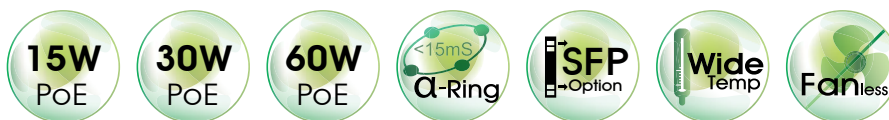


# EX78900 Series

Lite L3 Hardened Managed 16-port (8 x PoE) Gigabit Ethernet Switch



- 8 X PoE — provides 60 watt Ultra PoE ports
- Power Budget: 240W



## Overview

EtherWAN's EX78900 Series is a hardened DIN-rail mounted 16-port Gigabit switching platform. It features with 60W and IEEE 802.3af/at Power over Ethernet combining with robust management features required for mission-critical and harsh environments where sustained connectivity is crucial.

The EX78900 Series is equipped with 12 x 10/100/1000 BASE-TX (8 x PoE port), in combination with 4 Gigabit SFP ports. The Ultra PoE ports provide up to 60W/port with a total power budget of 240W, making the switch truly versatile to connect 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. The EX78900 Series 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. Users are able to access management features such as 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 EX78900 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

### • Ultra PoE Switch

- Up to 12 ports with 8 Ports PoE, support 60W/IEEE 802.3af/at, and 4 Gigabit SFP ports for high-bandwidth communication

### • PoE+ 250m

- PoE can be extended to 250m with 10Mbps transfer speed

### • Lite Layer 3 Routing Features

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

# 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)
- 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
- SSH for CLI and Telnet security
- SSL for web security
- System log (remote/local)
- ACL

## 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)
  - EtherWAN's Alpha-Ring network fault recovery (<15ms)
- 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

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- IP Packet Routing
  - Maximum number of routes in hardware: 64 entries
  - Static routing
  - RIP v1/v2
- Routing Redundancy
  - VRRP

# 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
- IEEE 802.3af/at Power over Ethernet

### 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

### Jumbo Frame

- 9216 bytes

### Address Table Size

- 16K MAC addresses

## Power

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### Input

- Redundant power inputs:  
Terminal Block: 52-57VDC

### Power Consumption

- Device: Max. 20W (without PoE)

### PoE Technology

- Alternative A & B  
Pins 1/2(+), 3/6(-), Pins 7/8(+), 4/5(-)

### PoE Power Output

- PoE can be configured as:
  1. 6-port 15.4W PoE and 2-port 60W PoE
  2. 8-port 30W PoE
  3. 4-port 10/100/1000 TX and 4-port 60W PoE
  4. Other PoE power level configuration can be done through firmware
- PoE power budget: 240W

### Protection

- Reverse polarity protection

## Mechanical

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### Casing

- Aluminum Case
- IP30

### Dimensions

- 72 x 140 x 170mm (W x D xH)  
(2.8" x 5.5" x 6.7")

### Weight

- 1.5Kg (3.3lbs.)

### Installation

- DIN-Rail

## Interface

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### Ethernet Port

- 10/100/1000BASE-TX (PoE): 8 or 12 ports
- 1000BASE-SX/LX/SFP: 4 ports

### Console Port

- Port: One DB9 RS-232 port

### Alarm Contact

- One relay output with current 0.5A/48VDC

### LED Indicators

- Per Unit: Power 1, Power 2
- Per PoE Port: PoE Status (Orange)
- Per Port: Link/Activity (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

- -40 to 85°C (-40 to 185°F)

### Ambient Relative Humidity

- 5% to 95% (non-condensing)

## Regulatory Approvals

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### ISO

- Manufactured in an ISO 9001 facility

### EMI

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#### FCC Part 15B Class A

#### VCCI Class A

#### EN 61000-6-4

#### EN 61000-3-2

#### EN 61000-3-3

### EMS

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#### 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 Compliances

