

RKS-G4028 系列

28G 埠 (含 802.3bt PoE 選項) 全 Gigabit 模組化網管型乙太網路交換器



特色與優點

- 滿足從快速乙太網路到全 Gigabit 工業網路 (最多 28 個 Gigabit 連接埠) 廣泛範圍的需求
- 適用於彈性連接器類型組合的模組化介面
- 支援 IEEE 802.3bt PoE，每個連接埠最高 90 W 的輸出
- 符合 IEC 61850-3 和 IEEE 1613 的高度 EMI 抗擾性
- 硬體型 IEEE 1588 PTP 可提供高度精確的時間同步
- 支援 Turbo Ring 和 Turbo Chain (復原時間 < 20 毫秒 @ 250 台交換器)¹，以及 STP/RSTP/MSTP，實現網路備援
- -40°C 至 75°C 操作溫度範圍
- 支援 MXstudio，輕鬆實現可視化的工業網路管理
- 開發符合 IEC 62443-4-1 且符合 IEC 62443-4-2 工業網路安全性標準

認證



簡介

RKS-G4028 系列專為滿足工業和商業的嚴格任務關鍵型應用而設計，例如變電站自動化系統 (IEC 61850-3、IEEE 1613)、鐵路應用 (EN 50121-4) 以及工廠自動化系統。RKS-G4028 系列的 Gigabit 和快速乙太網路骨幹、網路備援，以及 24 VDC、48 VDC 或 110/220 VDC/VAC 雙隔離式備援電源供應器，可提升通訊可靠性，並節省佈線成本。

RKS-G4028 系列的模組化設計也可讓您輕鬆進行網路規劃，並可安裝最多 28 個具有各種連接器類型的 Gigabit 連接埠，進而提供更大彈性。

附加特色與優點

- Layer 3 交換功能可跨網路傳送資料和資訊 (僅限 L3 型號)
- IEEE 1588v2 PTP (精密時間通訊協定) 用於網路時間同步
- 命令列介面 (CLI) 快速設定主要網管功能
- IGMP snooping 和 GMRP，用於過濾 multicast 流量
- 可基於連接埠實現 VLAN、IEEE 802.1Q VLAN 以及 GVRP，以簡化網路規劃
- QoS (IEEE 802.1p/1Q 和 TOS/DiffServ) 提高資料傳送穩定性
- IEEE 802.3ad、LACP 提供最佳化頻寬使用率
- 線路切換快速恢復
- TACACS+、IEEE 802.1X、SNMPv3、HTTPS 和 SSH 可提高網路安全性
- SNMPv1/v2c/v3，支援不同層級的網路管理
- RMON 提供主動且有效率的網路監控
- 頻寬管理可使用「鎖定連接埠」預防無法預測的網路狀態，進而限制對授權 MAC 位址的存取
- Port mirroring 可用於除錯
- 發生例外狀況時透過電子郵件和繼電器輸出自動發出警告
- 自動恢復連線設備的 IP 位址
- 可透過網頁瀏覽器、Telnet / 串列主控台、CLI、Windows 公用程式，以及 ABC-02 或 ABC-03 自動備份配置器進行配置

規格

Input/Output Interface

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

1. 如果連接埠連結速度為 1 Gigabit 或更高，復原時間 < 50 毫秒。

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

Ethernet Software Features

Management	IPv4/IPv6 Note: IPv6 is available for L2 models only. Flow control Back Pressure Flow Control DHCP Server/Client Note: DHCP Server/Client is available for L2 models only. ARP RARP LLDP Linkup Delay SMTP SNMP Trap SNMP Inform SNMPv1/v2c/v3 RMON TFTP SFTP HTTP HTTPS Telnet Syslog Private MIB Fiber check DHCP Relay Agent (Option 82) Port Mirroring (SPAN, RSPAN)
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 MRP Link Aggregation

