

EX27000 Series

IEC61850-3/IEEE1613 Managed 24-port 10/100BASE and 4-port Gigabit Ethernet Switch with SFP options



Value

- › Provides flexibility of 24-port 10/100BASE-TX/FX/BX/SFP and 4-port Gigabit-TX/SX/LX/BX/SFP
- › Flexibly configures each port configuration thru SFP modules
- › Fanless design to minimize maintenance hassles



Features

- › Complies with IEC61850-3/IEEE1613 for power substations & EN50121-4 for railway applications
- › Supports α-ring and RSTP/MSTP/STP for Ethernet redundancy
- › IP Multicast Filtering through IGMP Snooping V1, V2 & V3
- › Supports port-based VLAN and IEEE802.1Q VLAN Tagging and GVRP
- › IEEE802.1p QoS with four priority queues
- › MAC-based trunking and LACP
- › IEEE802.1x Security
- › Bandwidth Rate Control
- › Per-port programmable MAC address locking
- › Up to 24 Static Secure MAC addresses per port
- › Port mirroring
- › NTP synchronization
- › DHCP Client/Server
- › RS-232 console, Telnet, SNMP V1, V2c & V3, RMON, Web Browser, and TFTP Management
- › 1000Mbps-Full-duplex, 10/100Mbps-Full/Half-duplex, Auto-negotiation, Auto-MDI/MDIX
- › Full wire-speed forwarding rate
- › -10°C to 60°C (-14°F to 140°F) operating temperature range

Ordering Information

EX27604-0XYZ	24-port 10/100BASE-TX + 4-port Gigabit Managed Ethernet Switch
EX27424-WXYZ	16-port 10/100BASE-TX + 8-port 100BASE-FX + 4-port Gigabit Managed Ethernet Switch
EX27244-WXYZ	8-port 10/100BASE-TX + 16-port 100BASE-FX + 4-port Gigabit Managed Ethernet Switch
EX27064-WXYZ	24-port 100BASE-FX + 4-port Gigabit Managed Ethernet Switch
EX27064-V0VZ	24-port 100BASE-SFP + 4-port Gigabit SFP Combo Managed Ethernet Switch

100FX Fiber Options :

(W) = 1 : Multi Mode (SC) - 2Km

2 : Multi Mode (ST) - 2Km

6 : Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km

7 : Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km

8 : Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km

9 : Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km

A : Single Mode (SC) - 20Km

*More 100FX Fiber options also available upon request.

B : Single Mode (SC) - 40Km

F : Single Mode (FC) - 20Km

H : Single Mode (ST) - 20Km

P : Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km

Q : Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km

R : Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km

S : Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

Numbers of fixed Gigabit Fiber :

(X) = 0 : None

1 : One Gigabit Fiber Port

2 : Two Gigabit Fiber Ports

3 : Three Gigabit Fiber Ports

4 : Four Gigabit Fiber Ports

Gigabit Port Options :

(Y) = 1 : 10/100/1000BASE-TX

3 : 1000BASE-SX (SC) - 550m

4 : 1000BASE-SX (SC) - 2Km

5 : 1000BASE-SX (ST) - 550m

A : 1000BASE-LX (SC) - 10Km

B : 1000BASE-LX (SC) - 20Km

*More Gigabit options also available upon request.

R : 1000BASE-BX (SC) WDM-TX:1310nm/RX:1550nm - 20Km

S : 1000BASE-BX (SC) WDM-TX:1550nm/RX:1310nm - 20Km

V : 4-port 1000BASE SFP Combo with 10/100/1000BASE-TX

Power Input Interface :

(Z) = T : + / - 48VDC (Terminal Block)

W : 88 - 370VDC and 90 - 264VAC (Terminal Block)

C : 90 - 264VAC (AC Inlet)

TR : + / - 48VDC Redundant (Terminal Block)

WR : 88 - 370VDC and 90 - 264VAC Redundant (Terminal Block)

CR : 90 - 264VAC Redundant (AC Inlet)

