

EDS-4009 系列

9 埠網管型乙太網路交換器



特色與優點

- 根據 IEC 62443-4-1 開發，符合 IEC 62443-4-2 工業網路安全性標準
- Turbo Ring 和 Turbo Chain (250 台交換器，復原時間小於 20 毫秒)¹，以及透過 RSTP/STP 協議支援網路備援
- 大範圍功率輸入選項適用於彈性部署
- 小巧且富有彈性的外殼設計，可輕易安裝至狹小空間。
- 支援 MXstudio，輕鬆實現可視化的工業網路管理

認證



簡介

EDS-4009 系列包含多款 9 埠網管型快速乙太網路交換器，可選配三個 100M ST/SC 光纖連接埠。

備援乙太網路技術（例如 Turbo Ring、Turbo Chain 與 RSTP/STP）可增加系統的可靠性，並且改善網路骨幹的可用性。EDS-4009 系列是專門為高要求的應用所設計（例如視訊與流程監控、ITS 和 DCS 系統）所有應用都可從可擴充的骨幹中獲益。

EDS-4009 系列通過 IEC 62443-4-2 與 IEC 62443-4-1 工業網路安全性認證，其中包括產品安全性與安全開發生命週期需求，可協助客戶符合安全工業網路設計的合規性需求。

規格

Ethernet Interface

10/100BaseT(X) Ports (RJ45 connector)	6 Auto negotiation speed Full/Half duplex mode Auto MDI/MDI-X connection
100BaseFX Ports (multi-mode SC connector)	EDS-4009-3MSC-LV/-HV/-T models: 3
100BaseFX Ports (multi-mode ST connector)	EDS-4009-3MST-LV/-HV/-T models: 3
100BaseFX Ports (single-mode SC connector)	EDS-4009-3SSC-LV/-HV/-T models: 3

1. 如果連接埠連結速度為 1 Gigabit 或以上，復原時間小於 < 50 毫秒

Standards	IEEE 802.3 for 10BaseT IEEE 802.3u for 100BaseT(X) and 100BaseFX 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	<table><tr><th colspan="2" rowspan="2"></th><th colspan="2">100BaseFX</th></tr><tr><th>Multi-Mode</th><th>Single-Mode</th></tr><tr><th rowspan="2">Fiber Cable Type</th><th rowspan="2">OM1</th><th>50/125 μm</th><th rowspan="2">G.652</th></tr><tr><th>800 MHz x km</th></tr><tr><td colspan="2">Typical Distance</td><td>4 km</td><td>5 km</td><td>40 km</td></tr><tr><th rowspan="3">Wavelength</th><td>Typical (nm)</td><td colspan="2">1300</td><td>1310</td></tr><tr><td>TX Range (nm)</td><td colspan="2">1260 to 1360</td><td>1280 to 1340</td></tr><tr><td>RX Range (nm)</td><td colspan="2">1100 to 1600</td><td>1100 to 1600</td></tr><tr><th rowspan="4">Optical Power</th><td>TX Range (dBm)</td><td colspan="2">-10 to -20</td><td>0 to -5</td></tr><tr><td>RX Range (dBm)</td><td colspan="2">-3 to -32</td><td>-3 to -34</td></tr><tr><td>Link Budget (dB)</td><td colspan="2">12</td><td>29</td></tr><tr><td>Dispersion Penalty (dB)</td><td colspan="2">3</td><td>1</td></tr><tr><td colspan="5">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).</td></tr></table>						100BaseFX		Multi-Mode	Single-Mode	Fiber Cable Type	OM1	50/125 μm	G.652	800 MHz x km	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).				
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Ethernet Software Features

Industrial Protocols	EtherNet/IP Modbus TCP PROFINET IO Device
Management	IPv4/IPv6 Flow control Back Pressure Flow Control DHCP Server/Client ARP RARP LLDP Fiber check Port Mirroring (SPAN, RSPAN) 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 MRP MSTP
Security	Broadcast storm protection Rate Limit Trust access control Static Port Lock MAC Sticky HTTPS/SSL SSH RADIUS TACACS+ Access control list Login and Password Policy DHCP Snooping
Time Management	SNTP NTP Server/Client NTP Authentication IEEE 1588v2 PTP (hardware-based) Supported power profiles: IEEE 1588 Default 2008, IEC 61850-9-3-2016, IEEE C37.238-2017
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
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
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Serial Interface

