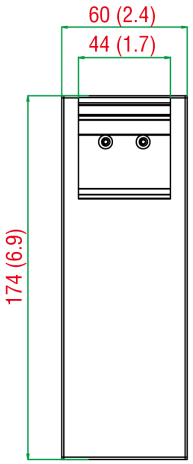


Front View

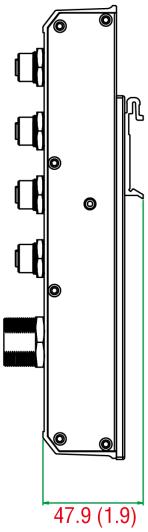


Side View





DIN-Rail Mounting Kit



Side View
(including DIN-Rail)

Ordering Information

Model Name	PoE, 10/100BaseT(X) Ports, M12 D-Coded Female Connector	10/100BaseT(X) Ports, M12 D-Coded Female Connector	Power Input	Input Voltage	Operating Temp.	Conformal Coating
TN-5308-LV	–	8	Single input	12/24/36/48 VDC	-25 to 60°C	–
TN-5308-LV-CT	–	8	Single input	12/24/36/48 VDC	-25 to 60°C	✓
TN-5308-LV-T	–	8	Single input	12/24/36/48 VDC	-40 to 75°C	–
TN-5308-LV-CT-T	–	8	Single input	12/24/36/48 VDC	-40 to 75°C	✓
TN-5308-MV	–	8	Single input	72/96/110 VDC	-25 to 60°C	–
TN-5308-MV-CT	–	8	Single input	72/96/110 VDC	-25 to 60°C	✓
TN-5308-MV-T	–	8	Single input	72/96/110 VDC	-40 to 75°C	–
TN-5308-MV-CT-T	–	8	Single input	72/96/110 VDC	-40 to 75°C	✓
TN-5308-4PoE-48	4	4	Single input	48 VDC	-25 to 60°C	–
TN-5308-4PoE-48-CT	4	4	Single input	48 VDC	-25 to 60°C	✓
TN-5308-4PoE-48-T	4	4	Single input	48 VDC	-40 to 75°C	–
TN-5308-4PoE-48-CT-T	4	4	Single input	48 VDC	-40 to 75°C	✓
TN-5308-8PoE-48	8	–	Single input	48 VDC	-25 to 60°C	–
TN-5308-8PoE-48-CT	8	–	Single input	48 VDC	-25 to 60°C	✓
TN-5308-8PoE-48-T	8	–	Single input	48 VDC	-40 to 75°C	–
TN-5308-8PoE-48-CT-T	8	–	Single input	48 VDC	-40 to 75°C	✓

Accessories (sold separately)

Cables

CBL-M12(FF5P)/Open-100 IP67	A-coded M12-to-5-pin power cable, IP67-rated 5-pin female M12 connector, 1 m Applicable Models: TN-5308-LV TN-5308-LV-T TN-5308-LV-CT-T TN-5308-MV-CT-T TN-5308-4PoE-48 TN-5308-4PoE-48-T TN-5308-8PoE-48 TN-5308-8PoE-48-T
CBL-M12D(MM4P)/RJ45-100 IP67	M12-to-RJ45 cable, IP67-rated, 1 m
CBL-M23(FF6P)/OPEN-BK-100 IP67	M23 to 6-pin power cable, IP67-rated female 6-pin M23 connector, IP67, 1 m Applicable Models: TN-5308-MV TN-5308-MV-T
CBL-M12DMM4PM12DMM4P-BK-100-IP67	M12-to-M12 Cat-5E STP Ethernet cable, 4-pin D-coded M12 connector, IP67, 1 m

M12 Connector Caps

A-CAP-M12F-M	Metal cap for M12 female connector
A-CAP-M12M-M	Metal cap for M12 male connector

Connectors

M12D-4PMM-IP67	M12 D-coded connector, QUICKON type, 4-pin male, IP67
M12D-4P-IP68	M12 D-coded screw-in sensor connector, male, IP68
A-PLG-WPM23-01-IP67	M23 cable connector, female 6-pin, crimp type, IP67 Applicable Models: TN-5308-MV TN-5308-MV-T

DIN-Rail Mounting Kits

DK-TN-5308	DIN-rail mounting kit for the TN-5308 Series

TN-5500A Series

EN 50155 8 to 18-port Ethernet switches with up to 8 PoE ports and up to 2 Gigabit ports

Features and Benefits

- Up to 2 Gigabit ports with optional bypass relay function
- 8 IEEE 802.3at/af compliant PoE and Ethernet combo ports
- Isolated power with 24 to 110 VDC power supply range
- Complies with all EN 50155 mandatory test items[1]
- -40 to 75°C operating temperature range
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), and STP/RSTP/MSTP for network redundancy

Certifications

EN 50155 EN 50121-4

Introduction

The ToughNet TN-5500A Series M12 managed Ethernet switches are designed for railway applications, such as rolling stock, and wayside installations. The TN-5500A Series switches use M12 and other circular connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. The TN-5500A Series Ethernet switches provide 8 or 16 Fast Ethernet M12 ports with or without 8 IEEE 802.3at/af compliant PoE (Power-over-Ethernet) ports, and 2 ports on the down side to provide the Gigabit Ethernet interface with an optional bypass relay function. The PoE switches are classified as power source equipment (PSE) and provide up to 30 watts of power per port, and can be used to power IEEE 802.3at/af compliant powered devices (PDs), such as IP surveillance, wireless access points, and IP phones.

The TN-5500A Series provides a wide power input range of 24/36/48/72/96/110 VDC that allows you to use the same type of power source at different sites around the globe. In addition, the 24 to 110 VDC wide power input range and isolated power increases the reliability of your communications system. In addition, the -40 to 75°C operating temperature and IP54 rated waterproof enclosure allow deployment in harsh environments. TN-5500A Series Ethernet switches are compliant with mandatory sections of EN 50155, covering operating temperature, power input voltage, surge, ESD, and vibration, as well as conformal coating and power insulation, making the switches suitable for a variety of industrial applications.