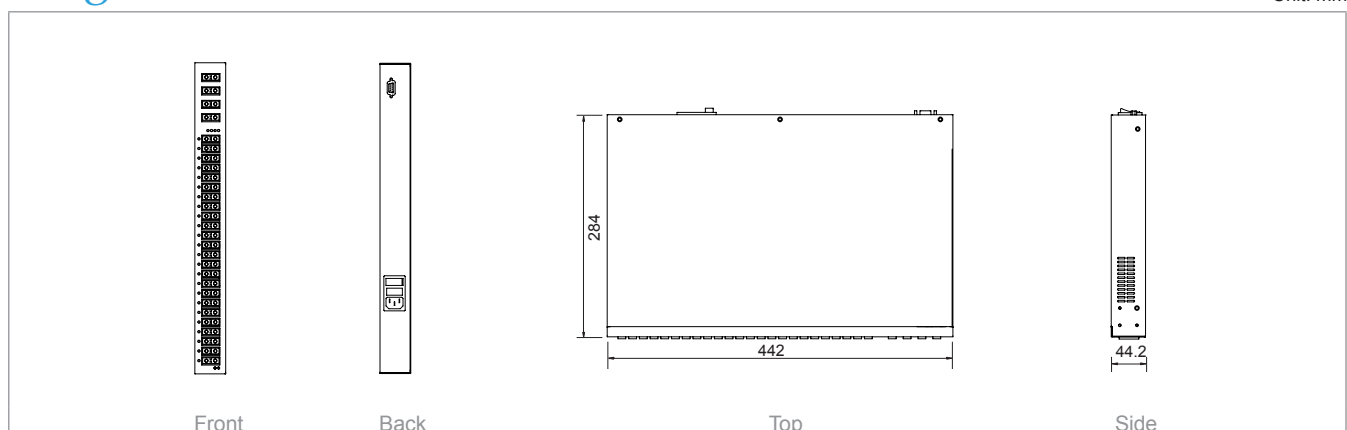
Specifications

Technology	
Standards	IEEE802.3 10BASE-T, IEEE802.3u 100BASE-TX/100BASE-FX, IEEE802.3ab 1000BASE-T, IEEE802.3z 1000BASE-SX/1000BASE-LX, IEEE802.3x, IEEE802.1p, IEEE802.1Q, IEEE802.1w, IEEE802.1x
Forward and Filtering Rate	14,880pps for 10Mbps 148,810pps for 100Mbps 1,488,100pps for 1000Mbps
Packet Buffer Memory	3M bits
Processing Type	- Store-and-Forward - Half-duplex back-pressure and IEEE802.3x full-duplex flow control
Address Table Size	8192 MAC addresses
Power	
Input	(T) : + / - 48VDC(36 - 75VDC) Internal Universal PSU (W) : 88 - 370VDC and 90 - 264VAC Internal Universal PSU (C) : 90 - 264VAC, 50 - 60Hz Internal Universal PSU
Power Consumption	42.7W Max.
Overload Current Protection	Present
Mechanical	
Casing	- Metal case - IP30
Dimensions	- Single Power: 442mm (W) x 284mm (D) x 44.2mm (H) (17.4" (W) x 11.1" (D) x 1.74" (H)) - Redundant Power: 442mm (W) x 360mm (D) x 44.2mm (H) (17.4" (W) x 14.1" (D) x 1.74" (H))
Weight	6.2Kg (13.7lbs.)
Installation	Rack Mounting
Interface	
Ethernet Port	10/100BASE-TX: 24, 20, 16, 12, 8, 4 or 0 port 100BASE-FX: 0, 4, 8, 12, 16, 20 or 24 ports 100BASE-SFP: 0 or 24 ports - Gigabit: 0, 2 or 4 ports - Gigabit-SFP Combo: 0 or 4 ports
Console Port	Port: One DB9 RS-232 port
LED Indicators	- Per Unit: Power Status - Per Port: 10/100TX, 100FX: Link/Activity (Green) 10/100/1000TX, 1000SX/LX: Link/Activity (Green)

