

# EX78000 Series

Hardened Managed 4 to 10-port 10/100BASE (8 x PoE) and 2-port Gigabit Ethernet Switch



## Highlights

### + Hardened-Grade for Non-Ventilated & Harsh Environments

Wide operating temperature range -40 to 75°C (-40 to 167°F)  
Fanless operation  
High impact, thermal shock, and electrical noise resistance

### + PoE Features

Up to 60W/port with 240W total power budget  
Long distance PoE up to 250m (820ft)  
PoE watchdog monitors status of connected PoE devices

### + Management/Security Features

Port control  
802.1x port-based network access control and remote authentication through RADIUS  
Configure and monitor with eVue™ and eLite™

### + Support

Complimentary Technical Support  
Free Firmware Upgrades  
Limited Lifetime Warranty

## Overview

EtherWAN's EX78000 Series is a hardened DIN-rail mounted managed PoE Ethernet switch platform. Equipped with 8 10/100BASE-TX PoE ports along with 60W power and 2 gigabit fiber ports, the EX78000 Series provides flexibility, speed, and reliability for networks in urban infrastructure, transportation, security, and other areas where connectivity is crucial.

EtherWAN — "When Connectivity is Crucial."

## Features

### + Interface

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

### + Management

- 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) 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+
- Multi-user login and privileged access management
- SSH for CLI and Telnet security
- SSL for web security
- System log (Remote/Local)
- ACL

### + Quality of Service (QoS)

- Priority Queues: 4 queues per port
- Traffic classification based on IEEE 802.1p CoS, DSCP, WRR and strict mode
- Rate Limiting (Ingress/Egress)

### + Layer 2 Features

- Auto-negotiation for port speed and duplex mode
- Flow Control
- IEEE 802.3x Full duplex mode
- Back-Pressure half duplex mode

#### Redundant Protocols

- IEEE 802.1D STP
- IEEE 802.1w RSTP
- IEEE 802.1s MSTP
- EtherWAN's Alpha-Ring network fault recovery (<15ms)

#### VLANs

- IEEE 802.1Q Tag VLANs (128 groups, 4096 VID)
- GVRP
- GMRP

#### Link Aggregation

- Static Trunk (2 groups, support MAC base)
- IEEE 802.3ad LACP

#### IGMP Snooping v1/v2/v3

## Specifications

### + Interface

#### Ethernet

4 or 8 x 10/100BASE-T(X) (PoE)

0, 2 or 4 x 100BASE FX

2 x 100/1000BASE SFP Slot

2 x Gigabit

#### Console

1 x DB9 RS-232

#### Alarm Contact

1 x Relay output, current capacity 0.5A/48VDC

#### LED Indicators

Per Unit: Power 1, Power 2, Alarm

Per Port: Link/Activity (Green)

Per PoE Port: (Orange)

### + 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 PNAC

IEEE 802.3af/at/bt Power over Ethernet

#### Forward/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

#### Input

52-57VDC Redundant (Terminal block)

Power Consumption  
10.4W Max (without PoE)

Power Power Budget  
240W Max.

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

Power Power Output  
Port 1 to 8 support PoE+ (15.4W/30W/60W)  
IEEE 802.3af: up to 15.4W/port, 47-57VDC  
IEEE 802.3at: up to 30W/port, 52-57VDC;  
60W/port, 52-57VDC

Protection  
Reverse Polarity Protection

## + Physical

**Casing Material**  
Metal

**IP Rating**  
IP30

**Dimensions**  
71.4 x 140 x 170mm (W x D x H)  
2.85" x 5.6" x 6.8"

**Weight**  
1.7kg (3.74lbs)

**Installation Type**  
DIN-rail mounting

## + Environmental

**Operating Temp.**  
-40 to 75°C (-40 to 167°F)  
Tested @ -40 to 85°C (-40 to 185°F)

**Storage Temp.**  
-45 to 85°C (-49 to 185°F)

**Relative Humidity**  
5% to 95% (non-condensing)

## + Regulatory

**ISO**  
Manufactured in ISO-9001 facility

**EMI**  
FCC Part 15B Class A  
VCCI Class A  
EN 61000-6-4

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

**Safety**  
UL 61010

**Vibration**  
IEC 60068-2-6 Fc

**Shock**  
IEC 60068-2-27 Ea

**Free Fall**  
FED STD 101C Method 5007.1

**Industrial Compliance**  
NEMA TS2

## + Warranty

Length  
Limited Lifetime

Details  
[www.etherwan.com/support/warranty-policy](http://www.etherwan.com/support/warranty-policy)