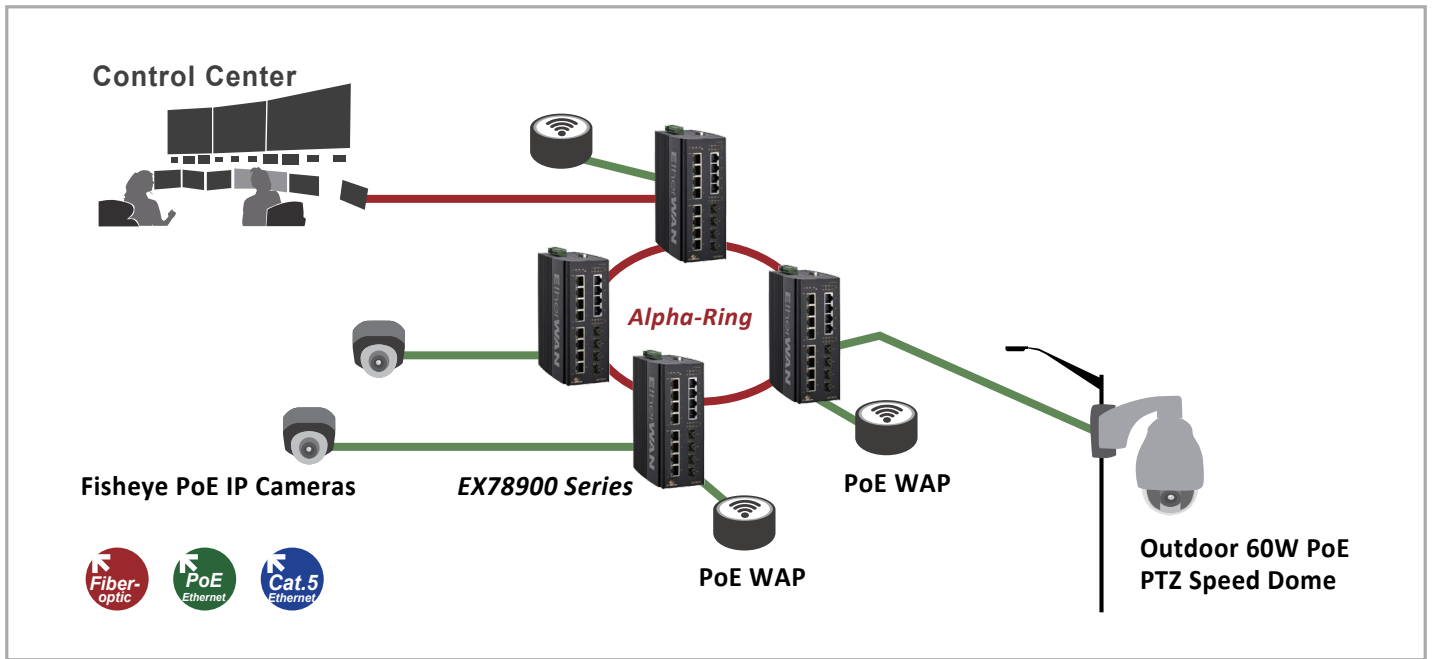
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#### IEC 60068-2-6 Fc (Vibration)

