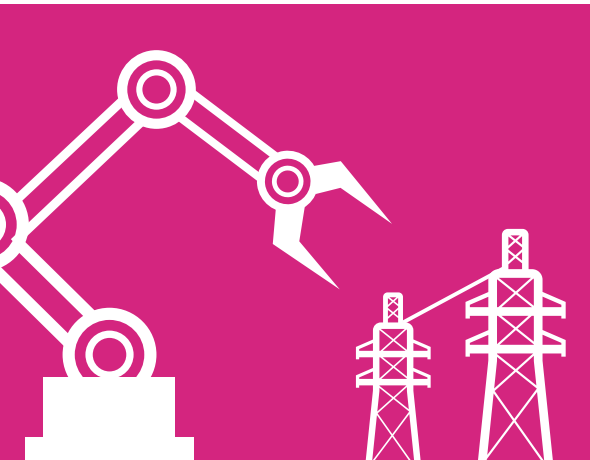**EtherWAN**

Master Catalog
When Connectivity is Crucial

- ◆ **Ethernet Switches**
- ◆ **Media Converters**
- ◆ **Ethernet Extenders**
- ◆ **Surge Protectors**
- ◆ **NIC & Industrial PSUs**

EtherWAN — *Your Single Source for Ethernet Connectivity Products.*

▷ **Ethernet Switches**

▷ **PoE Solutions**

▷ **Media Converters**

▷ **Ethernet Extenders**

▷ **Surge Protectors**

▷ **NIC & Accessories**

About **EtherWAN**

EtherWAN Systems, founded in 1996 in the United States with Pacific Rim headquarters in Taiwan, has become a leader in Ethernet connectivity for IP Surveillance, Intelligent Transportation Systems (ITS), Renewable Energy, Smart Grid, Oil & Mining, Factory Automation, etc.

EtherWAN specializes in designing and manufacturing Ethernet equipment for harsh environments. At EtherWAN, considerations of extreme temperatures, shock and vibration, power surge, and high ESD protection are all part of the most basic and minimal requirements in product design. Our commitment to quality and fault tolerance under extreme environmental conditions continues to drive our engineering capability to higher and higher levels. From Ethernet Switches, Media Converters, Serial Device Servers to Ethernet Extenders EtherWAN offers products and solutions for the most demanding industries.

EtherWAN Systems - When Connectivity is Crucial!

Our Focus Markets

IP Migration for Security and Surveillance

New generation equipment in public facilities utilizes IP as the protocol of choice. Ethernet-based networking infrastructure provides real-time data accessibility. EtherWAN provides Ethernet connectivity products to connect legacy equipment to modern control systems, offering ability to monitor in harsh environments.

IEC61850-3 / IEEE1613 Compliant Solutions for Electric Utility

"Smart Grid" helps to use renewable energy sources more efficiently. The basic premise is to design a computer network, using Internet Protocol (IP) that parallels the electric grid, transmitting information from sensors and controllers. EhterWAN has designed a line of products that comply with specifications required to operate in the electrical grid.

IP Transmission and Communication for ITS

Various sensors, controllers and video cameras are used in traffic monitoring and control systems. These systems are networked via IP over Ethernet. EtherWAN manufacturers Ethernet Connectivity products designed and tested to operate in harsh outdoor environments for use in Intelligent Transportation Systems (ITS).

Hardened Networking Solutions for Critical Infrastructure

IP networks are being used and deployed to connect the elements for security and surveillance and Access Control systems. Ethernet is the underlying network technology for IP networks. EtherWAN supplies a full line of Ethernet connectivity products designed to provide network services for security and access control systems.

Core Competency

Technology Know-how

- In-house hardware, software and mechanical design team with our own Linux kernel source codes
- Unique α-Ring for network redundancy with recovery time < 15ms
- Specialize in designing hardened Ethernet equipment with superior relaibility, long MTBF, redundant power support, wide operating temperature range, EDI, EMI, RFI and surge protection
- Extensive knowledge in internetworking, protocols, and interoperability with products from leading communication manufacturers in the world

Efficient Operation

- Flexible production process to provide various fiber options
- Efficient logistics to organize all size of standard product shipment without MOQ
- Abundant OEM/ODM experience with global leading networking equipment providers
- Effective inventory plan to guarantee the best delivery lead time

Customer-focused Services

- Professional technical support crew, with domain know-how and hands-on experience working with system integrators and solution providers
- The most current technical archives are always available online

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Ethernet Extenders

Accessories

Ethernet Switches

» **Hardened Ethernet Switches**

» **Fiber Intelligent Ethernet Switches**

» **Fiber Optic Modulized Ethernet Switches**

» **Gigabit Ethernet Switches**

» **Ethernet Switches with SFP**

» **PoE Ethernet Switches**

*— IEC61850-3 / IEEE1613 Products
for the Grids and Substations*

Ethernet Switch Glossary

α-Ring (Alpha Ring)

STP and RSTP are traditional network redundancy technologies most commonly used; however, they cannot provide fast network recovery in minimizing packet loss caused by link failure on industrial networks. Due to this requirement, EtherWAN's α-Ring was developed in order to overcome this issue. EtherWAN's α-Ring provides a very fast network redundancy mechanism to recover from a network failure in a very short period of time. If there is a broken connection in the ring topology, the network will recovered back to normal operation within 15ms.
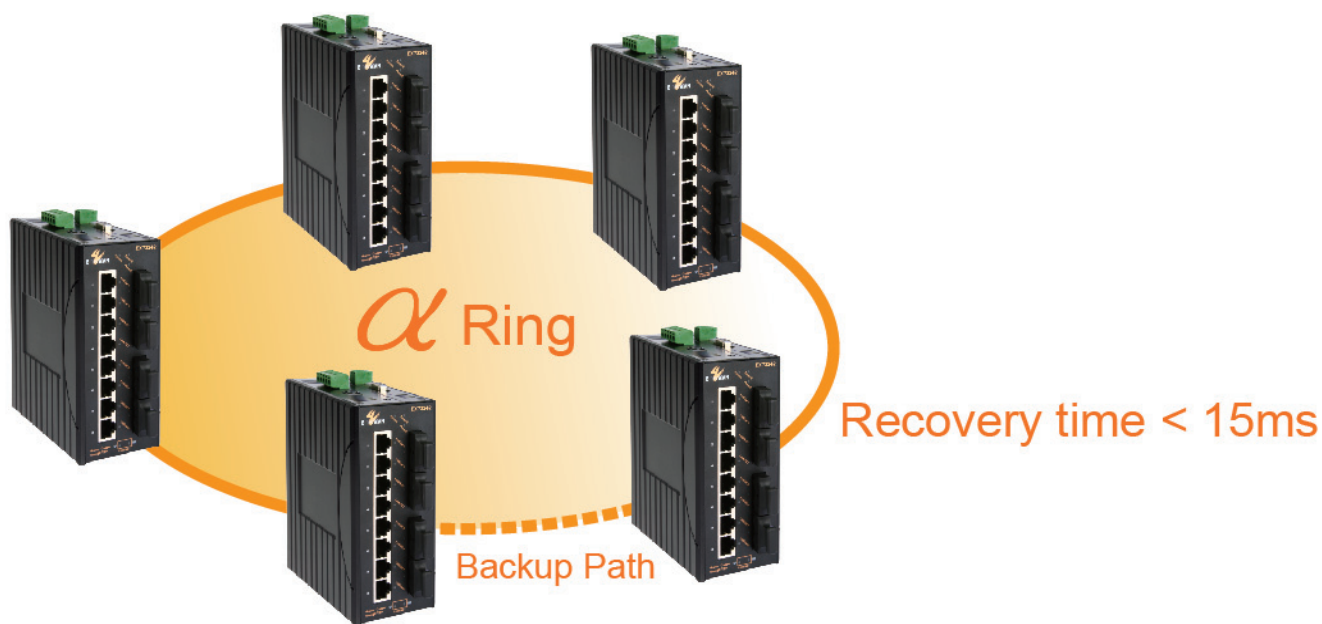
α-Chain (Alpha Chain)

Traditional Chain architecture does not support network redundancy mechanism. Based on network redundancy requirements, EtherWAN's α-Chain provides a network redundancy mechanism to recover from a network failure. It is suitable for different PLC and Unmanaged Switch and offers a variety of Chain redundancy

α-Ring

Ring Coupling

α-Ring

Backup Path

Backup Path

Backup Path

α-Chain

Backup Path

PLC

Primary Path

Ring 1

Ring 2

Backup Path

Backup Path

Backup Path

Backup Path

Primary Path

Backup Path

Ring 1

Ring 2

Backup Path

Backup Path
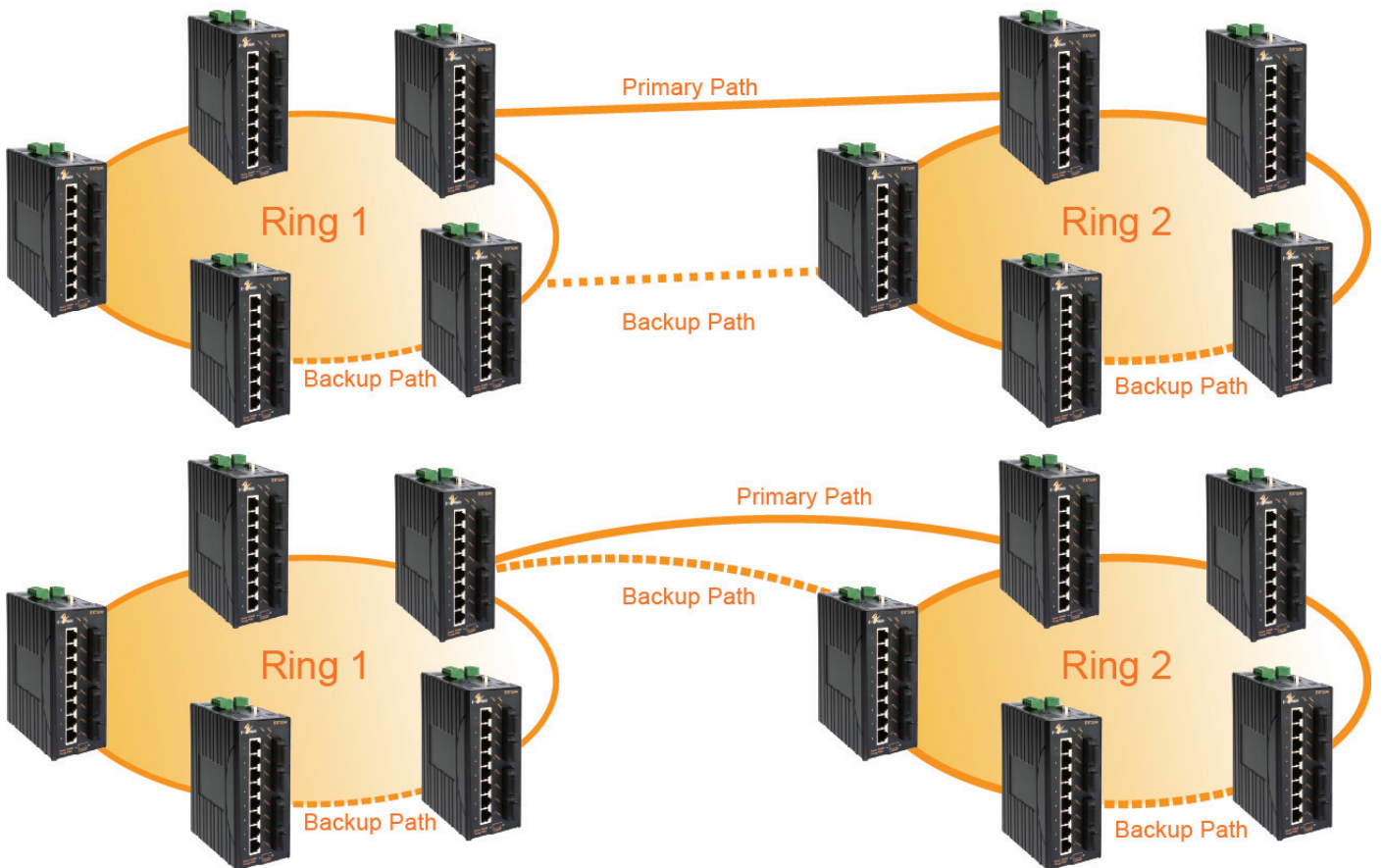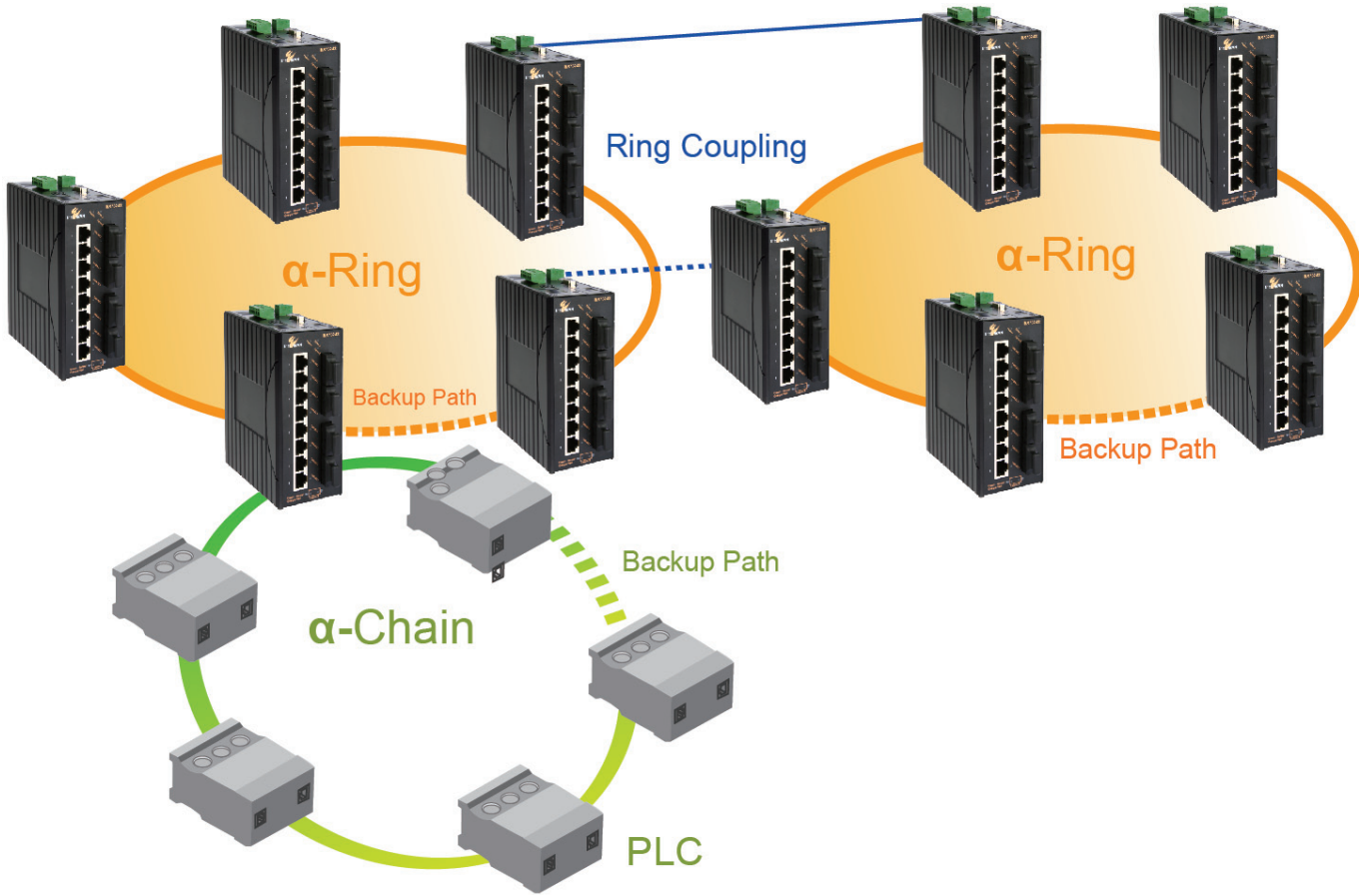
mode: a single switch, cross-switch, or cross-Ring design and planning.

Bandwidth Management

Rate control is used to meter and limit the data stream input or output rate to a port. The forwarding of broadcast traffic consumes the resources of a managed Ethernet switch, which can negatively impact the forwarding of other traffic. The rate control mechanism is used to protect regular traffic from broadcast or multicast traffic.

Command Line Interface (CLI)

The command line interface (CLI) is a network management application operated through an ASCII terminal that does not use a graphical user interface (GUI). Greater configuration flexibility can be achieved by directly entering commands into the terminal.

Dual Homing

Two rings may be connected together with redundant paths using α-Ring's dual homing feature. The back-up path between networks will activate within milliseconds once the primary connection between networks fails. Therefore, no matter what kind of network redundancy mechanism is incorporated, within each ring, whether it is RSTP or some other mechanism, network redundancy can be achieved between the two networks using α-Ring.

Internet Group Management Protocol (IGMP) Snooping

The purpose of IP multicast filtering is to optimize a switched network's performance, so that multicast packets will only be forwarded to those ports containing multicast group host members and routers instead of flooding to all of the ports in the subnet (VLAN).

Jumbo Frame

Jumbo Frames are large IP frames used in high-performance networks to increase performance over long distances. The term Jumbo Frame most often refers to Gigabit Ethernet frames that are higher than 9000 bytes, but they can refer to anything over the IP MTU (Maximum Transmission Unit) of 1500 bytes on an Ethernet frame.

Multiple Spanning Tree Protocol (MSTP, IEEE 802.1s)

MSTP was originally defined in IEEE 802.1s and was later merged into IEEE 802.1Q-2005. MSTP defines an extension to RSTP in order to further develop the usefulness of virtual LANs (VLANs). This per-VLAN Multiple Spanning Tree Protocol configures a separate spanning tree for each VLAN group and blocks all but one of the possible alternate paths within each spanning tree.

Network Time Protocol (NTP)

The Network Time Protocol (NTP) is a protocol for synchronizing all of the clocks in a network, using a set of distributed clients and servers.

Port Trunking and Link Aggregation Control Protocol (LACP, IEEE802.3ad)

Trunking is also called link aggregation, which serves as a shortcut to increase the bandwidth on a network. Trunking is a method of physically linking several ports together to act as a single port with higher bandwidth. This functionality allows bandwidth scaling. In addition, the trunking algorithm provides dynamic fail-over. Traffic automatically gets distributed to the remaining active ports if one of the ports fails, allowing for a seamless method of redundancy to occur over a trunk.

Port Security

EtherWAN's Managed Ethernet Switches provide filtering for source and destination MAC addresses. MAC address filtering allows a managed Ethernet switch to block an incoming packet to an interface when it sees a specified MAC address in either the source address or the destination address of the incoming packet. This filters unnecessary traffic, thereby providing intelligent control over traffic flows and broadcast traffic.

Port Mirroring

Port mirroring allows packets to be mirrored for network monitoring purposes and network debugging purposes. Traffic from any port can be mirrored to any other port using port mirroring.

PoE (Power over Ethernet)

Power over Ethernet or PoE technology describes a system of safely passing electrical power, along with data, through Ethernet cabling. The IEEE standard for PoE requires category 5 cable or higher for high power levels, but it can operate with category 3 cable for low power levels. Power is supplied in common mode over two or more of the differential pairs of wires found inside an Ethernet cable. It can come from a power supply within a PoE-enabled networking device, such as an Ethernet switch, or it can be injected into a cable that has a midspan power supply.

The original IEEE 802.3af-2003 PoE standard provides up to 15.4 W of DC power (a minimum of 44 VDC and 350 mA) to each device. However, only 12.95 W is certain to be available at the powered device, as some power will be dissipated in the cable. The updated IEEE 802.3at-2009 PoE standard, also known as PoE+ or PoE plus, provides up to 25.5 W of power. The 2009 standard prohibits a powered device from using all four pairs of wire for power; however, some vendors have announced products that claim to be compatible with the 802.3at standard and that can offer up to 51 W of power over a single cable, by utilizing all four pairs of wire in a category 5 cable.

Quality of Service (QoS, IEEE802.1p)

The Quality of Service (QoS) feature provides internal queues to support different classifications of traffic. High priority packet streams experience less delay inside managed Ethernet switches, which support lower latencies for certain delay-sensitive traffic. EtherWAN's Managed Ethernet Switch can classify packets according to the Port ID, MAC address, IEEE802.1p priority tag, DiffServ, and/or IP TOS.

Ring Coupling

Sometimes there might not only be one single ring in an industrial network. Industrial networks may be composed of numerous rings, as well as interconnected networks among these individual rings. The network among these rings can also provide network redundancy via the Coupling method. Thus, all the switches do not have to be confined and connected in one ring, since a single large ring that contains numerous switches can be broken into smaller, more manageable ring networks to ensure network efficiency and performance.

Rapid Spanning Tree Protocol (RSTP, IEEE802.1w)

RSTP provides significantly faster spanning tree convergence after a topology change, by introducing new convergence behaviors and bridge port roles. RSTP was designed to be backward-compatible with standard STP.

RMON

The switch supports the following RMON MIB groups defined in RFC 1757:
a. The RMON Statistics Group, which maintains utilization and error statistics for the switch port being monitored.
b. The RMON History Group, which gathers and stores periodic statistical samples from the previous statistics group.
c. The RMON Alarm Group, which allows a network administrator to define alarm thresholds for any MIB variable. An alarm can be triggered when the value of a specific MIB variable exceeds or falls below a threshold.
d. The RMON Event Group, which allows a network administrator to define actions based on alarms. SNMP Traps are generated when RMON Alarms are triggered.

Store-and-Forward

Store-and-forward switching is Cisco's primary LAN switching method. The store-and-forward method provides efficient and error-free transport instead of fast transport. In this mode, the complete data frame is received on the switch's buffer and a CRC is run. If the CRC passes, the switch looks up the destination hardware address in the MAC filter table, finds the correct outgoing interface, and sends the frame toward its destination.

Simple Network Management Protocol (SNMP)

Failure conditions and specific events discovered by EtherWAN's Managed Ethernet Switch series are reported to multiple user-defined destinations in the form of a SNMP trap.