Environment	
Operating Temperature	-10°C to 60°C (14°F to 140°F) - Tested @ -20°C to 70°C (-4°F to 158°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Ambient Relative Humidity	5% to 95% (non-condensing)
Regulatory Approvals	
ISO	Manufactured in an ISO9001 facility
EMI	- FCC Part 15, Class A - EN61000-6-4 - EN55022, N61000-3-2, EN61000-3-3
EMS	- EN61000-6-2 - EN61000-4-2 (ESD Standards) Contact: + / - 8KV Air: + / - 15KV - EN61000-4-3 (Radiated RFI Standards) 35V/m, 80 to 3G; 80% AM - EN61000-4-4 (Burst Standards) Signal Ports: + / - 4KV A.C. Power Ports: + / - 4KV - EN61000-4-5 (Surge Standards) Signal Ports: + / - 4KV; Line-to-Earth A.C. Power Ports: + / - 4KV; Line-to-Earth D.C. Power Ports: +/-4KV; Line-to-Earth - EN61000-4-6 (Induced RFI Standards) Signal Ports: 10Vrms @ 0.15 - 80MHz; 80% AM A.C. Power Ports: 10Vrms @ 0.15 - 80MHz; 80% AM - EN61000-4-8 (Magnetic Field Standards) 1000A/m @ 50, 60Hz - IEC61000-4-10 (Oscillatory wave magnetic field test) 100kHz and 1MHz: 30A/m - IEC61000-4-16 (Power frequency immunity test) 50Hz: 300V - IEC61000-4-18 (Oscillatory wave immunity test): 100 kHz, 2.5kV CM and 2.5kV DM 1MHz, 2.5kV CM and 2.5kV DM - IEEE1613: power frequency withstand voltage: 2KV, Insulation resistance >550 MOhm RJ45 Port 500V, Insulation resistance >550 MOhm Impulse voltage: 5Kv, Insulation resistance >550 MOhm IEC60870-2-1: AC/DC power supply voltage variations
Environmental Test Compliance	- IEC60068-2-6 Fc (Vibration Resistance) 1g @ 10 - 150Hz, Amplitude 0.35mm (Operation/Storage/Transport) - IEC60068-2-27 Ea (Shock) 25g @ 11ms (Half-Sine Shock Pulse; Operation) 50g @ 11ms (Half-Sine Shock Pulse; Storage/Transport) - FED STD 101C Method 5007.1 (Free fall w/ package) -Tested with Cross Weight and Drop High standard table

Diagrams

Unit: mm



EX77000 Series

Managed Hardened 24-port 10/100BASE and 4-port Gigabit Ethernet Switch with SFP options



Value

- Provides flexibility of 24-port 10/100BASE-TX/FX/BX/SFP plus 4-port Gigabit-TX/SX/LX/BX/SFP
- Wide temp range for extreme environments



Features

- Certified by NEMA TS2 Environmental requirements for traffic control equipment
- Supports α-ring and RSTP/MSTP/STP for Ethernet redundancy
- IP Multicast Filtering through IGMP Snooping V1, V2 & V3
- Supports port-based VLAN and IEEE802.1Q VLAN Tagging and GVRP
- IEEE802.1p QoS with four priority queues
- MAC-based trunking and LACP
- IEEE802.1x Security
- Bandwidth Rate Control
- Per-port programmable MAC address locking
- Up to 24 Static Secure MAC addresses per port
- Port mirroring
- NTP synchronization
- DHCP Client/Server
- RS-232 console, Telnet, SNMP V1, V2c & V3, RMON, Web Browser, and TFTP Management
- 1000Mbps-Full-duplex, 10/100Mbps-Full/Half-duplex, Auto-Negotiation, Auto-MDI/MDIX
- Full wire-speed forwarding rate
- -40°C to 75°C (-40°F to 167°F) operating temperature range, tested for functional operation @ -40°C to 85°C (-40°F to 185°F)