	Network 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 Dynamic ARP Inspection DHCP Snooping IP Source Guard
Time Management	SNTP IEEE 1588v2 PTP (hardware-based) Supported power profiles: IEEE 1588 Default 2008, IEC 61850-9-3-2016, IEEE C37.238-2017 NTP Server/Client NTP Authentication
Protocols	IPv4/IPv6 Note: IPv6 is available for L2 models only. TCP/IP UDP ICMP ARP RARP TFTP DNS NTP Client DHCP Server Note: DHCP Server is available for L2 models only. DHCP Client Note: DHCP Client is available for L2 models only. 802.1X QoS HTTPS HTTP Telnet SMTP SNMPv1/v2c/v3 RMON Syslog
Industrial Protocols	EtherNet/IP Modbus TCP
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 1588 PTP Power Profile IEC 61850-9-3 1588 PTP Power Profile C37.238-2017

Switch Properties

IGMP Groups	1024
Jumbo Frame Size	9.216 KB
MAC Table Size	16 K
Max. No. of VLANs	256
Packet Buffer Size	1.5 MB
Priority Queues	8
VLAN ID Range	VID 1 to 4094

USB Interface

Storage Port	USB Type A
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MicroSD Interface

Storage Port	microSD card
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LED Interface

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

Console Port	RS-232 (RJ45)
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Power Parameters

Total PoE Power Budget	300 W
Max. PoE Power Output per Port	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 power supplies) RKS-G4028-HV models: 110/220 VAC, 110/220 VDC RKS-G4028-2HV models: 110/220 VAC, 110/220 VDC (redundant power supplies) 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	<p>RKS-G4028-LV/2LV models: Max. 2.53 A @ 24 VDC Max. 1.25 A @ 48 VDC</p> <p>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</p> <p>EPS (PoE models only): Max. 7.50 A @ 48 VDC</p>
Power Consumption (Max.)	<p>RKS-G4028-LV/2LV models: Max. 60.72 W @ 24 VDC Max. 60 W @ 48 VDC</p> <p>RKS-G4028-HV/2HV models: Max. 60.5 W @ 110 VDC Max. 63.8 W @ 220 VDC Max. 62.2 W @ 110 VAC Max. 64.1 W @ 220 VAC</p> <p>Note: These are the maximum power consumption ratings for the device with the maximum number of modules installed.</p>

Physical Characteristics

IP Rating	IP30
Dimensions	440 x 44 x 300 mm (17.32 x 1.37 x 11.81 in)
Weight	<p>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)</p>
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	<p>EN IEC 62368-1 IEC 60950-1 IEC 62368-1 UL 61010 UL 62368-1</p>
EMC	<p>EN 55032/35 EN 61000-6-2/-6-4</p>
EMI	CISPR 32, FCC Part 15B Class A
Traffic Control	NEMA TS2
EMS	<p>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 Voltage Dips & Interruptions</p>
Power Substation	<p>IEC 61850-3 IEEE 1613</p>

Railway	EN 50121-4
Freefall	IEC 60068-2-32
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6
Industrial Cybersecurity	IEC 62443-4-1 IEC 62443-4-2