IEEE802.3az Energy Efficient Ethernet (EEE)

Energy-Efficient Ethernet is a set of enhancements to the twisted-pair and backplane Ethernet family of computer networking standards that allow for less power consumption during periods of low data activity. The intention was to reduce power consumption while retaining full compatibility with existing equipment.

The Institute of Electrical and Electronics Engineers (IEEE), through the IEEE 802.3az task force developed the standard. Some companies introduced technology to reduce the power required for Ethernet before the standard was ratified, using the name Green Ethernet.

In 100 Mbit/s, 1 gigabit and 10 Gbit/s speed data links, energy is used to keep the physical layer transmitters on all the time. If they could be put into "sleep" mode when no data is being sent that energy could be saved. By sending a low-power-idle (LPI) indication signal for a specified time the transmit chips in the system can be turned off. LPI is sent periodically to refresh the sleep mode. When there is data to transmit a normal idle signal is sent to wake the transmit system up before data is due to be sent. The data link is considered to be always operational, as they receive signal circuit remains active even when the transmit path is in sleep mode.

Spanning Tree Protocol (STP, IEEE802.1D)

STP is a network protocol that ensures a loop-free topology for any bridged Ethernet local area network. The basic function of STP is to prevent bridge loops and the ensuing broadcast radiation. STP also allows a network design to include spare (redundant) links to provide automatic backup paths if an active link fails, without the danger of bridge loops or the need for manual enabling/disabling of the backup links.

UPoE (60W PoE/PSE)

UPoE is High Power PoE Specifications, integrated with 60W PoE/PSE switching support.

UPoE offers highly efficient four-pair operation, and full compliance with the IEEE 802.3at draft 4.1 high-power PoE specifications. It supports 2-event classification as specified in the latest IEEE 802.3at specifications.

Until today, the barrier to PoE adoption was its restriction to 15.4W and 30W, respectively, in 802.3af and 802.3at applications. UPoE will enable a host of new Ethernet applications to take full advantage of the well-known PoE benefits at 60W power levels.

Key Features
  * 802.3at draft 4.1 compliant, which delivers up to 60W on 4-pairs
  * 2-event classification
  * 10/100/100 Base-T support

Technology	Standard	Availability	PSE	PD	Current
PoE	IEEE802.3af	2003	15.4E	12.95W	350mA
PoE+ (AT)	IEEE802.3at	2009	30W	25.5W	600mA
UPoE/4 pairs	Proprietary	2012/2009	60W	51W	600mAx2

Virtual Local Area Network (VLAN, IEEE802.1Q)

The IEEE802.1Q standard establishes a method for inserting a virtual local area network identifier (VID) into the Ethernet frames. The sharing of VLANs between switches is achieved by inserting a tag with a VLAN identifier (VID) into each frame. VLANs can be extended across a large network by assigning the same VID to the VLANs on numerous switches. When using IEEE802.1Q, a VID must be assigned for each VLAN.

Web-based Management

The Managed Ethernet Switch also hosts a point-and-click Web-based interface that allows users to access the full configuration and functionality of the switch from an Internet browser.

Web-Smart Switch

The Web-Smart Switch allows end users to configure IP settings, port-based VLANs, QoS settings and to restore default settings, as well as to display status messages such as the PoE condition, link status and alarm conditions. All of the above can be done via a web browser, such as Internet Explorer, Firefox or Chrome.

EN50155	EN50155		IEC61850-3	EN50121-4	IEC61850-3	EN50121-4
EN50121-4	EN50121-4					
EN50121-3	EN50121-3					
PoE	PoE					

Model Name	ER59000	ER58000	EX77000	EX87000	EX89000
Interface					
Max. 10/100 BASE-TX	16 (M12)	8 (M12)	24	24	24
Max. 10/100/1000 BASE-T	2	2 (M12)	4	4	4
Max. 100 BASE-FX	-	-	24	24	18
Max. 100 BASE-SFP	-	-	24	24	4
Max. 1000 BASE - SX/LX/BX	2 (LC)	2 (LC)	4	4	4
Max. 1000 BASE - SFP	-	-	4	4	4
PoE Ports	8 (30W)	8 (30W)	-	-	-
PoE Power Budget	240W	120W	-	-	-
RS-232 Console Port	√	√	√	√	√
Alarm Contact	√	√	-	-	√
Performance					
MAC Address Table Size	8192	8192	8192	8192	8192
Packet Buffer Memory (bits)	2M	2M	3M	3M	3M
Mechanical					
Casing	metal	metal	metal	metal	metal
Installation*	W	P	R	R	R
Dimensions (WxDxH)	258x117x228	288x161.5x64	Single Power: 442x250x44 Dual Power: 442x375x44	Single Power: 442x284x44 Dual Power: 442x375x44	Single Power: 442x343x44
Power Input					
No. of Power Inputs	2	2	1 or 2	1 or 2	1
110 - 240VAC	-	-	√	√	√
Terminal Block	(55VDC) (M23) (PoE) (12 - 48VDC) (M23) (nonPoE)	(24 - 48VDC) (M23)	±48VDC, 88 - 370VDC	±48VDC, 88 - 370VDC	±48VDC, 88 - 370VDC
DC Jack	-	-	-	-	-
AC to DC Adapter	-	-	-	-	-
Operating Temperature					
-10˚C to 60˚C	-	-	-	-	-
-40˚C to 75˚C	√	√	√	√	√
Network Redundancy					
α-Ring / α-Chain	√	√	√	√	√
STP / RSTP / MSTP	√	√	√	√	√
Network Management & Control					
	VLAN, QoS, IGMP, GMRP, LLDP, Bandwidth Rate Control, Port Trunking, Port Mirroring, Packet Filtering, DHCP Sever/Client, IEEE802.1x Security, SNMP (v1, v2c, v3), RMON, Web Management, Telnet Management, RS-232 Console Management				
Regulatory Approvals					
CE / FCC	√	√	√	√	√
UL508	-	-	-	-	-
ISA12.12.01 / UL1604	-	-	-	-	-
IEC61850-3 / IEEE1613	-	-	√	√	√
EN50121-4	-	-	-	√	√
EN50155	√	√	-	-	-
UL60950	-	-	-	-	-

* D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

Hardened Managed >>

Model Name	EX75000	EX76000	EX78000	EX78602 (NEW)	EX78900 (NEW)	EX74000	EX83000
Interface							
Max. 10/100 BASE-TX	24	16	8	6	-	6	16
Max. 10/100/1000 BASE-T	2	2	2	2	12	2	2
Max. 100 BASE-FX	-	4	4	-	-	-	4
Max. 100 BASE-SFP	-	-	2	-	-	-	4
Max. 1000 BASE - SX/LX/BX	2	2	2	2	-	-	2
Max. 1000 BASE - SFP	4	-	2	2	4	2	2
PoE Ports	MAX. 12 (30W)+2G (30W) MAX. 24 (15.4W)+2G (30W)	16 (15.4W)	8 (15.4W) or 4 (30W) + 4 (15.4W)	4 (30W) + 2 (60W)	8 (60W)	4 (30W)	-
PoE Power Budget	420W	246.4W	180W	180W	240W	120W	-
RS-232 Console Port	√	√	√	√	√	√	√
Alarm Contact	√	√	√	√	√	-	√
Performance							
MAC Address Table Size	8192	8192	8192	8192	16K	8192	8192
Packet Buffer Memory (bits)	3M	2M	2M	2M	12M	2M	2M
Jumbo Frame (bytes)	2048	-	-	-	9216	-	-
Mechanical							
Casing	metal	metal	metal	metal	aluminum	metal	aluminum
Installation	R	R	D, P	D, P	D, P	P	D, P
Dimensions (WxDxH)	442x343x44	442x205x44	71.4x140x170	71.4x140x170	63x140x170	200x134x50	84x125x145
Power Input							
No. of Power Inputs	1	2	3	3	3	1	3
110 - 240VAC	-	-	-	-	-	-	-
Terminal Block	55VDC	48VDC	48VDC	55VDC	55VDC	48VDC (PoE)	12 - 48VDC
DC Jack	-	-	48VDC	55VDC	55VDC	-	12VDC
AC to DC Adapter	-	-	-	-	-	-	-
Operating Temperature							
-10˚C to 60˚C	-	-	-	-	-	-	-
-40˚C to 75˚C	√	√	√	√	√	-	√
Network Redundancy							
α-Ring / α-Chain	√	√	√	√	√	√	√
STP / RSTP / MSTP	√	√	√	√	√	√	√
Network Management & Control							
	VLAN, QoS, IGMP, GMRP, LLDP, Bandwidth Rate Control, Port Trunking, Port Mirroring, Packet Filtering, IEEE802.1x Security, SNMP (v1, v2c, v3), RMON, Web Management, Telnet Management, RS-232 Console Management						
Regulatory Approvals							
CE / FCC	√	√	√	√	√	√	√
UL508	-	√	√	√	-	-	-
ISA12.12.01 / UL1604	-	-	-	-	-	-	-
IEC61850-3 / IEEE1613	-	-	-	-	-	-	√
EN50121-4	-	-	-	-	-	-	-
UL60950	-	-	-	-	-	-	-

* D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

Hardened Managed >>

Model Name	EX73000	EX63000	EX72000	EX62000	EX71000	EX61000A	EX70900 NEW
Interface							
Max. 10/100 BASE-TX	16	16	14	14	8	8	-
Max. 10/100/1000 BASE-T	2	2	2	2	2	2	8
Max. 100 BASE-FX	4	4	2	2	4	4	-
Max. 100 BASE-SFP	-	-	-	-	4	4	-
Max. 1000 BASE - SX/LX/BX	2	2	2	2	2	2	2
Max. 1000 BASE - SFP	-	2	2	2	2	2	2
PoE Ports	-	-	-	-	-	-	-
PoE Power Budget	-	-	-	-	-	-	-
RS-232 Console Port	√	√	√	√	√	√	√
Alarm Contact	√	-	-	-	√	√	√
Performance							
MAC Address Table Size	8192	8192	8192	8192	8192	8192	4096
Packet Buffer Memory (bits)	2M	2M	2M	2M	2M	2M	1.536M
Jumbo Frame (bytes)	-	-	-	-	-	-	9720
Mechanical							
Casing	metal	aluminum	metal	metal	aluminum	metal	aluminum
Installation*	D, P	D, P	P, R	D, P, R	D, P, R	D, P, R	D, P
Dimensions (WxDxh)	65x125x45	59x125x45	235x125x50	235x125x50	60x125x145	54x125x145	66x125x145
Power Input							
No. of Power Inputs	3	3	2	2	3	3	3
110 - 240VAC	-	-	-	-	-	-	-
Terminal Block	12 - 48VDC	12 - 48VDC	12 - 48VDC	12 - 48VDC	12 - 48VDC	12 - 48VDC	12 - 48VDC
DC Jack	12VDC	12VDC	-	12VDC	12VDC	12VDC	12VDC
AC to DC Adapter	-	-	-	-	-	-	-
Operating Temperature							
-10˚C to 60˚C	-	-	-	√	-	√	-40˚C to 75˚C
-40˚C to 75˚C	√	√	√	-	√	-	-
Network Redundancy							
α-Ring / α-Chain	√	√	√	√	√	√	√
STP / RSTP / MSTP	√	√	√	√	√	√	√
Network Management & Control							
	VLAN, QoS, IGMP, GMRP, LLDP, Bandwidth Rate Control, Port Trunking, Port Mirroring, Packet Filtering, IEEE802.1x Security, SNMP (v1, v2c, v3), RMON, Web Management, Telnet Management, RS-232 Console Management						
Regulatory Approvals							
CE / FCC	√	√	√	√	√	√	√
UL508	√	-	√	-	√	√	-
ISA12.12.01 / UL1604	√	-	-	-	-	-	-
IEC61850-3 / IEEE1613	-	-	-	-	-	-	-
EN50121-4	-	-	-	-	√	-	-
UL60950	-	-	-	-	-	-	-

* D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

IEC61850-3

ISA 12.12.01

Hardened Unmanaged >>

Model Name	EX39924 NEW	EX95000	EX33000	EX47000	EX94000	EX35000
Interface						
Max. 10/100 BASE-TX	-	16	16	8	8	-
Max. 10/100/1000 BASE-T	24	-	-	-	-	8
Max. 100 BASE-FX	-	2	2	2	4	-
Max. 100 BASE-SFP	-	-	-	-	-	-
Max. 1000 BASE - SX/LX/BX	-	-	-	-	-	2
Max. 1000 BASE - SFP	4 (Combo) / 16 (Combo)	-	-	-	-	2
PoE Ports	-	-	-	-	-	-
PoE Power Budget	-	-	-	-	-	-
RS-232 Console Port	-	-	-	-	-	-
Alarm Contact	-	√	√	√	√	√
Performance						
MAC Address Table Size	8192	4096	4096	2048	2048	8192
Packet Buffer Memory (bits)	4.096M	1.625M	1.625M	448K	768K	1.125M
Jumbo Frame (bytes)	16379	-	-	-	-	-
Mechanical						
Casing	metal	aluminum	aluminum	aluminum	aluminum	aluminum
Installation*	R	D, P, R	D, P, R	D, P,	D, P	D, P
Dimensions (WxDxH)	208.8x440x44	75.5x110x135	69.5x110x135	60x125x145	50x110x145	68x110x135
Power Input						
No. of Power Inputs	1	3	3	3	3	3
100 - 240VAC	√	-	-	-	-	-
Terminal Block	-	12 - 48VDC	12 - 48VDC	12 - 48VDC	12 - 48VDC	12 - 32VDC
DC Jack	-	12VDC	12VDC	12VDC	12VDC	12VDC
AC to DC Adapter	-	-	-	-	-	-
Operating Temperature						
-10˚C to 60˚C	√	-	√	-	-	-20˚C to 60˚C
-40˚C to 75˚C	-	√	-	√	√	-
Network Redundancy						
α-Ring / α-Chain	-	-	-	-	-	-
STP / RSTP / MSTP	-	-	-	-	-	-
Network Management & Control						
				-		
Regulatory Approvals						
CE / FCC	√	√	√	√	√	√
UL508	-	√	√	-	√	√
ISA12.12.01 / UL1604	-	-	-	-	√	-
IEC61850-3 / IEEE1613	-	-	-	√	-	-
EN50121-4	-	-	-	√	-	-
UL60950	-	-	-	-	-	-

* D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

PoE   PoE   PoE   PoE   PoE

Hardened Unmanaged >>

Model Name	EX49000	EX49000A	EX46100	EX48000	EX38000
Interface					
Max. 10/100 BASE-TX	16	16	8	5	5
Max. 10/100/1000 BASE-T	2	2	-	-	-
Max. 100 BASE-FX	-	-	2	1	1
Max. 100 BASE-SFP	-	-	-	-	-
Max. 1000 BASE - SX/LX/BX	2	2	-	-	-
Max. 1000 BASE - SFP	2	2	-	-	-
PoE Ports	16 (30W)	16 (30W)	4 (30W)	4 (30W)	4 (30W)
PoE Power Budget	480W	480W	120W	120W	120W
RS-232 Console Port	-	-	-	-	-
Alarm Contact	√	√	√	√	√
Performance					
MAC Address Table Size	4096	4096	1024	1024	1024
Packet Buffer Memory (bits)	2.25M	2.25M	1M	512K	512K
Mechanical					
Casing	metal	metal	aluminum	metal	metal
Installation*	R	R	D, P, R	Desktop, W	Desktop, W
Dimensions (WxDxH)	442x205x44.2	442x205x44.2	68x135x110	200x134.3x35	200x134.3x35
Power Input					
No. of Power Inputs	2	2	3	3	3
110 - 240VAC	-	-	-	-	-
Terminal Block	47 - 57VDC	47 - 57VDC	47 - 57VDC	47 - 57VDC	47 - 57VDC
DC Jack	-	-	47 - 57VDC	47 - 57VDC	47 - 57VDC
AC to DC Adapter	-	-	-	-	-
Operating Temperature					
-10˚C to 60˚C	-	-	-	-	√
-40˚C to 75˚C	√	√	√	√	-
Network Redundancy					
α-Ring / α-Chain	-	-	-	-	-
STP / RSTP / MSTP	-	-	-	-	-
Network Management & Control					
	System, IP Configuration, VLAN,QoS, Web Management	-		System, IP Configuration, VLAN,QoS, Web Management	
Regulatory Approvals					
CE / FCC	√	√	√	√	√
UL508	-	-	-	-	-
ISA12.12.01 / UL1604	-	-	-	-	-
IEC61850-3 / IEEE1613	-	-	-	-	-
EN50121-4	-	-	-	-	-
UL60950	-	-	-	-	-

* D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

Hardened Unmanaged >>			
Model Name	EX48000A	EX45000	EX34000
Interface			
Max. 10/100 BASE-TX	5	8	8
Max. 10/100/1000 BASE-T	-	-	-
Max. 100 BASE-FX	1	2	2
Max. 100 BASE-SFP	-	-	-
Max. 1000 BASE - SX/LX/BX	-	-	-
Max. 1000 BASE - SFP	-	-	-
PoE Ports	4 (15.4W)	4 (15.4W)	4 (15.4W)
PoE Power Budget	61.6W	61.6W	61.6W
RS-232 Console Port	-	-	-
Alarm Contact	√	√	√
Performance			
MAC Address Table Size	1024	1024	1024
Packet Buffer Memory (bits)	512K	1M	1M
Mechanical			
Casing	metal	aluminum	aluminum
Installation*	Desktop, W	D, P, R	D, P, R
Dimensions (WxDxH)	200x134.3x35	68x110x135	62x110x135
Power Input			
No. of Power Inputs	3	2	3
110 - 240VAC	-	-	-
Terminal Block	47 - 57VDC	47 - 57VDC	47 - 57VDC
DC Jack	47 - 57VDC	47 - 57VDC	47 - 57VDC
AC to DC Adapter	-	-	-
Operating Temperature			
-10˚C to 60˚C	-	-	√
-40˚C to 75˚C	√	√	-
Network Redundancy			
α-Ring / α-Chain	-	-	-
STP / RSTP / MSTP	-	-	-
Network Management & Control			
	-		-
Regulatory Approvals			
CE / FCC	√	√	√
UL508	-	-	-
ISA12.12.01 / UL1604	-	-	-
IEC61850-3 / IEEE1613	-	-	-
EN50121-4	-	-	-
UL60950	-	-	-

* D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

Hardened Unmanaged >>

Model Name	EX43000	EX45900 NEW	EX42900 NEW	EX32900 NEW	EX42200	EX42000
Interface						
Max. 10/100 BASE-TX	8	-	-	-	5	5
Max. 10/100/1000 BASE-T	-	5	5 / 8	5 / 8	-	-
Max. 100 BASE-FX	4	-	-	-	1	1
Max. 100 BASE-SFP	-	-	-	-	-	-
Max. 1000 BASE - SX/LX/BX	-	1	1	1	-	-
Max. 1000 BASE - SFP	-	1	-	-	-	-
PoE Ports	-	4 (30W)	-	-	4 (30W)	-
PoE Power Budget	-	120W	-	-	120W	-
RS-232 Console Port	-	-	-	-	-	-
Alarm Contact	√	√	- / √	- / √	√	√
Performance						
MAC Address Table Size	2048	8192	8192 / 4096	8192 / 4096	2048	2048
Packet Buffer Memory (bits)	768K	1M	1M / 192K	1M / 192K	448K	384K
Jumbo Frame (bytes)	-	10K	10K / 9720	10K / 9720	-	-
Mechanical						
Casing	aluminum	metal	metal	plastic	aluminum	plastic
Installation*	D	D	D	D	D	D
Dimensions (WxDxH)	50x125x135	30x100x149	30x70x110 30x100x149	26x70x110 30x86x149	61x73x110	26x70x110
Power Input						
No. of Power Inputs	2	2	1 / 2	1 / 2	2	1
100 - 240VAC	-	-	-	-	-	-
Terminal Block	12 - 30VDC	24 / 48VDC	12 - 48VDC	12 - 48VDC	18 - 57VDC	12 - 48VDC
DC Jack	12VDC	-	-	-	-	-
AC to DC Adapter	-	-	-	-	-	-
Operating Temperature						
-10˚C to 60˚C	-20˚C to 60˚C	-	-	√	-	√
-40˚C to 75˚C	-	√	√	-	√	-
Network Redundancy						
α-Ring / α-Chain	-	-	-	-	-	-
STP / RSTP / MSTP	-	-	-	-	-	-
Network Management & Control						
				-		
Regulatory Approvals						
CE / FCC	√	√	√	√	√	√
UL508	-	-	-	-	-	-
ISA12.12.01 / UL1604	-	-	-	-	-	-
IEC61850-3 / IEEE1613	-	-	-	-	-	-
EN50121-4	-	-	-	-	-	-
UL60950	√	-	-	-	-	√

* D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

Non-Hardened Managed >>

Model Name	EX27000	EX29000	EX25611	EX26262	EX26182
Interface					
Max. 10/100 BASE-TX	24	24	-	-	-
Max. 10/100/1000 BASE-T	4	4	24	24	18
Max. 100 BASE-FX	24	18	-	-	-
Max. 100 BASE-SFP	24	-	-	-	-
Max. 1000 BASE - SX/LX/BX	4	4	-	-	-
Max. 1000 BASE - SFP	4	4	8	2	2
PoE Ports	-	-	-	24 (30W)	18 (30W)
PoE Power Budget	-	-	-	190W	190W
RS-232 Console Port	√	√	√	-	-
Alarm Contact	-	√	-	-	-
Performance					
MAC Address Table Size	8192	8192	32K	8192	8192
Packet Buffer Memory (bits)	3M	3M	256M	64M	64M
Mechanical					
Casing	metal	metal	metal	metal	metal
Installation*	R	R	R	R	R
Dimensions (WxDxH)	Single Power: 442x343x44 Dual Power: 442x375x44	Single Power: 442x343x44	442x300x44	440x350x44	440x350x44
Power Input					
No. of Power Inputs	1 or 2	1	1	1	1
100 - 240VAC	√	√	√	√	√
Terminal Block	±48VDC, 88 - 370VDC	±48VDC, 88 - 370VDC	-	-	-
DC Jack	-	-	-	-	-
AC to DC Adapter	-	-	-	-	-
Operating Temperature					
0˚C to 45˚C	-	-	0˚C to 40˚C	√	√
-10˚C to 60˚C	√	√	-	-	-
-40˚C to 75˚C	-	-	-	-	-
Network Redundancy					
α-Ring / α-Chain	√	√	-	-	-
STP / RSTP / MSTP	√	√	√	√	√
Network Management & Control					
	VLAN, QoS, IGMP, GMRP, Bandwidth Rate Control, Port Trunking, Port Mirroring, Packet Filtering, IEEE802.1x Security, SNMP (v1, v2c, v3), RMON, Web Man agement, Telnet Management, RS232 Console Management (expect EX26262 and EX26182)				
Regulatory Approvals					
CE / FCC	√	√	√	√	√
UL508	-	-	-	-	-
ISA12.12.01 / UL1604	-	-	-	-	-
IEC61850-3 / IEEE1613	√	-	-	-	-
EN50121-4	√	-	-	-	-
UL60950	-	-	-	√	√

