

# EX76000 Series

Hardened Managed 16-port 10/100BASE PoE with  
2-port Gigabit Combo Ethernet Switch



## Overview

EtherWAN's EX76000 Series provides a hardened 18-port switching platform supporting IEEE 802.3at Power over Ethernet, high performance switching with robust management features required for mission-critical and harsh environments where sustained connectivity is crucial.

The EX76000 Series is equipped with 16 10/100BASE-TX PoE ports, in combination with two Gigabit SX/LX/BX/WDM combo port options. The IEEE 802.3at PoE ports provide up to 30W per port with a total power budget of 480W, making the switch truly versatile for connecting with PoE Powered Devices (PD) with different bandwidth and power consumption requirements such as; outdoor PTZ dome cameras, wireless access points, and way-side communication devices.

1U rack mountable, the EX76000 Series is equipped with EtherWAN's Alpha-Ring self-healing ring technology providing less than 15ms fault recovery time. Users are able to access management features such as port security, IGMP snooping, port-based VLAN, GARP protocols, link aggregation, via web browser, telnet, SSH, SNMP, RMON, TFTP, and RS-232 console interfaces. With the hardened specifications, the EX76000 Series is designed to operate at -40 to 75°C in harsh environments, where high ESD, shock, and vibration may be present.

EtherWAN – "When Connectivity is Crucial."

## Spotlight

### • PoE Connectivity

- Sixteen 10/100BASE IEEE 802.3at Power over Ethernet ports
- Two Gigabit-SX/LX/BX combo ports

### • Hardened Grade

- Wide operating temperature range from -40 to 75°C (-40 to 167°F) for extreme environments
- Fanless and ruggedized housing
- High shock and electric noise immunity
- Complies with UL 508 safety requirements for industrial control devices

# 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): group 1, 2, 3, 9
- Port mirroring: TX/RX and both
- NTP (Network Time Protocol) time synchronization
- IEEE 802.1ab LLDP (Link Layer Discovery Protocol)

## 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
- SSH for CLI and Telnet security
- SSL for web security
- Multi-level user account/password against unauthorized configuration
- System log (Remote/Local)

## Quality of Service (QoS)

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- Priority Queues: 4 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)
  - Supports EtherWAN's Alpha-Ring topology for less than 15ms fault recovery time
- 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 (2 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: 7.2Gbps
- Packet Buffer Size: 2M bits
- MAC Address Table: 8192

# Hardware Specifications

## Technology

### 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
- IEEE 802.3af/at Power over Ethernet (PoE)

### Forward and Filtering Rate

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

### Packet Buffer Memory

- 2M 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

- 8192 MAC addresses

## Power

### Input

- Redundant power inputs:  
Terminal Block: 47-57VDC

### Power Consumption

- Max. 12W (without PoE)
- PoE Power Budget (depends on power input): 480W Max.

### PoE Technology

- Alternative B  
Pins 7/8(-), 4/5(+)

### PoE Power Output

- Port 1 to 16
- IEEE 802.3af: up to 15.4W/port, 47-55VDC, 350mA Max.
- IEEE 802.3at: up to 30W/port, 52-57VDC, 600mA Max.

### Protection

- Reverse polarity protection

## Mechanical

### Casing

- Metal Case
- IP30

### Dimensions

- 442 x 205 x 44mm (W x D x H)  
(17.40" x 8.07" x 1.73")

### Weight

- 3.5Kg (7.7lbs.)

### Installation

- Rack mounting

## Interface

### Ethernet Port

- 10/100BASE-TX: 8, 12 or 16 ports
- 100BASE-FX: 0, 2 or 4 ports
- Gigabit: 0, 1 or 2 ports

### Console Port

- Port: One DB9 RS-232 port

### Alarm Contact

- One relay output with current 1A/24VDC

### LED Indicators

- Per Unit: Power 1, Power 2
- Per PoE Port: PoE (Amber)
- Per Port: Link/Activity (Green), Speed (Green)