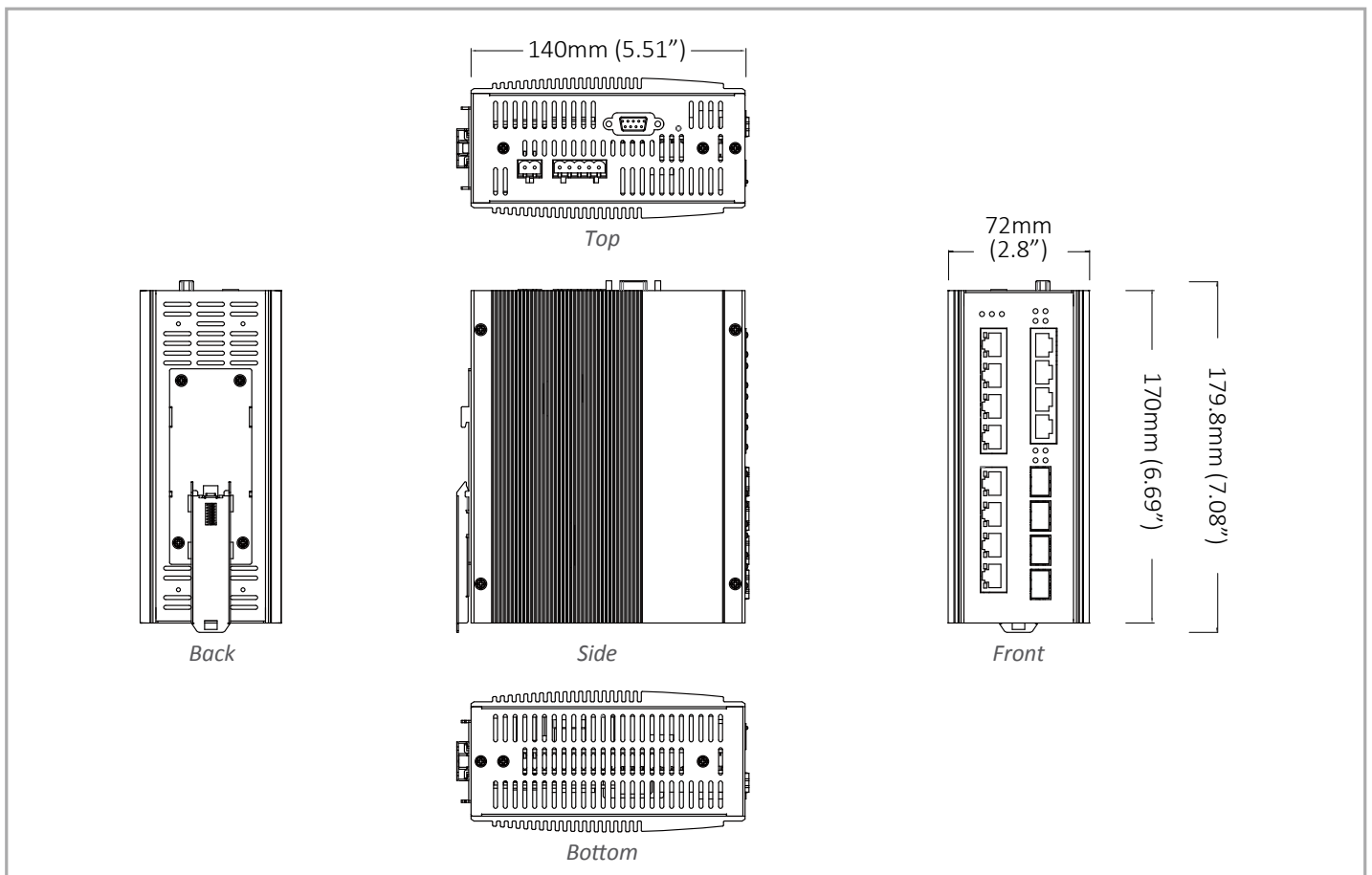
#### IEC 60068-2-27 Ea (Shock)

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

# Application Diagram



# Dimensions



## Ordering Information

### Model

<b>EX78931-0VB</b>	12-Port 10/100/1000BASE-TX with 8-port PoE +4-port Gigabit SFP Hardened Managed Ethernet Switch
<b>EX78921-0VB</b>	8-Port 10/100/1000BASE-TX PoE +4-Port Gigabit SFP Hardened Managed Ethernet Switch
<b>EX78921-0XB</b>	8-Port 10/100/1000BASE-TX PoE +4-Port Gigabit Fiber Hardened Managed Ethernet Switch

\* DIN-Rail mounting kit included.

### Gigabit Port Options (X)

<b>3</b>	1000BASE-SX (SC) - 550m
<b>4</b>	1000BASE-SX (SC) - 2Km
<b>5</b>	1000BASE-SX (ST) - 550m
<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

\* More Gigabit options are also available upon request.

### Optional Accessories

<b>SDR-480-48</b>	480W/10A DIN-Rail 48VDC Industrial Power Supply
<b>EB-232</b>	Configuration Backup and Restoration Tool for EX78900 switch with firmware V2.01.1 or above