

# EX77000 Series

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



## Overview

EtherWAN's EX77000 series provides a hardened-graded fully managed 28-port switching platform combining high performance switching backbone with robust and secure management features required for mission critical and harsh environments where sustained connectivity is crucial.

The EX77000 series equipped with 24 fast Ethernet ports and 4 gigabit uplink ports with fixed fiber or SFP options, allows for fan-less operation in high EMI and vibration environments with a temperature range from -40 to 75°C (-40 to 167°F).

Users are able to access EX77000 management features such as port security, IGMP snooping, VLANs, GARP protocols, and LACP, via web browser, Telnet, SNMP, RMON, TFTP, and RS-232 console interfaces.

EX77000 is also NEMA-TS2 certified for traffic applications, it can be mountable on a 1U rack, and is equipped with EtherWAN's Alpha-Ring self-healing technology, providing less than 15ms fault recovery time making it ideal for applications intolerant to interruption.

EtherWAN — "When Connectivity is Crucial."

## Spotlight

### • Versatile Connectivity

- Provides flexibility of 24-port 10/100BASE-TX/FX/BX/SFP plus 4-port Gigabit-TX/SX/LX/BX/SFP

### • Hardened Grade

- Wide operating temperature range for extreme environments
- Fanless and ruggedized housing
- High shock and electric noise immunity

### • Secure Remote Access

- IEEE 802.1x, ACL (Access Control List), and RADIUS support

# Software Features

## Management

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- Interface
  - CLI, Telnet and Web Browser
  - SNMP v1/v2c/v3
- Firmware and configuration upgrade and backup via TFTP
- Supports DHCP Server/Client
- RMON (Remote Monitoring)
- Port mirroring: TX/RX and both
- NTP (Network Time Protocol) time synchronization
- IEEE 802.1ab LLDP (Link Layer Discovery Protocol)
- IPv4/IPv6

## Security

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- MAC address filtering
- Enable/Disable port
- Storm control (Broadcast and multicast types)
- IEEE 802.1x LAN access control
- Remote authentication through RADIUS and TACAS+
- SSH for CLI and Telnet security
- SSL for web security
- Multi-level user account/password against unauthorized configuration
- System log (Remote/Local)
- ACL

## Quality of Service (QoS)

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- Priority Queues: 8 queues per port
- Traffic classification based on IEEE 802.1p CoS, DSCP, WRR (Weighted Round Robin) and strict mode
- Rate Limiting (Ingress/Egress)

## Layer 2 Features

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- Auto-negotiation for port speed and duplex mode
- Flow Control
  - IEEE 802.3x full duplex mode
  - Back-Pressure half duplex mode
- Redundant Protocol
  - IEEE 802.1D Spanning Tree Protocol (STP)
  - IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
  - EtherWAN's Alpha-Ring with network fault recovery (<15ms)
- VLANs
  - Port-based VLANs
  - IEEE 802.1Q Tag VLANs (128 groups, 4096 VID)
  - GVRP (GARP VLAN Registration Protocol)
  - GMRP (GARP Multicast Registration Protocol)
- Link Aggregation
  - Static Trunk (8 groups, support MAC base)
  - IEEE 802.3ad Link Aggregation Control Protocol
- IGMP Snooping
  - IGMP Snooping v1/v2/v3

## Performance

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- Switching Capability: 12.8Gbps
- Jumbo Frame: 9K bytes

# Hardware Specifications

## Technology

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### Standards

- IEEE 802.3 10BASE-T
- IEEE 802.3u 100BASE-TX/100BASE-FX
- IEEE 802.3ab 1000BASE-T
- IEEE 802.3z 1000BASE-SX/1000BASE-LX
- IEEE 802.3x Full duplex and flow control
- IEEE 802.1p QoS
- IEEE 802.1Q Tag VLANs
- IEEE 802.1w RSTP
- IEEE 802.1x Port-based Network Access Control

### Forward and Filtering Rate

- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

### Packet Buffer Memory

- 12M bits

### Processing Type

- Store-and-Forward
- Auto Negotiation
- Half-duplex back-pressure and IEEE 802.3x full-duplex flow control
- Auto MDI/MDIX