Additional Features and Benefits

- Provides up to 30 watts per PoE port with a total power budget of 120 watts per switch
- IPv6 Ready logo awarded (IPv6 Logo Committee certified)
- Leading EN 50155 PoE switches for rolling stock applications
- DHCP Option 82 for IP address assignment with different policies
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), and STP/RSTP/MSTP for network redundancy
- IGMP snooping and GMRP for filtering multicast traffic
- EtherNet/IP and Modbus TCP industrial Ethernet protocols supported
- Port-based VLAN, IEEE 802.1Q VLAN, and GVRP to ease network planning
- QoS (IEEE 802.1p/1Q and ToS/DiffServ) allows real-time traffic classification and prioritization
- IEEE 802.3ad, LACP for optimum bandwidth utilization
- SNMPv1/v2c/v3 for different levels of network management
- TACACS+, SNMPv3, IEEE 802.1X, HTTPS, and SSH to enhance network security
- RMON for proactive and efficient network monitoring
- Bandwidth management to prevent unpredictable network status
- Lock port allows access by only authorized MAC addresses
- Port mirroring for online debugging
- Automatic warning by exception through email and relay output
- Line-swap fast recovery
- LLDP for automatic topology discovery in network management software
- Configurable by web browser, Telnet/serial console, CLI, and Windows utility
- Loop protection to prevent network loops
- Panel mounting or DIN-rail mounting installation capability

Specifications

Input/Output Interface

Alarm Contact Channels	2 x relay output in one M12 A-coded 5-pin male connector with current carrying capacity of 1 A @ 30 VDC

1. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed statement, click here: www.moxa.com/doc/specs/EN_50155_Compliance.pdf

Ethernet Interface

10/100/1000BaseT(X) Ports, Q-ODC Fiber Connector	TN-5510A-2GLSX Series: 2 TN-5510A-8PoE-2GLSX Series: 2
10/100/1000BaseT(X) Ports (M12 X-coded 8-pin female connector)	TN-5510A-2GTX Series: 2 TN-5510A-8PoE-2GTX Series: 2 TN-5518A-2GTX Series: 2 TN-5518A-8PoE-2GTX Series: 2
10/100/1000BaseT(X) Ports (M12 X-coded 8-pin female connector with bypass relay)	TN-5510A-2GTXBP Series: 2 TN-5510A-8PoE-2GTXBP Series: 2
10/100BaseT(X) Ports (M12 D-coded 4-pin female connector)	TN-5508A/5510A Series non-PoE models: 8 TN-5516A/5518A Series non-PoE models: 16 TN-5516A/5518A Series PoE models: 8
PoE Ports (10/100BaseT(X), M12 D-coded 4-pin female connector)	TN-5500A Series PoE models: 8
Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1X for authentication IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3ad for Port Trunk with LACP IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3x for flow control TN-5500A Series PoE models: IEEE 802.3af/at for PoE/PoE+ output TN-5510A Series 2GLSX models: IEEE 802.3z for 1000BaseSX/LX/LHX/ZX

Ethernet Software Features

Broadcast Forwarding	IP directed broadcast, broadcast forwarding
Configuration Options	Command Line Interface (CLI), Command Line Interface (CLI) through Serial/Telnet/SSH, Web Console (HTTP/HTTPS), Windows Utility
Filter	802.1Q, GMRP, GVRP, IGMP v1/v2/v3, Port-based VLAN, Static Multicast
Industrial Protocols	EtherNet/IP Adapter (Slave), Modbus TCP Server (Slave)
Management	Back Pressure Flow Control, DHCP Option 66/67/82, DHCP Server/Client, Flow control, HTTP, IPv4/IPv6, IOxpress, LLDP, Port Mirror, QoS/CoS/ToS, RARP, RMON, SMTP, SNMP Inform, SNMP Trap, Syslog, Telnet, Account Management
MIB	Bridge MIB, Ethernet-like MIB, MIB-II, P-BRIDGE MIB, Q-BRIDGE MIB, RMON MIB Groups 1, 2, 3, 9, RSTP MIB
Redundancy Protocols	Link Aggregation, MSTP, RSTP, STP, Turbo Chain, Turbo Ring v1/v2, Turbo Ring with DRC
Security	Broadcast storm protection, HTTPS/SSL, Local Account Accessibility, TACACS+, Port Lock, RADIUS, Rate Limit, SSH
Time Management	IEEE 1588 PTP v1/v2, NTP Server/Client, SNTP

Switch Properties

IGMP Groups	256
Max. No. of VLANs	64
VLAN ID Range	VID 1 to 4094

LED Interface

LED Indicators	STATE, PWR1, PWR2, FAULT, 10/100/1000M

Serial Interface

Console Port	M12 A-coded male connector

Power Parameters

Input Current	TN-5508A-WV Series: 0.28 A @ 24 VDC, 0.07 A @ 110 VDC TN-5508A-8PoE Series: 7.6 A @ 24 VDC, 1.55 A @ 110 VDC TN-5510A-2GTXBP Series: 0.56 A @ 24 VDC, 0.13 A @ 110 VDC TN-5510A-2GLSX Series: 0.45 A @ 24 VDC, 0.1 A @ 110 VDC TN-5510A-8PoE-2GTX Series: 7.90 A @ 24 VDC, 1.61 A @ 110 VDC TN-5510A-8PoE-2GLSX Series: 7.80 A @ 24 VDC, 1.58 A @ 110 VDC TN-5516A-WV Series: 0.39 A @ 24 VDC, 0.09 A @ 110 VDC TN-5516A-8PoE Series: 8.37 A @ 24 VDC, 1.65 A @ 110 VDC TN-5518A-2GTX Series 0.68 A @ 24 VDC, 0.16 A @ 110 VDC TN-5518A-8PoE-2GTX Series: 8.66 A @ 24 VDC, 1.69 A @ 110 VDC
Input Voltage	24/36/48/72/96/110 VDC, Redundant dual inputs
No. of Power Inputs	TN-5500A Series non-PoE models: 2 TN-5500A Series PoE models: 1
Operating Voltage	16.8 to 137.5 VDC
Overload Current Protection	Supported
Power Connector	M23 connector
Reverse Polarity Protection	Supported
Total PoE Power Budget	TN-5500A Series PoE models: 120 W

Physical Characteristics

Housing	Metal
IP Rating	IP54
Dimensions	TN-5508A Series non-PoE models: 185 x 175.8 x 76 mm (7.28 x 6.92 x 2.99 in) TN-5508A Series PoE models: 185 x 175.8 x 115 mm (7.28 x 6.92 x 4.53 in) TN-5510A Series non-PoE models: 185 x 180.9 x 76 mm (7.28 x 7.12 x 2.99 in) TN-5510A Series PoE models: 185 x 180.9 x 115 mm (7.28 x 7.12 x 4.53 in) TN-5510A-2GLSX-ODC Series: 185 x 204.3 x 76.0 mm (7.28 x 8.04 x 2.99 in) TN-5510A-8PoE-2GLSX-ODC series: 185 x 219.3 x 115 mm (7.28 x 8.63 x 4.53 in) TN-5516A Series non-PoE models: 250 x 175.8 x 76 mm (9.84 x 6.92 x 2.99 in) TN-5516A Series PoE models: 250 x 175.8 x 115 mm (9.84 x 6.92 x 4.53 in) TN-5518A Series non-PoE models: 250 x 180.9 x 76 mm (9.84 x 7.12 x 2.99 in) TN-5518A Series PoE models: 250 x 180.9 x 115 mm (9.84 x 7.12 x 4.53 in)
Weight	TN-5508A Series non-PoE models: 1,610 g (3.54 lb) TN-5508A Series PoE models: 2,383 g (5.25 lb) TN-5510A Series non-PoE models: 1,805 g (3.97 lb) TN-5510A Series PoE models: 2,690 g (5.93 lb) TN-5516A Series non-PoE models: 2,138 g (4.71 lb) TN-5516A Series PoE models: 3,286 g (7.24 lb) TN-5518A Series non-PoE models: 2,250 g (4.96 lb) TN-5518A Series PoE models: 3,439 g (7.58 lb)
Installation	DIN-rail mounting (optional), Wall mounting
Protection	TN-5500A Series -CT models: PCB conformal coating

