

EX87000 Series

IEC61850/ IEEE1613 24-port 10/100BASE and 4 Gigabit ports with SFP options
Hardened Managed Ethernet Switches



Overview



Certified by IEC 61850-3 & IEEE1613 for power substation applications, the EX87000 series switch comes with twenty four 10/100BASE-TX and/or 100BASE-FX/BX ports plus four 10/100/1000BASE-TX and/or Gigabit SFP combo (1000BASE-SX/LX/BX) ports in a package. The EX87000 functions at temperatures ranging from -40°C to 75°C (-40°F to 167°F) and is tested for functional operation @ -40°C to 85°C (-40°F to 185°F). Fully manageable via SNMP, Web Browser, Telnet or Console port, the EX87000 is designed to integrate 10/100Mbps networks into fibre optic Gigabit backbones. Four Gigabit SFP combo ports can be fibre optic or copper ports. The EX87000 series supports Snooping, Rapid Spanning Tree for Redundancy, QoS for priority queuing, and port mirroring. Users may choose among SNMP RMON, Web browser, or Telnet for remote monitoring and configuration. It also supports rate control, which allows users to set the maximum bandwidth on each port individually.

Features

- Complies with IEC61850-3 & IEEE1613 Environmental requirements for power substation automation systems
- Complies with EN50121-4 environmental requirement for Railway applications
- Complies with IEC61000-6-2 EMC Generic standard immunity for Industrial environment
- EtherWAN proprietary "α-ring" support for network redundancy; recovery time <15ms
- IEEE802.1w RSTP, IEEE802.1S MSTP and IEEE802.1D STP Compatible
- 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, SSL/SSH, 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
- 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
- Supports NTP

Ordering Information

EX87604-OXYZ	24-port 10/100BASE-TX + 4-port Gigabit Managed Ethernet switch
EX87424-WXYZ	16-port 10/100BASE-TX + 8-port 100BASE-FX + 4-port Gigabit Managed Ethernet switch
EX87244-WXYZ	8-port 10/100BASE-TX + 16-port 100BASE-FX + 4-port Gigabit Managed Ethernet switch
EX87064-WXYZ	24-port 100BASE-FX + 4-port Gigabit Managed Ethernet switch

100FX Fibre Options:

- (W) =
- | | |
|--|--|
| 1: Multi Mode (SC) | B: Single Mode (SC) -40Km |
| 2: Multi Mode (ST) | H: Single Mode (ST) -20Km |
| 6: Multi Mode (SC) WDM-TX: 1310nm/RX: 1550nm-2Km | P: Single Mode (SC) WDM -TX: 1310nm/RX: 1550nm -20Km |
| 7: Multi Mode (SC) WDM-TX: 1550nm/RX: 1310nm-2Km | Q: Single Mode (SC) WDM -TX: 1550nm/RX: 1310nm -20Km |
| 8: Multi Mode (SC) WDM-TX: 1310nm/RX: 1550nm-5Km | R: Single Mode (SC) WDM -TX: 1310nm/RX: 1550nm -40Km |
| 9: Multi Mode (SC) WDM-TX: 1550nm/RX: 1310nm-5Km | S: Single Mode (SC) WDM -TX: 1550nm/RX: 1310nm -40Km |
| A: Single Mode (SC) -20Km | V: SFP Mode |
- *More 100FX Fibre options also available upon request.

Numbers of Gigabit Fibre:

- (X) =
- 0: None
 - 1: One Gigabit Fibre port
 - 2: Two Gigabit Fibre port
 - 3: Three Gigabit Fibre port
 - 4: Four Gigabit Fibre port

Gigabit Options:

- (Y) =
- | | |
|---------------------------|--|
| 3: 1000BASE-SX (SC) | R: 1000BASE-BX (SC) WDM -TX: 1310nm/RX: 1550nm -20Km |
| A: 1000BASE-LX (SC) -10Km | S: 1000BASE-BX (SC) WDM -TX: 1550nm/RX: 1310nm -20Km |
| B: 1000BASE-LX (SC) -20Km | V: 1000BASE SFP Combo (1000Mbps SFP Combo with 10/100/1000BASE-TX) |
- *More Gigabit options also available upon request.

Power Input Interface: (Z) =C: 100 ~ 240VAC, R: 100 ~ 240VAC Redundant power supply



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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:

- Input Voltage: 100 to 240VAC, 50 ~ 60Hz Internal Universal PSU

Power Consumption:

- 42.7W Max.

Overload Current Protection:

- Present

Mechanical

Casing:

- Metal case
- IP 30

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 375mm (D) x 44.2mm (H)
(17.4" (W) x 14.7" (D) x 1.74" (H))

Weight:

- 3.4Kg (7.5lbs.)

Installation:

- Rack Mounting

Interface

Ethernet Port:

- 10/100BASE-TX: 24, 16, 8 or 0 port
- 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

Safety:

- UL508

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 3G; 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; 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
 - EN61000-4-8 (Magnetic Field Standards)
1000A/m @ 50, 60Hz; Criteria A
- #### Environmental Test Compliance:
- IEC60068-2-6 Fc (Vibration Resistance)
5g @ 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.)

Diagrams

