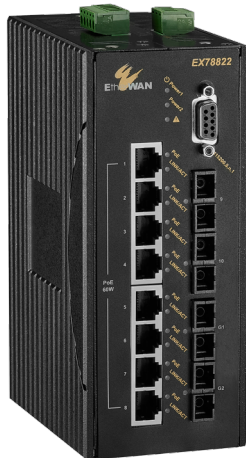


EX78000 Series

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



Overview

EtherWAN's EX78000 Series provides a hardened 12-port switching platform supporting 60W Power over Ethernet, high performance switching with robust management features required for mission-critical and harsh environments where sustained connectivity is crucial.

The EX78000 Series is equipped with 8 10/100BASE-TX PoE ports, in combination with two Gigabit SX/LX/BX/WDM Fiber ports with 100/1000BASE SFP options. The Ultra PoE ports provide up to 60 Watts per port with a total power budget of 240 Watts. This ensures maximum versatility when used in conjunction with powered devices having different bandwidth and power consumption requirements. Applications include outdoor PTZ (Pan-Tilt-Zoom) dome cameras, wireless access points, and way-side communication devices.

With support for EtherWAN's Alpha-Ring protocol, fault recovery times are guaranteed to be under 15 milliseconds, making these switches ideal for applications that are intolerant to interruption. Robust management features include IPv4/IPv6 protocols, port security, IGMP snooping, port-based VLANs, GARP protocols, and link aggregation. Management is via web browser, Telnet, SSH, SNMP, TFTP, and RS-232 console interfaces.

With the hardened specifications, the EX78000 can operate in ambient temperatures from -40 to 75°C (-40 to 167°F), and in locations where high electrostatic discharge, shock, and vibration may be present.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **PoE power budget up to 60W/port (Ultra PoE), total 240W**
 - Ports 1 to 8 support IEEE 802.3af/at/60W Power over Ethernet
- **Dual firmware image support**
 - Dual flash images provide independent primary and secondary operating system files for backup
- **PoE watchdog**
 - Real-time monitoring PD status and keep it alive

Software Features

Management

- 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
- SFP transceivers support Digital Diagnostics Monitoring (DDM)
- 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
- Multi-level user account/password against unauthorized configuration
- 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 (Weighted Round Robin) 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 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 (2 groups, support MAC base)
 - IEEE 802.3ad Link Aggregation Control Protocol
- IGMP Snooping
 - IGMP Snooping v1/v2/v3

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

- 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

- Redundant Power Input:
Terminal Block: 52-57VDC

Power Consumption

- Device: Max. 10.4W (without PoE)
- PoE Power Budget: 240W Max.

PoE Technology

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

PoE 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

Mechanical

Casing

- Metal Case
- 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

- Din-Rail

Interface

Ethernet Port

- 10/100BASE-TX (PoE): 4 or 8 ports
- 100BASE-FX: 0, 2 or 4 ports
- 100/1000BASE SFP Slot: 2 ports
- Gigabit: 2 ports

Console Port

- Port: One DB9 RS-232 port

Alarm Contact

- One relay output with current 0.5A/48VDC (UL 61010)

LED Indicators

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

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 61010

EMI

VCCI Class A

FCC Part 15B Class A

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

IEC 60068-2-6 Fc (Vibration)