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

USB Connector	USB Type A (Reserved)
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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
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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
Note	The EDS-4009 Series supports modular power supplies. The model names and power parameters are determined by the installed power module. For example: EDS-4009-T + PWR-100-LV = EDS-4009-LV-T EDS-4009-T + PWR-105-HV-I = EDS-4009-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-4009-LV-T with the PWR-105-HV-I, refer to the specifications of the EDS-4009-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
Operating Voltage	-LV/-LV-T models: 9.6 to 60 VDC -HV/-HV-T models: 88 to 300 VDC, 85 to 264 VAC
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
Power Consumption (Max.)	EDS-4009-3MSC-LV(-T) models: 9.51 W EDS-4009-3MSC-HV(-T) models: 12.14 W EDS-4009-3MST-LV(-T) models: 9.51 W EDS-4009-3MST-HV(-T) models: 12.17 W EDS-4009-3SSC-LV(-T) models: 9.51 W EDS-4009-3SSC-HV(-T) models: 12.34 W
Overload Current Protection	Supported
Reverse Polarity Protection	Supported

Physical Characteristics

IP Rating	IP40
Dimensions	EDS-4009-3MSC(-T)/EDS-4009-3SSC(-T) models: 55 x 140 x 120 mm (2.17 x 5.51 x 4.72 in) EDS-4009-3MST(-T) models: 55 x 140 x 132 mm (2.17 x 5.51 x 5.20 in)
Weight	EDS-4009-3MSC(-T) models: 821.5 g (1.81 lb) EDS-4009-3MST(-T) models: 920 g (2.03 lb) EDS-4009-3SSC(-T) models: 932 g (2.05 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 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
Hazardous Locations	-LV/-LV-T models: ATEX IECEx Class I Division 2

MTBF

Time	EDS-4009-3MSC-LV/-LV-T models: 972,841 hrs EDS-4009-3MSC-HV/-HV-T models: 482,263 hrs EDS-4009-3MST-LV/-LV-T models: 972,841 hrs EDS-4009-3MST-HV/-HV-T models: 482,263 hrs EDS-4009-3SSC-LV/-LV-T models: 972,841 hrs EDS-4009-3SSC-HV/-HV-T models: 482,263 hrs
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Warranty

