

# EX89000 Series

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



Modular design



## Value

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

## Features

- Complies with EN50121-4 Railway application environmental
- Supports  $\alpha$ -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 with automatic link fail-over
- RS-232 console, Telnet, SNMP V1, V2c & V3, RMON, Web Browser, and TFTP Management
- Supports Command Line Interface in RS-232 Console
- Supports IEEE802.1x Security
- Bandwidth Rate Control
- Per-port programmable MAC address locking
- Up to 24 Static Secure MAC addresses per port
- Port mirroring
- Supports NTP
- 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 10/100BASE FX	✓	✓	✓	-
M89420-W00	4-Port 10/100BASE TX + 2-Port 10/100BASE FX	✓	✓	✓	-
M89060-W00	6-Port 10/100BASE FX	✓	✓	✓	-
M89240-W00	2-Port 10/100BASE TX + 4-Port 10/100BASE FX	✓	✓	✓	-
M89440-W00	4-Port 10/100BASE TX + 4-Port 10/100BASE FX	✓	✓	✓	-
M89004-0XY	4-Port 10/100/1000BASE	-	-	-	✓

### 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  
\*More 100FX Fiber options also available upon request.

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

### 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 Options :

(Y) = 1 : 10/100/1000BASE-TX  
3 : 1000BASE-SX (SC) - 550m  
4 : 1000BASE-SX (SC) - 2Km  
5 : 1000BASE-SX (ST) - 550m  
\*More Gigabit options also available upon request.

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 (1000Mbps SFP Combo with 10/100/1000BASE-TX)

Installation Type : Rack Mount (mounting kit is included)

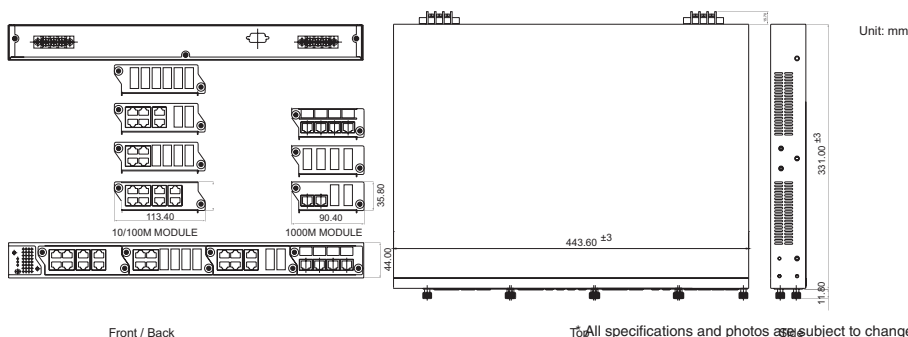
## Specifications

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 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	4.4Kg (9.68lbs.)
Installation	Rack Mounting
Interface	
Ethernet Port	10/100BASE-TX: 24, 16, 8 or 0 ports 100BASE-FX: 0, 4, 8, 12, 16, 20 or 24 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; Criteria B Air: + / - 15KV; Criteria B - EN61000-4-3 (Radiated RFI Standards) 35V/m, 80 to 1000MHz, 1400 to 2000MHz, 2000 to 2700MHz; 80% AM Criteria A - EN61000-4-4 (Burst Standards) Signal Ports: + / - 4KV; Criteria A A.C. Power Ports: + / - 4KV; Criteria A - EN61000-4-5 (Surge Standards) Signal Ports: + / - 2KV; Line-to-Line; Criteria B A.C. Power Ports: + / - 4KV Line-to-Earth; + / - 2KV Line-to-Line;Criteria A D.C. Power Ports: + / - 2KV Line-to-Earth; + / - 1KV Line-to-Line;Criteria A - EN61000-4-6 (Induced RFI Standards) Signal Ports: 10Vrms @ 0.15 - 80MHz; 80% AM Criteria A A.C. Power Ports: 10Vrms @ 0.15 - 80MHz; 80% AM Criteria A D.C. Power Ports: 10Vrms @ 0.15 - 80MHz; 80% AM Criteria A - EN61000-4-8 (Magnetic Field Standards) 1000A/m @ 50, 60Hz; Criteria A - 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) 2g @ 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) *IEC60068-2-32 Ed (Free Fall) 1M (3.281ft.)

## Dimensions



Front / Back