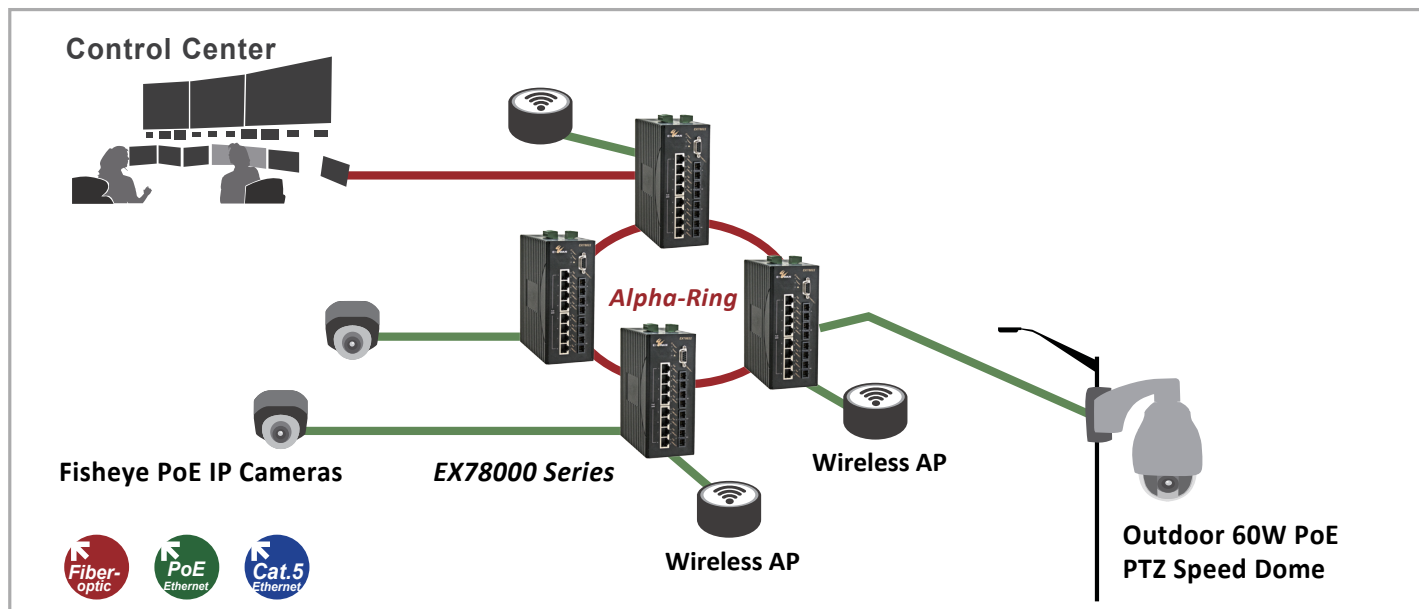
IEC 60068-2-27 Ea (Shock)