Ordering Information

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EX77244-WXYZ	8-port 10/100BASE-TX + 16-port 100BASE-FX + 4-port Gigabit Managed Ethernet Switch
EX77064-WXYZ	24-port 100BASE-FX + 4-port Gigabit Managed Ethernet Switch
EX77064-V0VZ	24-port 100BASE-SFP + 4-port Gigabit SFP Combo Managed Ethernet Switch

100FX Fiber Options :

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 Q : Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
 R : Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
 S : Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km
 V : SFP Mode

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Gigabit Port Options :

(Y) = 1 : 10/100/1000BASE-TX
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 4 : 1000BASE-SX (SC) - 2Km
 5 : 1000BASE-SX (ST) - 550m

A : 1000BASE-LX (SC) - 10Km
 B : 1000BASE-LX (SC) - 20Km
 R : 1000BASE-BX (SC) WDM-TX:1310nm/RX:1550nm - 20Km
 S : 1000BASE-BX (SC) WDM-TX:1550nm/RX:1310nm - 20Km
 V : 4-port 1000BASE SFP Combo with 10/100/1000BASE-TX

*More Gigabit options also available upon request.

Power Input Interface : (Z) = T : + / - 48VDC (Terminal Block)

W : 88 - 370VDC and 90 - 264VAC (Terminal Block)
 C : 90 - 264VAC (AC Inlet)
 TR : + / - 48VDC Redundant (Terminal Block)
 WR : 88 - 370VDC and 90 - 264VAC Redundant (Terminal Block)
 CR : 90 - 264VAC Redundant (AC Inlet)

Installation Type : Rack Mount (mounting kit is included)

Specifications

Technology	
Standards	IEEE802.3 10BASE-T, IEEE802.3u 100BASE-TX/100BASE-FX, IEEE802.3ab 1000BASE-T, IEEE802.3z 1000BASE-SX/1000BASE-LX, IEEE802.3x, IEEE802.1p, IEEE802.1Q, IEEE802.1w, IEEE802.1x
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Power Consumption	42.7W Max.
Overload Current Protection	Present

Mechanical	
Casing	- Metal case - IP30
Dimensions	- Single Power: 442mm (W) x 250mm (D) x 44.2mm (H) (17.4" (W) x 9.8" (D) x 1.74" (H)) - Redundant Power: 442mm (W) x 375mm (D) x 44.2mm (H) (17.4" (W) x 14.7" (D) x 1.74" (H))
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Console Port	Port: One DB9 RS-232 port
LED Indicators	- Per Unit: Power Status - Per Port: 10/100TX, 100FX: Link/Activity (Green) 10/100/1000TX, 1000SX/LX: Link/Activity (Green) - SFP Selected: Selected/Unselected (Green)

Environment	
Operating Temperature	-40°C to 75°C (-40°F to 167°F) - Tested @ -40°C to 85°C (-40°F to 185°F)
Storage Temperature	-45°C to 85°C (-49°F to 185°F)
Ambient Relative Humidity	5% to 95% (non-condensing)

Regulatory Approvals	
ISO	Manufactured in an ISO9001 facility
Safety	UL60950-1, EN60950-1, IEC60950-1
EMI	- FCC Part 15, Class A - EN61000-6-4 - EN55022 - EN61000-3-2 - EN61000-3-3
EMS	- EN61000-6-2 - EN61000-4-2 (ESD Standards) - Contact: + / - 6KV - Air: + / - 8KV - EN61000-4-3 (Radiated RFI Standards) 10V/m, 80 to 1000MHz; 80% AM - EN61000-4-4 (Burst Standards) - Signal Ports: + / - 4KV - A.C. Power Ports: + / - 4KV - EN61000-4-5 (Surge Standards) - Signal Ports: + / - 1KV; Line-to-Earth; A.C. Power Ports: + / - 0.5KV; Line-to-Earth - EN61000-4-6 (Induced RFI Standards) - Signal Ports: 10Vrms @ 0.15 - 80MHz; 80% AM - A.C. Power Ports: 10Vrms @ 0.15 - 80MHz; 80% AM - EN61000-4-8 (Magnetic Field Standards) 30A/m @ 50, 60Hz
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Diagrams

Unit: mm

