ER58000 Series

Hardened Managed 8-port 10/100BASE M12 PoE with 2-port Gigabit M12 Ethernet Switch

Overview

EtherWAN's ER58000 Series switches are built in compliance with the EN 50155 standard, the international standard covering electronic equipment used on rolling stock. They support Power over Ethernet (PoE), and are designed for railway vehicles and wayside station applications.

The 8 x 10/100BASE-TX PoE ports are IEEE802.3at compliant, and provide up to 30 Watts per port with a total power budget of 120 Watts. This allows for stable delivery of power to PoE Powered Devices such as outdoor PTZ (Pan/Tilt/Zoom) dome cameras, wireless access points, and wayside communication devices. Two Gigabit Ethernet ports can be configured with a wide variety of connectivity options. All ports use secure M12 connectors for maximum reliability and protection against environmental interference.

Wall mountable, ER58000 Series switches support EtherWAN's Alpha-Ring self-healing ring technology, which provides a fault recovery time of under 15 milliseconds. Management features of the switch include port security, IGMP snooping, port-based VLAN, GARP protocols, link aggregation, web browser management, Telnet, SSH, SNMP, RMON, TFTP, and console interfaces. An operating temperature range of -40 to 75°C (-40 to 167°F), in conjunction with the highest resistance against power surges, electrostatic discharge, and vibration, make the ER58000 a rock-solid component for critical applications.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Railway Oriented**
  - Compliant with EN 50155 / EN 50121-3-2 / EN 50121-4 standards for railway applications
- **M12 Connectors**
  - Built-in 8-port 10/100BASE M12 plus 2-port Gigabit M12/LC connectors; One M12 console port
- **Power over Ethernet (PoE)**
  - Provides 8-port IEEE802.3at PoE with up to 30 Watts per port

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
- IEEE802.1ab LLDP (Link Layer Discovery Protocol)

Security

- MAC address filtering
- Enable/disable port
- Storm control (broadcast and multicast types)
- IEEE802.1x 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 IEEE802.1p 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
  - IEEE802.3x full duplex mode
  - Back-Pressure half duplex mode
- Redundant Protocols
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
  - EtherWAN's α-Ring network fault recovery (<15ms) and α-Chain
- VLANs
  - Port-based VLANs
  - IEEE802.1Q 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)
  - IEEE802.3ad Link Aggregation Control Protocol
- IGMP Snooping
  - IGMP snooping v1/v2/v3

Performance

- Switching Capability: 5.6 Gbps
- Packet Buffer Size: 2M bits
- MAC Address Table: 8K

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.3x Full duplex and flow control
- IEEE802.1p QoS
- IEEE802.1Q Tag VLANs
- IEEE802.1w RSTP
- IEEE802.1x Port-based Network Access Control
- IEEE802.1s MSTP
- IEEE802.3ad LACP
- IEEE802.3af/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
- Auto Negotiation
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Address Table Size
- 8192 MAC addresses

Power

Input
- Redundant power inputs:
  M23, 24 - 48VDC

Power Consumption
- Device: Max. 11W (without PoE)
- PoE power budget (depends on power input): 120W Max.

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

PoE Power Output
- Ports 1 to 8: IEEE802.3at, up to 30W/port

Mechanical

Casing
- Metal Case
- IP50

Dimensions
- 288 x 161.5 x 64mm (W x D x H)
  (11.3" x 6.4" x 2.5")

Weight
- 2.3Kg (5.07lbs)

Installation
- Wall mounting

Interface

Ethernet Ports
- 10/100BASE-M12 D-Code 4-pin Female: 8 ports
- Gigabit-M12 A-Code 8-pin Female/LC: 2 ports

Console Port
- One M12 port

LED Indicators
- Per Unit: Power 1 (Green)
  Power 2 (Green)
- Per Port: Link/Activity (Green)

