

ER59000 Series

Hardened Managed 16-port 10/100BASE M12 (8 x PoE)
with 2-port Gigabit LC Ethernet Switch



Overview

EtherWAN's ER59000 Series provides a hardened 18-port switching platform supporting IEEE 802.3at Power over Ethernet, high performance switching with robust management features required for railway transportation application.

The ER59000 Series is equipped with 16x 10/100BASE-TX (8x PoE) with M12 connector, in combination with two Gigabit LC Fiber ports options. The rugged, weatherproof IP67 rated switch is ideal for use in extreme environments. Compliant with EN 50155 standard, the ER59000 Series is designed for rolling stock applications.

The IEEE 802.3at PoE ports provide up to 30W/port with a total power budget of 240W, 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.

Panel mountable, the ER59000 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 console interfaces. With the hardened specifications, the ER59000 Series is designed to operate at -40 to 75°C with IP67 protection in harsh environments, where dust, water immersion, high ESD, shock, and vibration may be present.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Railway Oriented**
 - Compliant with EN 50155/EN 50121-3-2/EN 50121-4 railway applications
- **M12 Connector**
 - Built-in 16-port 10/100BASE M12 plus 2-port Gigabit Copper/LC
 - 8-port PoE function with IEEE 802.3at up to 30W per port
- **IP67 Rated Fully Managed Ethernet Switch**
 - IP67 grade protection and rugged enclosure design

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
- NTP (Network Time Protocol) time synchronization
- IEEE 802.1ab LLDP (Link Layer Discovery Protocol)

Security

- 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

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 Protocols
 - 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
 - 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

- Switching Capability: 7.2Gbps
- Packet Buffer Size: 2M bits
- MAC Address Table: 8K

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 802.1s MSTP
- IEEE 802.3ad LACP
- 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
- Half-duplex back-pressure and IEEE 802.3x full-duplex flow control

Address Table Size

- 8192 MAC addresses

Power

Input

- Redundant power inputs:
 - M23: 12-48VDC (non-PoE model)
 - M23: 55 (52-57) VDC

Power Consumption

- Device: Max. 11W (without PoE)
- PoE power budget (depends on power input): 240W Max

PoE Power Output

- Port 1 to 8: IEEE 802.3at, up to 30W/port, 47-57VDC

PoE Technology

- Alternative A
 - Pins 1/2(+), 3/6(-)

Protection

- Reverse polarity protection

Mechanical

Casing

- Die-cast aluminum
- IP67

Dimensions

- 258 x 228 x 83.5mm (W x D x H)
(10.1" x 8.9" x 3.2")

Weight

- 2.3Kg (5.07lbs)

Installation

- Panel mounting

Interface

Ethernet Port

- 10/100BASE-M12 D-Code 4-Pin Female: 16 ports
- Gigabit-TX/LC: 2 ports

Console Port

- Port: M12 RS-232 Console

LED Indicators

- Per Unit: Power 1 (Green), Power 2 (Green)
- Per Port: Link/Activity (Green)
- Per PoE Port (Port 1 to 8 for PoE model only): PoE (Green)

Alarm Contact

- One relay M12 A-Code 4-Pin Female output with current 1A@250VAC

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

EMI

FCC Part 15B Class A

VCCI Class A

EN 61000-6-4

EN 61000-3-2

EN 61000-3-3

EN 55022

EN 55011 (for EN 50155)

EMS

EN 61000-6-2

- EN 61000-4-2 (ESD Standards)
- EN 61000-4-3 (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)
- EN 61000-4-9 (Pulsed magnetic field)

Environmental Test Compliance

IEC 61373 (Vibration) for EN50155

IEC 61373 (Shock) for EN50155

IEC 600680-2-32 Ed (Free fall)