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)
Altitude	2000 m

Standards and Certifications

EMC	EN 55032/24
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Freefall	IEC 60068-2-31
Radio Frequency	FCC
Railway	EN 50121-4, EN 50155, IEC 60571
Railway Fire Protection	EN 45545-2
Safety	IEC 60950-1, UL 61010-2-201
Shock	IEC 60068-2-27, IEC 61373, EN 50155
Vibration	IEC 60068-2-64, IEC 61373, EN 50155

Declaration

Green Product	RoHS, CRoHS, WEEE

MTBF

Time	TN-5508A-WV Series: 814,964 hrs TN-5508A-8PoE Series: 526,372 hrs TN-5510A-2GTX Series: 758,855 hrs TN-5510A-2GTXBP Series: 742,880 hrs TN-5510A-2GLSX Series: 722,049 hrs TN-5510A-8PoE-2GTX Series: 502,756 hrs TN-5510A-8PoE-2GTXBP Series: 495,703 hrs TN-5510A-8PoE-2GLSX Series: 486,560 hrs TN-5516A-WV Series: 722,721 hrs TN-5516A-8PoE Series: 722,721 hrs TN-5516A-2GTX Series: 647,128 hrs TN-5516A-2GTXBP Series: 628,808 hrs TN-5516A-8PoE-2GTX Series: 448,300 hrs TN-5516A-8PoE-2GTXBP Series: 439,442 hrs
Standards	Telcordia SR332

Warranty

Warranty Period	5 years
Details	See www.moxa.com/warranty

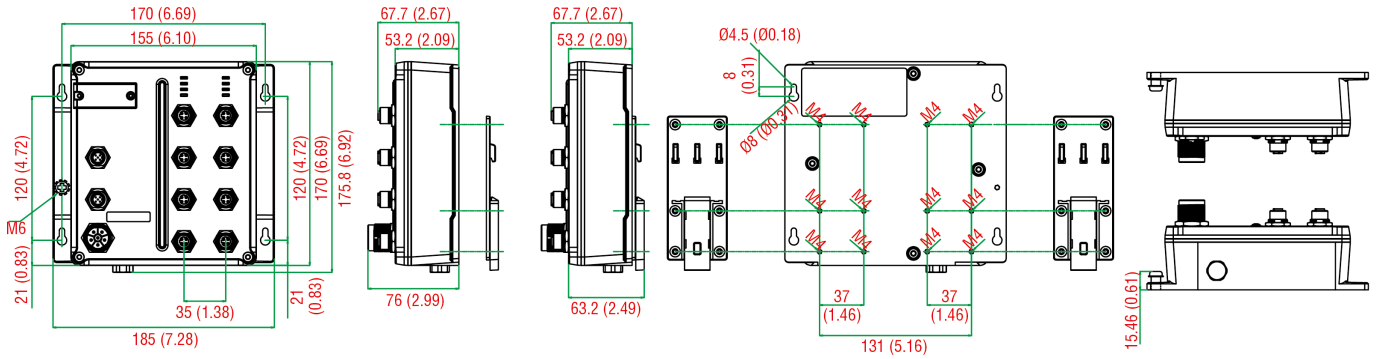
Package Contents

Device	1 x TN-5500A Series switch
Installation Kit	2 x cap, female, metal, for M12 port 1 x wall-mounting kit
Cable	1 x M12-to-DB9 console port
Documentation	1 x document and software CD 1 x quick installation guide 1 x warranty card

Dimensions

TN-5508A non-PoE Series

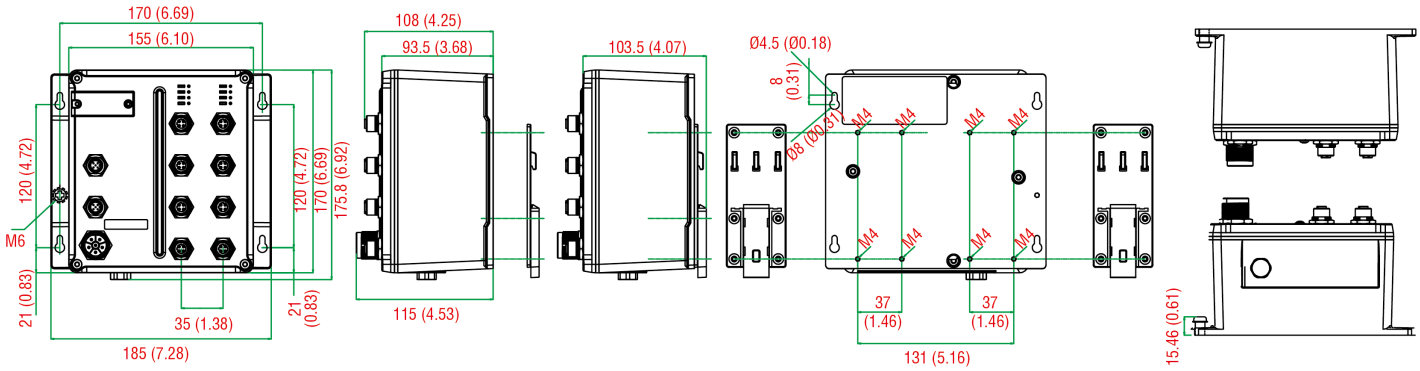
Unit: mm (inch)



Front View | Side View (including DIN-Rail Mounting Kit) | DIN-Rail Mounting Kit | Rear View | Top & Bottom Views

TN-5508A-8PoE Series

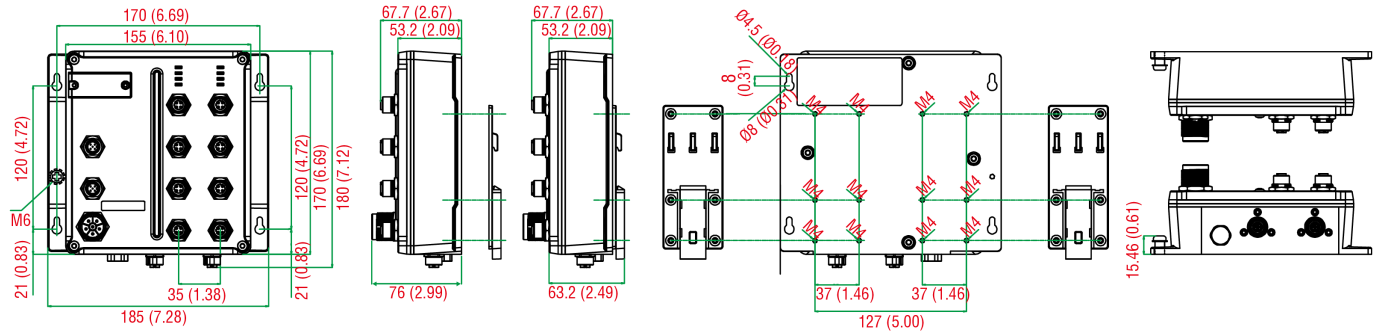
Unit: mm (inch)



