

# EX77000 Series

24-port 10/100Base Fast Ethernet with up to 4-port Gigabit Hardened Managed Ethernet Switches



## Overview

Designed for rugged environments, the EtherWAN hardened EX77000 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 EX77000 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 EX77000 is designed to integrate 10/100Mbps networks into fiber optic Gigabit backbones. The four Gigabit SFP combo ports can be fiber optic or copper ports. The hardened EX77000 series supports Snooping, 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. EtherWAN offers a line of products that provide a total solution for Ethernet applications in industrial and rugged environments.

## Features

- ▶ Complies with NEMA TS1 & TS2 Environmental requirements for Traffic control equipment
- ▶ 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, 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
- ▶ 8192 MAC addresses
- ▶ 3M bits buffer memory
- ▶ 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
- ▶ Hardened Metal case
- ▶ Supports Rack Mounting installation
- ▶ Supports NTP

## Ordering Information

EX77604-0XYZ	24-port 10/100Base-TX + 4-port Gigabit Managed Ethernet switch
EX77424-WXYZ	16-port 10/100Base-TX + 8-port 100Base-FX + 4-port Gigabit Managed Ethernet switch
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

### 100FX Fiber Options :

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

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

### Numbers of 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) = 3 : 1000Base-SX (SC)  
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 : 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

## 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:

- 35.4W Max.

#### Overload Current Protection:

- Present

### Mechanical

#### Casing:

- Metal case
- IP 30

#### 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 403mm (D) x 44.2mm (H)  
(17.4" (W) x 15.8" (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, 8, 16 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, EN60950-1, IEC60950-1

#### EMS:

- EN61000-6-2
  - EN61000-4-2 (ESD Standards)  
Contact: + / - 6KV; Criteria B  
Air: + / - 8KV; Criteria B
  - EN61000-4-3 (Radiated RFI Standards)  
10V/m, 80 to 1000MHz; 80% AM Criteria A
  - EN61000-4-4 (Burst Standards)  
Signal Ports: + / - 4KV; Criteria B  
D.C. Power Ports: + / - 4KV; Criteria B
  - EN61000-4-5 (Surge Standards)  
Signal Ports: + / - 1KV; Line-to-Line; Criteria B  
D.C. Power Ports: + / - 0.5KV; Line-to-earth; Criteria B
  - EN61000-4-6 (Induced RFI Standards)  
Signal 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)  
30A/m @ 50, 60Hz; Criteria A

#### Environmental Test Compliance:

- IEC60068-2-6 Fc (Vibration Resistance)  
5g @ 10~150KHz, 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.)

#### NEMA TS1/2 Environmental requirements for Traffic control equipment

## Diagrams