* D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

Non-Hardened Unmanaged >>

Model Name	EX17242	EX17162	EX17162A	EX17016	EX17016A
Interface					
Max. 10/100 BASE-TX	24	16	16	16	16
Max. 10/100/1000 BASE-T	2	2	2	-	-
Max. 100 BASE-FX	-	-	-	-	-
Max. 100 BASE-SFP	-	-	-	-	-
Max. 1000 BASE - SX/LX/BX	-	-	-	-	-
Max. 1000 BASE - SFP	2 (Combo)	2 (Combo)	2 (Combo)	-	-
PoE Ports	24(15.4W)	16 (15.4W)	16 (15.4W)	16 (15.4W)	16 (15.4W)
PoE Power Budget	369.6W	246.4W	246.4W	246.4W	246.4W
RS-232 Console Port	-	-	-	-	-
Alarm Contact	-	-	-	-	-
Performance					
MAC Address Table Size	4096	4096	4096	4096	4096
Packet Buffer Memory (bits)	2.75M	2.75M	2.75M	1.5M	1.5M
Mechanical					
Casing	metal	metal	metal	metal	metal
Installation*	R	R	R	R	R
Dimensions (WxDxH)	440x330x44	440x330x44	440x330x44	440x220x44	440x220x44
Power Input					
No. of Power Inputs	1	1	1	1	1
110 - 240VAC	√	√	√	√	√
Terminal Block	-	-	-	-	-
DC Jack	-	-	-	-	-
AC to DC Adapter	-	-	-	-	-
Operating Temperature					
0˚C to 45˚C	√	√	√	√	√
-10˚C to 60˚C	-	-	-	-	-
-40˚C to 75˚C	-	-	-	-	-
Network Redundancy					
α-Ring / α-Chain	-	-	-	-	-
STP / RSTP / MSTP	-	-	-	-	-
Network Management & Control					
	System, IP Configuration, VLAN, QoS, Web Management		-	System, IP Configuration, VLAN, QoS, Web Management	-
Regulatory Approvals					
CE / FCC	√	√	√	√	√
UL508	-	-	-	-	-
ISA12.12.01 / UL1604	-	-	-	-	-
IEC61850-3 / IEEE1613	-	-	-	-	-
EN50121-4	-	-	-	-	-
UL60950	-	-	-	√	√

* D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

PoE   PoE   PoE   PoE   PoE   PoE

Non-Hardened Unmanaged >>

Model Name	EX17908	EX17082	EX17008	EX17908A	EX17082A	EX17008A	EX17044A
Interface							
Max. 10/100 BASE-TX	-	8	8	-	8	8	8
Max. 10/100/1000 BASE-T	8	2	-	8	2	-	-
Max. 100 BASE-FX	-	-	-	-	-	-	-
Max. 100 BASE-SFP	-	-	-	-	-	-	-
Max. 1000 BASE - SX/LX/BX	-	-	-	-	-	-	-
Max. 1000 BASE - SFP	-	2 (Combo)	-	-	-	-	-
PoE Ports	8 (30W)	8 (30W)	8 (15.4W)	8 (30W)	8 (30W)	8 (15.4W)	4 (15.4W)
PoE Power Budget	240W	240W	123.2W	240W	240W	123.2W	59W
RS-232 Console Port	-	-	-	-	-	-	-
Alarm Contact	-	-	-	-	-	-	-
Performance							
MAC Address Table Size	8192	4096	1024	8192	4096	1024	1024
Packet Buffer Memory (bits)	1M	2.75M	512K	1M	2.75M	512K	512K
Mechanical							
Casing	metal	metal	metal	metal	metal	metal	metal
Installation*	Desktop	R	Desktop	Desktop	R	Desktop	Desktop
Dimensions (WxDxH)	266x160x44	440x220x44	266x160x44	266x160x44	440x220x44	266x160x44	266x160x44
Power Input							
No. of Power Inputs	1	1	1	1	1	1	1
110 - 240VAC	√	√	√	√	√	√	√
Terminal Block	-	-	-	-	-	-	-
DC Jack	-	-	-	-	-	-	-
AC to DC Adapter	-	-	-	-	-	-	-
Operating Temperature							
0˚C to 45˚C	(0˚C to 40˚C)	√	√	(0˚C to 40˚C)	√	√	√
-10˚C to 60˚C	-	-	-	-	-	-	-
-40˚C to 75˚C	-	-	-	-	-	-	-
Network Redundancy							
α-Ring / α-Chain	-	-	-	-	-	-	-
STP / RSTP / MSTP	-	-	-	-	-	-	-
Network Management & Control							
		System, IP Configuration, VLAN, QoS, Web Management			-		
Regulatory Approvals							
CE / FCC	√	√	√	√	√	√	√
UL508	-	-	-	-	-	-	-
ISA12.12.01 / UL1604	-	-	-	-	-	-	-
IEC61850-3 / IEEE1613	-	-	-	-	-	-	-
EN50121-4	-	-	-	-	-	-	-
UL60950	-	-	√	-	-	√	√

Model Name	EX1608SF	EX16900 NEW	EX1608B/BF1
Interface			
Max. 10/100 BASE-TX	6	-	8
Max. 10/100/1000 BASE-T	-	5 / 8	-
Max. 100 BASE-FX	8	-	1
Max. 100 BASE-SFP	-	-	-
Max. 1000 BASE - SX/LX/BX	-	1	-
Max. 1000 BASE - SFP	-	1	-
PoE Ports	-	-	-
PoE Power Budget	-	-	-
RS-232 Console Port	-	-	-
Alarm Contact	-	-	-
Performance			
MAC Address Table Size	2048	2048 / 4096	2048
Packet Buffer Memory (bits)	768K	1M / 192K	1M
Jumbo Frame (bytes)	-	9K / 9720	-
Mechanical			
Casing	metal	metal	metal
Installation*	R	Desktop	R, W
Dimensions (WxDxH)	443.6x203.2x44	160x80.5x28	252x134.3x35
Power Input			
No. of Power Inputs	1	1	1
110 - 240VAC	√	-	√
Terminal Block	-	-	-
DC Jack	-	5VDC	-
AC to DC Adapter	-	√	-
Operating Temperature			
0˚C to 45˚C	√	√	√
-10˚C to 60˚C	-	-	-
-40˚C to 75˚C	-	-	-
Network Redundancy			
α-Ring / α-Chain	-	-	-
STP / RSTP / MSTP	-	-	-
Network Management & Control			
		-	
Regulatory Approvals			
CE / FCC	√	√	√
UL508	-	-	-
ISA12.12.01 / UL1604	-	-	-
IEC61850-3 / IEEE1613	-	-	-
EN50121-4	-	-	-
UL60950	-	√	-

* D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

Non-Hardened Unmanaged >>			
Model Name	EX1605PB/PBF1	EX1608PB/PBF1	EX1616W
Interface			
Max. 10/100 BASE-TX	5	8	16
Max. 10/100/1000 BASE-T	-	-	-
Max. 100 BASE-FX	1	1	1
Max. 100 BASE-SFP	-	-	-
Max. 1000 BASE - SX/LX/BX	-	-	-
Max. 1000 BASE - SFP	-	-	-
PoE Ports	-	-	-
PoE Power Budget	-	-	-
RS-232 Console Port	-	-	-
Alarm Contact	-	-	-
Performance			
MAC Address Table Size	2048	2048	4096
Packet Buffer Memory (bits)	1M	1M	1.5M
Mechanical			
Casing	metal	metal	metal
Installation*	W	W	R
Dimensions (WxDxH)	160x80.5x28	160x80.5x28	440x207x44
Power Input			
No. of Power Inputs	1	1	1
110 - 240VAC	-	-	√
Terminal Block	-	-	-
DC Jack	12VDC	12VDC	-
AC to DC Adapter	√	√	-
Operating Temperature			
0˚C to 45˚C	√	√	√
-40˚C to 75˚C	-	-	-
Network Redundancy			
α-Ring / α-Chain	-	-	-
STP / RSTP / MSTP	-	-	-
Network Management & Control			
	-	-	System, IP Configuration, VLAN, QoS, Web Management
Regulatory Approvals			
CE / FCC	√	√	√
UL508	-	-	-
ISA12.12.01 / UL1604	-	-	-
IEC61850-3 / IEEE1613	-	-	-
EN50121-4	-	-	-
UL60950	-	-	-

* D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

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 IEEE802.3at 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 EN50155 standard, the ER59000 Series is designed for rolling stock applications.

The IEEE802.3at 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°C 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 EN50155/EN50121-3-2/EN50121-4 railway applications

- **M12 Connector**
  - Built-in 16-port 10/100BASE M12 plus 2-port Gigabit Copper/LC
  - 8-port PoE function with IEEE802.3at 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
- 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 Alpha-Ring network fault recovery (<15ms)
- 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: 7.2Gbps
- 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
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control

Address Table Size
- 8192 MAC addresses

Power

Input
- Redundant power inputs:
  M23: 12 - 48VDC (non-PoE model)
  M23: 55 (52 to 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: IEEE802.3at, up to 30W/port, 47 - 57VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Die-cast aluminum
- IP67

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

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 RS232 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 @ 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 ISO9001 facility

EMI
FCC Part 15B, Class A

EN61000-6-4

EN55022

EN55011 (for EN50155)

EMS
EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6(Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)
- EN61000-4-9 (Pulsed magnetic field)

Environmental Test Compliance
IEC61373 (Vibration) for EN50155

IEC61373 (Shock) for EN50155

IEC600680-2-32 Ed (Free fall)

Industrial Compliance
EN50155

EN50121-3-2

EN50121-4

Application Diagram

The ER59000 Series deployed in a rolling stock application

Dimensions

258mm (10.1")

83.5mm (3.2")

228mm (8.9")

Ordering Information

Model

ER59402-20YZP	Hardened Managed 16-port 10/100BASE M12 (8 x PoE) with 2-port Gigabit LC 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

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	IEEE802.3at

Optional Accessories

96G-1618957XX		Power cable with 6pin female M23 connector, 2-Meter cable
ER58000-RJ454P		4-pin M12 D-code male to 10/100BASE-TX RJ45 interface, 3-Meter cable

ER58000 Series

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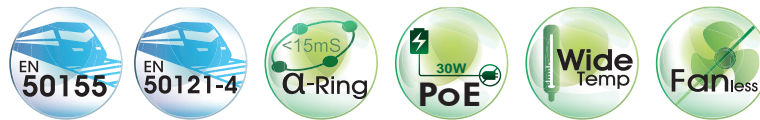
Overview

EtherWAN's ER58000 Series provides a hardened 10-port switching platform supporting IEEE802.3at Power over Ethernet, high performance switching with robust management features required for railway transportation application.

The ER58000 Series is equipped with 8 x 10/100BASE-TX PoE with M12 connector, in combination with two Gigabit M12 ports. Compliant with EN50155 standard, the ER58000 Series is designed for rolling stock applications.

The IEEE802.3at PoE ports provide up to 30W/port with a total power budget of 120W, 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.

Wall mountable, the ER58000 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 RS-232 console interfaces. With the hardened specifications, the ER58000 Series is designed to operate at -40°C to 75°C in harsh environments, where high ESD, shock, and vibration may be present.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Railway Oriented**
  - Compliant with EN50155/EN50121-3-2/EN50121-4 railway applications

- **M12 Connectors**
  - Built-in 8-port 10/100BASE M12 plus 2-port Gigabit M12/LC connectors

- **Power over Ethernet (PoE)**
  - Provides 8-port PoE function with IEEE802.3at up to 30W 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 Protocol
  - 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電力出力
- Port 1 to 8: IEEE802.3at, up to 30W/port

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Metal Case
- IP50

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

Weight
- 2.3Kg (5.07lbs)

Installation
- Wall mounting

Interface

Ethernet Port
- 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 ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN55011 (for EN50155)

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6(Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)
- EN61000-4-9 (Pulsed magnetic field)

Environmental Test Compliance

IEC61373 (Vibration) for EN50155

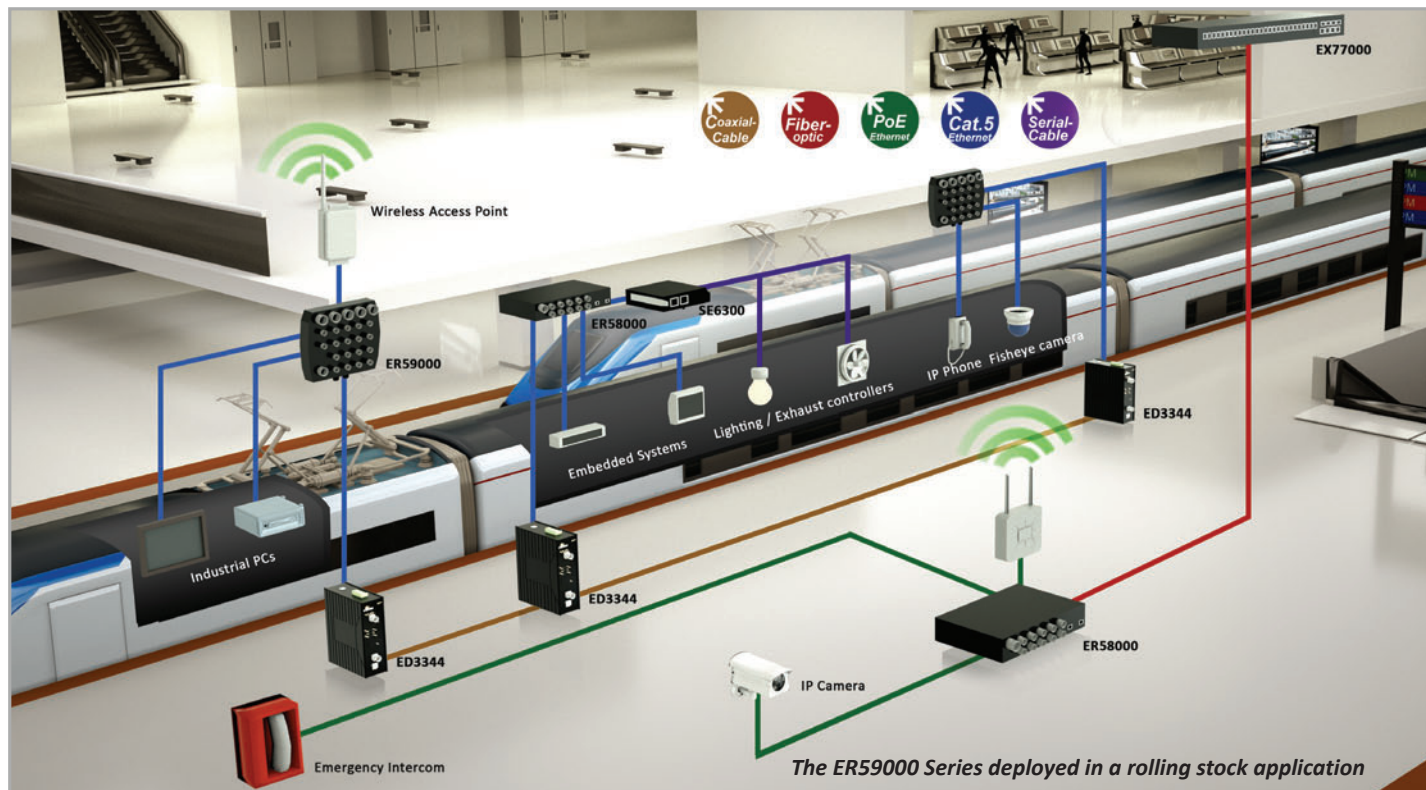**IEC61373 (Shock) for EN50155**
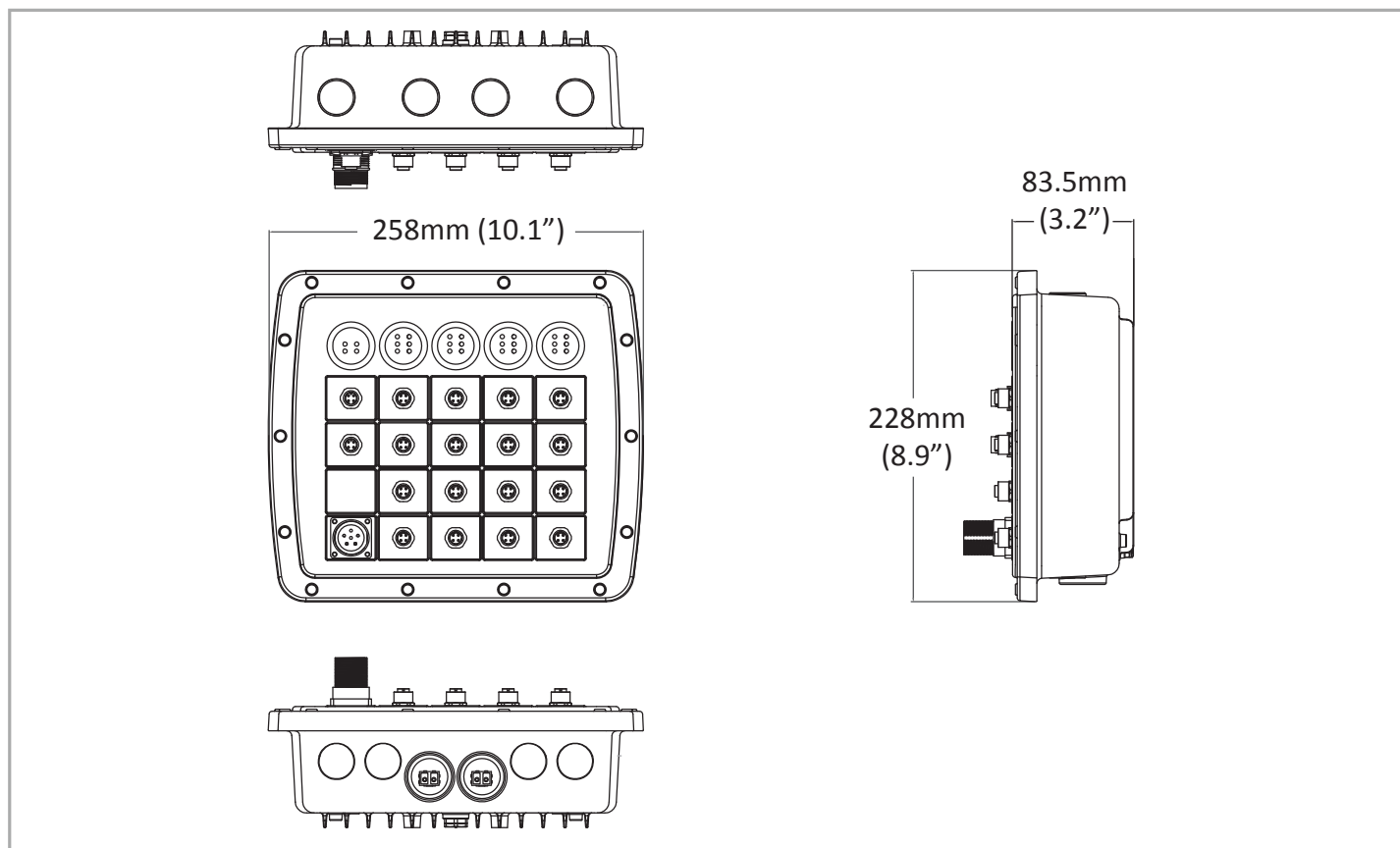
IEC600680-2-32 Ed (Free fall)

Industrial Compliance

EN50155

EN50121-3-2

EN50121-4

Application Diagram

The ER58000 Series deployed in a rolling stock network system

Dimensions

Back

288mm (11.3")

161.5mm (6.4")

64mm (2.5")

Front

Top

Side

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

EX78900 Series

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 IEEE802.3at/af 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°C 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/ IEEE802.3af/at, and 4 Gigabit SFP ports for high-bandwidth communication

- **Intelligent Management**
  ◦ Optimize network performance with QoS, VLAN, and PoE scheduling, etc.

- **Remote Secure Access**
  ◦ IEEE802.1x, ACL and RADIUS support

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
- System log (remote/local)
- ACL

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 Protocol
  - 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
- 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 (4 groups, support MAC base)
  - IEEE802.3ad Link Aggregation Control Protocol
- IGMP Snooping
  - IGMP snooping v1/v2/v3

Performance

- Switching Capability: 16Gbps
- Packet Buffer Size: 12M bits
- MAC Address Table: 16K
- Jumbo Frame: 9216 bytes

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
- IEEE802.3af/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 IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Jumbo Frame
- 9216 bytes

Address Table Size
- 16K MAC addresses

Power

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

Power Consumption
- Device: Max. 20W (without PoE)

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

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case
- IP30

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

Weight
- 1.1Kg (2.42lbs.)

Installation
- DIN-Rail (Top hat type35mm), Rack, or Wall mounting

Interface

Ethernet Port
- 10/100/1000BASE-TX (PoE): 12 ports
- 1000BASE-SFP: 4 ports

Console Port
- Port: One DB9 RS-232 port

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

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliances

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

IEC60068-2-32 Ed (Free fall)

Application Diagram

Control Center

Alpha-Ring

Fisheye PoE IP Cameras

EX78900 Series

PoE WAP

PoE WAP

Outdoor 60W PoE PTZ Speed Dome

Fiber-optic

PoE Ethernet

Cat.5 Ethernet

Dimensions

140mm (5.51")

Top

72mm (2.8")

170mm (6.69")

179.8mm (7.08")

Back

Side

Front

Bottom

Ordering Information

Models

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

* DIN-Rail mounting kit included

Optional Accessories

SDR-480-48	480W/10A DIN-Rail 48VDC Industrial Power Supply (for terminal block)

EX78602 Series

Hardened Managed 6-port 10/100BASE (4 x PoE + 2 x 60W PoE) and 2-port Gigabit Ethernet Switch

Overview

EtherWAN's EX78602 Series provides a hardened 8-port switching platform with 60W and IEEE802.3at/af Power over Ethernet combining high performance switching with robust management features required for mission-critical and harsh environments where sustained connectivity is crucial.

