

# EX77900 Series

Hardened Managed 24-port Gigabit and 4-port 10G SFP+ Ethernet Switch



## Overview

### [When should you use an Industrial Layer 3 switch?](#)

EtherWAN's EX77900 Series provides a Hardened Full-Gigabit Managed 28-port switching platform that combines the advantages of Layer 3 routing protocols with robust management features and hardened specifications. With support for static routing, Routing Information Protocol (RIP) V1/V2, and Virtual Router Redundancy Protocol (VRRP), these switches deliver outstanding flexibility and security in a high performance and cost-effective package.

The EX77900 Series is equipped with twenty-eight gigabit ports, or a combination of twenty-four Gigabit copper ports and four 10G SFP+ for connecting the switch to the core network. Mountable on a 1U rack, the switches are equipped with EtherWAN's Alpha-Ring self-healing technology, providing less than 15ms fault recovery time making it ideal for applications intolerant to interruption.

A broad range of management features and options includes port security, IGMP snooping, port-based VLAN, GARP protocols, link aggregation and ACL, via web browser, telnet, SSH, SNMP, RMON, TFTP, and RS-232 console interfaces. With the hardened specifications, the EX77900 Series is designed to operate at -40 to 75°C in harsh environments, and is IEC 61850 & IEEE 1613 compliant, capable of operating under high EMI environments, making it an ideal choice for mission-critical applications.

EtherWAN — "When Connectivity is Crucial."

## Spotlight

### + Hardened Grade

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

### + 10GbE Connectivity

- Four 10G SFP+ for connecting the switch to the core network

### + L2/L3 Routing Features

- Supports static route, RIP v1/v2 and OSPF
- Maximum number of routes in hardware: 64 entries
- Supports Virtual Router Redundancy Protocol (VRRP)

## Features

### + Interface

CLI, Telnet and Web Browser  
SNMP v1/v2c/v3

### + Management

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

MAC address filtering  
Enable/Disable port  
Storm control (Broadcast and multicast types)  
IEEE 802.1x LAN access control  
Remote authentication through RADIUS and TACACS+  
SSH for CLI and Telnet security  
SSL for web security  
ACL

### + Quality of Service (QoS)

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

**Auto-negotiation for port speed and duplex**  
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 network fault recovery (<15ms) and Alpha-Chain

#### **VLANs**

IEEE 802.1Q Tag VLANs (128 groups, 4096 VID)  
GVRP (GARP VLAN Registration Protocol)  
GMRP (GARP Multicast Registration Protocol)

#### **Link Aggregation**

Static Trunk (4 groups, support MAC base)  
IEEE 802.3ad Link Aggregation Control Protocol

#### **IGMP Snooping**

IGMP Snooping v1/v2/v3

### + Layer 3 Features

#### **Routing Protocols**

Maximum number of routes in hardware:64 entries  
Static routing  
RIP v1/v2  
OSPF v2

#### **Routing Redundancy**

VRRP

# 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

### Forward and Filtering Rate

14,880pps for 10Mbps  
148,810pps for 100Mbps  
1,488,100pps for 1000Mbps  
14,880,952pps for 10Gbps

### 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

## + Interface

### Ethernet Port

10/100/1000BASE-TX: 16 or 24 ports  
100/1000BASE-SX/LX/BX/SFP: 8 ports  
10G SFP+: 4 ports

### Console Port

One DB9 RS-232 port

### USB Port

One USB Port (Type A connector)

### Alarm Contact

One relay output with current 0.6A/30VDC

### LED Indicators

Per Unit: Power 1, Power 2, Alarm  
Per Port: Link/Activity (Green)

## + Environment

### Operating Temperature

-40 to 75°C (-40 to 167°F)

### Storage Temperature

-45 to 85°C (-49 to 185°F)

### Ambient Relative Humidity

5% to 95% (non-condensing)

## + Power

### Input

Power input can be configured as:

- ±48VDC (Terminal Block)
- 88-300VDC or 100-240VAC (Terminal Block)
- 100–240VAC (AC Inlet)
- ±48VDC Redundant (Terminal Block)
- 88-300VDC or 100-240VAC Redundant (Terminal Block)
- 100–240VAC Redundant (AC Inlet)