## Environment

### 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

### ISO

- Manufactured in an ISO 9001 facility

### Safety

#### UL 508

### EMI

#### FCC Part 15B Class A

#### EN 55022

#### EN 61000-3-2

#### EN 61000-3-3

#### EN 61000-6-4

### EMS

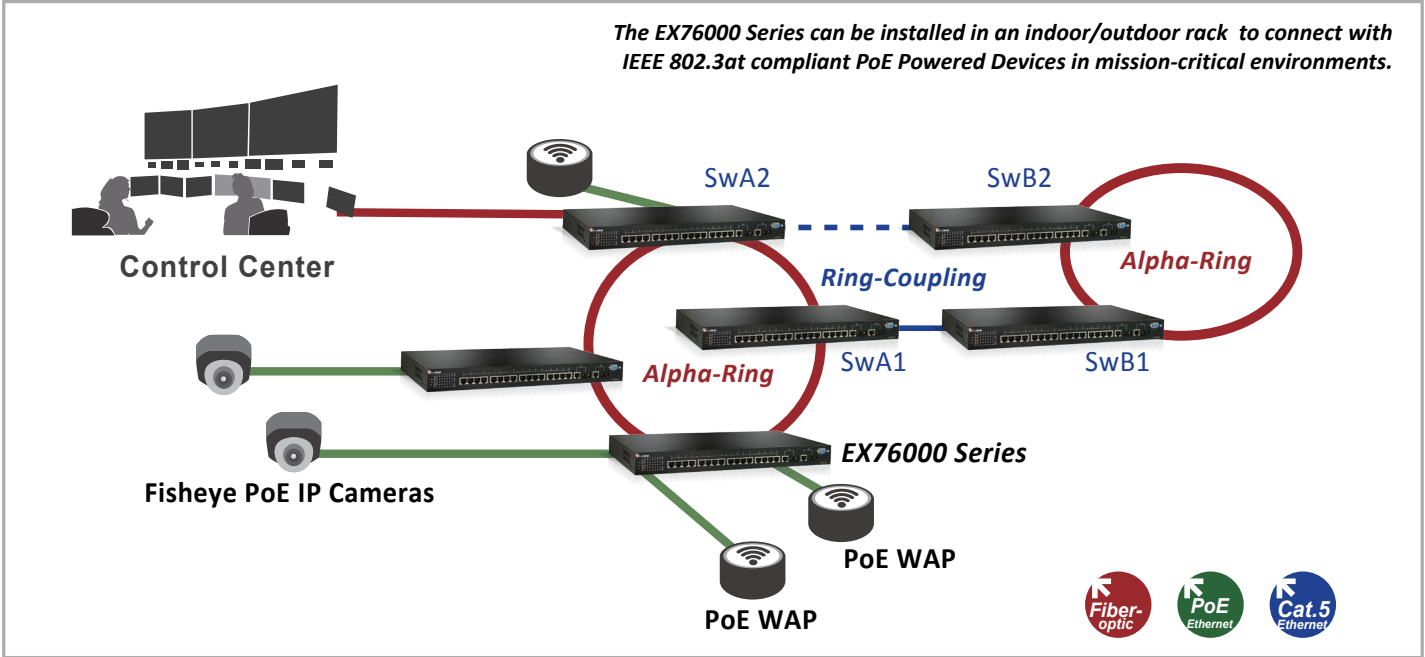
#### EN 61000-6-2

- EN 61000-4-2 (ESD Standards)
- EN 61000-4-3 (Radiated 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)