The EX78602 Series is equipped with 6 10/100BASE-TX PoE (4 x PoE 30W + 2 x 60W ports), in combination with two Gigabit SX/LX/BX/WDM Fiber ports with SFP options.

The Ultra PoE ports provide up to 60W/port with a total power budget of 180W, 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.

Din Rail mountable, the EX78602 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 RS-232 console interfaces. With the hardened specifications, the EX78602 Series is designed to operate at -40°C to 75°C in harsh environments, where high ESD, shock, and vibration may be present.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Ultra High-Power PoE Switch**
  - Up to 2 ports with 60W PoE, 4-port PoE with IEEE802.3af/at, and 2 Gigabit (SX/LX/SFP) ports for high-bandwidth communication

- **Intelligent Management**
  - Optimize network performance with QoS, VLAN, and PoE scheduling, etc. Network redundancy is secured by EtherWAN's α-Ring, with fault recovery time < 15ms

- **Remote Secure Access**
  - IEEE802.1x, and RADIUS support

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
- System log (remote/local)

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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
  - EtherWAN's Alpha-Ring network fault recovery (<15ms)
- 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: 5.2Gbps
- 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
- IEEE802.3af/at Power over Ethernet

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 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:
  Terminal block: 55 (52 - 57) VDC
  DC Jack: 55 (52 - 57) VDC

Power Consumption
- Device: Max. 15W without PoE
- Total PoE power budget: 180W Max. depending on power input

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case
- IP30

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

Weight
- 1.7Kg (3.74lbs.)

Installation
- DIN-Rail (Top hat type35mm), Rack, or Wall mounting

Interface

Ethernet Port
- 10/100BASE-TX (PoE): 6 ports
  Port 1 to port 4: Up to 30W/ea
  Port 5 to port 6: Up to 60W/ea
- Gigabit: 2 ports

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power 1 (Green)
            Power 2 (Green)
            Power 3 (Green)
- Per Port: Link/Activity (Green)
- Per PoE Port: PoE Status (Orange)

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
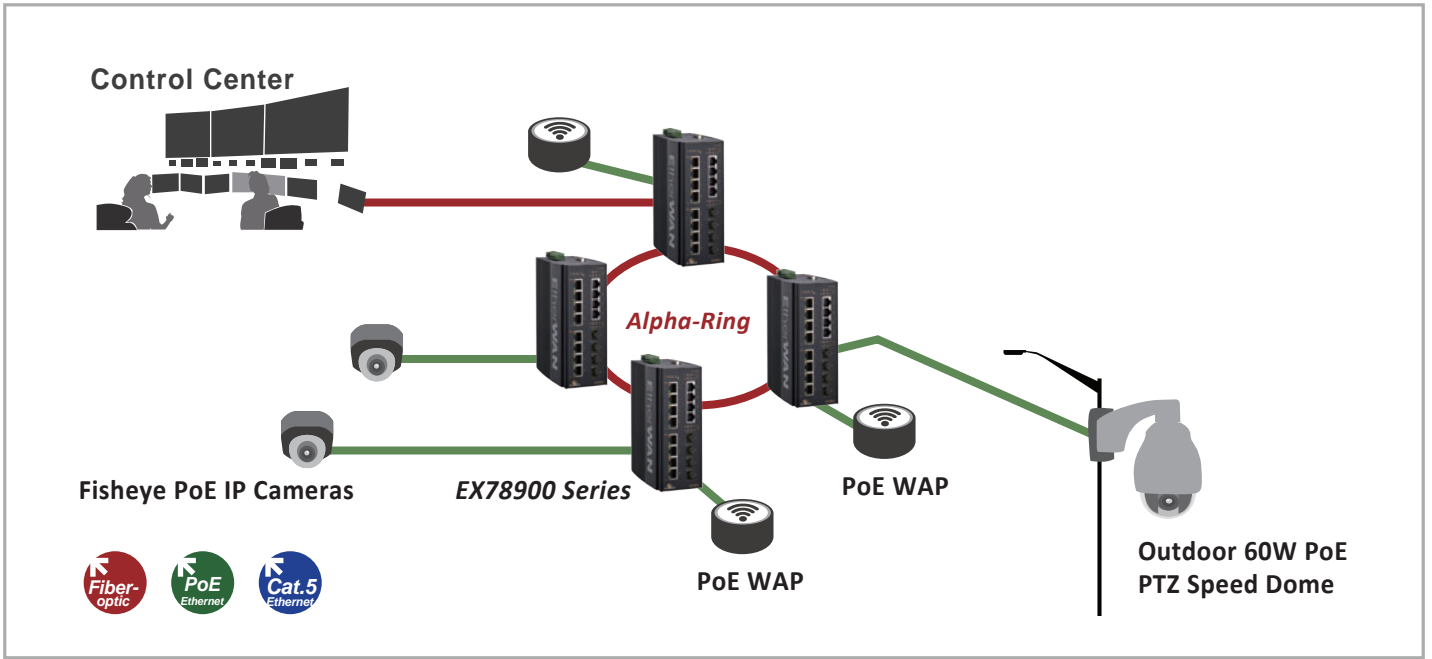- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliances
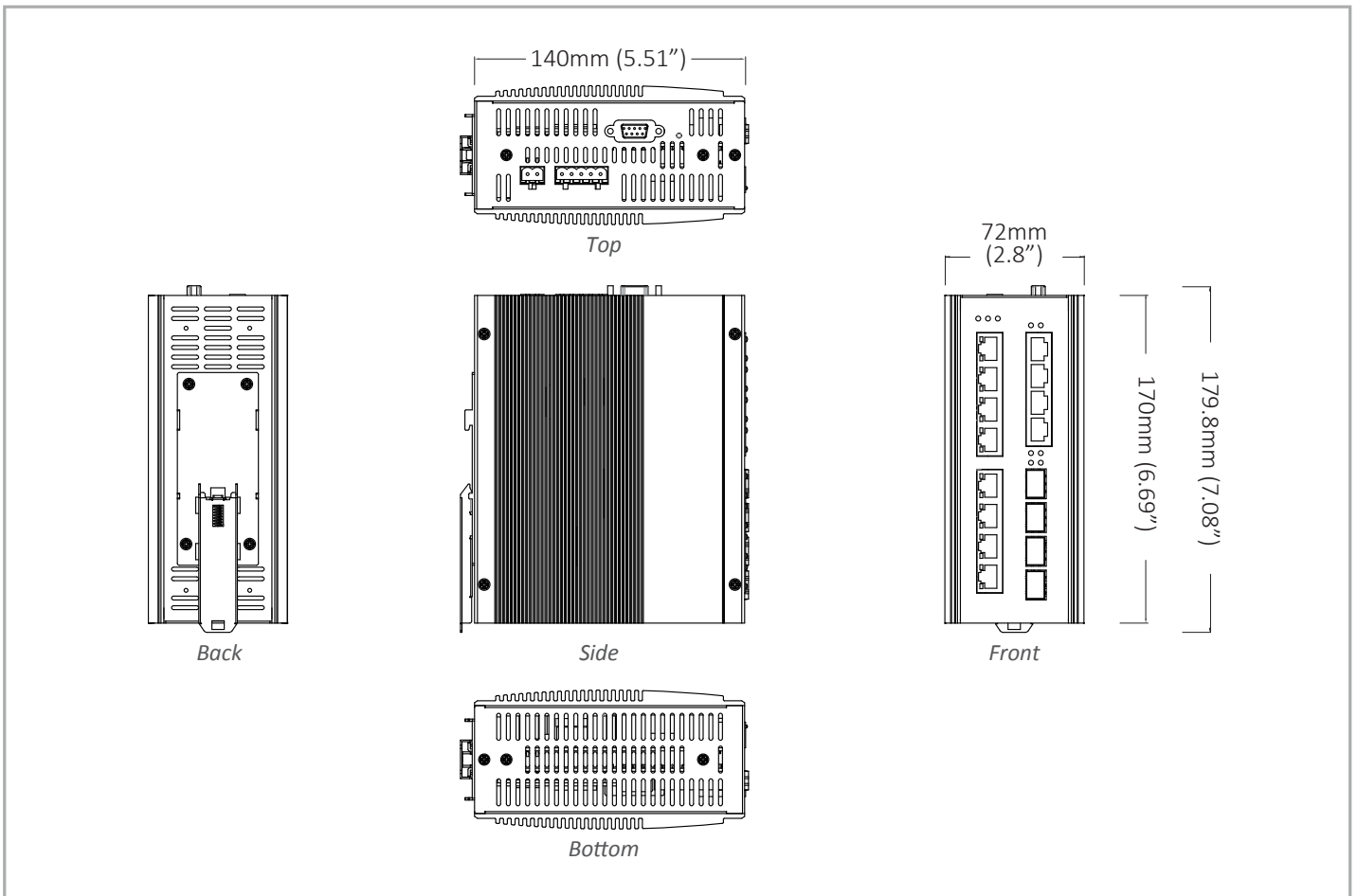
IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

IEC60068-2-32 Ed (Free fall)

Application Diagram

CONTROL CENTER

α(Alpha)-Ring

OUTDOOR

EX78602 Series

60W PoE
PTZ Speed Dome

Fiber-optic

PoE
Ethernet

Fisheye Cameras

Wireless APs

Dimensions

140mm (5.6")

Top

71.4mm
(2.85")

170mm (6.8")

Back

Side

Front

Bottom

Ordering Information

Model

EX78602-01B	6-port 10/100BASE-TX PoE (4 x 30W + 2 x 60W) and 2-port 10/100/1000BASE-T Hardened Managed Ethernet Switch
EX78602-0VB	6-port 10/100BASE-TX PoE (4 x 30W + 2 x 60W) and 2-port Gigabit SFP Hardened Managed Ethernet Switch
EX78602-0YB	6-port 10/100BASE-TX PoE (4 x 30W + 2 x 60W) and 2-port Gigabit Hardened Managed Ethernet Switch

* DIN-Rail mounting kit included

Gigabit Port Options (Y)

1	10/100/1000BASE-TX
3	1000BASE-SX(SC) - 550m
4	1000BASE-SX (SC) - 2Km
5	1000BASE-SX (ST) - 550m
8	1000BASE-SX (ST) - 2Km
A	1000BASE-LX (SC) - 10Km
B	1000BASE-LX (SC) - 20Km
R	1000BASE-BX (SC) WDM - TX: 1310nm/RX: 1550nm - 20Km
S	1000BASE-BX (SC) WDM - TX: 1550nm/RX: 1310nm - 20Km
V	1000BASE SFP (DDM)

Optional Accessories

KP-AA96-480	Panel Mounting Kits
SDR-240-48	240W/5A DIN-Rail 48VDC Industrial Power Supply (for terminal block)

EX78000 Series

Hardened Managed 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 IEEE802.3at 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 SFP options. The IEEE802.3at PoE ports provide up to 30W/port with a total power budget of 180W, 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.

Din rail mountable, the EX78000 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 RS-232 console interfaces. With the hardened specifications, the EX78000 Series is designed to operate at -40°C to 75°C in harsh environments, where high ESD, shock, and vibration may be present.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Versatile PoE Connectivity**
  - 10-port 10/100BASE-TX/FX/BX/SFP plus 2-port Gigabit-TX/SX/LX/SFP
  - Port 1 to 8 supports IEEE802.3af or IEEE802.3at Power over Ethernet

- **Hardened Grade**
  - Wide operating temperature range From -40°C to 75°C (-40°F to 167°F) for extreme environments
  - Fanless and ruggedized housing
  - High shock and electric noise immunity
  - Complies with NEMA TS2 for traffic control equipment

- **Secure Remote Access**
  - IEEE802.1x and RADIUS support

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
- 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
- System log (remote/local)

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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
  - EtherWAN's Alpha-Ring network fault recovery (<15ms)
- 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: 6Gbps
- Packet Buffer Size: 2M
- 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
- IEEE802.3af/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 input:
  Terminal Block: 47 - 57VDC
  DC Jack: 47 - 57VDC

Power Consumption
- Device: Max. 15W (without PoE)
- PoE power budget (depends on power input):
  181.6W Max.

PoE Power Output
- Port 1 to 8 support PoE
- IEEE802.3af: up to 15.4W/port, 47 - 57VDC.
- IEEE802.3at: up to 30W/port, 50 - 57VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Metal Case
- IP30

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

Weight
- 1.7Kg (3.74lbs.)

Installation
- Din-Rail (Top hat type 35mm) or Wall mounting

Interface

Ethernet Port
- 10/100BASE-TX (PoE): 8 or 4 ports
- 100BASE-FX: 0, 2 or 4 ports
- Gigabit: 0, 1 or 2 ports

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power 1, Power 2, Power 3
- Per Port: Link/Activity (Green)
- Per PoE Port: PoE (Orange)

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 ISO9001 facility

Safety

UL508

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
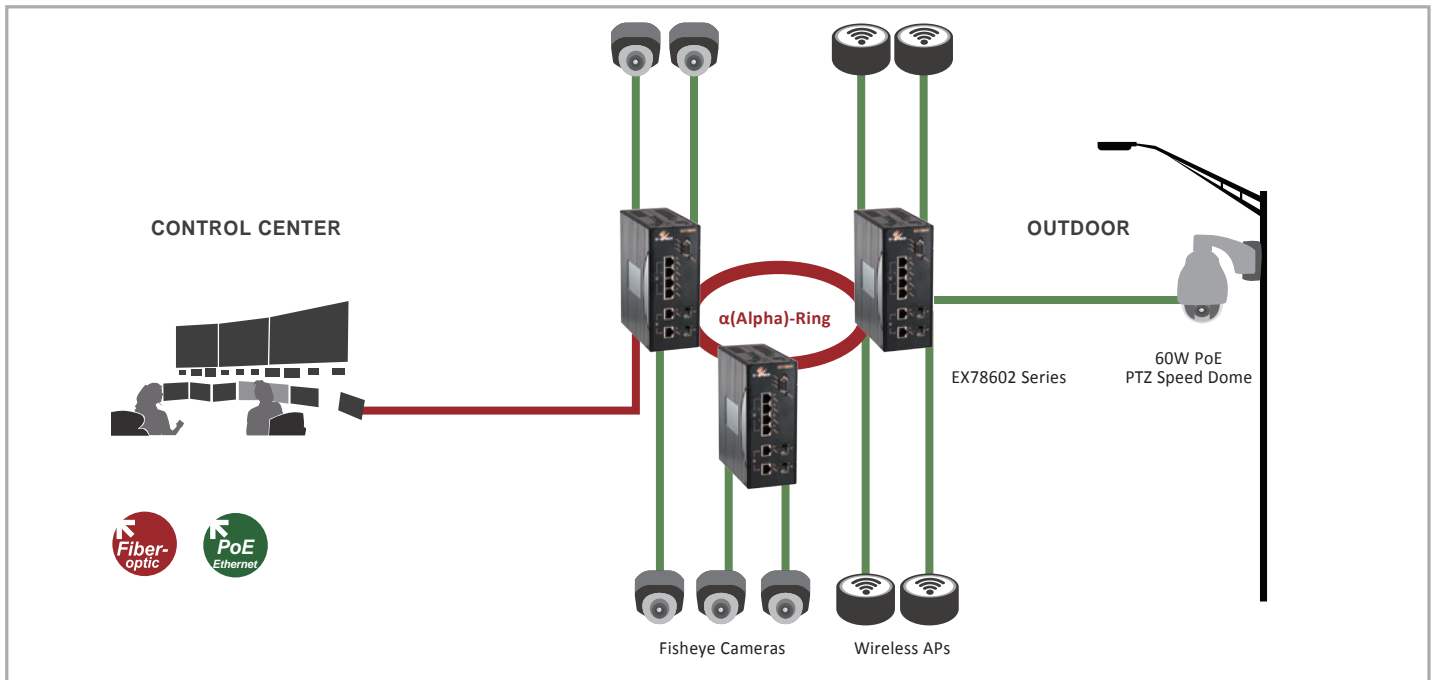- EN61000-4-8 (Magnetic Field Standards)

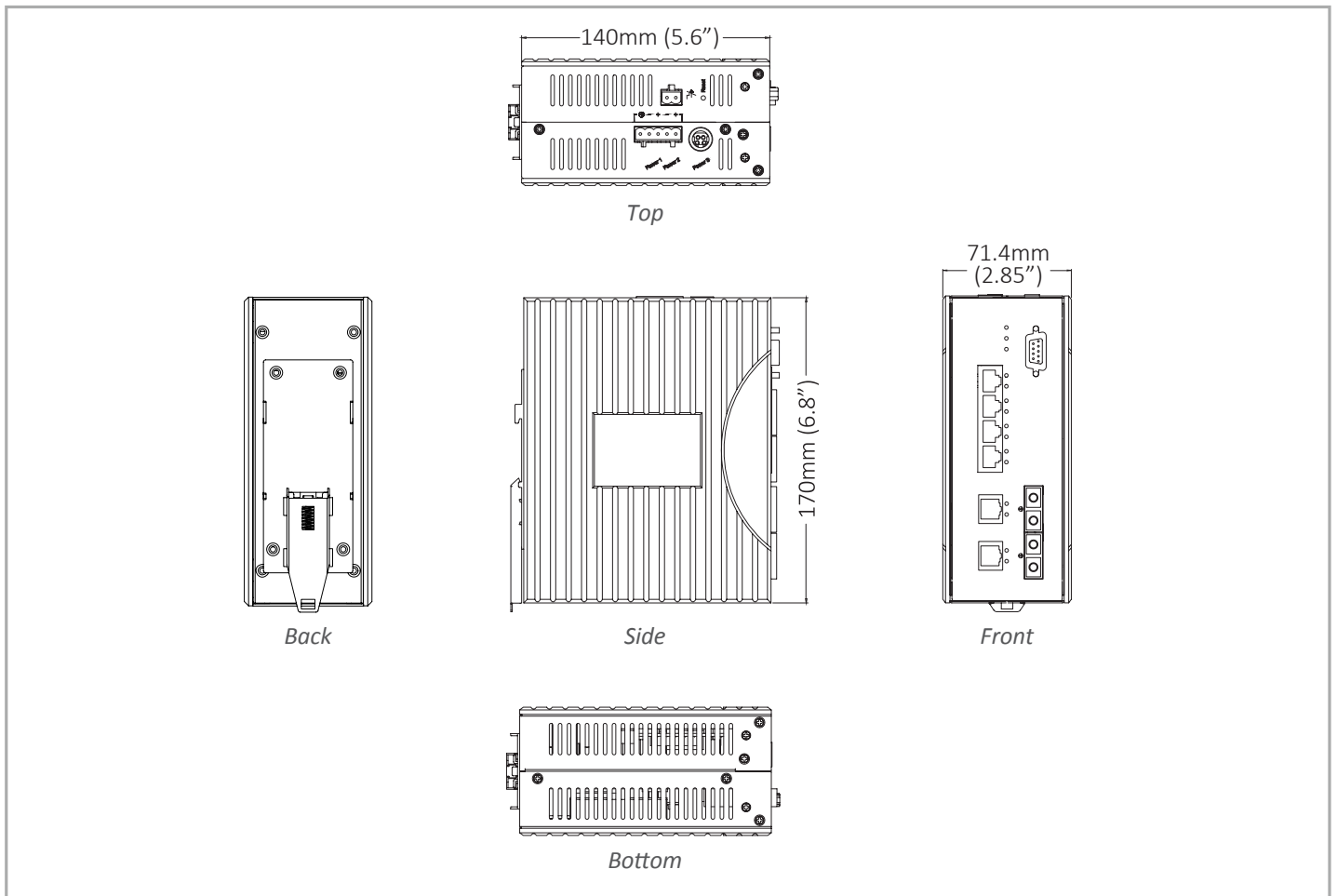**Environmental Test Compliance**

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

IEC60068-2-32 Ed (Free fall)

Industrial Compliance

NEMA TS2

Application Diagram

The EX78000 Series can be DIN-rail mounted in an indoor/outdoor cabinet to connect IEEE802.3af compliant PoE Powered Devices in mission-critical environments.

CONTROL CENTER

α(Alpha)-Ring

EX78000 Series

Fiber-optic

PoE Ethernet

Fisheye Cameras   *Wireless APs*

Dimensions

Top

140mm (5.6")

170mm (6.8")

71.4mm (2.85")

Back   *Side*   *Front*

Bottom

Ordering Information

Model

EX78400-00B-P	4-port 10/100BASE-TX PoE Hardened Managed Ethernet Switch
EX78401-0YB-P	4-port 10/100BASE-TX PoE + 1-port Gigabit Hardened Managed Ethernet Switch
EX78402-0YB-P	4-port 10/100BASE-TX PoE + 2-port Gigabit Hardened Managed Ethernet Switch
EX78420-X0B-P	4-port 10/100BASE-TX PoE + 2-port 100BASE-FX Hardened Managed Ethernet Switch
EX78440-X0B-P	4-port 10/100BASE-TX PoE + 4-port 100BASE-FX Hardened Managed Ethernet Switch
EX78441-XYB-P	4-port 10/100BASE-TX PoE + 4-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch
EX78442-XYB-P	4-port 10/100BASE-TX PoE + 4-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch
EX78800-00B-P	8-port 10/100BASE-TX PoE Hardened Managed Ethernet Switch
EX78801-0YB-P	8-port 10/100BASE-TX PoE + 1-port Gigabit Hardened Managed Ethernet Switch
EX78802-0YB-P	8-port 10/100BASE-TX PoE + 2-port Gigabit Hardened Managed Ethernet Switch
EX78820-X0B-P	8-port 10/100BASE-TX PoE + 2-port 100BASE-FX Hardened Managed Ethernet Switch
EX78821-XYB-P	8-port 10/100BASE-TX PoE + 2-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch
EX78822-XYB-P	8-port 10/100BASE-TX PoE + 2-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch

* Rack mounting kit included

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
F	Single Mode (FC) - 20Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
V	100BASE SFP (DDM)

*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
B	1000BASE-LX (SC) - 20Km
R	1000BASE-BX (SC) WDM-TX:1310nm/RX:1550nm - 20Km
S	1000BASE-BX (SC) WDM-TX:1550nm/RX:1310nm - 20Km
V	1000BASE SFP (DDM)

* More Gigabit options also available upon request.