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

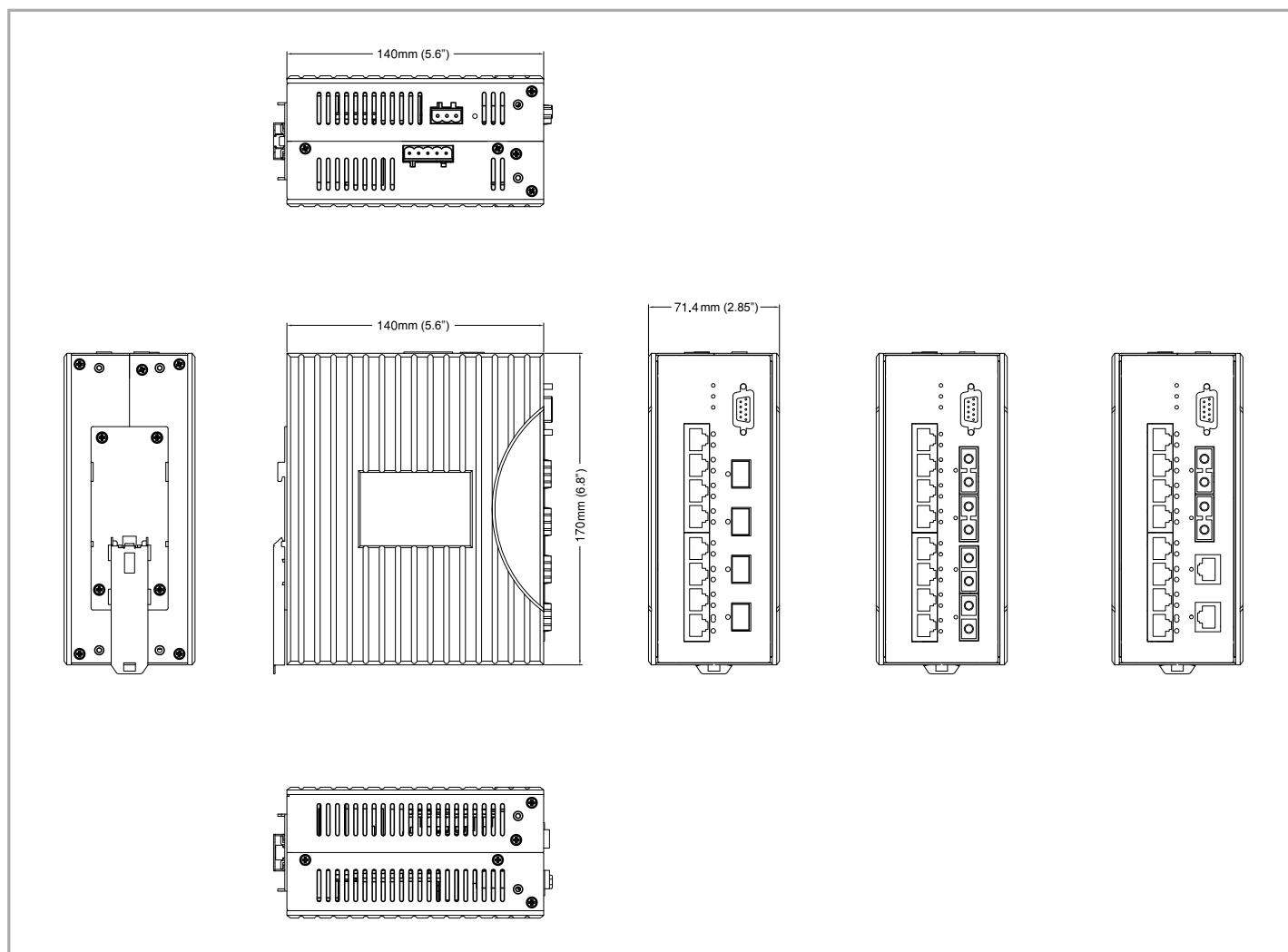
Industrial Compliance

NEMA TS2

Application Diagram



Dimensions



Ordering Information

Model

EX78402-0YBT	4-port 10/100BASE-TX PoE +2-port Gigabit Hardened Managed Ethernet Switch
EX78802-0YBT	8-port 10/100BASE-TX PoE +2-port Gigabit Hardened Managed Ethernet Switch
EX78822-XZBT	8-port 10/100BASE-TX PoE +2-port 100BASE-FX +2-port Gigabit Hardened Managed Ethernet Switch
EX78822-VVBT	8-port 10/100BASE-TX PoE +2-port 100BASE-SFP +2-port 100/1000BASE-SFP Hardened Managed Ethernet Switch

* DIN-Rail mount included.

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
A	Single Mode (SC) - 20Km

* More 100FX fiber options also available upon request.

Gigabit Port Options (Y)

1	10/100/1000BASE-TX
3	1000BASE-SX (SC) - 550m
4	1000BASE-SX (SC) - 2Km
5	1000BASE-SX (ST) - 550m
A	1000BASE-LX (SC) - 10Km
R	1000BASE-BX (SC) WDM-TX: 1310nm/RX: 1550nm-20Km
S	1000BASE-BX (SC) WDM-TX: 1550nm/RX: 1310nm-20Km
V	Support 2-port 100/1000BASE SFP (DDM)

* More Gigabit options also available upon request.

Gigabit Port Options (Z)

1	10/100/1000BASE-TX
3	1000BASE-SX (SC) - 550m
4	1000BASE-SX (SC) - 2Km
5	1000BASE-SX (ST) - 550m
A	1000BASE-LX (SC) - 10Km
R	1000BASE-BX (SC) WDM-TX: 1310nm/RX: 1550nm-20Km
S	1000BASE-BX (SC) WDM-TX: 1550nm/RX: 1310nm-20Km

* More Gigabit options also available upon request.

Optional Accessories

NDR-120-48	120W/2.5A DIN-Rail 48VDC Industrial Power Supply
NDR-240-48	240W/5A DIN-Rail 48VDC Industrial Power Supply
SDR-480-48	480W/10A DIN-Rail 48VDC Industrial Power Supply
EB-232	Configuration Backup and Restoration Tool