### Power Consumption

31.08W

## + Mechanical

### Casing

Metal Case

IP30

### Dimensions

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

### Weight

5.27kg

### Installation

Rack mounting

## + Regulatory Approvals

### ISO

Manufactured in an ISO 9001 facility

### Safety

- UL 62368

### EMI

- FCC Part 15B Class A
- VCCI Class A
- EN 61000-6-4
- EN 61000-3-2
- EN 61000-3-3

### 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)

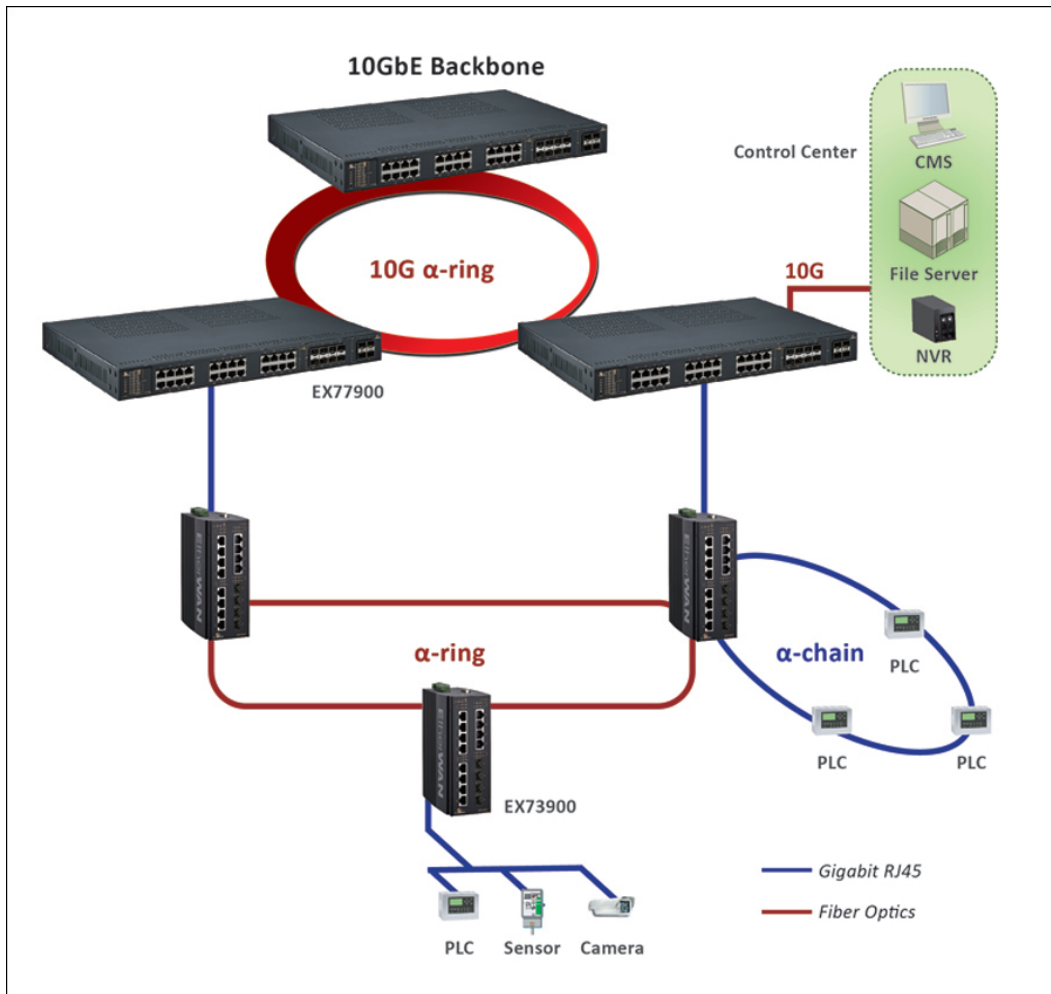
### Environmental Test Compliance

- IEC 60068-2-6 Fc (Vibration Resistance)
- IEC 60068-2-27 Ea (Shock)
- FED STD 101C Method 5007.1 (Free fall w/package)