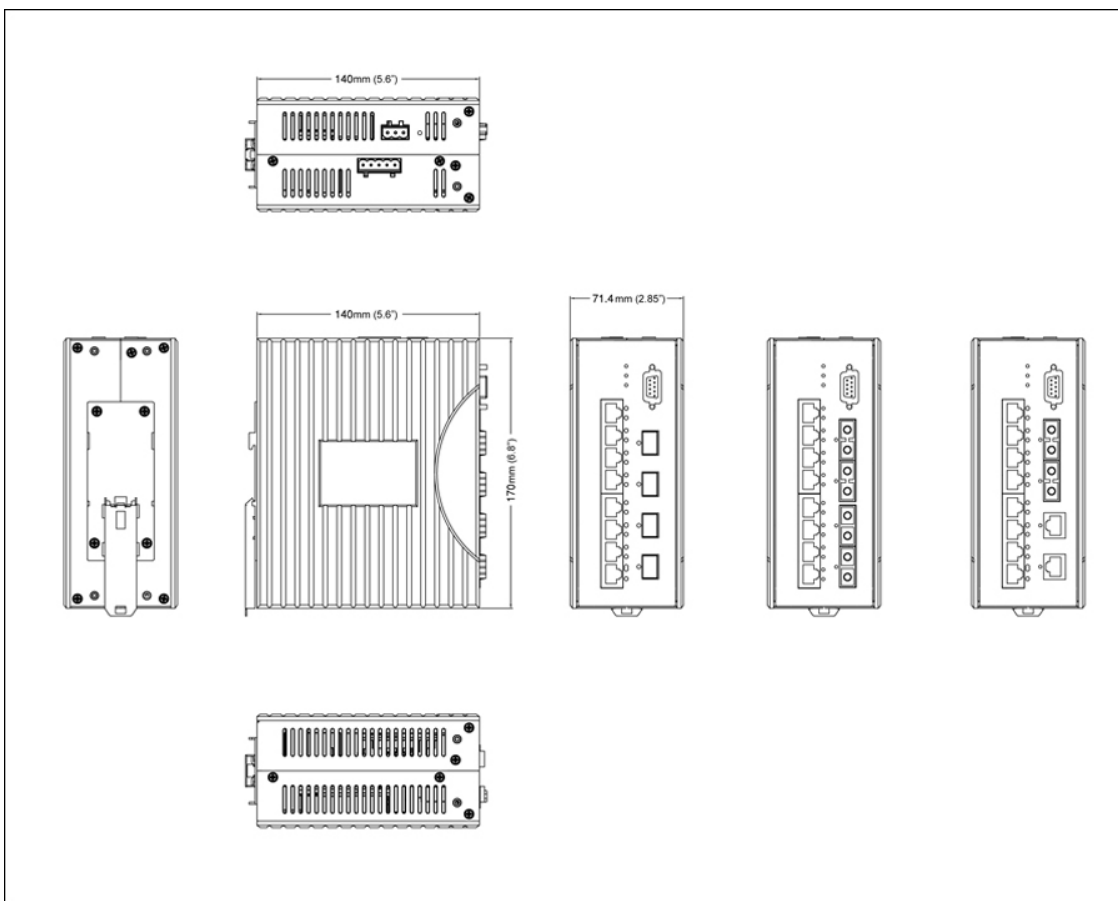
## + What's Included

**Device**  
Ethernet Switch

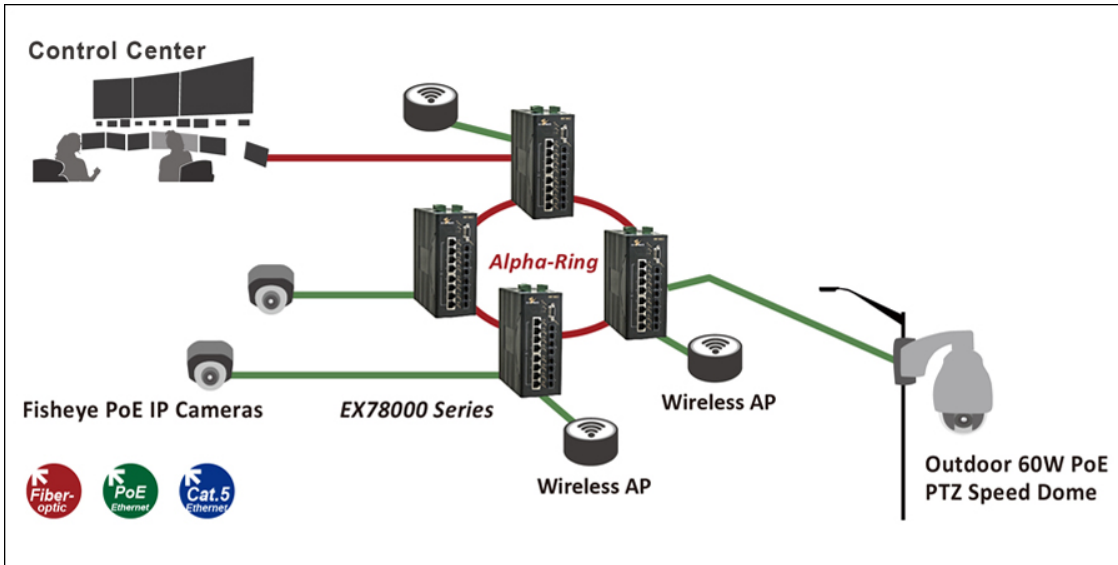
**Cables**  
1 Console Cable

**Documentation**  
Quick Install Guide

## Dimensions

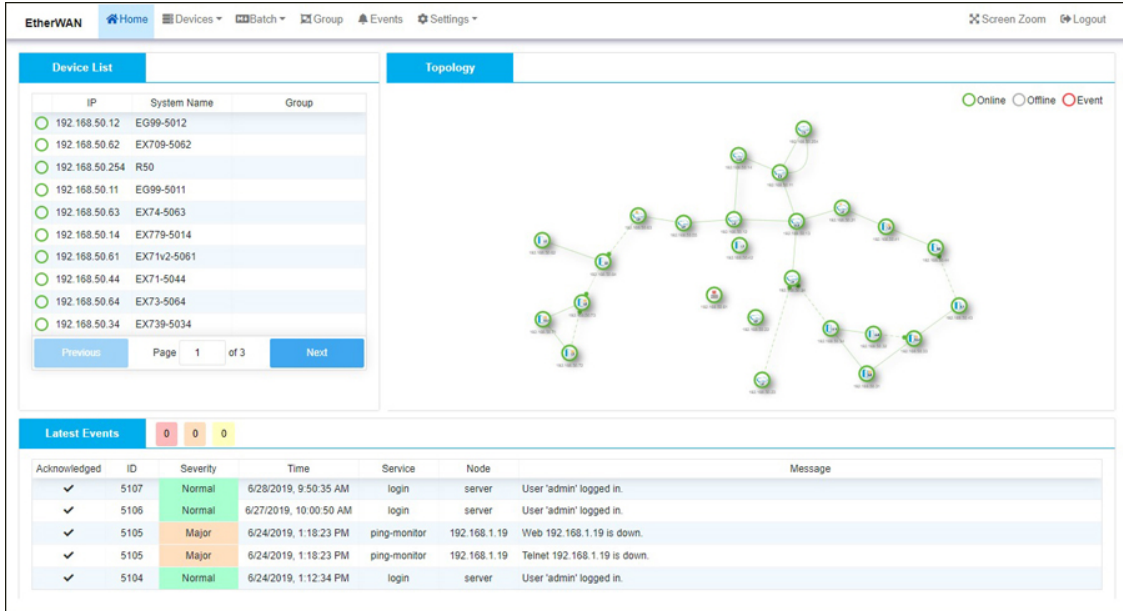


# Application



# Software

Network Management [eVue™ Network Configuration and Monitoring Tool](#)  
