

EX89000 Series

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



Value

- Modulized Ethernet Switch of 24-port 10/100BASE-TX/FX/BX and 4-port Gigabit-TX/SX/LX/BX/SFP
- Complies with IEC61850-3 & IEEE1613 environmental requirements for power substation automation systems
- Supports GOOSE message
- Wide temp range for extreme environments



Modular design

SFP
Option

Fanless

Features

- Complies with IEC61850-3/IEEE1613 for power substations & EN50121-4 for railway applications
- Supports α-ring and RSTP/MSTP/STP for Ethernet redundancy and GOOSE Message
- Zero Packet Loss pass by GOOSE Message
- IP Multicast Filtering through IGMP Snooping V1, V2 & V3
- 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 time
- 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

EX89000-00Z Rack mount chassis with integrated power supply for four M89000 modules

Power Input Interface : (Z) = T : + / - 48VDC (Terminal Block)
W: 88 - 370VDC and 90 - 264VAC (Terminal Block)
C : 90 - 264VAC (AC Inlet)

M89000 Series Modules:

Model Name	Description	Slot-1	Slot-2	Slot-3	Slot-4
M89800-000	8-Port 10/100BASE TX	✓	✓	✓	
M89620-W00	6-Port 10/100BASE TX + 2-Port 100BASE FX	✓	✓	✓	
M89420-W00	4-Port 10/100BASE TX + 2-Port 100BASE FX	✓	✓	✓	
M89060-W00	6-Port 10/100BASE FX	✓	✓	✓	
M89240-W00	2-Port 10/100BASE TX + 4-Port 100BASE FX	✓	✓	✓	
M89440-W00	4-Port 10/100BASE TX + 4-Port 100BASE FX	✓	✓	✓	
M89004-0XY	4-Port Gigabit				✓

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
B : Single Mode (SC) - 40Km
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

*More 100FX Fiber options also available upon request.

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

*More Gigabit options also available upon request.

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
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 343mm (D) x 44.2mm (H) (17.4" (W) x 13.5" (D) x 1.74" (H))
Weight	• 4.5Kg (9.9lbs.)
Installation	• Rack Mounting

Interface	
Ethernet Port	10/100BASE-TX: 24, 16, 8 or 0 ports 100BASE-FX: 0 to 18 ports - Gigabit: 0, 2 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) 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
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: + / - 8KV Air: + / - 15KV - EN61000-4-3 (Radiated RFI Standards) 35V/m, 80 to 1000MHz, 1400 to 2000MHz, 2000 to 2700MHz; 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: + / - 2KV 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 D.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