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

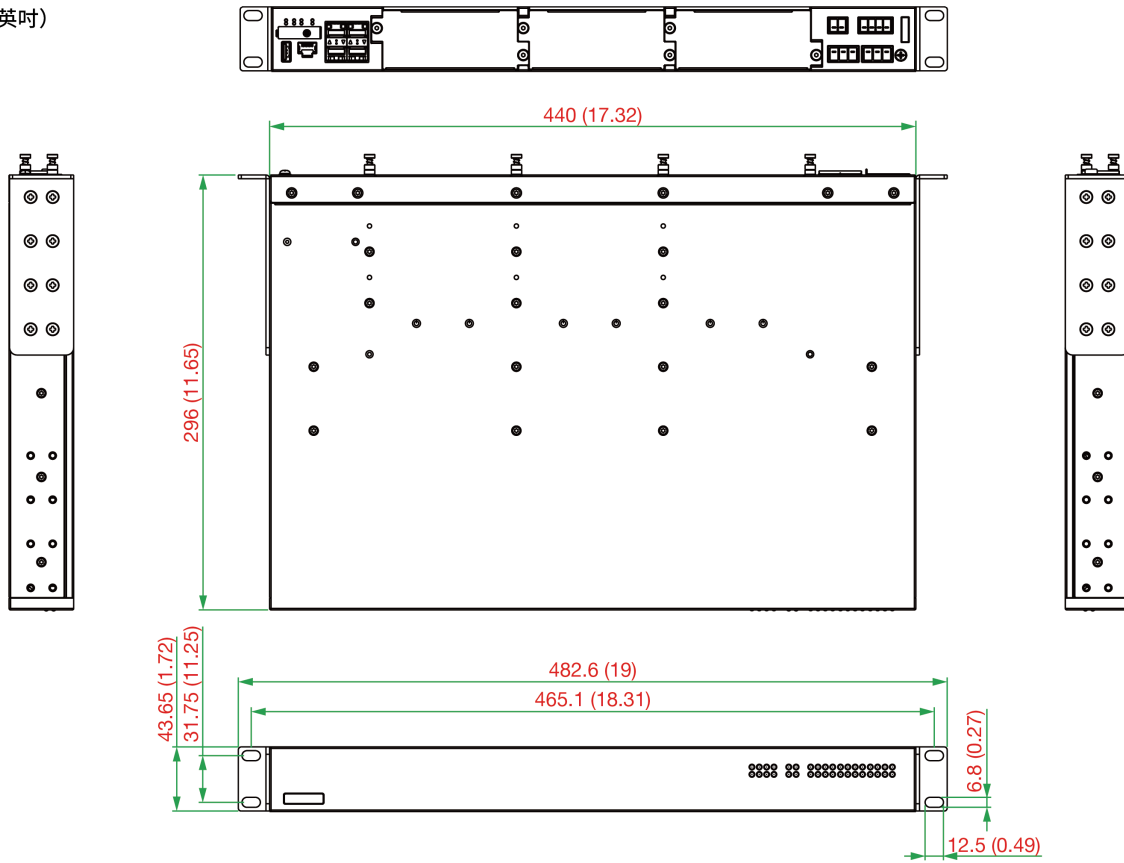
Warranty Period	5 years
Details	See www.moxa.com/tw/warranty

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	<ol style="list-style-type: none"> 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.

尺寸

單位：公釐 (英吋)



訂購資訊

Model Name	Max. No. of Ports	PoE Support	L3 Functionality	Input Voltage	Redundant Power Supplies	External Power Supply	Operating Temp.
RKS-G4028-4GT-HV-T	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-LV-T	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
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

Model Name	Max. No. of Ports	PoE Support	L3 Functionality	Input Voltage	Redundant Power Supplies	External Power Supply	Operating Temp.
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

配件 (選購)

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-1GEZXC	SFP module with 1 1000BaseEZXC port with LC connector for 110 km transmission, 0 to 60°C operating temperature
SFP-1GEZXC-120	SFP module with 1 1000BaseEZXC 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-1GLHXC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLSXC	SFP module with 1 1000BaseLSX port with LC connector for 1km/2km transmission, 0 to 60°C operating temperature
SFP-1GLXC	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, 0 to 60°C operating temperature
SFP-1GSXC	SFP module with 1 1000BaseSX port with LC connector for 300m/550m transmission, 0 to 60°C operating temperature
SFP-1GZXC	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-1GLHXC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXC-T	SFP module with 1 1000BaseLSX port with LC connector for 1km/2km transmission, -40 to 85°C operating temperature
SFP-1GLXC-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-1GZXC-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

Cables

CN20070	10-pin RJ45 to DB9 female serial cable
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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

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