 Network Discovery [eLite™ Network Discovery and IP Configuration Tool](#)



**Device List**

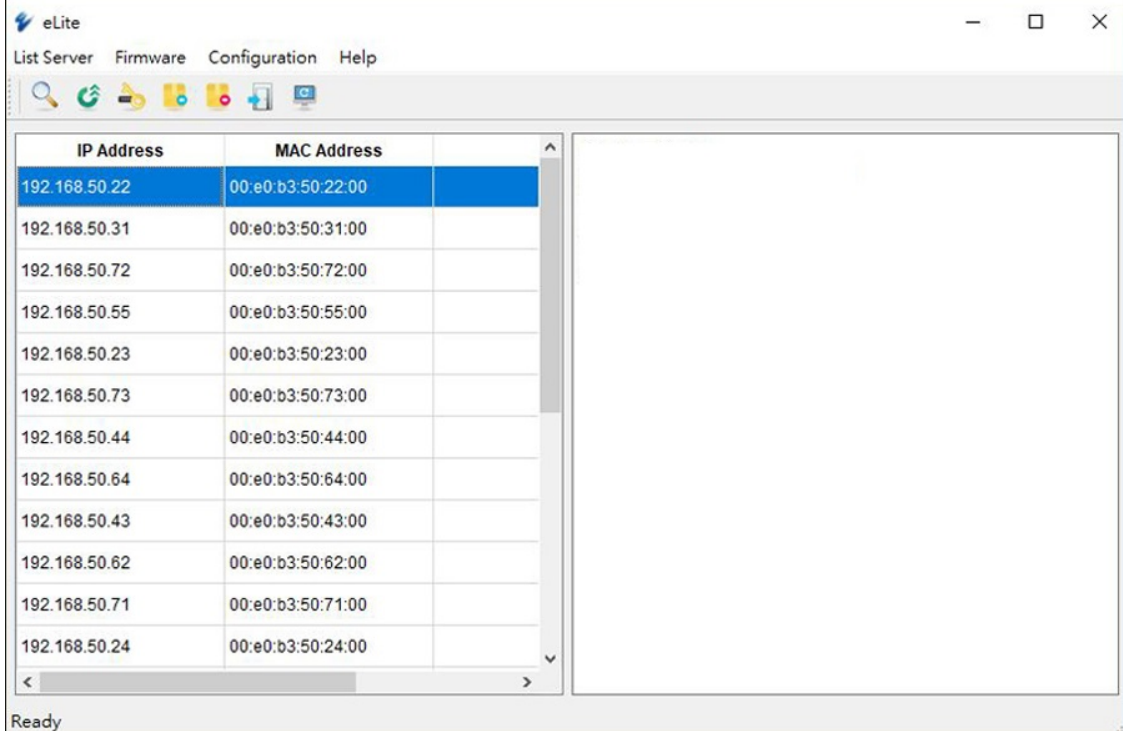
IP	System Name	Group
192.168.50.12	EG99-5012	
192.168.50.62	EX709-5062	
192.168.50.254	R50	
192.168.50.11	EG99-5011	
192.168.50.63	EX74-5063	
192.168.50.14	EX779-5014	
192.168.50.61	EX71v2-5061	
192.168.50.44	EX71-5044	
192.168.50.64	EX73-5064	
192.168.50.34	EX739-5034	