Ordering Information - continued

PoE Type (P)

T	4 ports IEEE802.3at & 4 ports IEEE802.3af
T6	6 ports IEEE802.3at only without IEEE802.3af on others

*If no alphabet specified, the model has 8 ports IEEE802.3af

Optional Accessories

DD-85-48	85W/1.78A 48VDC Industrial Power Supply (for terminal block)
DR-75-48	75W/1.6A DIN-Rail 48VDC Industrial Power Supply (for terminal block)
DR-120-48	120W/2.5A DIN-Rail 48VDC Industrial Power Supply (for terminal block)
SDR-240-48	240W/5A DIN-Rail 48VDC Industrial Power Supply

EX70900 Series

Hardened Managed 8-port Gigabit Ethernet Switch

Overview

EtherWAN's EX70900 Series provides a Hardened Fully Managed 8-port switching platform combining high performance switching backbone with robust and secure management features required for mission critical and harsh environments where sustained connectivity is crucial.

Mountable on a DIN-Rail, the EX70900 Series is a full Gigabit hardened managed switch, featured with 6 ports of 10/100/1000BASE-TX, in combination with up to two SFP Combo port options.

Users are able to access management features such as; port security, IGMP snooping, VLANs, GARP protocols, LACP to name a few, via web browser, Telnet, SNMP, RMON, TFTP, and RS-232 console interfaces. With its hardened-grade specifications and IEC61850 certifications, the EX70900 Series is capable of operating under high EMI environments at the temperatures ranging from -40°C to 75°C, making it an ideal choice for harsh applications.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Full Gigabit Connectivity**
  ◦ Managed Hardened 8-port Gigabit Ethernet switch with either copper, SC, ST or LC connectors available

- **Intelligent Data Management**
  ◦ Optimize network performance with QoS, VLAN etc.

- **Compliance with IEC61850-3**
  ◦ For installations with high EMS requirements

- **Energy Efficient Ethernet (EEE)**
  ◦ Supports IEEE802.3az standard

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
- 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
- System log (remote/local)

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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
- 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: 16Gbps
- Packet Buffer Size: 1.5M bits
- MAC Address Table: 4K

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3ab 1000BASE-T
- IEEE802.3az EEE
- 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

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 1.5M bits

Processing Type
- Store-and-Forward
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control

Address Table Size
- 4096 MAC addresses

Power

Input
- Redundant power inputs:
  12 - 48VDC (Terminal Block)
  12VDC (DC Jack)

Power Consumption
- 10.2W Max., 0.85A @ 12VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 66mm (W) x 125mm (D) x 145mm (H)
  (2.64" (W) x 4.92" (D) x 5.7" (H))

Weight
- 1.1Kg (2.42lbs.)

Installation
- DIN-Rail (Top hat type35mm) or Wall mounting

Interface

Ethernet Port
- 10/100/1000BASE-TX: 8, 7, or 6 ports
- 1000BASE-SX/LX/SFP: 0, 1, or 2 ports

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit:
  - Power Status (Power 1, Power 2, Power 3)
  - Alarm
- Per Port: Link/Activity

Alarm Contact
- One relay output with current 1A @ 24VDC

Environment

Operating Temperature
- -40°C to 75°C (14°F to 167°F)
  Tested @ -40°C to 85°C(-40°F to 185°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety
UL508

EMI
FCC Part 15B, Class A

EN61000-6-4

EN61000-3-2

EN61000-3-3

EMS
EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance
IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance
IEC61850-3

Application Diagram

Dimensions

Top

66mm (2.64")

125mm (4.92")

145mm (5.71")

Front

Side

Back

Bottom
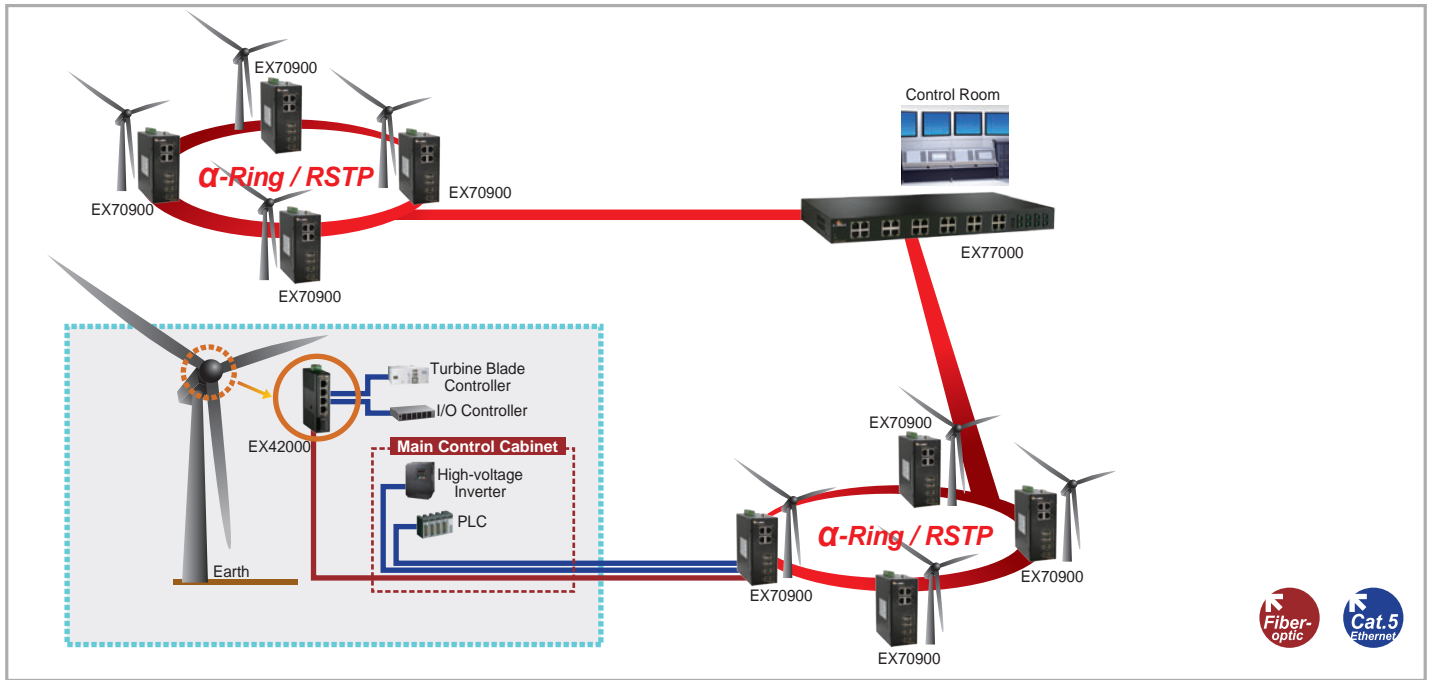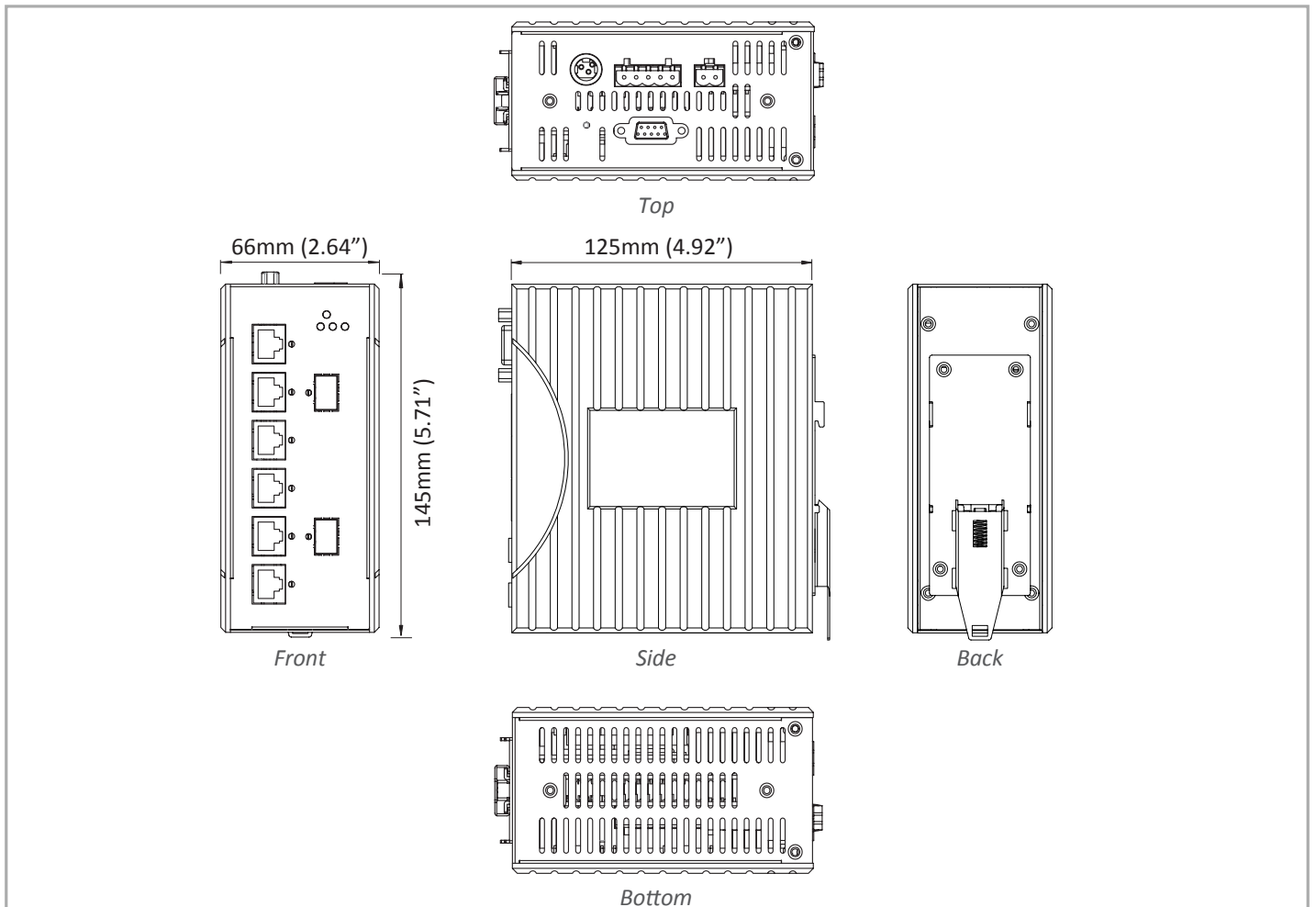
Ordering Information

Model

EX70980-00B	8-Port 10/100/1000BASE-TX Managed Hardened Ethernet Switch
EX70971-0VB	7-Port 10/100/1000BASE-TX + 1-Port Gigabit SFP Hardened Managed Ethernet Switch
EX70962-0VB	6-Port 10/100/1000BASE-TX + 2-Port Gigabit SFP Hardened Managed Ethernet Switch
EX70962-0XB	6-Port 10/100/1000BASE-TX +2-Port Gigabit Fiber Hardened Managed Ethernet Switch

* DIN-Rail mounting kit included

Gigabit Port Options (X)

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

* More Gigabit options are also available upon request

Optional Accessories

DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for Terminal Block) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC Jack in aluminum housing (for DC Jack) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EX77000 Series

Hardened Managed 24-port 10/100BASE and 4-port Gigabit Ethernet Switch with SFP options

Overview

EtherWAN's EX77000 Series provides a Hardened Fully Managed 28-port switching platform combining high performance switching backbone with robust and secure management features required for mission critical and harsh environments where sustained connectivity is crucial.

The EX77000 Series is equipped with twenty-four 10/100BASE Fast Ethernet ports, in combination with up to four Gigabit, Fixed Fiber, or SFP Combo port options. Mountable on a 1U rack, the EX77000 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, VLANs, GARP protocols, LACP, and via web browser, Telnet, SNMP, RMON, TFTP, and RS-232 console interfaces.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Versatile Connectivity**
  - Provides flexibility of 24-port 10/100BASE-TX/FX/BX/SFP plus 4-port Gigabit-TX/SX/LX/BX/SFP

- **Hardened Grade**
  - Wide operating temperature range for extreme environments
  - Fanless and ruggedized housing
  - High shock and electric noise immunity

- **Secure Remote Access**
  - IEEE802.1x, ACL(Access Control List), and RADIUS support

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)
- 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
- System log (remote/local)
- ACL

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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
  - EtherWAN's Alpha-Ring with network fault recovery (<15ms)
- 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 (8 groups, support MAC base)
  - IEEE802.3ad Link Aggregation Control Protocol
- IGMP Snooping
  - IGMP snooping v1/v2/v3

Performance

- Switching Capability: 12.8Gbps
- Packet Buffer Size: 3M bit
- MAC Address Table: 8192

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

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 3M 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
- (T): + / - 48VDC (36 - 75VDC) Internal Universal PSU
- (W): 88 - 370VDC and 90 - 264VAC Internal Universal PSU
- (C): 90 - 264VAC, 50 - 60Hz Internal Universal PSU

Power Consumption
- 42.7W Max.

Protection
- Overload current protection

Mechanical

Casing
- Metal Case
- IP30

Dimensions
- Single Power:
  442mm (W) x 250mm (D) x 44.2mm (H)
  (7.4" (W) x 9.8" (D) x 1.74" (H))
- Redundant Power:
  442mm (W) x 375mm (D) x 44.2mm (H)
  17.4"(W) x 14.7" (D) x 1.74"(H)

Weight
- 6.2Kg (13.7lbs)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 24, 20, 16, 12, 8, 4 or 0 port
- 100BASE-FX: 0, 4, 8, 12, 16, 20 or 24 ports
- 100BASE-SFP: 0 or 24 ports
- 10/100/1000BASE TX or 1000BASE SX/LX: 0, 2 or 4 ports
- Gigabit-SFP Combo: 0 or 4 ports

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power
- Per Port: Link/Activity (Green)
- Per SFP port: Selected (Green)

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 ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

**IEC60068-2-6 Fc (Vibration Resistance)**

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

NEMA TS2

Application Diagram

Exhaust Control System

Fire Detection System

Exhaust Control System

PLC

PLC

EX71000

EX71000

IP Camera System

Speed Display

Emergency Phone

EX71000

Alpha-Ring < 15ms

Fiber-optic

Cat.5 Ethernet

Serial-Cable

The EX77000 utilized in an intelligent tunnel solution

Dimensions

Back

44.2mm (1.74")

250mm (9.8")

442mm (17.4")

Top

Side

Front

Ordering Information

Model

EX77604-0XYZ	24-port 10/100BASE-TX + 4-port Gigabit Managed Ethernet Switch
EX77424-WXYZ	16-port 10/100BASE-TX + 8-port 100BASE-FX + 4-port Gigabit Managed Ethernet Switch
EX77244-WXYZ	8-port 10/100BASE-TX + 16-port 100BASE-FX + 4-port Gigabit Managed Ethernet Switch
EX77064-WXYZ	24-port 100BASE-FX + 4-port Gigabit Managed Ethernet Switch
EX77064-V0VZ	24-port 100BASE-SFP + 4-port Gigabit SFP Combo Managed Ethernet Switch

* Rack mounting kit included

100FX Fiber Options (W)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
F	Single Mode (FC) - 20Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km
V	SFP

Numbers of fixed Gigabit Fiber (X)

0	None
1	One Gigabit Fiber Port
2	Two Gigabit Fiber Ports
3	Three Gigabit Fiber Ports
4	Four Gigabit Fiber Ports

Gigabit Port Options (Y)

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

Ordering Information - continued

Power Input Interface (Z)

T	± 48VDC (Terminal Block)
W	88 - 370VDC and 90 - 264VAC (Terminal Block)
C	90 - 264VAC (AC Inlet)
TR	± 48VDC Redundant (Terminal Block)
WR	88 - 370VDC and 90 - 264VAC Redundant (Terminal Block)
CR	90 - 264VAC Redundant (AC Inlet)

EX87000 Series

IEC61850-3/IEEE1613 Hardened Managed 24-port 10/100BASE
and 4-port Gigabit Ethernet Switch with SFP options
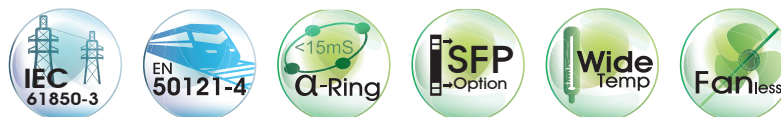
Overview

EtherWAN's EX87000 Series provides a Hardened Fully Managed 28-port switching platform combining high performance switching backbone with robust and secure management features required for mission critical and harsh environments where sustained connectivity is crucial.

The EX87000 Series is equipped with twenty-four 10/100BASE Fast Ethernet ports, in combination with up to four Gigabit, Fixed Fiber, or SFP Combo port options. Mountable on a 1U rack, the EX87000 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, VLANs, GARP protocols, LACP, and GOOSE messaging to name a few, via web browser, Telnet, SNMP, RMON, TFTP, and RS-232 console interfaces. With its hardened-grade specifications and IEC61850 & IEEE1613 certifications, the EX87000 Series is capable of operating under high EMI environments at the temperatures ranging from -40°C to 75°C, making it an ideal choice for harsh applications.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Versatile Connectivity**
  - Provides flexibility of 24-port 10/100BASE-TX/FX/BX/SFP plus 4-port Gigabit-TX/SX/LX/BX/SFP

- **Hardened Grade**
  - Wide operating temperature range for extreme environments
  - Fanless and ruggedized housing
  - High shock and electric noise immunity

- **KEMA-Certified**
  - IEC61850-3 and IEEE1613 performance tests conducted by KEMA

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)
- 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
- ACL

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 Protocol
    - 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 (8 groups, support MAC base)
    - IEEE802.3ad Link Aggregation Control Protocol
- IGMP Snooping
    - IGMP snooping v1/v2/v3

Performance

- Switching Capability: 12.8Gbps
- Packet Buffer Size: 3M bits
- MAC Address Table: 4K

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

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 3M 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
- (T): + / - 48VDC (36 - 75VDC) Internal Universal PSU
- (W): 88 - 370VDC and 90 - 264VAC Internal Universal PSU
- (C): 90 - 264VAC, 50 - 60Hz Internal Universal PSU

Power Consumption
- 42.7W Max.

Protection
- Overload current protection

Mechanical

Casing
- Metal Case
- IP30

Dimensions
- Single Power:
  442mm (W) x 284mm (D) x 44.2mm (H);
  17.4" (W) x 11.1" (D) x 1.74" (H)
- Redundant Power:
  442mm (W) x 375mm (D) x 44.2mm (H);
  17.4"(W) x 14.7" (D) x 1.74"(H)

Weight
- Single Power: 5.1Kg (11.2lbs.)
- Redundant Power: 6.2Kg (13.7lbs.)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 24, 16, 8 or 0 port
- 100BASE-FX: 0, 4, 8, 12, 16, 20 or 24 ports
- Gigabit: 0, 2 or 4 ports

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power
- Per Port: Link/Activity (Green)
- Per SFP slot: Selected (Green)

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 ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)
- IEC61000-4-10 (Oscillatory wave magnetic field test)
- IEC61000-4-16 (Power frequency immunity test)
- IEC61000-4-18 (Oscillatory wave immunity test)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

IEC61850-3 / IEEE1613

EN50121-4

IEC60870-2-1

Application Diagram

The EX87000 Series in a renewable energy solution

Dimension

Back

44.2mm (1.74")

284mm (11.1")

442mm (17.4")