Front View | Side View (including DIN-Rail Mounting Kit) | DIN-Rail Mounting Kit | Rear View | Top & Bottom Views

TN-5510A non-PoE Series

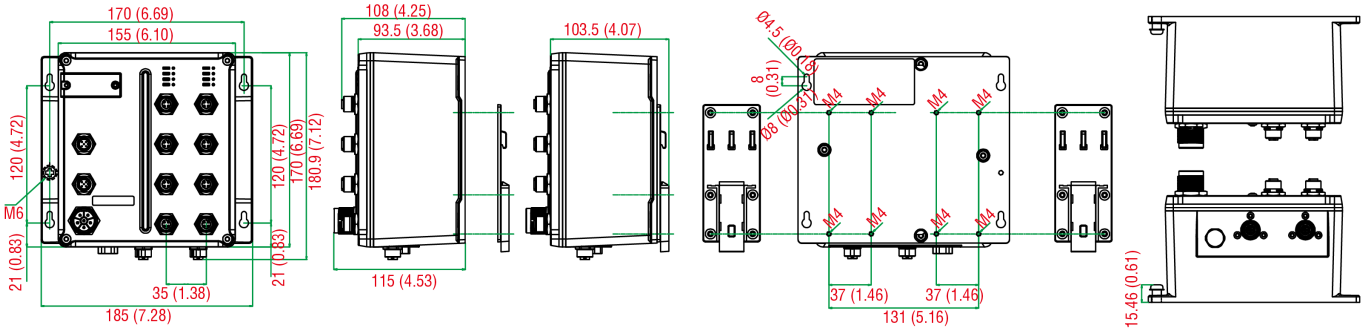
Unit: mm (inch)



Front View | Side View (including DIN-Rail Mounting Kit) | DIN-Rail Mounting Kit | Rear View | Top and Bottom Views

TN-5510A-8PoE Series

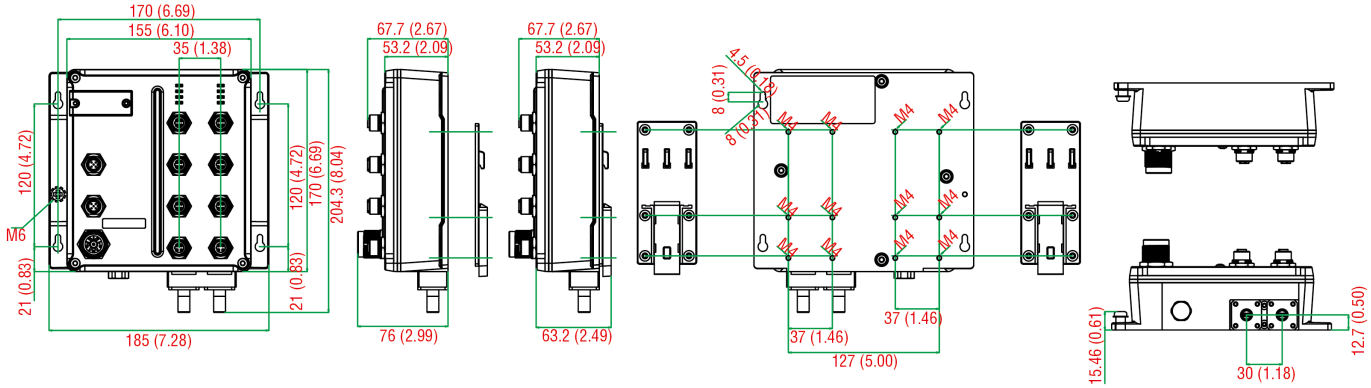
Unit: mm (inch)



Front View | Side View (including DIN-Rail Mounting Kit) | DIN-Rail Mounting Kit | Rear View | Top and Bottom Views

TN-5510A-2GLSX-ODC Series

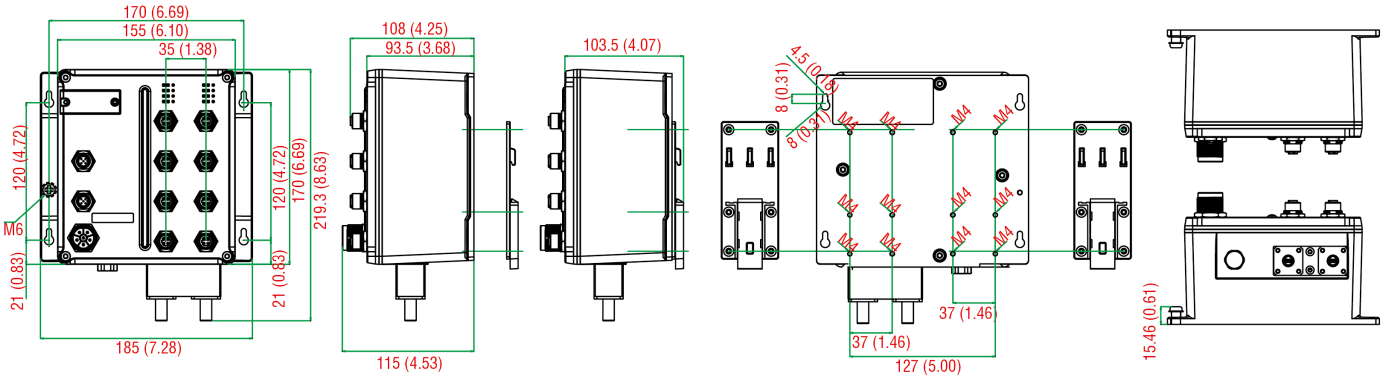
Unit: mm (inch)



Front View | Side View (including DIN-Rail Mounting Kit) | DIN-Rail Mounting Kit | Rear View | Top and Bottom Views