### Address Table Size

- 16K MAC addresses

## Power

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### Input

- (T): ±48VDC Internal Universal PSU
- (W): 88-300VDC or 100-240VAC Internal Universal PSU
- (C): 100-240VAC, 50-60Hz Internal Universal PSU

### Power Consumption

- For models with all copper ports:  
EX77604 Series: 21.9W@230VAC
- For models with all fiber ports:  
EX77064 Series: 40.6W@230VAC

## Mechanical

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### Casing

- Metal Case
- IP30

### Dimensions

- Redundant Power:  
442 x 375 x 44mm (W x D x H)  
(17.4" x 14.7" x 1.73")
- Single Power:  
442 x 250 x 44.2mm (W x D x H)  
(17.4" x 9.8" x 1.74")

### Weight

- 5Kg (11lbs)

### Installation

- Rack mounting

## Interface

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### Ethernet Port

- 10/100BASE-TX: 0, 8, 16 or 24 ports
- 100BASE-FX: 0, 8, 16 or 24 ports
- Gigabit: 4 ports

### Console Port

- Port: One DB9 RS-232 port

### Alarm Contact

- One relay output with current 0.6A/30VDC

### LED Indicators

- Per Unit: Power, Alarm
- Per Port: Link/Activity (Green)
- Per SFP Port: Selected (Green)

## Environment

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### Operating Temperature

- -40 to 75°C (-40 to 167°F)  
Tested @ -40 to 85°C (-40 to 185°F)

### Storage Temperature

- -45 to 85°C (-49 to 185°F)

### Ambient Relative Humidity

- 5% to 95% (non-condensing)

## Regulatory Approvals

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### ISO

- Manufactured in an ISO 9001 facility

### Safety

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#### UL 62368

### EMI

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#### FCC Part 15B Class A

#### EN 61000-6-4

### EMS

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#### EN 61000-6-2

- EN 61000-4-2 (ESD Standards)
- EN 61000-4-3 (RFI Standards)
- EN 61000-4-4 (Burst Standards)
- EN 61000-4-5 (Surge Standards)
- EN 61000-4-6 (Induced RFI Standards)
- EN 61000-4-8 (Magnetic Field Standards)

### Environmental Test Compliance

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#### FED STD 101C Method 5007.1 (Free fall w/package)