Top

Side

Front
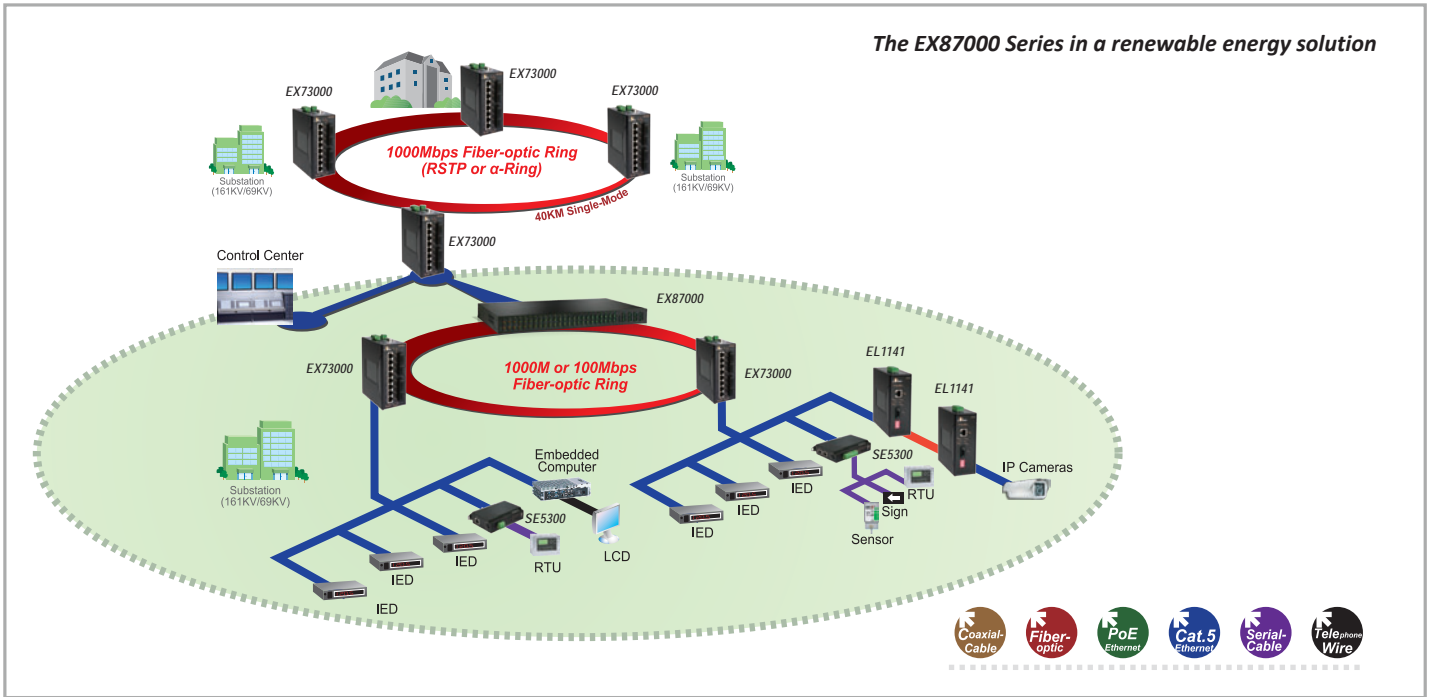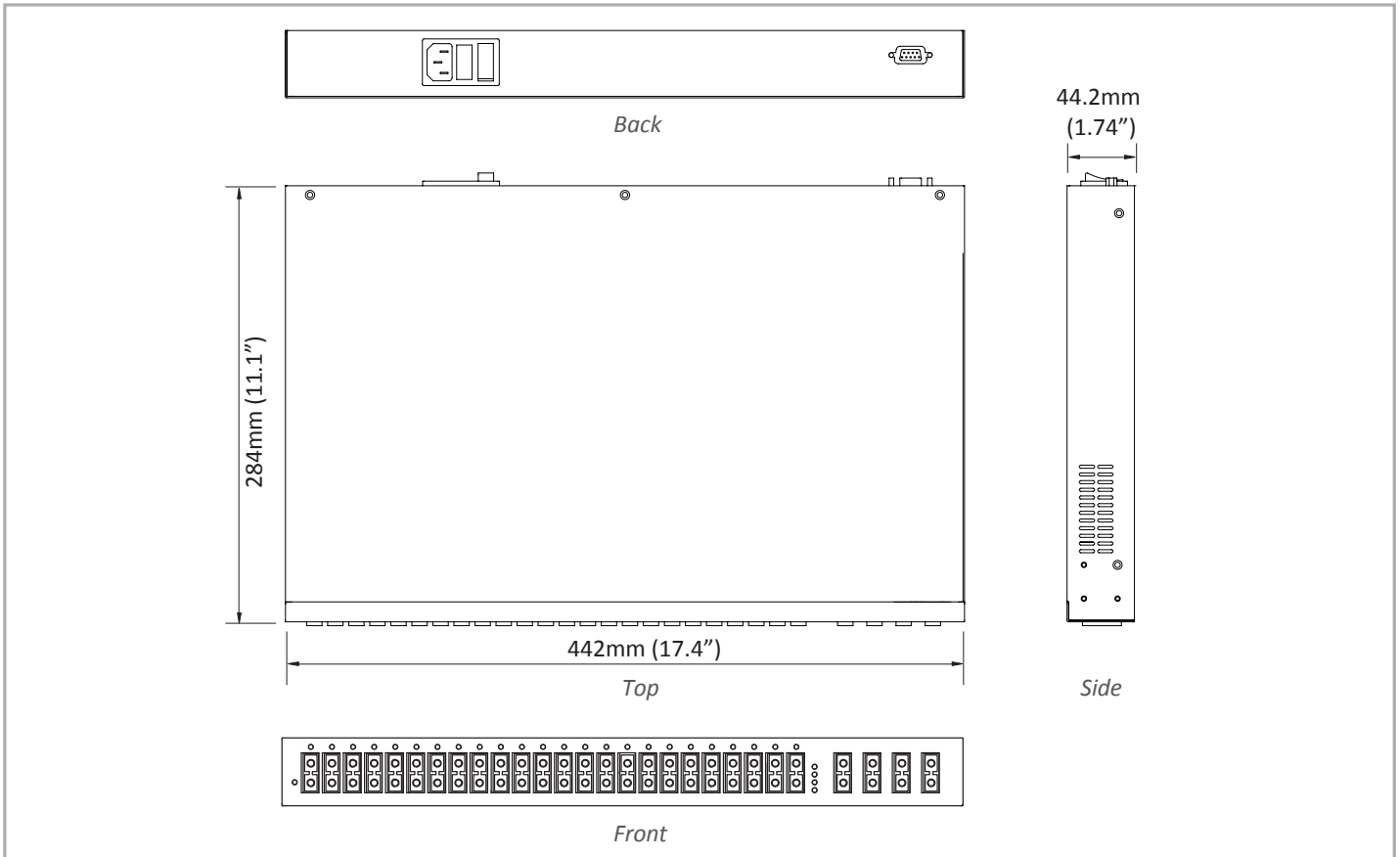
Ordering Information

Model

EX87604-0XYZ	Hardened Managed 24-port 10/100BASE-TX + 4-port Gigabit Ethernet Switch
EX87424-WXYZ	Hardened Managed 16-port 10/100BASE-TX + 8-port 100BASE-FX + 4-port Gigabit Ethernet Switch
EX87412-WXYZ	Hardened Managed 16-port 10/100BASE-TX + 4-port 100BASE-FX + 4-port Gigabit Ethernet Switch
EX87244-WXYZ	Hardened Managed 8-port 10/100BASE-TX + 16-port 100BASE-FX + 4-port Gigabit Ethernet Switch
EX87064-WXYZ	Hardened Managed 24-port 100BASE-FX + 4-port Gigabit Ethernet Switch
EX87064-V0VZ	Hardened Managed 24-port 100BASE-SFP + 4-port Gigabit SFP Combo Ethernet Switch

* Rack mounting kit included

100FX Fiber Options (W)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
F	Single Mode (FC) - 20Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km
V	100BASE SFP

*More 100FX Fiber options also available upon request.

Numbers of fixed Gigabit Fiber (X)

0	None
1	One Gigabit Fiber Port
2	Two Gigabit Fiber Ports
3	Three Gigabit Fiber Ports
4	Four Gigabit Fiber Ports

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
B	1000BASE-LX (SC) - 20Km
R	1000BASE-BX (SC) WDM-TX:1310nm/RX:1550nm - 20Km
S	1000BASE-BX (SC) WDM-TX:1550nm/RX:1310nm - 20Km
V	4-port 1000BASE SFP Combo with 10/100/1000BASE-TX

* More Gigabit options also available upon request

Ordering Information - continued

Power Input Interface (Z)

T	± 48VDC (Terminal Block)
W	88 - 370VDC and 90 - 264VAC (Terminal Block)
C	90 - 264VAC (AC Inlet)
TR	± 48VDC Redundant (Terminal Block)
WR	88 - 370VDC and 90 - 264VAC Redundant (Terminal Block)
CR	90 - 264VAC Redundant (AC Inlet)

EX89000 Series

IEC61850-3/IEEE1613 Modulized Hardened Managed 24-port 10/100BASE and 4-port Gigabit Ethernet Switch with SFP options

Overview

EtherWAN's EX89000 Series provides a Hardened Fully Managed 28-port switching platform combining high performance switching backbone with robust and secure management features required for mission critical and harsh environments where sustained connectivity is crucial.

Highly modulized, the EX89000 switch supports up to 28 electrical and/or optical interfaces with data transfer rates of 10/100 Mbits and up to four Gigabit, Fixed Fiber, or SFP Combo port options. Mountable on a 1U rack, the EX89000 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, VLANs, GARP protocols, LACP, and GOOSE messaging to name a few, via web browser, Telnet, SNMP, RMON, TFTP, and RS-232 console interfaces. With its hardened-grade specifications and IEC61850 & IEEE1613 certifications, the EX89000 Series is capable of operating under high EMI environments at the temperatures ranging from -40°C to 75°C, making it an ideal choice for harsh applications.

EtherWAN—"When Connectivity is Crucial."

Spotlight

- **Versatile Connectivity**
  - Modulized 24-port 10/100BASE-TX/FX/BX and 4-port Gigabit-TX/SX/LX/BX/SFP

- **Hardened Grade**
  - Wide operating temperature range for extreme environments
  - Fanless and ruggedized housing
  - High shock and electric noise immunity

- **IEC61850-3 & IEEE1613 Certified**
  - Meets the standards for operating in power substation zones

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)
- Port mirroring: TX/RX and both
- NTP (Network Time Protocol) time synchronization

Security

- MAC Address by port security
- Enable/disable port
- Storm control (broadcast and multicast types)
- IEEE802.1x LAN access control
- Remote authentication through RADIUS

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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
  - Supports EtherWAN's Alpha-Ring topology for less than 15ms fault recovery time
- 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 (8 groups, support MAC base)
  - IEEE802.3ad Link Aggregation Control Protocol
- IGMP Snooping
  - IGMP snooping v1/v2/v3

Performance

- Switching Capability: 12.8Gbps
- Packet Buffer Size: 3M bits
- MAC Address Table: 8192

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

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 3M 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
- (T) : ±48VDC (36–75VDC) Internal Universal PSU
- (W) : 88–370VDC and 90–264VAC Internal Universal PSU
- (C) : 90–264VAC, 50–60Hz Internal Universal PSU
- (TR) : ±48VDC Redundant (Terminal Block)
- (WR) : 88–370VDC and 90-264VAC Redundant (Terminal Block)
- (CR): 90–264VAC Redundant (AC Inlet)

Power Consumption
- 42.7W Max.

Protection
- Overload Current Protection

Mechanical

Casing
- Metal Case
- IP30

Dimensions
- Single Power:
  442mm (W) x343mm (D) x 44.2mm (H)
  (17.4" (W) x 13.5"(D) x 1.74" (H))
- Redundant Power:
  442mm (W) x404mm (D) x 44.2mm (H)
  (17.4" (W) x 15.9"(D) x 1.74" (H))

Weight
- Single Power: 4.5Kg (9.9lbs.)
- Redundant Power: 4.6 kg (10.1 lbs.)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 24, 16, 8 or 0 port
- 100BASE-FX: 0 to 18 ports
- Gigabit: 0, 2 or 4 ports

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power
- Per Port: Link/Activity (Green)
- Per SFP slot: Selected/Unselected (Green)

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 ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)
- IEC61000-4-10 (Oscillatory wave magnetic field test)
- IEC61000-4-16 (Power frequency immunity test)
- IEC61000-4-18 (Oscillatory wave immunity test)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

IEEE61850-3 / IEEE1613

EN50121-4

Application Diagram

The EX89000 unit utilized in this renewable energy solution acts as a core switch to provide fober connectivity.

Dimensions

Back

15.7mm (0.62")

343mm (13.5")

442mm (17.4")

Top

Side

35.8mm (14.09")

113.4mm (4.46")

90.4mm (3.6")

44.2mm (17.74")

Front

10/100M Module   *1000M Module*

Ordering Information

Model

EX89000-00Z	Rack mount chassis with integrated power supply for four M89000 modules

* Rack mounting kit included

Modules for EX89000 Series

Model	Description	Slot 1	Slot 2	Slot 3	Slot 4
M89800-000	8-Port 10/100BASE TX	√	√	√	
M89620-W00	6-Port 10/100BASE TX + 2-Port 100BASE FX	√	√	√	
M89420-W00	4-Port 10/100BASE TX + 2-Port 100BASE FX	√	√	√	
M89060-W00	6-Port 10/100BASE FX	√	√	√	
M89240-W00	2-Port 10/100BASE TX + 4-Port 100BASE FX	√	√	√	
M89440-W00	4-Port 10/100BASE TX + 4-Port 100BASE FX	√	√	√	
M89004-0XY	4-Port Gigabit				√

100FX Fiber Options (W)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
F	Single Mode (FC) - 20Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

*More 100FX Fiber options also available upon request.

Numbers of fixed Gigabit Fiber (X)

0	None
4	Four Gigabit Fiber Ports

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
B	1000BASE-LX (SC) - 20Km
R	1000BASE-BX (SC) WDM-TX:1310nm/RX: 1550nm - 20Km
S	1000BASE-BX (SC) WDM-TX:1550nm/RX: 1310nm - 20Km
V	4-port 1000BASE SFP Combo with 10/100/1000BASE-TX

* More Gigabit options also available upon request.

Power Input Interface (Z)

T	±48VDC (Terminal Block)
W	88 - 370VDC and 90 - 264VAC (Terminal Block)
C	90 - 264VAC Redundant (AC Inlet)
TR	±48VDC Redundant (Terminal Block)
WR	88 - 370VDC and 90 - 264VAC Redundant
CR	90 - 264VAC Redundant (AC Inlet)

EX75000 Series

Hardened Managed 24-port 10/100BASE-TX + 4-port Gigabit Ethernet PoE Switch

Overview

EtherWAN's EX75000 Series provides a hardened 28-port switching platform supporting IEEE802.3at Power over Ethernet, high performance switching with robust management features required for mission-critical and harsh environments where sustained connectivity is crucial.

The EX75000 Series is equipped with 24 10/100BASE-TX PoE ports, in combination with two Gigabit PoE ports and two Gigabit SX/LX/BX/WDM Fiber ports with SFP options.

The IEEE802.3at PoE ports provide up to 30W/port with a total power budget of 420W, 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.

1U rack mountable, the EX75000 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 RS-232 console interfaces. With the hardened specifications, the EX75000 Series is designed to operate at -40°C to 75°C in harsh environments, where high ESD, shock, and vibration may be present.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **High-Density PoE Switch**
  - Up to 26 IEEE802.3at PoE ports
  - 4 Gigabit (SX/LX/SFP) ports for high-bandwidth communication

- **Intelligent Data and Power Management**
  - Optimize network performance with QoS, VLAN and PoE scheduling, etc.
  - Network redundancy secured with EtherWAN's Alpha-Ring network fault recovery time < 15ms

- **Secure Remote Access**
  - IEEE802.1x, ACL (Access Control List), and RADIUS support

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)
- Port mirroring: TX/RX and both
- SFP transceivers support Digital Diagnostics Monitoring (DDM)
- 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
- ACL

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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
  - EtherWAN's Alpha-Ring with network fault recovery (<15ms)
- 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 (8 groups, support MAC base)
  - IEEE802.3ad Link Aggregation Control Protocol
- IGMP Snooping
  - IGMP snooping v1/v2/v3

Performance

- Switching Capability: 12.8Gbps
- Packet Buffer Size: 3M bits
- MAC Address Table: 8K
- Jumbo frame: 2048 bytes

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
- 3M 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 Voltage
- Terminal Block: 55 (48 to 57VDC)

Power Consumption
- Max. 30W (without PoE)
- PoE power budget: 420W (depends on power input)
  Port 01 to Port 08, 10/100 PoE ports: 120W
  Port 09 to Port 16, 10/100 PoE ports: 120W
  Port 17 to Port 24, 10/100 PoE ports: 120W
  Port 25 to Port 26, 10/100/1000 PoE ports: 60W

Protection
- Overload current protection

Mechanical

Casing
- Metal Case
- IP30

Dimensions
- 442mm (W) x 343mm (D) x 44.2mm (H)
  (17.4" (W) x 13.5" (D) x 1.74" (H))

Weight
- 5.15Kg (11.35lbs.)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 24 ports
- Gigabit: 4 ports

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power (Green), Alarm (Red)
- Per Port: Link/Activity (Green)

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 ISO9001 facility

EMI

FCC Part 15B, Class A

VCCI Class A

EN61000-6-4

EN55022

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6(Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

IEC60068-2-32 Ed (Free fall)

Application Diagram

The EX75000 Series can be installed in an indoor/outdoor rack to connect IEEE802.3at compliant PoE Powered Devices in mission-critical environments.

Control Center

SwA2   SwB2   *Alpha-Ring*

Ring-Coupling

EX75000 Series

Alpha-Ring

SwA1   SwB1

EX75000 Series

Fisheye PoE IP Cameras

PoE WAP

PoE WAP

PoE PTZ Speed Dome

Fiber-optic   PoE Ethernet   Cat.5 Ethernet

Dimensions

343mm (13.5")

442mm (17.4")
Top

44.2mm (1.74")
Side

Back

Front

Ordering Information

Model

EX75604-0XYGT	24-port 10/100BASE-TX PoE + 2-port 10/100/1000BASE-T PoE + 2-port 1000BASE-T/SX/LX Hardened Managed Ethernet Switch
EX75604-04VGT	24-port 10/100BASE-TX PoE + 4-port 1000BASE SFP Hardened Managed Ethernet Switch

* Rack mounting kit included

Number of Fixed Gigabit Fibers (X)

0	None
2	Two Gigabit Fiber ports
4	Four Gigabit Fiber ports

Gigabit Port Options (Y)

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

Optional Accessories

SDR-480-48	480W/10A DIN-Rail Industrial Power Supply (for terminal block)

EX76000 Series

Hardened Managed 16-port 10/100BASE PoE with 2-port Gigabit combo Ethernet Switch

Overview

EtherWAN's EX76000 Series provides a hardened 18-port switching platform supporting IEEE802.3af/at Power over Ethernet, high performance switching with robust management features required for mission-critical and harsh environments where sustained connectivity is crucial.

The EX76000 Series is equipped with 16 10/100BASE-TX PoE ports, in combination with two Gigabit SX/LX/BX/WDM combo port options. The IEEE802.3af/at PoE ports provide up to 15.4W/30W per port with a total power budget of 246W/480W, 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.

1U rack mountable, the EX76000 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 RS-232 console interfaces. With the hardened specifications, the EX76000 Series is designed to operate at -40°C to 75°C in harsh environments, where high ESD, shock, and vibration may be present.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **PoE Connectivity**
    - Sixteen 10/100BASE IEEE802.3af/at Power over Ethernet ports
    - Two Gigabit-SX/LX/BX combo ports

- **Hardened Grade**
    - Wide operating temperature range from -40°C to 75°C (-40°F to 167°F) for extreme environments
    - Fanless and ruggedized housing
    - High shock and electric noise immunity
    - Complies with UL508 safety requirements for industrial control devices

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
- System log (remote/local)

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 Protocol
    - IEEE802.1D Spanning Tree Protocol (STP)
    - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
    - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
    - Supports EtherWAN's Alpha-Ring topology for less than 15ms fault recovery time
- 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: 7.2Gbps
- Packet Buffer Size: 2M bits
- MAC Address Table: 8192

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
- IEEE802.3af/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:
  Terminal Block: 47 - 55VDC (IEEE802.3af version)
  Terminal Block: 52 - 57VDC (IEEE802.3at version)

Power Consumption
- Max. 12W (without PoE)
- PoE power budget (depends on power input):
  246.4W (IEEE802.3af version)
  480W Max. (IEEE802.3at version)

PoE Power Output
- IEEE802.3af: up to 15.4W/port
- IEEE802.3at: up to 30W/port

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Metal Case
- IP30

Dimensions
- 442mm (W) x 205mm (D) x 44mm (H)
  17.40" (W) x 8.07" (D) x 1.73" (H)

Weight
- 3.5Kg (7.7lbs.)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 16, 12 or 8 ports
- 100BASE-FX: 0, 2 or 4 ports
- Gigabit: 0, 1 or 2 ports

Console Port
- Port: One DB9 RS-232 port

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

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 ISO9001 facility

Safety

UL508

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Application Diagram

The EX76000 Series can be installed in an indoor/outdoor rack to connect with IEEE802.3af/at compliant PoE Powered Devices in mission-critical environments.