TN-5510A-8PoE-2GLSX-ODC Series

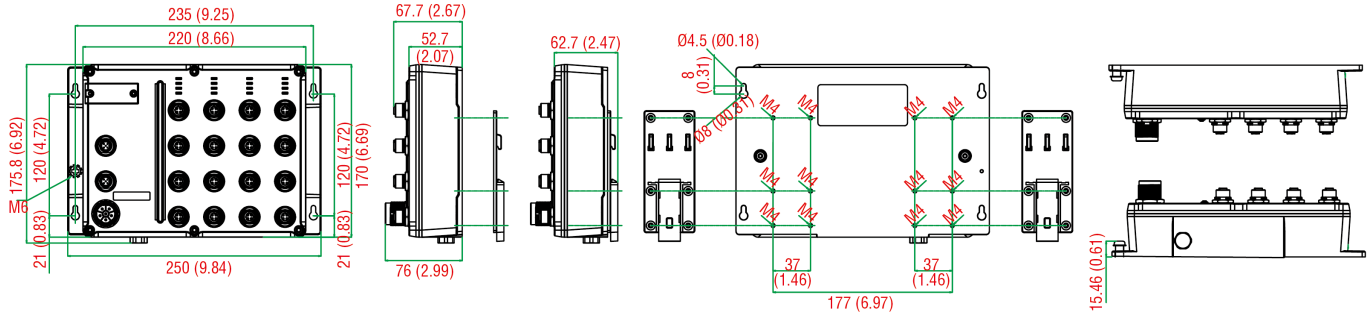
Unit: mm (inch)



Front View | Side View (including DIN-Rail Mounting Kit) | DIN-Rail Mounting Kit | Rear View | Top and Bottom Views

TN-5516A non-PoE Series

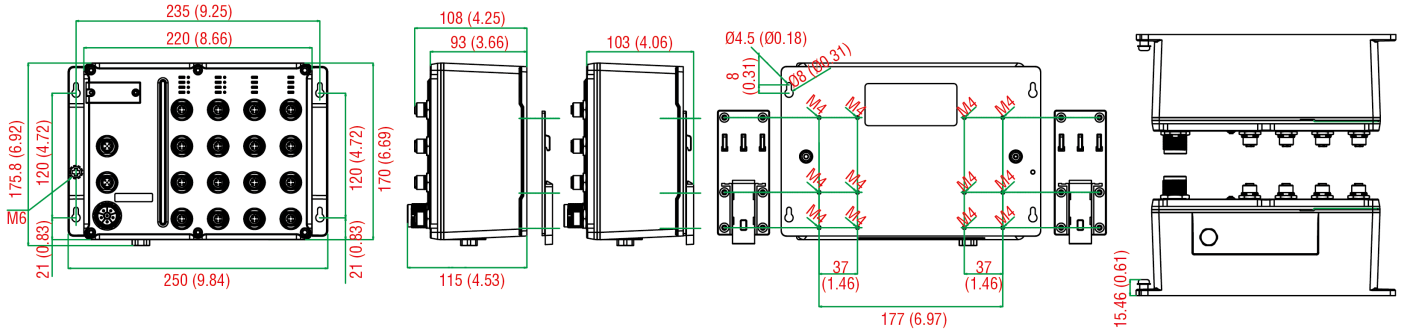
Unit: mm (inch)



Front View | Side View (including DIN-Rail Mounting Kit) | Rear View | DIN-Rail Mounting Kit | Top & Bottom Views

TN-5516A-8PoE Series

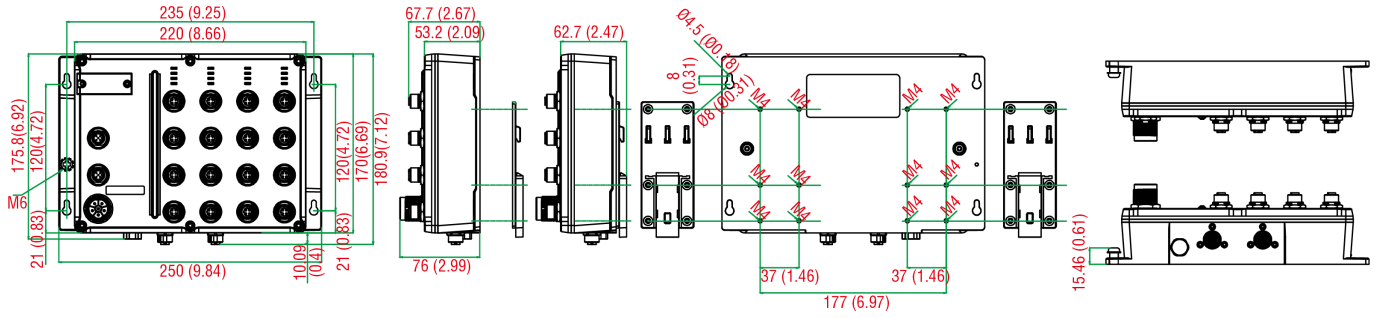
Unit: mm (inch)



Front View | Side View (including DIN-Rail Mounting Kit) | DIN-Rail Mounting Kit | Rear View | Top & Bottom Views

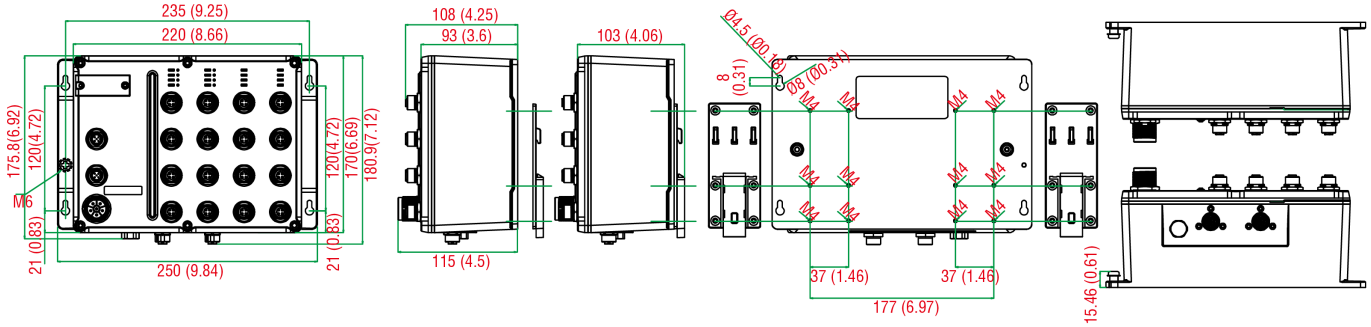
TN-5518A non-PoE Series

Unit: mm (inch)



Front View | Side View (including DIN-Rail Mounting Kit) | Rear View | DIN-Rail Mounting Kit | Top and Bottom Views

Unit: mm (inch)



Front View

Side View (including DIN-Rail Mounting Kit)