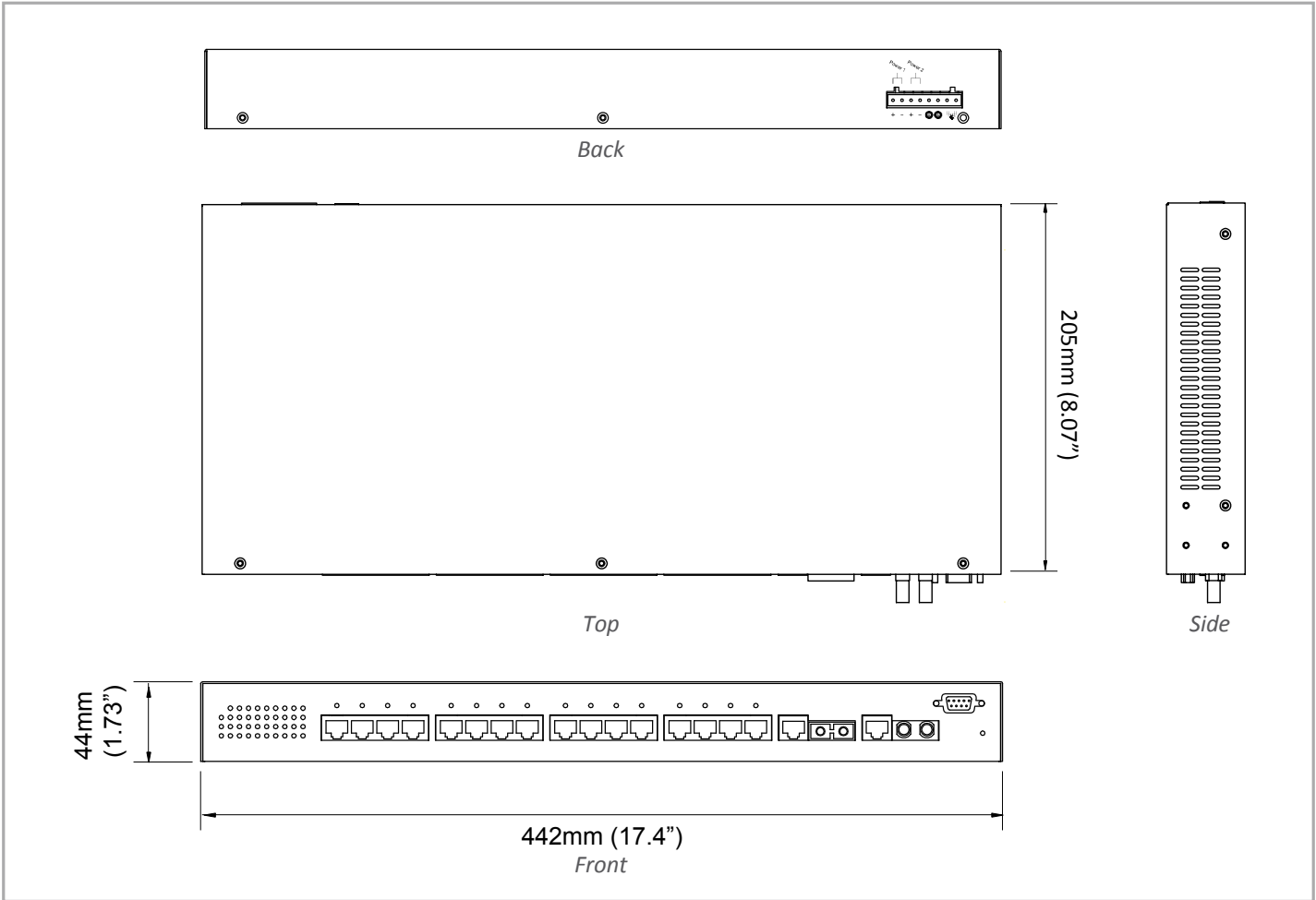
### Environmental Test Compliance

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

# Application Diagram



# Dimensions



# Ordering Information

## Model

|                     |                                                                                  |
|---------------------|----------------------------------------------------------------------------------|
| <b>EX76400-00TT</b> | 16-port 10/100BASE-TX PoE Hardened Managed Ethernet Switch                       |
| <b>EX76402-0YTT</b> | 16-port 10/100BASE-TX PoE +2-port combo Gigabit Hardened Managed Ethernet Switch |

\* Rack mounting kit included.

## 100FX Fiber Options (X)

|          |                                                 |
|----------|-------------------------------------------------|
| <b>1</b> | Multi Mode (SC) - 2Km                           |
| <b>2</b> | Multi Mode (ST) - 2Km                           |
| <b>6</b> | Multi Mode (SC) WDM-TX: 1310nm/RX: 1550nm-2Km   |
| <b>7</b> | Multi Mode (SC) WDM-TX: 1550nm/RX: 1310nm-2Km   |
| <b>8</b> | Multi Mode (SC) WDM-TX: 1310nm/RX: 1550nm-5Km   |
| <b>9</b> | Multi Mode (SC) WDM-TX: 1550nm/RX: 1310nm-5Km   |
| <b>A</b> | Single Mode (SC) - 20Km                         |
| <b>B</b> | Single Mode (SC) - 40Km                         |
| <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>R</b> | Single Mode (SC) WDM-TX: 1310nm/RX: 1550nm-40Km |
| <b>S</b> | Single Mode (SC) WDM-TX: 1550nm/RX: 1310nm-40Km |

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

## Gigabit Port Options (Y)

|          |                                                                                     |
|----------|-------------------------------------------------------------------------------------|
| <b>1</b> | 10/100/1000BASE-TX (No Gigabit Fiber port supported)                                |
| <b>3</b> | Combo port: 10/100/1000BASE-TX with 1000BASE-SX (SC) - 550m                         |
| <b>4</b> | Combo port: 10/100/1000BASE-TX with 1000BASE-SX (SC) - 2Km                          |
| <b>5</b> | Combo port: 10/100/1000BASE-TX with 1000BASE-SX (ST) - 550m                         |
| <b>A</b> | Combo port: 10/100/1000BASE-TX with 1000BASE-LX (SC) - 10Km                         |
| <b>B</b> | Combo port: 10/100/1000BASE-TX with 1000BASE-LX (SC) - 20Km                         |
| <b>R</b> | Combo port: 10/100/1000BASE-TX with 1000BASE-BX (SC) WDM-TX: 1310nm/RX: 1550nm-20Km |
| <b>S</b> | Combo port: 10/100/1000BASE-TX with 1000BASE-BX (SC) WDM-TX: 1550nm/RX: 1310nm-20Km |

\* More Gigabit options also available upon request.

## Optional Accessories

|                   |                                                  |
|-------------------|--------------------------------------------------|
| <b>EDR-120-48</b> | 120W/2.5A DIN-Rail 48VDC Industrial Power Supply |
| <b>NDR-240-48</b> | 240W/5A DIN-Rail 48VDC Industrial Power Supply   |
| <b>SDR-480-48</b> | 480W/10A DIN-Rail 48VDC Industrial Power Supply  |