Control Center

SwA2

SwB2

Ring-Coupling

Alpha-Ring

Alpha-Ring

SwA1

SwB1

Fisheye PoE IP Cameras

EX76000 Series

PoE WAP

PoE WAP

Fiber-optic

PoE Ethernet

Cat.5 Ethernet

Dimensions

Back

205mm (8.07")

Top

Side

44mm (1.73")

442mm (17.4")

Front
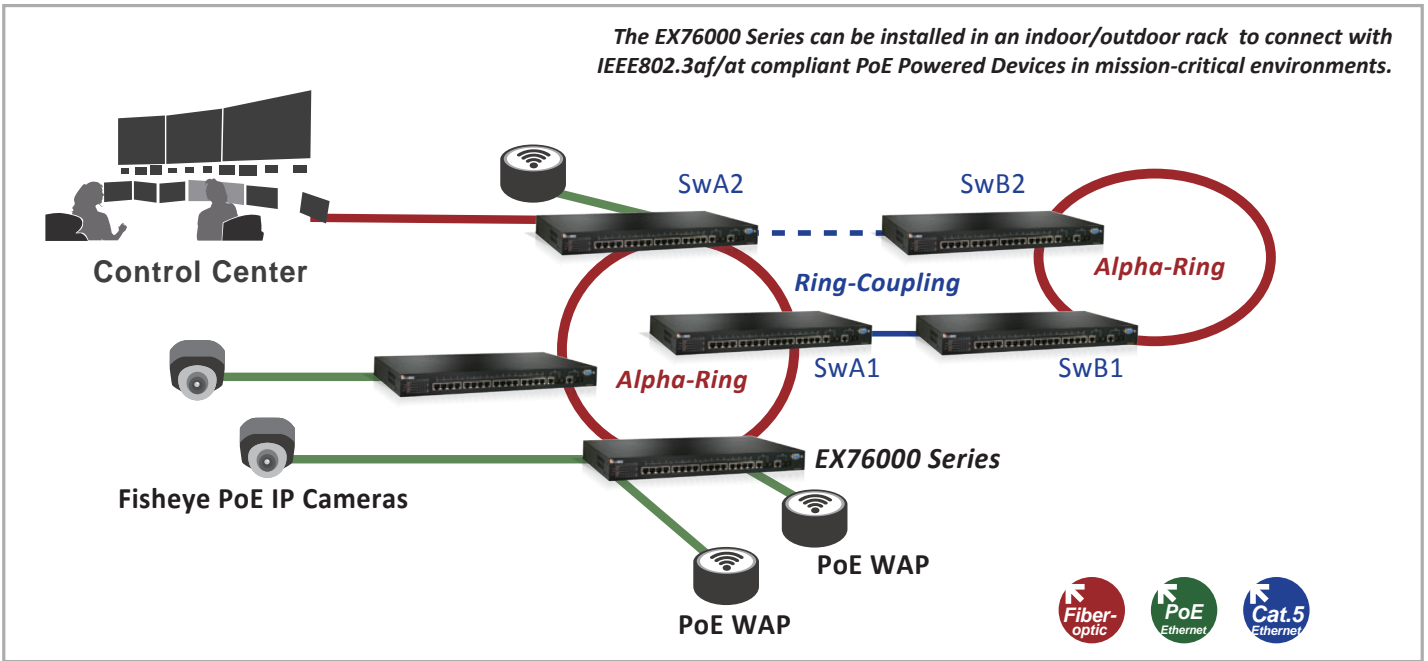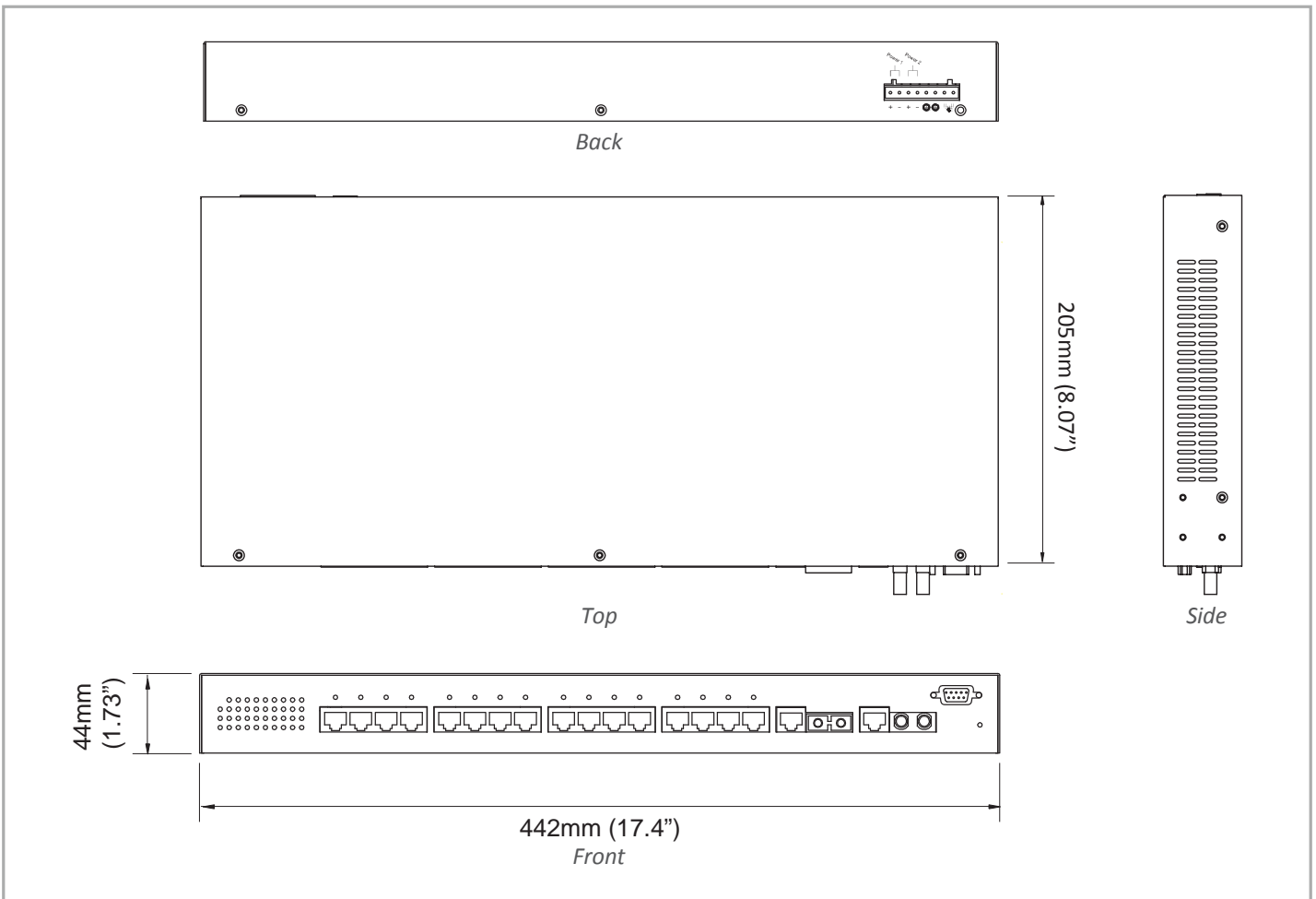
Ordering Information

Model

EX76400-00TP	16-port 10/100BASE-TX PoE Hardened Managed Ethernet Switch
EX76401-0YTP	16-port 10/100BASE-TX PoE + 1-port combo Gigabit Hardened Managed Ethernet Switch
EX76402-0YTP	16-port 10/100BASE-TX PoE + 2-port combo Gigabit Hardened Managed Ethernet Switch
EX76300-00TP	12-port 10/100BASE-TX PoE Hardened Managed Ethernet Switch
EX76301-0YTP	12-port 10/100BASE-TX PoE + 1-port combo Gigabit Hardened Managed Ethernet Switch
EX76302-0YTP	12-port 10/100BASE-TX PoE + 2-port combo Gigabit Hardened Managed Ethernet Switch
EX76320-X0TP	12-port 10/100BASE-TX PoE + 2-port 100BASE-FX Hardened Managed Ethernet Switch
EX76321-XYTP	12-port 10/100BASE-TX PoE + 2-port 100BASE-FX + 1-port combo Gigabit Hardened Managed Ethernet Switch
EX76322-XYTP	12-port 10/100BASE-TX PoE + 2-port 100BASE-FX + 2-port combo Gigabit Hardened Managed Ethernet Switch
EX76200-00TP	8-port 10/100BASE-TX PoE Hardened Managed Ethernet Switch
EX76201-0YTP	8-port 10/100BASE-TX PoE + 1-port combo Gigabit Hardened Managed Ethernet Switch
EX76202-0YTP	8-port 10/100BASE-TX PoE + 2-port combo Gigabit Hardened Managed Ethernet Switch
EX76220-X0TP	8-port 10/100BASE-TX PoE + 2-port 100BASE-FX Hardened Managed Ethernet Switch
EX76221-XYTP	8-port 10/100BASE-TX PoE + 2-port 100BASE-FX + 1-port combo Gigabit Hardened Managed Ethernet Switch
EX76222-XYTP	8-port 10/100BASE-TX PoE + 2-port 100BASE-FX + 2-port combo Gigabit Hardened Managed Ethernet Switch
EX76240-X0TP	8-port 10/100BASE-TX PoE + 4-port 100BASE-FX Hardened Managed Ethernet Switch
EX76241-XYTP	8-port 10/100BASE-TX PoE + 4-port 100BASE-FX + 1-port combo Gigabit Hardened Managed Ethernet Switch
EX76242-XYTP	8-port 10/100BASE-TX PoE + 4-port 100BASE-FX + 2-port combo Gigabit Hardened Managed Ethernet Switch

* Rack mounting kit included

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

*More 100FX Fiber options also available upon request.

Ordering Information - continued

Gigabit Port Options (Y)

1	10/100/1000BASE-TX (No Gigabit Fiber port supported)
3	Combo port: 10/100/1000BASE-TX with 1000BASE-SX(SC) - 550m
4	Combo port: 10/100/1000BASE-TX with 1000BASE-SX (SC) - 2Km
5	Combo port: 10/100/1000BASE-TX with 1000BASE-SX (ST) - 550m
A	Combo port: 10/100/1000BASE-TX with 1000BASE-LX (SC) - 10Km
B	Combo port: 10/100/1000BASE-TX with 1000BASE-LX (SC) - 20Km
R	Combo port: 10/100/1000BASE-TX with 1000BASE-BX (SC) WDM-TX:1310nm/RX:1550nm - 20Km
S	Combo port: 10/100/1000BASE-TX with 1000BASE-BX (SC) WDM-TX:1550nm/RX:1310nm - 20Km

* More Gigabit options also available upon request.

PoE Type (P)

T	16 ports of IEEE802.3at

* If no alphabet specified, the model has 16 ports of IEEE802.3af

Optional Accessories

DR-120-48	120W/2.5A DIN-Rail 48VDC industrial power supply
SDR-240-48	240W/5A DIN-rail 48VDC industrial power supply
SDR-480-48	480W/10A DIN-Rail 48VDC industrial power supply

EX83000 Series

IEC61850/IEEE1613 Managed Hardened 16-port 10/100BASE with 2-port Gigabit combo Ethernet Switch

Overview

EtherWAN's EX83000 Series provides a Hardened Fully Managed 18-port switching platform combining high performance switching backbone with robust and secure management features required for mission critical and harsh environments where sustained connectivity is crucial.

The EX83000 Series is equipped with Sixteen 10/100BASE Fast Ethernet ports, in combination with up to Two Gigabit, Fixed Fiber, or SFP Combo port options. Mountable on a DIN-rail. The EX83000 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, VLANs, GARP protocols, LACP, and GOOSE messaging to name a few, via web browser, Telnet, SNMP, RMON, TFTP, and RS-232 console interfaces. With its hardened-grade specifications and IEC61850 & IEEE1613 certifications, the EX83000 Series is capable of operating under high EMI environments at the temperatures ranging from -40°C to 75°C, making it an ideal choice for harsh applications.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Hardened Grade**
  - Wide operating temperature range from -40°C to 75°C (-40°F to 167°F) for extreme environments
  - Fanless and ruggedized housing
  - High shock and electric noise immunity
  - IEC61850/IEEE1613 compliant for applications in power substation zones

- **Versatile Connectivity**
  - Provides 16-port 10/100BASE-TX/FX/BX/SFP plus 2-port Gigabit-SX/LX/BX/SFP combo

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
- System log (remote/local)

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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
  - EtherWAN's Alpha-Ring network fault recovery (<15ms)
- 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: 7.2Gbps
- Packet Buffer Size: 2M bits
- MAC Address Table: 8192

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

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 Voltage
- 12 - 48VDC (Terminal Block)
- 12VDC (DC Jack)

Power Consumption
- 15W Max. 1.25A @ 12VDC, 0.625A @ 24VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 84mm (W) x 125mm (D) x145mm (H)
  3.3" (W) x 4.92" (D) x 5.71" (H)

Weight
- 1.4Kg (3.08lbs.)

Installation
- DIN-Rail (Top hat type 35mm) or Wall mounting

Interface

Ethernet Port
- 10/100BASE-TX: 16, 12 or 8 ports
- 100BASE-FX: 0, 1, 2 or 4 ports
- Gigabit: 0, 1 or 2 ports

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power 1, Power 2, Power 3
- Per Port: Link/Activity
  (Green: Copper, Orange: Fiber)

Alarm Contact
- One relay output with current 1A @ 24VDC

Environment

Operating Temperature
- -40°C to 75°C (-40°F to 167°F)
  Tested @ -40°C to 80°C (-40°F to 176°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 ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN61000-3-2

EN61000-3-3

EN55022

EMS

EEN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)
- IEC61000-4-10 (Oscillatory wave magnetic field test)
- IEC61000-4-16 (Power frequency immunity test)
- IEC61000-4-18 (Oscillatory wave immunity test)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

IEEE61850-3 / IEEE1613

EN50121-4

NEMA TS2

Application Diagram

The EX83000 Series is deployed beside power substations to provide high EMS operation.

Dimensions

Top

84mm (3.3")

125mm (4.92")

84mm (3.3")

145mm (5.71")

Back

Side

Front

Bottom

Ordering Information

Model

EX83400-00B	16-port 10/100BASE-TX Hardened Managed Ethernet Switch
EX83401-0YB	16-port 10/100BASE-TX + 1-port Gigabit Hardened Managed Ethernet Switch
EX83402-0YB	16-port 10/100BASE-TX + 2-port Gigabit Hardened Managed Ethernet Switch
EX83310-X0B	12-port 10/100BASE-TX + 1-port 100BASE-FX Hardened Managed Ethernet Switch
EX83311-XYB	12-port 10/100BASE-TX + 1-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch
EX83312-XYB	12-port 10/100BASE-TX + 1-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch
EX83320-X0B	12-port 10/100BASE-TX + 2-port 100BASE-FX Hardened Managed Ethernet Switch
EX83321-XYB	12-port 10/100BASE-TX + 2-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch
EX83322-XYB	12-port 10/100BASE-TX + 2-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch
EX83200-00B	8-port 10/100BASE-TX Hardened Managed Ethernet Switch
EX83201-0YB	8-port 10/100BASE-TX + 1-port Gigabit Hardened Managed Ethernet Switch
EX83202-0YB	8-port 10/100BASE-TX + 2-port Gigabit Hardened Managed Ethernet Switch
EX83210-X0B	8-port 10/100BASE-TX + 1-port 100BASE-FX Hardened Managed Ethernet Switch
EX83211-XYB	8-port 10/100BASE-TX + 1-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch
EX83212-XYB	8-port 10/100BASE-TX + 1-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch
EX83220-X0B	8-port 10/100BASE-TX + 2-port 100BASE-FX Hardened Managed Ethernet Switch
EX83221-XYB	8-port 10/100BASE-TX + 2-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch
EX83222-XYB	8-port 10/100BASE-TX + 2-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch
EX83240-X0B	8-port 10/100BASE-TX + 4-port 100BASE-FX Hardened Managed Ethernet Switch
EX83241-XYB	8-port 10/100BASE-TX + 4-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch
EX83242-XYB	8-port 10/100BASE-TX + 4-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch

* DIN-Rail mounting kit included

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km
V	100BASE SFP

Ordering Information - continued

Gigabit Port Options (Y)

1	10/100/1000BASE-TX (No Gigabit Fiber port supported)
3	Combo port: 10/100/1000BASE-TX with 1000BASE-SX(SC) - 550m
4	Combo port: 10/100/1000BASE-TX with 1000BASE-SX (SC) - 2Km
5	Combo port: 10/100/1000BASE-TX with 1000BASE-SX (ST) - 550m
A	Combo port: 10/100/1000BASE-TX with 1000BASE-LX (SC) - 10Km
B	Combo port: 10/100/1000BASE-TX with 1000BASE-LX (SC) - 20Km
R	Combo port: 10/100/1000BASE-TX with 1000BASE-BX (SC) WDM-TX:1310nm/RX:1550nm - 20Km
S	Combo port: 10/100/1000BASE-TX with 1000BASE-BX (SC) WDM-TX:1550nm/RX:1310nm - 20Km
V	Combo port: 1000BASE-SFP with 10/100/1000BASE-TX

Optional Accessories

KP-AA96-480	Panel mounting Kits
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60--24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for Terminal Block) (X)= 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC Jack in aluminum housing (for DC Jack) (X)= 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EX73000 Series

Hardened Managed 16-port 10/100BASE with 2-port Gigabit combo Ethernet Switch

Overview

EtherWAN's EX73000 Series provides a Hardened Fully Managed 18-port switching platform combining high performance switching backbone with robust and secure management features required for mission critical and harsh environments where sustained connectivity is crucial.

The EX73000 Series is equipped with sixteen 10/100BASE Fast Ethernet ports, in combination with up to two Gigabit combo ports with fixed Fiber options. Mountable on a DIN-rail, the EX73000 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, VLANs, GARP protocols, LACP to name a few, and via web browser, Telnet, SNMP, RMON, TFTP, and RS-232 console interfaces.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Versatile Connectivity**
  - Provides 16-port 10/100BASE-TX/FX/BX/SFP plus 2-port Gigabit-SX/LX/BX/SFP combo

- **Hardened Grade**
  - Wide operating temperature range from -40°C to 75°C (-40°F to 167°F) for extreme environments
  - Fanless and ruggedized housing

- **Secure Remote Access**
  - IEEE802.1x, and RADIUS support

- **ISA12.12.01 Certification**
  - Highly qualified for explosive environmental applications and certified by UL with ISA12.12.01 Class I, Division 2 classified for use in hazardous locations

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
- System log (remote/local)

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 Protocol
  - 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)
- 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: 7.2Gbps
- Packet Buffer Size: 2M bits
- MAC Address Table: 8192

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 Quality of Service (QoS)
- IEEE802.1Q Tag VLANs
- IEEE802.1w RSTP
- IEEE802.1x Port-based Network Access Control

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:
  12 - 48VDC (Terminal Block),
  12VDC (DC Jack)

Power Consumption
- 15W Max. 1.25A @ 12VDC, 0.625A @ 24VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 65mm (W) x 125mm (D) x145mm (H)
  (2.56" (W) x 4.92" (D) x 5.71" (H))

Weight
- 1Kg (2.2lbs.)

Installation
- DIN-Rail (Top hat type 35mm) or Wall mounting

Interface

Ethernet Port
- 10/100BASE-TX: 16, 12 or 8 ports
- 100BASE-FX: 0, 1, 2 or 4 ports
- Gigabit: 0, 1 or 2 ports

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power 1, Power 2, Power 3
- Per Port: Link/Activity
  (Green: Copper, Orange: Fiber)

Alarm Contact
- One relay output with current 1A @ 24VDC

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 ISO9001 facility

Safety

UL508

ISA 12.12.01

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliances

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

NEMA TS2

Application Diagram

Dimensions

Top

Back (DIN-Rail)

Side

Front

Bottom
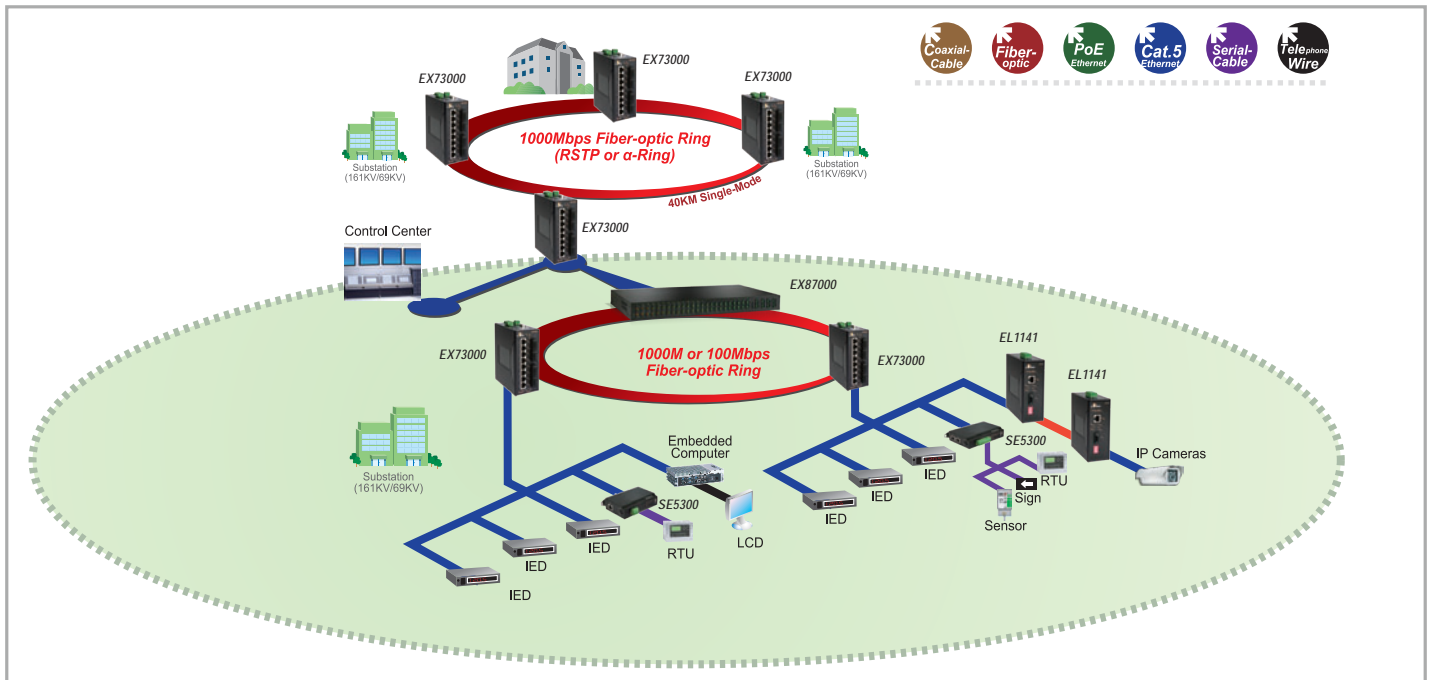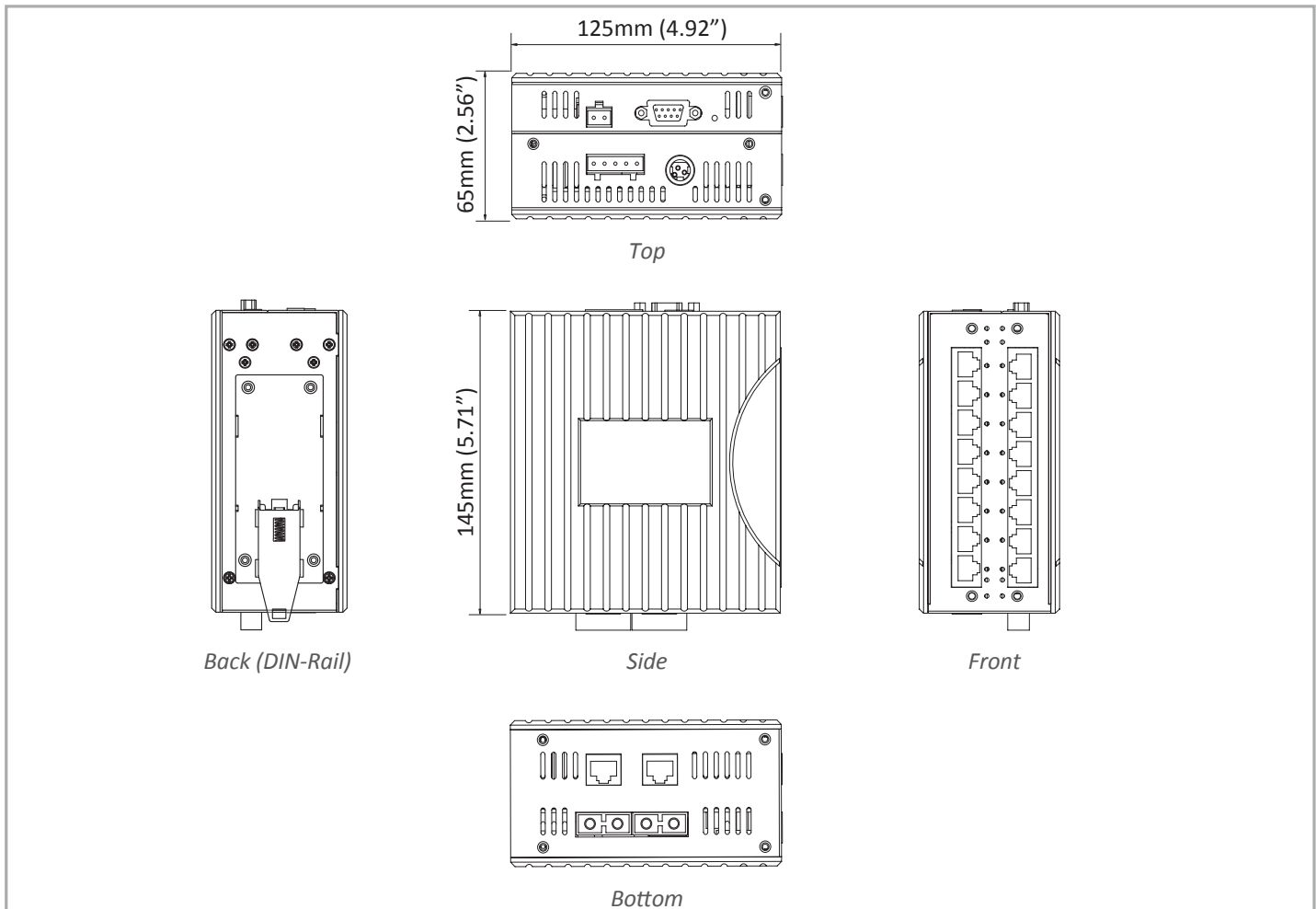
Ordering Information