#### IEC 60068-2-6 Fc (Vibration Resistance)

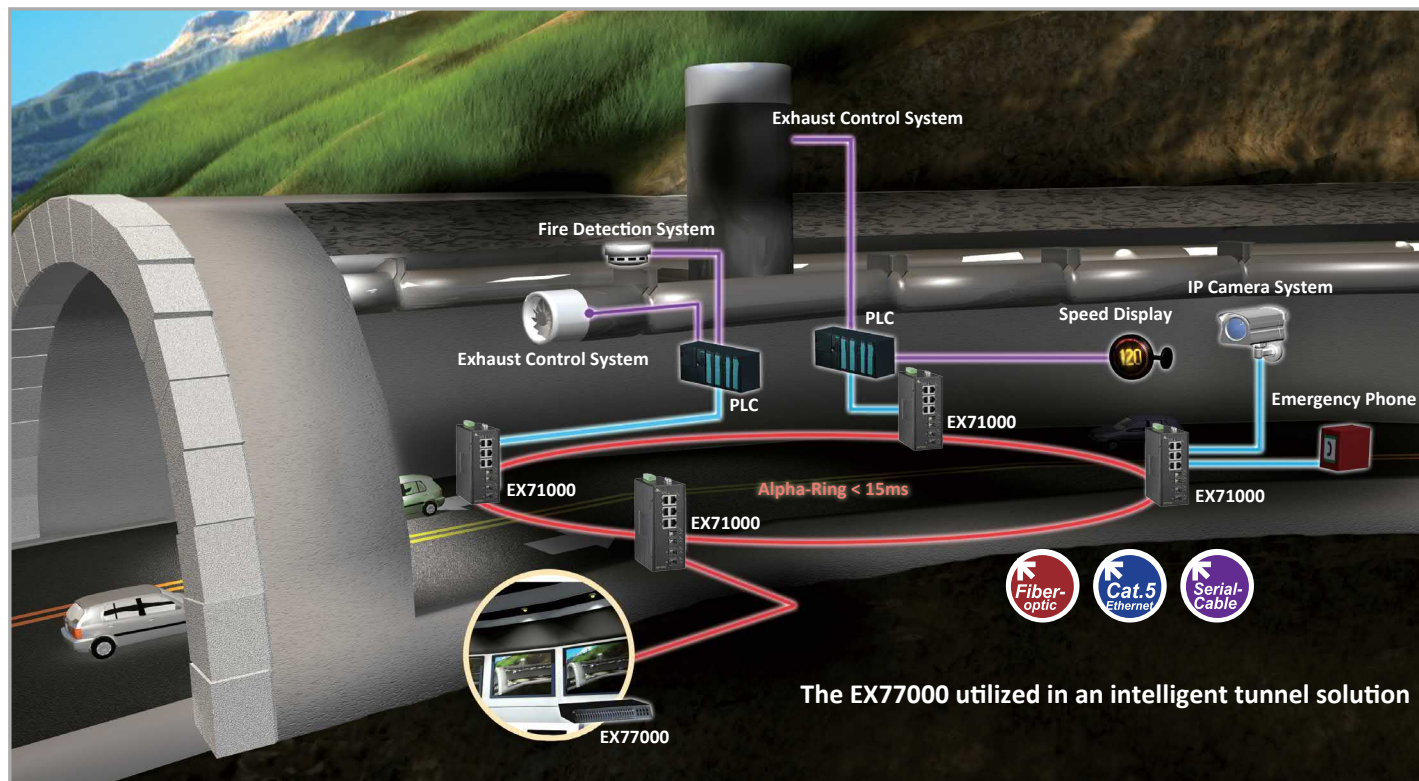
#### IEC 60068-2-27 Ea (Shock)