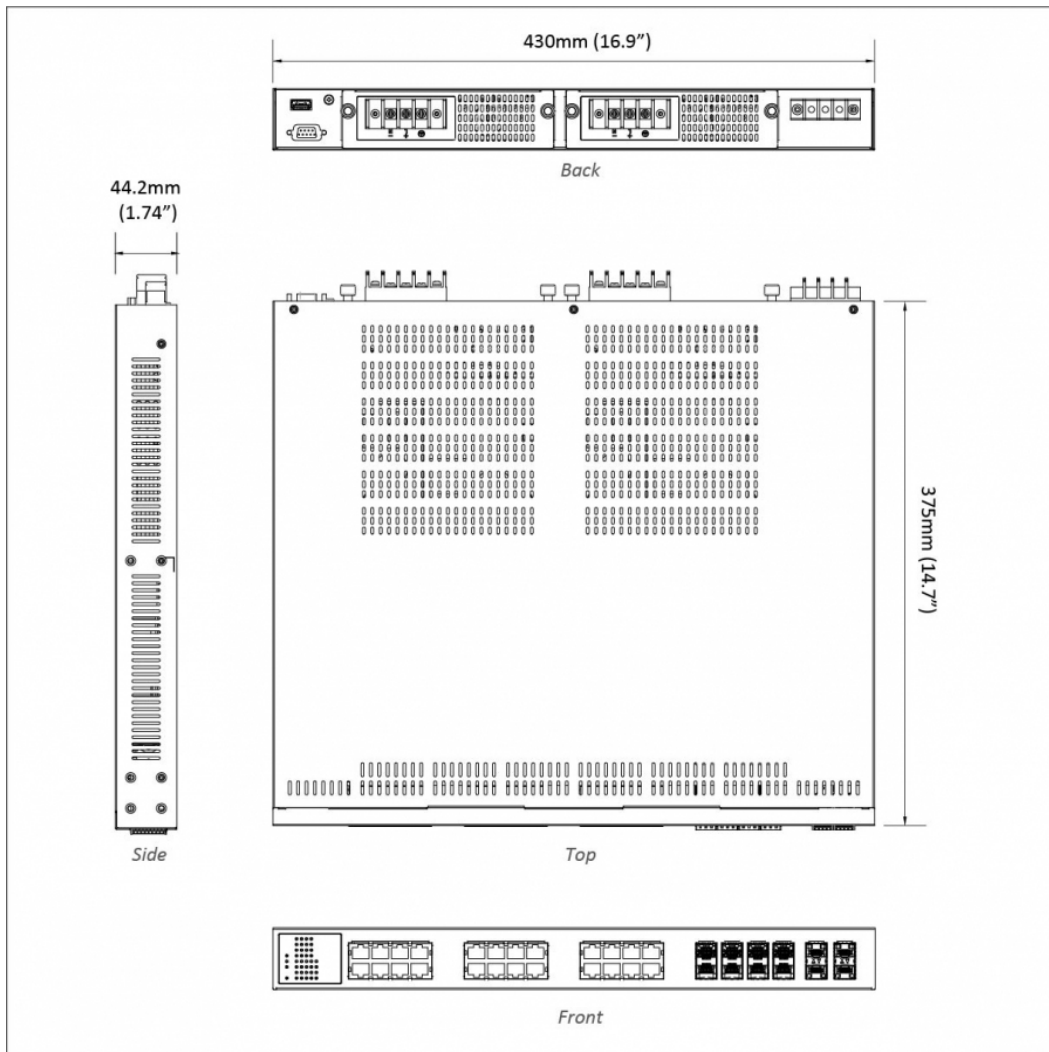
### Industrial Compliance

- IEC 61850-3/IEEE 1613
- EN 50121-4
- NEMA TS2

# Application



# Dimensions



## Ordering Info

### + Model

<b>EX77964-8VZ</b>	16-port 10/100/1000BASE-TX +8-port 100/1000BASE SFP Combo +4-port 1G/10G SFP+ Hardened Managed Ethernet Switch
--------------------	--

### + 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)

### + Optional Accessory

<b>EB-232</b>	Configuration Backup and Restoration Tool for EtherWAN switch with firmware 2.01.1 or above
---------------	---