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

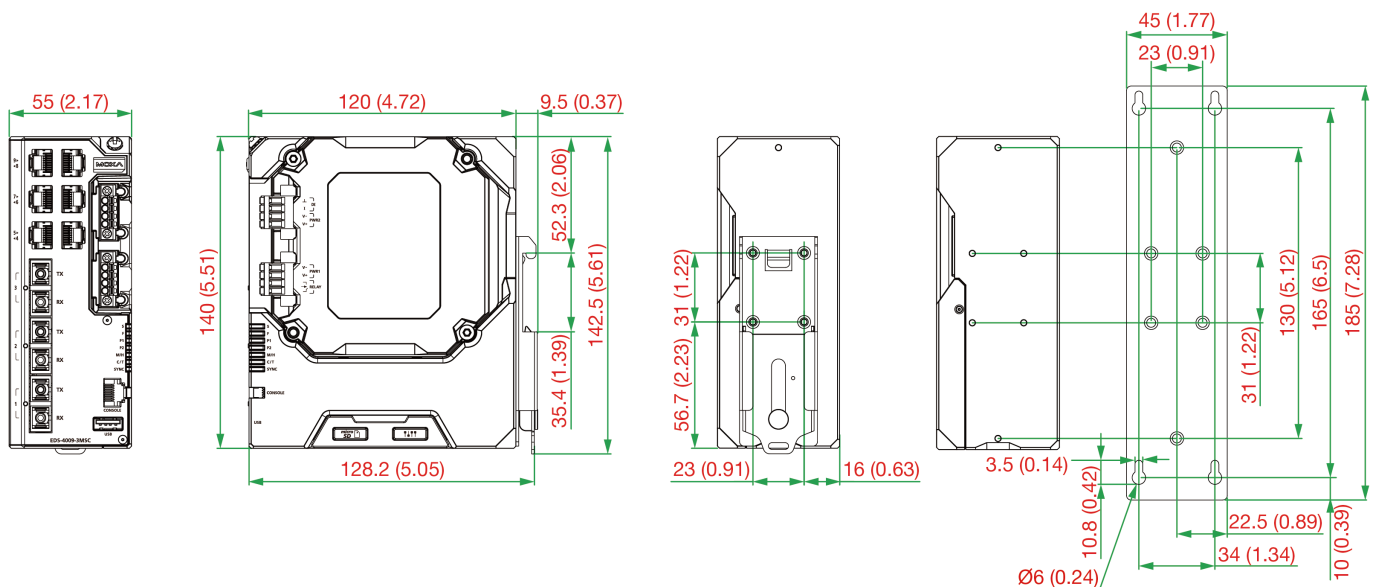
Package Contents

Device	1 x EDS-4009 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

尺寸

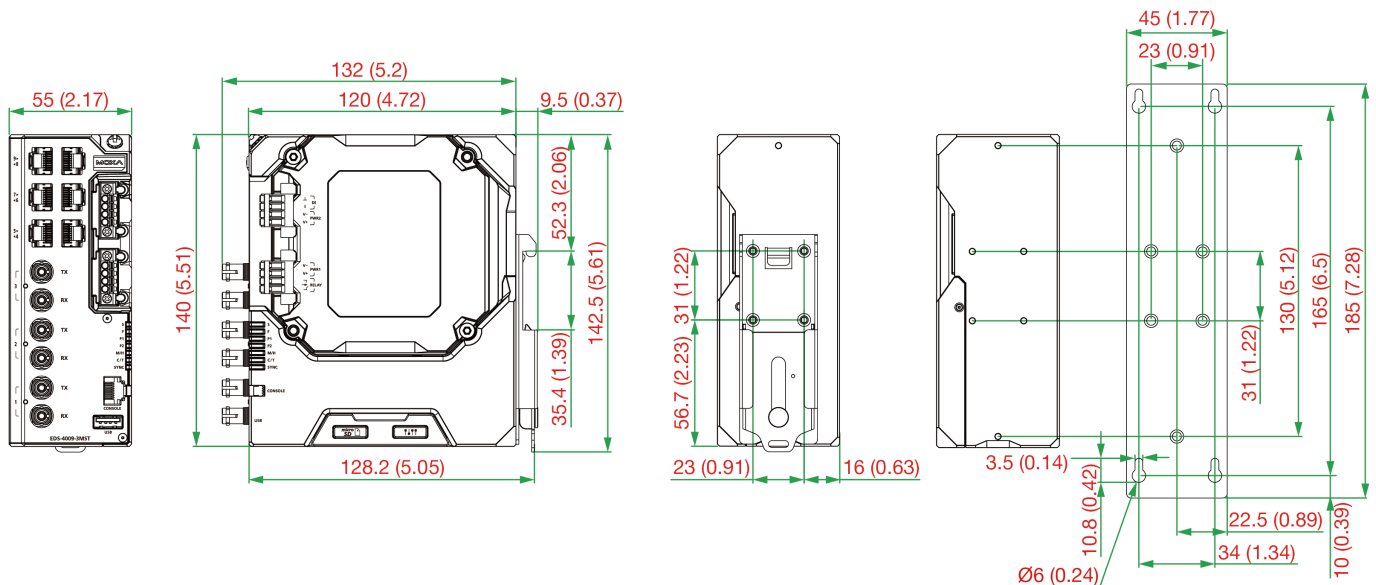
EDS-4009-3MSC(-T)、EDS-4009-3SSC(-T) 型號

單位：公釐（英吋）



EDS-4009-3MST(-T) 型號

單位：公釐（英吋）



訂購資訊

Model Name	10/100BaseT(X) Ports (RJ45 Connector)	100BaseFX Ports (Multi-mode SC Connector)	100BaseFX Ports (Multi-mode ST Connector)	100BaseFX Ports (Single-mode SC Connector)	Operating Voltage	Pre-installed Power Module	Operating Temp.
EDS-4009-3MSC-LV	6	3	–	–	9.6 to 60 VDC	PWR-100-LV	-10 to 60°C
EDS-4009-3MSC-LV-T	6	3	–	–	9.6 to 60 VDC	PWR-100-LV	-40 to 75°C
EDS-4009-3MSC-HV	6	3	–	–	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-10 to 60°C
EDS-4009-3MSC-HV-T	6	3	–	–	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-40 to 75°C
EDS-4009-3MST-LV	6	–	3	–	9.6 to 60 VDC	PWR-100-LV	-10 to 60°C
EDS-4009-3MST-LV-T	6	–	3	–	9.6 to 60 VDC	PWR-100-LV	-40 to 75°C
EDS-4009-3MST-HV	6	–	3	–	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-10 to 60°C
EDS-4009-3MST-HV-T	6	–	3	–	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-40 to 75°C
EDS-4009-3SSC-LV	6	–	–	3	9.6 to 60 VDC	PWR-100-LV	-10 to 60°C
EDS-4009-3SSC-LV-T	6	–	–	3	9.6 to 60 VDC	PWR-100-LV	-40 to 75°C
EDS-4009-3SSC-HV	6	–	–	3	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-10 to 60°C
EDS-4009-3SSC-HV-T	6	–	–	3	88 to 300 VDC, 85 to 264 VAC	PWR-105-HV-I	-40 to 75°C

配件（選購）

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

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

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