### Industrial Compliance

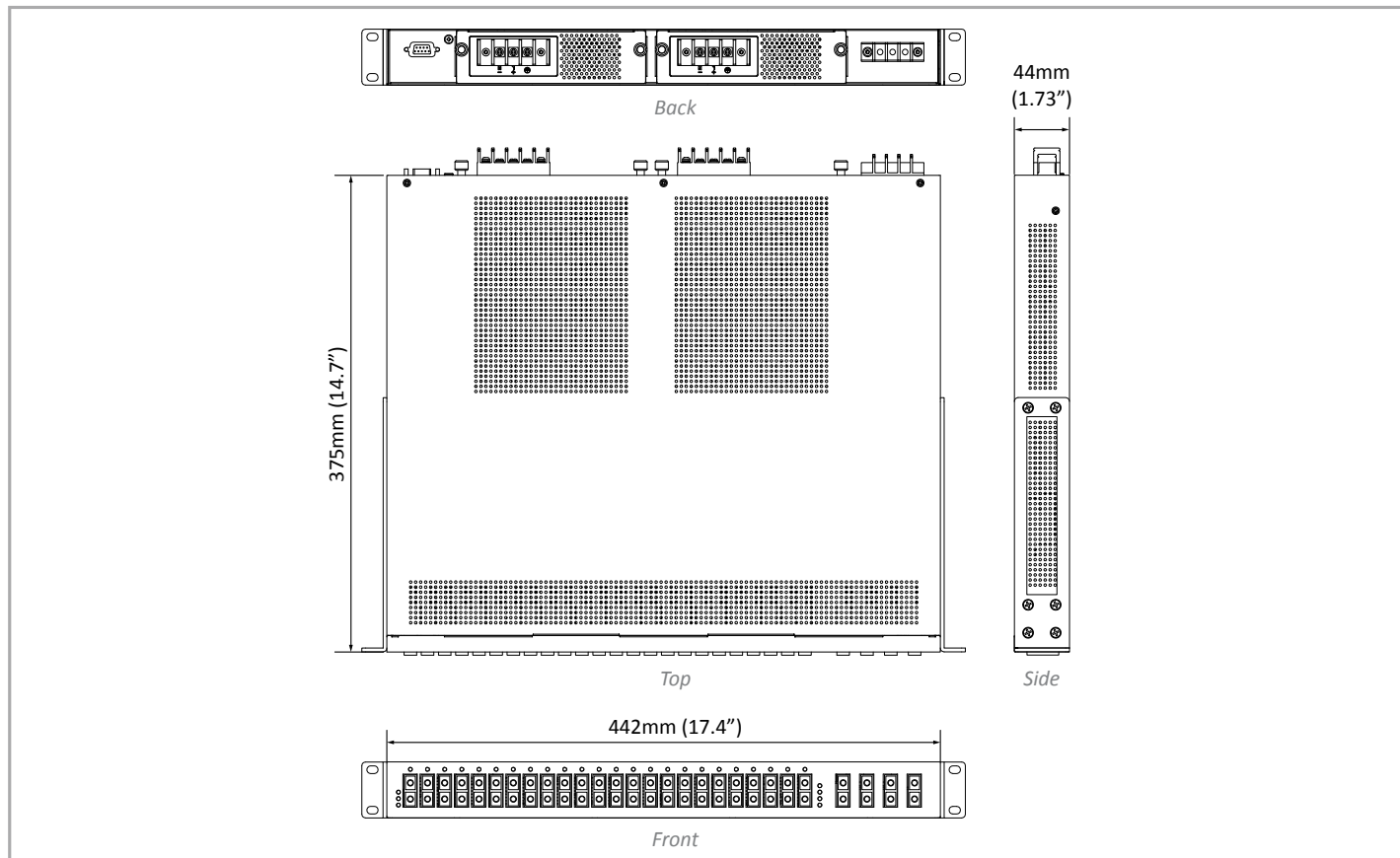
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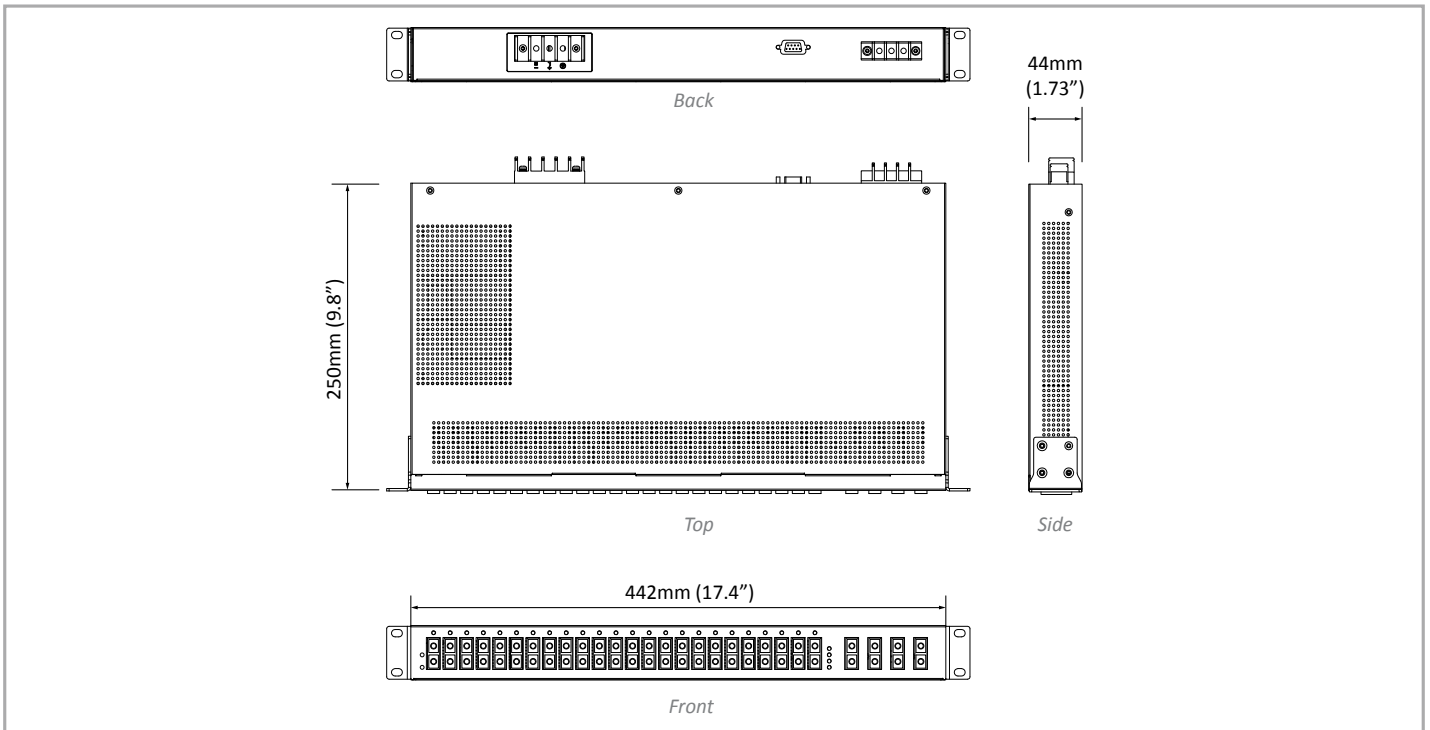
#### NEMA TS2