DIN-Rail Mounting Kit

Rear View

Top and Bottom Views

Ordering Information

Model Name	10/100/1000BaseT(X) Ports Q-ODC Fiber Connector	10/100/1000BaseT(X) Ports M12 X-Coded 8-Pin Female Connector	10/100/1000BaseT(X) Ports M12 X-Coded 8-Pin Female Connector with Bypass Relay	10/100BaseT(X) Ports M12 D-Coded 4-Pin Female Connector	PoE Ports 10/100BaseT(X), M12 D-Coded 4-Pin Female Connector	Conformal Coating
TN-5508A-WV-T	–	–	–	8	–	–
TN-5508A-WV-CT-T	–	–	–	8	–	✓
TN-5508A-8PoE-WV-T	–	–	–	–	8	–
TN-5508A-8PoE-WV-CT-T	–	–	–	–	8	✓
TN-5510A-2GTX-WV-T	–	2	–	8	–	–
TN-5510A-2GTX-WV-CT-T	–	2	–	8	–	✓
TN-5510A-2GTXBP-WV-T	–	–	2	8	–	–
TN-5510A-2GTXBP-WV-CT-T	–	–	2	8	–	✓
TN-5510A-2GLSX-ODC-WV-T	2	–	–	8	–	–
TN-5510A-2GLSX-ODC-WV-CT-T	2	–	–	8	–	✓
TN-5510A-8PoE-2GTX-WV-T	–	2	–	–	8	–
TN-5510A-8PoE-2GTX-WV-CT-T	–	2	–	–	8	✓
TN-5510A-8PoE-2GTXBP-WV-T	–	–	2	–	8	–
TN-5510A-8PoE-2GTXBP-WV-CT-T	–	–	2	–	8	✓
TN-5510A-8PoE-2GLSX-ODC-WV-T	2	–	–	–	8	–
TN-5510A-8PoE-2GLSX-ODC-WV-CT-T	2	–	–	–	8	✓
TN-5516A-WV-T	–	–	–	16	–	–
TN-5516A-WV-CT-T	–	–	–	16	–	✓
TN-5516A-8PoE-WV-T	–	–	–	8	8	–

Model Name	10/100/1000BaseT(X) Ports Q-ODC Fiber Connector	10/100/1000BaseT(X) Ports M12 X-Coded 8-Pin Female Connector	10/100/1000BaseT(X) Ports M12 X-Coded 8-Pin Female Connector with Bypass Relay	10/100BaseT(X) Ports M12 D-Coded 4-Pin Female Connector	PoE Ports 10/100BaseT(X), M12 D-Coded 4-Pin Female Connector	Conformal Coating
TN-5516A-8PoE-WV-CT-T	–	–	–	8	8	✓
TN-5518A-2GTX-WV-T	–	2	–	16	–	–
TN-5518A-2GTX-WV-CT-T	–	2	–	16	–	✓
TN-5518A-2GTXBP-WV-T	–	–	2	16	–	–
TN-5518A-2GTXBP-WV-CT-T	–	–	2	16	–	✓
TN-5518A-8PoE-2GTX-WV-T	–	2	–	8	8	–
TN-5518A-8PoE-2GTX-WV-CT-T	–	2	–	8	8	✓
TN-5518A-8PoE-2GTXBP-WV-T	–	–	2	8	8	–
TN-5518A-8PoE-2GTXBP-WV-CT-T	–	–	2	8	8	✓

Accessories (sold separately)

Storage Kits

ABC-01-M12	Configuration backup and restoration tool with M12 connector for managed Ethernet switches and wireless APs/Bridges/Clients, 0 to 60°C operating temperature

Cables

CBL-M12D(MM4P)/RJ45-100 IP67	M12-to-RJ45 cable, IP67-rated, 1 m
CBL-M23(FF6P)/OPEN-BK-100 IP67	M23 to 6-pin power cable, IP67-rated female 6-pin M23 connector, IP67, 1 m
CBL-M12DMM4PM12DMM4P-BK-100-IP67	M12-to-M12 Cat-5E STP Ethernet cable, 4-pin D-coded M12 connector, IP67, 1 m
CBL-M12XMM8P-Y-100-IP67	M12-to-M12 Cat-5 UTP Ethernet cable, 8-pin male X-coded crimp type M12 connector, IP67, 1 m Applicable Models: TN-5510A-2GTX-WV-T TN-5510A-2GTX-WV-CT-T TN-5510A-2GTXBP-WV-T TN-5510A-2GTXBP-WV-CT-T TN-5510A-8PoE-2GTX-WV-T TN-5510A-8PoE-2GTX-WV-CT-T TN-5510A-8PoE-2GTXBP-WV-T TN-5510A-8PoE-2GTXBP-WV-CT-T TN-5518A-2GTX-WV-T TN-5518A-2GTX-WV-CT-T TN-5518A-2GTXBP-WV-T TN-5518A-2GTXBP-WV-CT-T TN-5518A-8PoE-2GTX-WV-T TN-5518A-8PoE-2GTX-WV-CT-T TN-5518A-8PoE-2GTXBP-WV-T TN-5518A-8PoE-2GTXBP-WV-CT-T
CBL-M12XMM8P-Y-300-IP67	M12-to-M12 Cat-5 UTP Ethernet cable, 8-pin male X-coded crimp type M12 connector, IP67, 3 m Applicable Models: TN-5510A-2GTX-WV-T TN-5510A-2GTX-WV-CT-T TN-5510A-2GTXBP-WV-T TN-5510A-2GTXBP-WV-CT-T TN-5510A-8PoE-2GTX-WV-T TN-5510A-8PoE-2GTX-WV-CT-T

	TN-5510A-8PoE-2GTXBP-WV-T TN-5510A-8PoE-2GTXBP-WV-CT-T TN-5518A-2GTX-WV-T TN-5518A-2GTX-WV-CT-T TN-5518A-2GTXBP-WV-T TN-5518A-2GTXBP-WV-CT-T TN-5518A-8PoE-2GTX-WV-T TN-5518A-8PoE-2GTX-WV-CT-T TN-5518A-8PoE-2GTXBP-WV-T TN-5518A-8PoE-2GTXBP-WV-CT-T
CBL-M12XMM8PRJ45-Y-200-IP67	M12-to-RJ45 Cat-5 UTP Ethernet cable, 8-pin male X-coded crimp type M12 connector, IP67, 2 m Applicable Models: TN-5510A-2GTX-WV-T TN-5510A-2GTX-WV-CT-T TN-5510A-2GTXBP-WV-T TN-5510A-2GTXBP-WV-CT-T TN-5510A-8PoE-2GTX-WV-T TN-5510A-8PoE-2GTX-WV-CT-T TN-5510A-8PoE-2GTXBP-WV-T TN-5510A-8PoE-2GTXBP-WV-CT-T TN-5518A-2GTX-WV-T TN-5518A-2GTX-WV-CT-T TN-5518A-2GTXBP-WV-T TN-5518A-2GTXBP-WV-CT-T TN-5518A-8PoE-2GTX-WV-T TN-5518A-8PoE-2GTX-WV-CT-T TN-5518A-8PoE-2GTXBP-WV-T TN-5518A-8PoE-2GTXBP-WV-CT-T