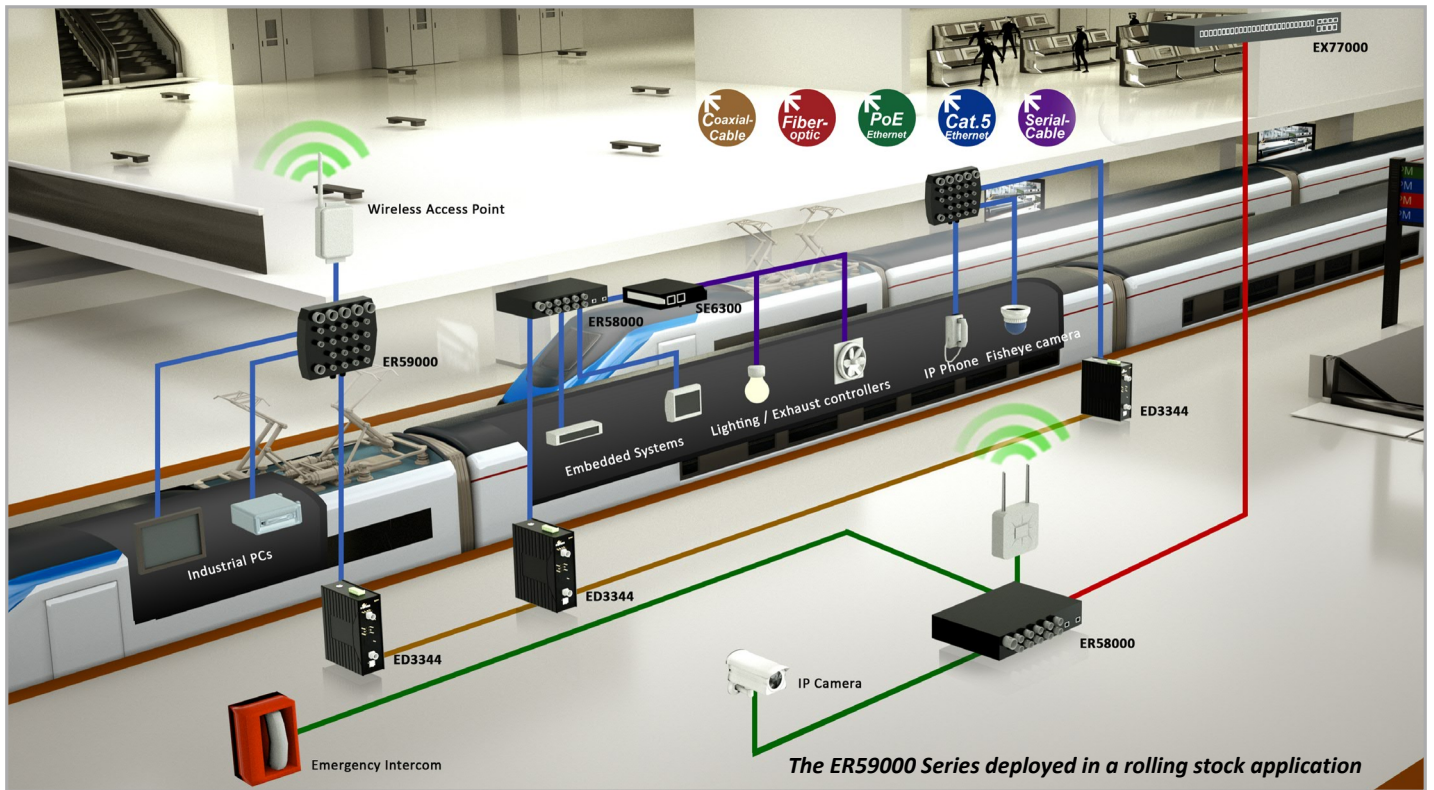
Industrial Compliance

EN 50155

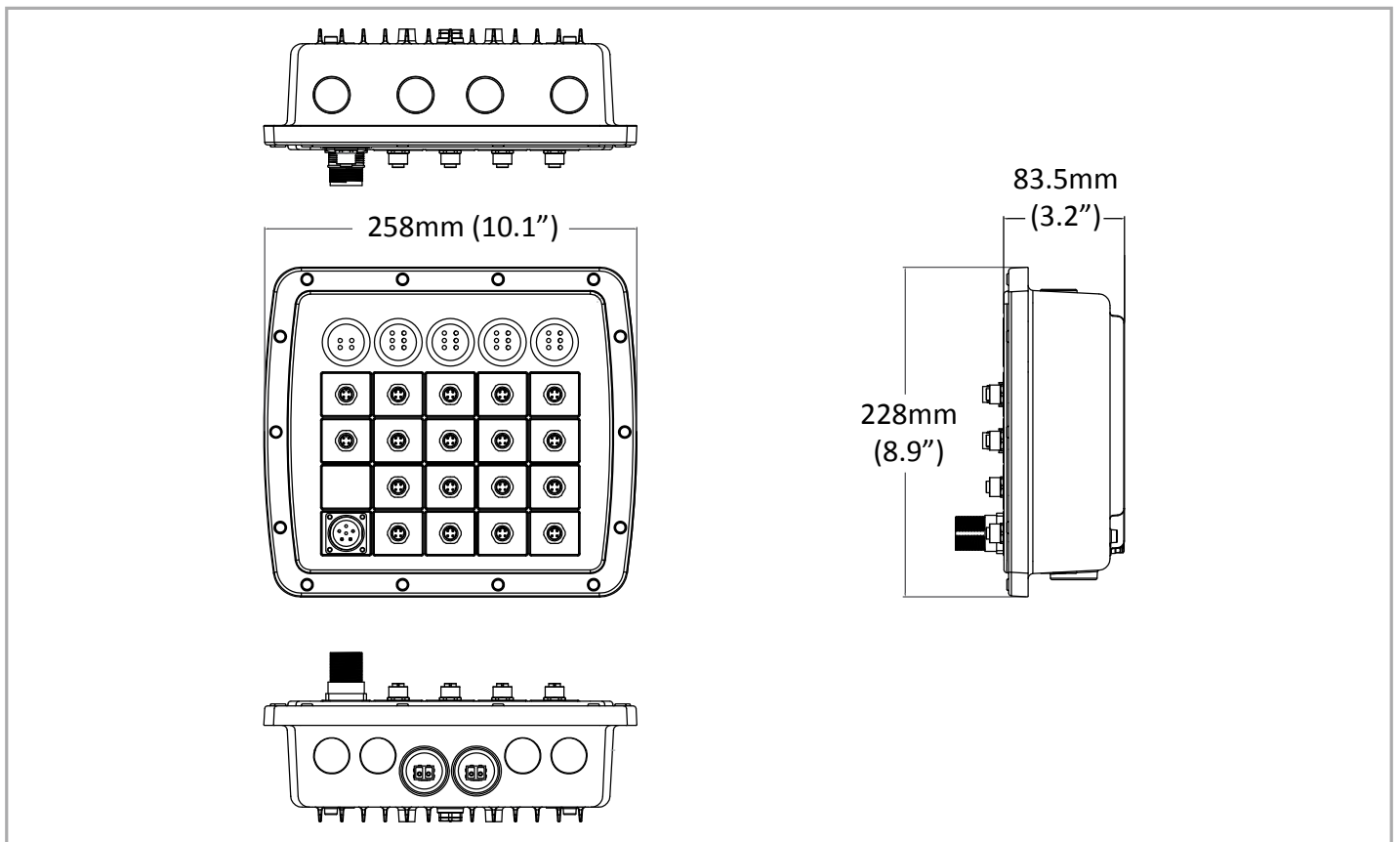
EN 50121-3-2

EN 50121-4

Application Diagram



Dimensions



Ordering Information

Model

ER59402-20YZP	Hardened Managed 16-port 10/100BASE M12 (8 x PoE) with 2-port Gigabit LC Ethernet Switch
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* Panel mounting kit included.

Gigabit Port Options (Y)

1	10/100/1000BASE-TX
E	1000BASE-SX (LC) - 550m
M	1000BASE-SX (LC) - 10Km
N	1000BASE-LX (LC) - 20Km

* More Gigabit options also available upon request.





Power Input Interface (Z)

T	12 to 48VDC, 18 to 30VAC (for non-PoE model)
G	52 to 57VDC (for PoE model)

PoE Type (P)

0	Non-PoE
T	IEEE 802.3at

Optional Accessories

W96G-1618957XX		Power cable with 6pin female M23 connector, 2-Meter cable
ER58000-RJ454P		M12 D-code (4-pin male) to 10/100BASE-TX RJ45 interface, 3-Meter cable
W96G-1543223XX		M12 D-code (4-pin male) quick connector
W96G-1543236XX		M12 A-code (8-pin male) quick connector