**Topology**

Legend: Online (Green circle), Offline (Grey circle), Event (Red circle)

**Latest Events**

Acknowledged	ID	Severity	Time	Service	Node	Message
✓	5107	Normal	6/28/2019, 9:50:35 AM	login	server	User 'admin' logged in.
✓	5106	Normal	6/27/2019, 10:00:50 AM	login	server	User 'admin' logged in.
✓	5105	Major	6/24/2019, 1:18:23 PM	ping-monitor	192.168.1.19	Web 192.168.1.19 is down.
✓	5105	Major	6/24/2019, 1:18:23 PM	ping-monitor	192.168.1.19	Telnet 192.168.1.19 is down.
✓	5104	Normal	6/24/2019, 1:12:34 PM	login	server	User 'admin' logged in.



**eLite**

List Server Firmware Configuration Help

IP Address	MAC Address
192.168.50.22	00:e0:b3:50:22:00
192.168.50.31	00:e0:b3:50:31:00
192.168.50.72	00:e0:b3:50:72:00
192.168.50.55	00:e0:b3:50:55:00
192.168.50.23	00:e0:b3:50:23:00
192.168.50.73	00:e0:b3:50:73:00
192.168.50.44	00:e0:b3:50:44:00
192.168.50.64	00:e0:b3:50:64:00
192.168.50.43	00:e0:b3:50:43:00
192.168.50.62	00:e0:b3:50:62:00
192.168.50.71	00:e0:b3:50:71:00
192.168.50.24	00:e0:b3:50:24:00

Ready

## Ordering Info

### + Model

<b>EX78402-0YBT</b>	4-port 10/100BASE-TX PoE + 2-port Gigabit
<b>EX78802-0YBT</b>	8-port 10/100BASE-TX PoE + 2-port Gigabit
<b>EX78822-XZBT</b>	8-port 10/100BASE-TX PoE + 2-port 100BASE-FX +2-port Gigabit
<b>EX78822-VVBT</b>	8-port 10/100BASE-TX PoE + 2-port 100BASE-SFP +2-port 100/1000BASE-SFP

\* DIN-Rail mounting kit included.

### + 100FX Fiber Options (X)

<b>1</b>	Multi Mode (SC) - 2Km
<b>2</b>	Multi Mode (ST) - 2Km
<b>A</b>	Single Mode (SC) - 20Km

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

### + Gigabit Port Options (Y)

<b>1</b>	10/100/1000BASE-TX
<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>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>	Support 2-port 100/1000BASE SFP (DDM)

\* More Gigabit options also available upon request.

### + Gigabit Port Options (Z)

<b>1</b>	10/100/1000BASE-TX
<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>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 also available upon request.

### + Accessories

<b>Hardened Gigabit SFP Module</b>	<a href="http://www.etherwan.com/products/sfp-fiber-transceiver">www.etherwan.com/products/sfp-fiber-transceiver</a>
<b>DIN-Rail Power Supplies</b>	<a href="http://www.etherwan.com/products/din-rail-power-supply">www.etherwan.com/products/din-rail-power-supply</a> (* )
<b>*Recommended Power Supply</b>	NDR-480-48 480W 48VDC DIN-Rail Power Supply
<b>EB-232</b>	Configuration Backup and Restoration Tool