# Application Diagram



# Dimensions





## Ordering Information

### Model

<b>EX77604-0XYZ</b>	24-port 10/100BASE-TX +4-port Gigabit Managed Ethernet Switch
<b>EX77424-WXYZ</b>	16-port 10/100BASE-TX +8-port 100BASE-FX +4-port Gigabit Managed Ethernet Switch
<b>EX77244-WXYZ</b>	8-port 10/100BASE-TX +16-port 100BASE-FX +4-port Gigabit Managed Ethernet Switch
<b>EX77064-WXYZ</b>	24-port 100BASE-FX +4-port Gigabit Managed Ethernet Switch
<b>EX77064-V0VZ</b>	24-port 100BASE-SFP +4-port Gigabit SFP Combo Managed Ethernet Switch

\* Rack mounting kit included.

### 100FX Fiber Options (W)

<b>1</b>	Multi Mode (SC) - 2Km
<b>2</b>	Multi Mode (ST) - 2Km
<b>A</b>	Single Mode (SC) - 20Km
<b>H</b>	Single Mode (ST) - 20Km
<b>P</b>	Single Mode (SC) WDM-TX: 1310nm/RX: 1550nm-20Km
<b>Q</b>	Single Mode (SC) WDM-TX: 1550nm/RX: 1310nm-20Km
<b>V</b>	SFP

### Numbers of Fixed Gigabit Fiber (X)

<b>0</b>	None
<b>4</b>	Four Gigabit Fiber Ports

**Gigabit Port Options (Y)**

<b>3</b>	1000BASE-SX (SC) - 550m
<b>4</b>	1000BASE-SX (SC) - 2Km
<b>A</b>	1000BASE-LX (SC) - 10Km
<b>B</b>	1000BASE-LX (SC) - 20Km
<b>R</b>	1000BASE-BX (SC) WDM-TX: 1310nm/RX: 1550nm-20Km
<b>S</b>	1000BASE-BX (SC) WDM-TX: 1550nm/RX: 1310nm-20Km
<b>V</b>	4-port 100/1000BASE SFP Combo with 10/100/1000BASE-TX

**Power Input Interface (Z)**

<b>T</b>	±48VDC (Terminal Block)
<b>W</b>	88-300VDC or 100-240VAC (Terminal Block)
<b>C</b>	100-240VAC (AC Inlet)
<b>TR</b>	±48VDC Redundant (Terminal Block)
<b>WR</b>	88-300VDC or 100-240VAC Redundant (Terminal Block)
<b>CR</b>	100-240VAC Redundant (AC Inlet)