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

Environment

Operating Temperature
- -40°C to 75°C (-40°F to 167°F)
  Tested @ -40°C to 85°C (-40°F to 185°F)

Storage Temperature
- -45°C to 85°C (-49°F 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

EN61000-6-2
- 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 EN 50155

IEC 61373 (Shock) for EN 50155

IEC 600680-2-32 Ed (Free fall)

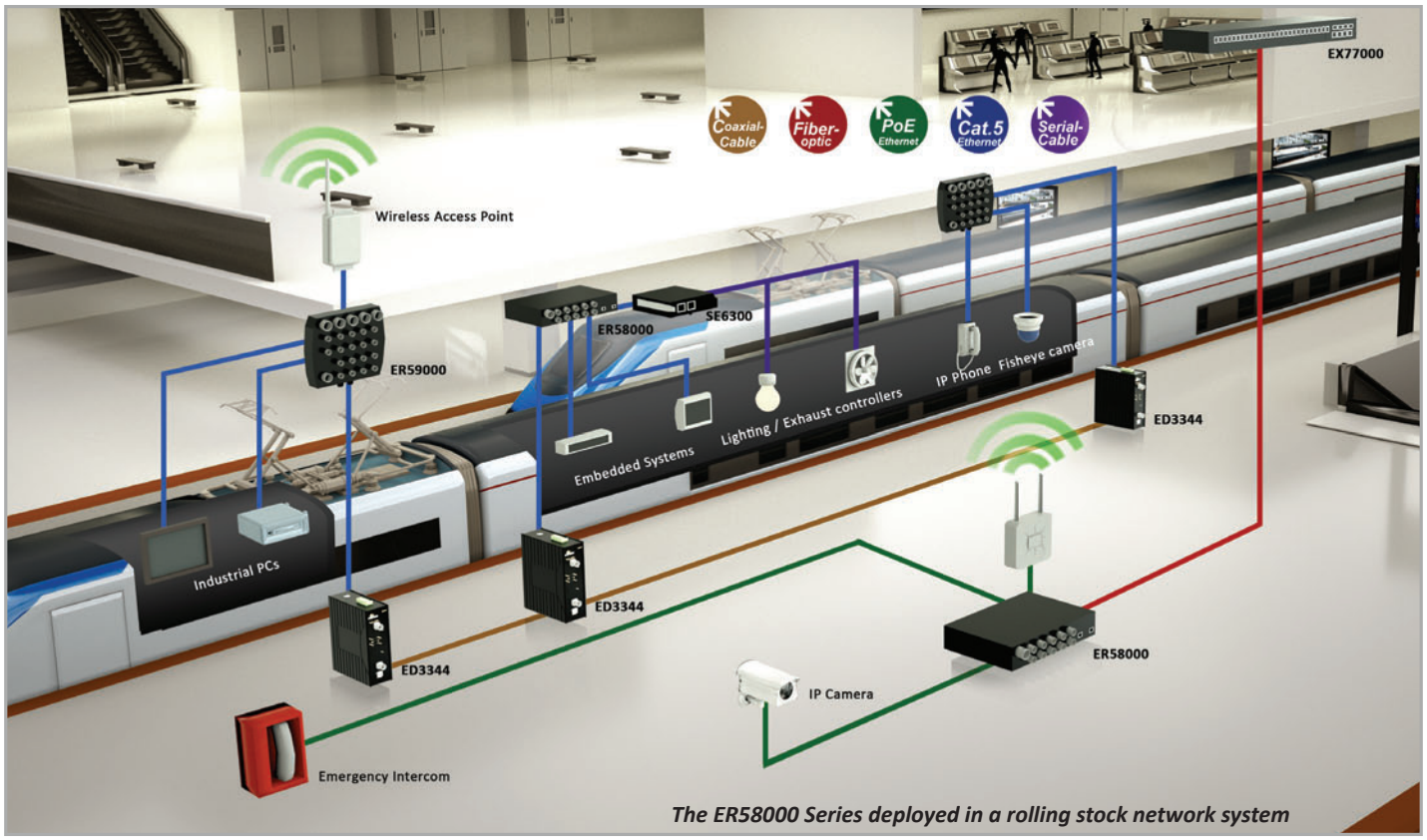
Industrial Compliance

EN 50155

EN 50121-3-2

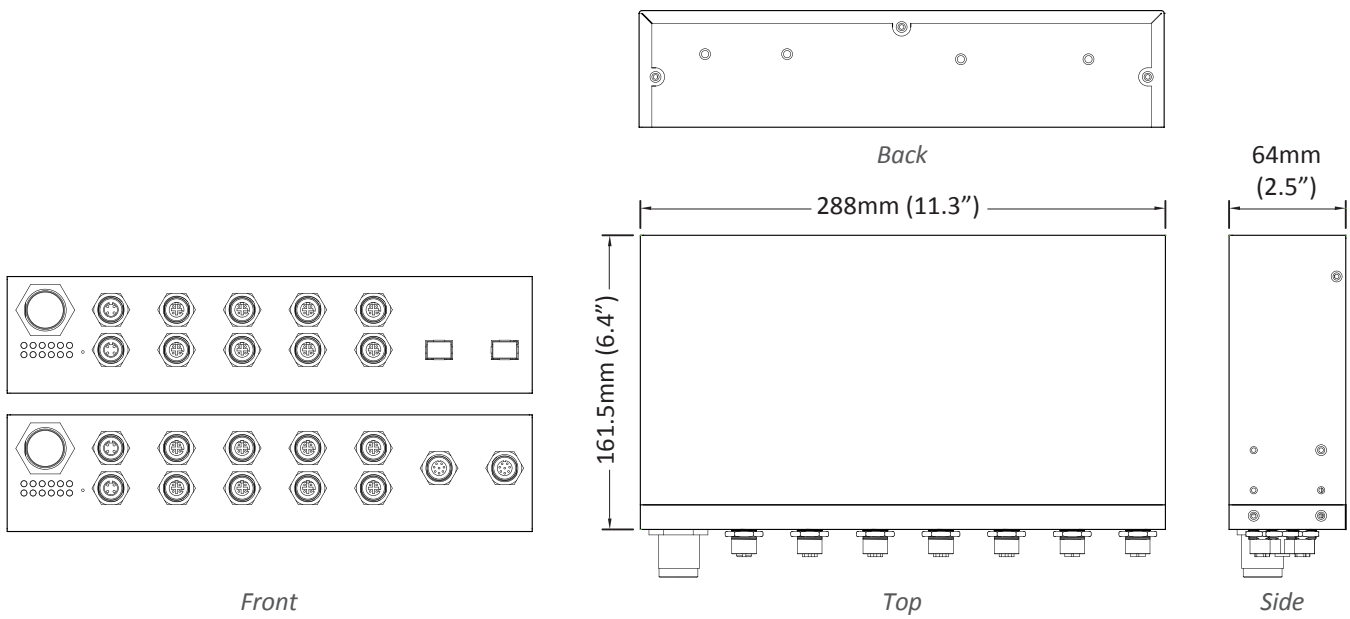
EN 50121-4

Application Diagram



The ER58000 Series deployed in a rolling stock network system

Dimensions



Ordering Information

Model

ER58802-20YHT	8-port 10/100BASE-M12 PoE + 2-port Gigabit Hardened Managed Ethernet Switch

** 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*

Optional Accessories

96G-S1N8A80WW		M23 Power Connector
96G-1618957XX		Power cable with 6-pin female M23 connector, 2-meter cable
ER58000-RJ454P		4-pin M12 D-code male to 10/100BASE-TX RJ45 interface, 3-meter cable
ER58000-RJ458P		8-pin M12 A-code male to 10/100/1000BASE-TX RJ45 interface, 3-meter cable