Connectors

M12A-5P-IP68	A-coded screw-in sensor connector, female, IP68, 4.05 cm
M12D-4PMM-IP67	M12 D-coded connector, QUICKON type, 4-pin male, IP67
M12D-4P-IP68	M12 D-coded screw-in sensor connector, male, IP68
A-PLG-WPM23-01-IP67	M23 cable connector, female 6-pin, crimp type, IP67
M12X-8PMM-IP67-HTG	X-coded screw-in Gigabit Ethernet connector, 8-pin male M12 connector, IP67 Applicable Models: TN-5510A-2GTX-WV-T TN-5510A-2GTX-WV-CT-T TN-5510A-2GTXBP-WV-T TN-5510A-2GTXBP-WV-CT-T TN-5510A-8PoE-2GTX-WV-T TN-5510A-8PoE-2GTX-WV-CT-T TN-5510A-8PoE-2GTXBP-WV-T TN-5510A-8PoE-2GTXBP-WV-CT-T TN-5518A-2GTX-WV-T TN-5518A-2GTX-WV-CT-T TN-5518A-2GTXBP-WV-T TN-5518A-2GTXBP-WV-CT-T TN-5518A-8PoE-2GTX-WV-T TN-5518A-8PoE-2GTX-WV-CT-T TN-5518A-8PoE-2GTXBP-WV-T TN-5518A-8PoE-2GTXBP-WV-CT-T

DIN-Rail Mounting Kits

DK-DC50131-01	DIN-rail mounting kit, 6 screws

M12 Connector Caps

A-CAP-M12F-M	Metal cap for M12 female connector
A-CAP-M12M-M	Metal cap for M12 male connector

TN-G6500 Series

EN 50155 Full Gigabit Ethernet switches with up to 8 PoE ports

Features and Benefits

Preliminary

- 12 Gigabit ports with push-pull M12 connectors
- Isolated power with 24 to 110 VDC power supply range
- Complies with all EN 50155 mandatory test items[1]
- -40 to 70°C operating temperature range
- IP67-rated housing protection
- Turbo Ring and Turbo Chain (recovery time < 50 ms @ 250 switches), and RSTP/STP for network redundancy
- 8 IEEE 802.3at/af compliant PoE and Ethernet combo ports
- Provides up to 30 W per PoE port

Certifications

EN 50155 EN 50121-4

Introduction

The ToughNet TN-G6500 Series M12 managed Ethernet switches are designed for railway applications, including rolling stock and wayside installations. The switches use M12 and other circular connectors to ensure tight, robust connections, and guarantee reliable operation in industrial environments where vibration and shock are commonplace. The TN-G6500 Series Ethernet switches provide 12 Gigabit Ethernet M12 ports; 8 ports support IEEE 802.3at/af compliant PoE functionality. These PoE switches are classified as power source equipment (PSE); they provide up to 30 watts of power per port, and can be used to power IEEE 802.3at/af compliant powered devices (PDs), such as IP cameras, wireless access points, and IP phones.

The TN-G6500 Series has push-pull M12 connectors that are tailor-made for push-pull cables in order to facilitate quick installation, and also allow M12 rotary cables to be utilized. The 24 to 110 VDC wide power input range and isolated dual-power inputs not only allow you to use the same type of power source at different sites around the globe, but also increase the reliability of your communications system. Furthermore, the -40 to 70°C operating temperature and IP67-rated enclosure allow deployment in harsh environments. The TN-G6512 Series Ethernet switches are compliant with the essential sections of the EN 50155 standard, covering operating temperature, power input voltage, surge, ESD, vibration, power isolation, and includes a model with conformal coating to ensure suitability for a variety of industrial applications.

Additional Features and Benefits

- Provides up to 30 watts per PoE port with a total power budget of 96 watts per switch
- IPv6 Ready logo awarded (IPv6 Logo Committee certified)
- DHCP Option 82 for IP address assignment with different policies
- IGMP snooping and GMRP for filtering multicast traffic
- EtherNet/IP and Modbus/TCP industrial Ethernet protocols supported
- Port-based VLAN, IEEE 802.1Q VLAN, and GVRP to ease network planning
- QoS (IEEE 802.1p/1Q and ToS/DiffServ) allows real-time traffic classification and prioritization
- IEEE 802.3ad, LACP for optimum bandwidth utilization
- SNMPv1/v2c/v3 for different levels of network management
- TACACS+, SNMPv3, IEEE 802.1X, HTTPS, and SSH to enhance network security
- RMON for efficient network monitoring and proactive capability
- Bandwidth management prevents unpredictable network status
- Lock port allows access by only authorized MAC addresses
- Port mirroring for online debugging
- Automatic warning by exception through email and relay output
- Line-swap fast recovery
- LLDP for automatic topology discovery in network management software
- Configurable by web browser, Telnet/serial console, CLI, and Windows utility
- Loop protection prevents network loops
- Panel mounting installation capability

1. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed statement, click here: www.moxa.com/doc/specs/EN_50155_Compliance.pdf

Specifications

Ethernet Interface

10/100/1000BaseT(X) Ports (M12 X-coded 8-pin female connector)	4
PoE Ports (100/1000BaseT(X), M12 X-coded 8-pin female connector)	8
Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1X for authentication IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3ad for Port Trunk with LACP IEEE 802.3af/at for PoE/PoE+ output IEEE 802.3x for flow control IEEE 802.3u for 100BaseT(X)

Ethernet Software Features

Broadcast Forwarding	IP directed broadcast, broadcast forwarding
Configuration Options	Command Line Interface (CLI), Command Line Interface (CLI) through Serial/Telnet/SSH, Web Console (HTTP/HTTPS), Windows Utility
Filter	802.1Q, GMRP, GVRP, IGMP v1/v2, Port-based VLAN, Static Multicast
Industrial Protocols	SNMPv1/v2c/v3
Management	Account Management, Back Pressure Flow Control, DHCP Option 66/67/82, DHCP Server/Client, Flow control, HTTP, IPv4/IPv6, LLDP, Port Mirror, QoS/CoS/ToS, RARP, RMON, SMTP, SNMP Inform, Syslog, Telnet, SNMP Trap
MIB	Bridge MIB, Ethernet-like MIB, MIB-II, P-BRIDGE MIB, Q-BRIDGE MIB, RMON MIB Groups 1, 2, 3, 9, RSTP MIB
Redundancy Protocols	Link Aggregation, MSTP, RSTP, STP, Turbo Chain, Turbo Ring v1/v2, Turbo Ring with DRC
Security	TACACS+, Broadcast storm protection, HTTPS/SSL, Local Account Accessibility, Port Lock, RADIUS, Rate Limit, SSH
Time Management	NTP Server/Client, SNTP

Switch Properties

IGMP Groups	256
Max. No. of VLANs	256
Priority Queues	4
VLAN ID Range	VID 1 to 4094

LED Interface

LED Indicators	PWR1, PWR2, FAULT, MSTR/HEAD, CPLR/TAIL, 10/100/1000M, PoE

Serial Interface

Console Port	RS-232 (M12 B-coded 5-pin female connector)

Power Parameters

Input Voltage	24/36/48/72/96/110 VDC
No. of Power Inputs	2

Operating Voltage	16.8 to 137.5 VDC
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Total PoE Power Budget	96 W
Input Current	5.8 A @ 24 VDC
Power Connector	M12 K-coded 5-pin male connector

Physical Characteristics

Housing	Metal
IP Rating	IP67
Dimensions	159 x 97 x 100 mm (6.26 x 3.82 x 3.94 in)
Weight	1,750 g (3.86 lb)
Installation	Wall mounting
Protection	TN-G6512-8GPoE-WV-CT-T: PCB conformal coating

Environmental Limits

Operating Temperature	-40 to 70°C (-40 to 158°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Altitude	2000 m

Standards and Certifications

EMC	EN 55032/24
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 6 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Freefall	IEC 60068-2-31
Radio Frequency	FCC
Railway	EN 50121-4, EN 50155, IEC 60571
Railway Fire Protection	EN 45545-2
Safety	UL 61010-2-201, IEC 60950-1
Shock	IEC 60068-2-27, IEC 61373, EN 50155
Vibration	IEC 60068-2-64, IEC 61373, EN 50155

Declaration

Green Product	RoHS, CRoHS, WEEE

MTBF

Time	471,356 hrs
Standards	Telcordia SR332

Warranty

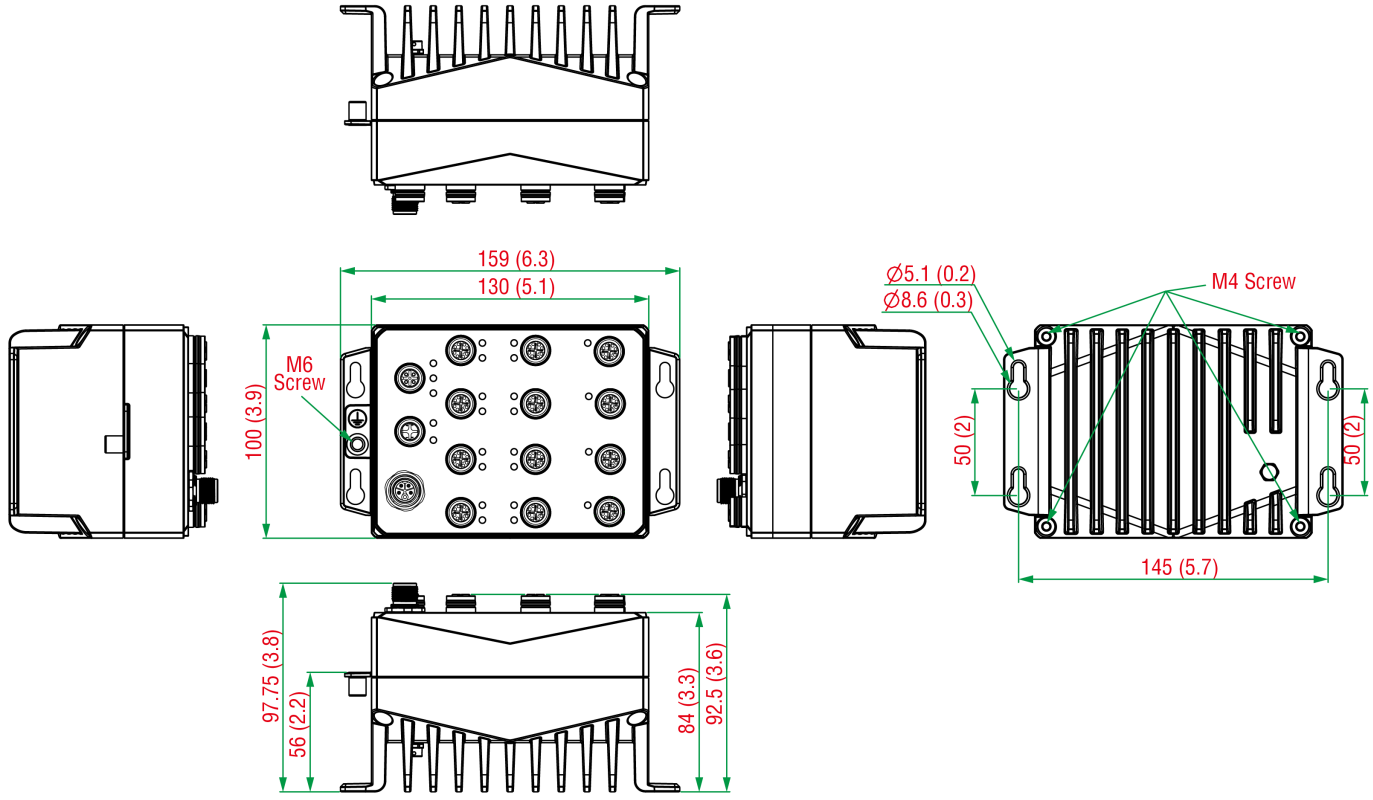
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x TN-G6500 Series switch
Installation Kit	1 x wall-mounting kit 1 x cap, male, metal, for M12 port 14 x cap, female, metal, for M12 port
Cable	1 x M12-to-DB9 console port
Documentation	1 x quick installation guide 1 x warranty card

Dimensions

Unit: mm (inch)



Ordering Information

Model Name	10/100/1000BaseT(X) Ports, M12 X-Coded 8-Pin Female Connector	PoE Ports 100/1000BaseT(X), M12 X-Coded 8-Pin Female Connector	Conformal Coating
TN-G6512-8GPoE-WV-T	4	8	–
TN-G6512-8GPoE-WV-CT-T	4	8	✓

Accessories (sold separately)

Storage Kits

ABC-02-P-USB-M12	Configuration backup and restoration tool with M12 connector for Moxa's ToughNet series of managed Ethernet switches and wireless AP/bridge/client, -40 to 75°C operating temperature, conformal coating

M12 Connector Caps

A-CAP-M12M-M	Metal cap for M12 male connector
A-CAP-M12F-M-PP	Metal cap for M12 female push-pull connector

Connectors

M12X-8PMM-IP67-HTG	X-coded screw-in Gigabit Ethernet connector, 8-pin male M12 connector, IP67

Cables

CBL-M12XMM8P-Y-300-IP67	M12-to-M12 Cat-5 UTP Ethernet cable, 8-pin male X-coded crimp type M12 connector, IP67, 3 m
CBL-M12XMM8PRJ45-Y-200-IP67	M12-to-RJ45 Cat-5 UTP Ethernet cable, 8-pin male X-coded crimp type M12 connector, IP67, 2 m
CBL-M12XMM8P-Y-100-IP67	M12-to-M12 Cat-5 UTP Ethernet cable, 8-pin male X-coded crimp type M12 connector, IP67, 1 m