Model

Model	Description
EX73400-00B	16-port 10/100BASE-TX Hardened Managed Ethernet Switch
EX73401-0YB	16-port 10/100BASE-TX + 1-port Gigabit Hardened Managed Ethernet Switch
EX73402-0YB	16-port 10/100BASE-TX + 2-port Gigabit Hardened Managed Ethernet Switch
EX73302-0YB	12-port 10/100BASE-TX + 2-port Gigabit Hardened Managed Ethernet Switch
EX73310-X0B	12-port 10/100BASE-TX + 1-port 100BASE-FX Hardened Managed Ethernet Switch
EX73311-XYB	12-port 10/100BASE-TX + 1-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch
EX73312-XYB	12-port 10/100BASE-TX + 1-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch
EX73320-X0B	12-port 10/100BASE-TX + 2-port 100BASE-FX Hardened Managed Ethernet Switch
EX73321-XYB	12-port 10/100BASE-TX + 2-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch
EX73322-XYB	12-port 10/100BASE-TX + 2-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch
EX73200-00B	8-port 10/100BASE-TX Hardened Managed Ethernet Switch
EX73201-0YB	8-port 10/100BASE-TX + 1-port Gigabit Hardened Managed Ethernet Switch
EX73202-0YB	8-port 10/100BASE-TX + 2-port Gigabit Hardened Managed Ethernet Switch
EX73210-X0B	8-port 10/100BASE-TX + 1-port 100BASE-FX Hardened Managed Ethernet Switch
EX73211-XYB	8-port 10/100BASE-TX + 1-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch
EX73212-XYB	8-port 10/100BASE-TX + 1-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch
EX73220-X0B	8-port 10/100BASE-TX + 2-port 100BASE-FX Hardened Managed Ethernet Switch
EX73221-XYB	8-port 10/100BASE-TX + 2-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch
EX73222-XYB	8-port 10/100BASE-TX + 2-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch
EX73240-X0B	8-port 10/100BASE-TX + 4-port 100BASE-FX Hardened Managed Ethernet Switch
EX73241-XYB	8-port 10/100BASE-TX + 4-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch
EX73242-XYB	8-port 10/100BASE-TX + 4-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch

* DIN-Rail mounting kit included

100FX Fiber Options (X)

Option	Description
1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

Gigabit Port Options (Y)

1	10/100/1000BASE-TX (No Gigabit Fiber port supported)
3	Combo port: 10/100/1000BASE-TX with 1000BASE-SX(SC) - 550m
4	Combo port: 10/100/1000BASE-TX with 1000BASE-SX (SC) - 2Km
5	Combo port: 10/100/1000BASE-TX with 1000BASE-SX (ST) - 550m
A	Combo port: 10/100/1000BASE-TX with 1000BASE-LX (SC) - 10Km
B	Combo port: 10/100/1000BASE-TX with 1000BASE-LX (SC) - 20Km
R	Combo port: 10/100/1000BASE-TX with 1000BASE-BX (SC) WDM-TX:1310nm/RX:1550nm - 20Km
S	Combo port : 10/100/1000BASE-TX with 1000BASE-LX (SC) WDM-TX:1550nm/RX: 1310nm - 20Km

Optional Accessories

KP-AA96-480	Panel mounting Kits
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60--24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for Terminal Block); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC Jack in aluminum housing; (for DC Jack) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EX72000 Series

Hardened Managed 8 to 14 ports 10/100BASE and 2-port Gigabit Ethernet Switch with SFP options
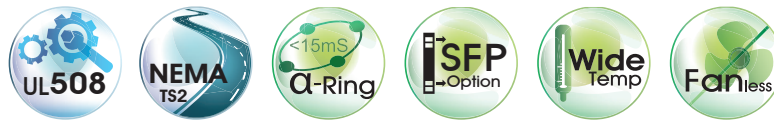
Overview

EtherWAN's EX72000 Series provides a Hardened Fully Managed 14-port switching platform combining high performance switching backbone with robust and secure management features required for mission critical and harsh environments where sustained connectivity is crucial.

The EX72000 Series is equipped with eight to fourteen 10/100BASE Fast Ethernet ports, or in combination with up to Two Gigabit, Fixed Fiber, or SFP Combo port options. Panel mountable, the EX72000 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, VLANs, GARP protocols, LACP, via web browser, Telnet, SNMP, RMON, TFTP, and RS-232 console interfaces.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Versatile Connectivity**
  - Provides flexibility of 8-port to 14-port 10/100BASE-TX/FX/BX plus 2-port Gigabit-TX/SX/LX/BX/SFP combos

- **Intelligent Data Management**
  - Optimize network performance with QoS, VLAN etc.

- **Secure Remote Access**
  - IEEE802.1x and RADIUS support

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
- System log (remote/local)

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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
  - EtherWAN's Alpha-Ring network fault recovery (<15ms)
- 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: 6.4Gbps
- Packet Buffer Size: 2M bits
- MAC Address Table: 8192

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

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:
  12 - 48VDC (Terminal Block);
  12VDC (DC Jack)

Power Consumption
- 15W Max. 1.25A @ 12VDC, 0.625A @ 24VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 235mm (W) x 125mm (D) x 50mm (H)
  (9.25" (W) x 4.92" (D) x 1.97" (H))

Weight
- 1.5Kg (3.3lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel, or Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 14, 13, 12 or 8 port
- 100BASE-FX: 0, 1 or 2 ports
- Gigabit: 0, 1 or 2 ports

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power 1 (Green)
  Power 2 (Green)
  Power 3 (Green)
- Per Port: Link/Activity (Green)
  10/100M (Green)

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL508

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

NEMA TS2

Application Diagram

Dimensions

Ordering Information

Model

EX72140-00B	14-port 10/100BASE-TX Hardened Managed Ethernet Switch
EX72141-X0B	13-port 10/100BASE-TX + 1-port 100BASE-FX Hardened Managed Ethernet Switch
EX72142-X0B	12-port 10/100BASE-TX + 2-port 100BASE-FX Hardened Managed Ethernet Switch
EX72102-X0B	8-port 10/100BASE-TX + 2-port 100BASE-FX Hardened Managed Ethernet Switch
EX72128-0YB	12-port 10/100BASE-TX + 1-port Gigabit Hardened Managed Ethernet Switch
EX72129-0YB	12-port 10/100BASE-TX + 2-port Gigabit Hardened Managed Ethernet Switch
EX72088-0YB	8-port 10/100BASE-TX + 1-port Gigabit Hardened Managed Ethernet Switch
EX72089-0YB	8-port 10/100BASE-TX + 2-port Gigabit Hardened Managed Ethernet Switch

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

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
B	1000BASE-LX (SC) - 20Km
R	1000BASE-BX (SC) WDM-TX:1310nm/RX:1550nm - 20Km
S	1000BASE-BX (SC) WDM-TX: 1550nm/RX: 1310nm - 20Km
V	2-port 1000BASE SFP combo 10/100/1000BASE-TX

Optional Accessories

KD-AA96000	DIN-Rail mounting kit
KP-BK6212	Panel mounting kit
KR-BK72-400	Rack mounting kit
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60--24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for Terminal Block); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC Jack in aluminum housing (for DC Jack); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EX71000 Series

Hardened Managed 8-port 10/100BASE and 2-port Gigabit Ethernet Switch with SFP options

Overview

EtherWAN's EX71000 Series provides a Hardened Fully Managed 10-port switching platform combining high performance switching backbone with robust and secure management features required for mission critical and harsh environments where sustained connectivity is crucial.

The EX71000 Series is equipped with Ten 10/100BASE Fast Ethernet ports, in combination with up to Two Gigabit, Fixed Fiber, or SFP port options. Mountable on a DIN-rail. The EX71000 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, VLANs, GARP protocols, LACP, via web browser, Telnet, SNMP, RMON, TFTP, and RS-232 console interfaces.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Versatile Connectivity**
  - Provides 8-port 10/100BASE-TX/FX/BX/SFP plus 2-port Gigabit-SX/LX/BX/SFP

- **Hardened Grade**
  - Wide operating temperature range from -40°C to 75°C (-40°F to 167°F) for extreme environments
  - Fanless and ruggedized housing

- **Secure Remote Access**
  - IEEE802.1x, ACL (Access Control List), and RADIUS support

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
- System log (remote/local)

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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
  - EtherWAN's Alpha-Ring network fault recovery (<15ms)
- 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: 6.8Gbps
- Packet Buffer Size: 2M bits
- MAC Address Table: 8192

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

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:
  12 - 48VDC (Terminal Block)
  12VDC (DC Jack)

Power Consumption
- 11W Max. 0.92A @ 12VDC, 0.46A @ 24VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 60mm (W) x 125mm (D) x 145mm (H)
  (2.36" (W) x 4.92" (D) x 5.7" (H))

Weight
- 1.1Kg (2.42lbs.)

Installation
- DIN-Rail (Top hat type35mm), Rack or Wall mounting

Interface

Ethernet Port
- 10/100BASE-TX: 8, 6 or 4 port
- 100BASE-FX: 0 to 4 ports
- Gigabit: 0, 1 or 2 ports

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power 1, Power 2, Power 3
- Per Port: Link/Activity, Speed

Alarm Contact
- One relay output with current 1A @ 24VDC

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL508

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

NEMA TS2

EN50121-4

Application Diagram

Exhaust Control System

Fire Detection System

Exhaust Control System

PLC

PLC

EX71000

EX71000

EX71000

Speed Display

IP Camera System

Emergency Phone

Alpha-Ring < 15ms

Fiber-optic

Cat.5 Ethernet

Serial-Cable

The EX71000 utilized in an intelligent tunnel solution

Dimensions

60mm (2.36")

125mm (4.92")

145mm (5.7")

Top

Front

Side

Back

Bottom
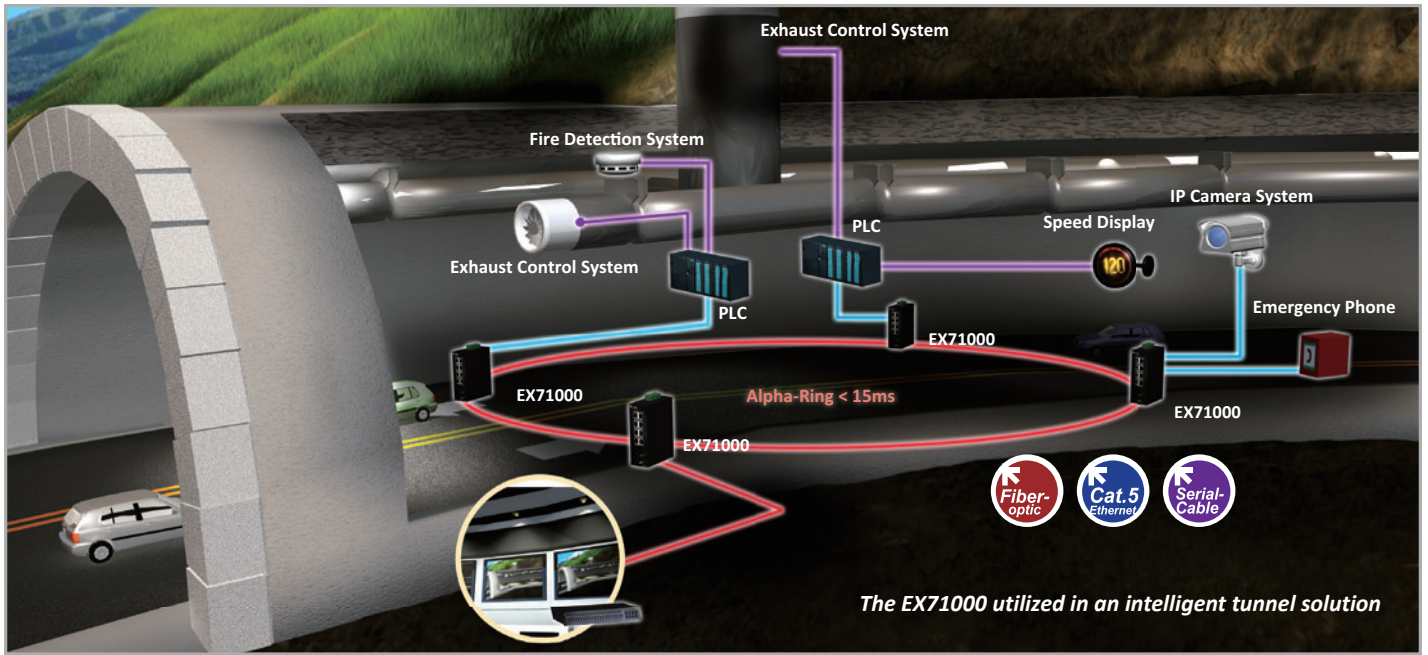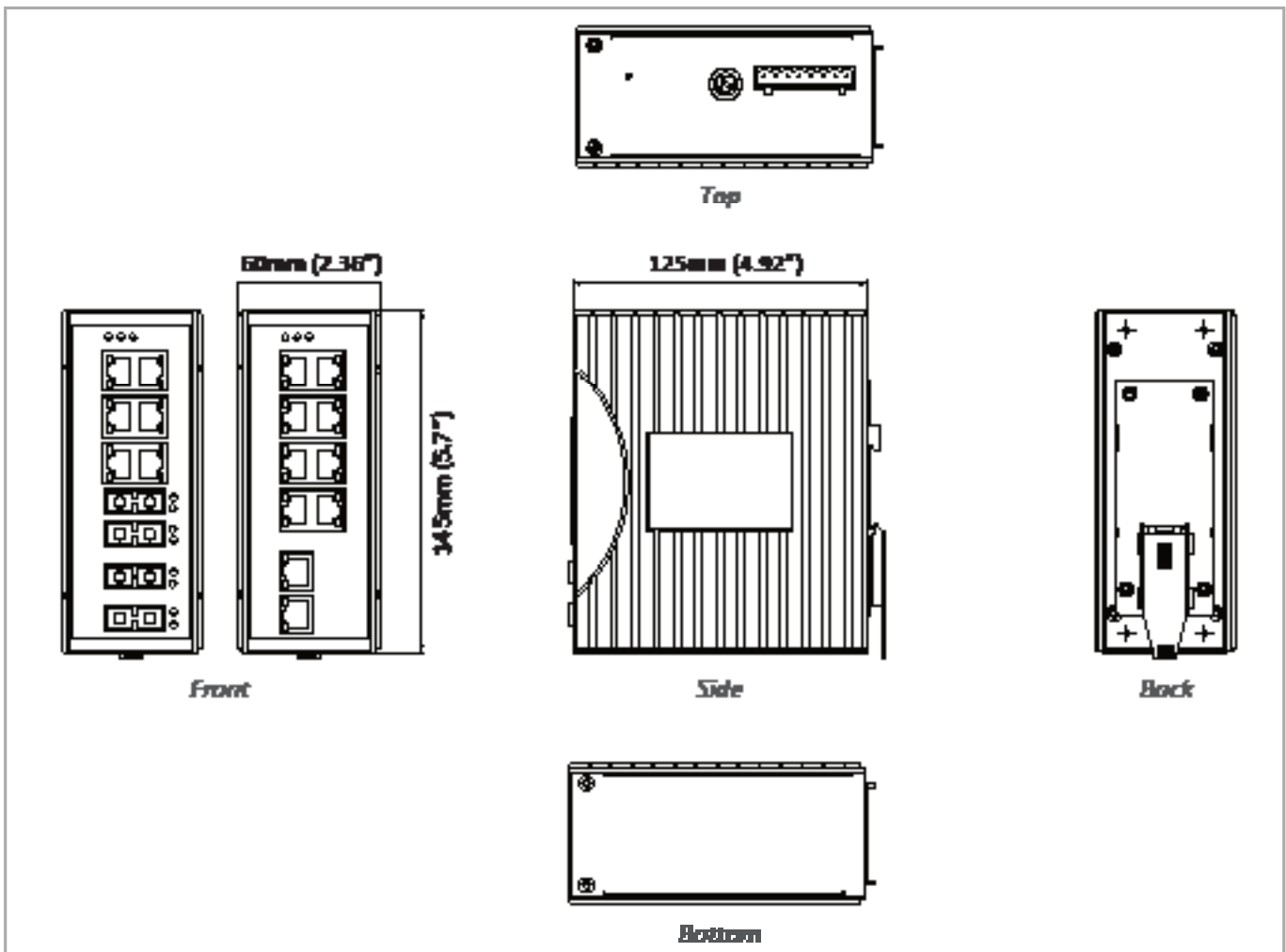
Ordering Information

Model

EX71800-00B	8-port 10/100BASE-TX Hardened Managed Ethernet Switch
EX71801-0YB	8-port 10/100BASE-TX + 1-port Gigabit Hardened Managed Ethernet Switch
EX71802-0YB	8-port 10/100BASE-TX + 2-port Gigabit Hardened Managed Ethernet Switch
EX71802-02B	8-port 10/100BASE-TX + 2-port 10/100/1000BASE-TX LAN Bypass
EX71610-X0B	6-port 10/100BASE-TX + 1-port 100BASE-FX Hardened Managed Ethernet Switch
EX71620-X0B	6-port 10/100BASE-TX + 2-port 100BASE-FX Hardened Managed Ethernet Switch
EX71621-XYB	6-port 10/100BASE-TX + 2-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch
EX71622-XYB	6-port 10/100BASE-TX + 2-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch
EX71420-X0B	4-port 10/100BASE-TX + 2-port 100BASE-FX Hardened Managed Ethernet Switch
EX71422-XYB	4-port 10/100BASE-TX + 2-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch
EX71440-X0B	4-port 10/100BASE-TX + 4-port 100BASE-FX Hardened Managed Ethernet Switch

* DIN-Rail mounting kit included

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km
V	100BASE SFP

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
B	1000BASE-LX (SC) - 20Km
R	1000BASE-BX (SC) WDM-TX:1310nm/RX:1550nm - 20Km
S	1000BASE-BX (SC) WDM-TX: 1550nm/RX: 1310nm - 20Km
V	1000BASE SFP

Optional Accessories

KP-AA96-480	Panel mounting Kits
KR-BK71000	Rack mounting Kits
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60--24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for Terminal Block) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC Jack in aluminum housing (for DC Jack) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EX74000 Series

Hardened Managed 6-port 10/100BASE (4 x PoE) with 2-port SFP (DDM) Gigabit combo Ethernet Switch

Overview

EtherWAN's EX74000 Series provides a hardened 8-port switching platform supporting IEEE802.3af+ Power over Ethernet, high performance switching with robust management features required for mission-critical and harsh environments where sustained connectivity is crucial.

The EX74000 Series is equipped with four 10/100BASE-TX PoE ports plus two 10/100BASE-TX/Gigabit SFP combo ports. The high -power PoE ports provide up to 30W/port with a total power budget of 120W, 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.

The EX74000 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 RS-232 console interfaces. With the hardened specifications, the EX74000 Series is designed to operate at -40°C to 75°C in harsh environments, where high ESD, shock, and vibration may be present.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Hardened Grade**
  - Wide operating temperature range from -40°C to 75°C (-40°F to 167°F) for extreme environments
  - Fanless and ruggedized housing
  - High shock and electric noise immunity
  - Complies with UL508 safety requirements for industrial control devices

- **Power over Ethernet**
  - Port 1 to 4 supports IEEE802.3af+ with 30W max.

- **SFP Connectivity**
  - Provides two Gigabit-SFP combo ports for uplink

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
- 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
- System log (remote/local)

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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
  - EtherWAN's Alpha-Ring network fault recovery (<15ms)
- 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: 5.2Gbps
- Packet Buffer Size: 2M bits
- MAC Address Table: 8192

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
- IEEE802.3af 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 Voltage
- Terminal Block: 47 to 57VDC

Power Consumption
- Device: Max. 17.7W (without PoE)
- PoE power budget (depends on power input): 120W Max.

PoE Power Output
- Port 1 to 4
- IEEE802.3af: up to 15.4W/port, 47 - 57VDC
- IEEE802.3af+: up to 30W/port, 50 - 57VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Metal Case
- IP30

Dimensions
- 200mm (W) x 134mm (D) x 50mm (H)
  (7.87" (W) x 5.2" (D) x 1.97" (H))

Weight
- 1.5Kg (7.7lbs.)

Installation
- Panel or Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 6 ports
- Gigabit SFP (DDM): 2 ports

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power Status
- Per port 10/100TX PoE (Orange)
- Per port 10/100TX, 100FX: Link/Activity (Green)
- Per port Gigabit/SFP: Link/Activity (Green)

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 ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

IEC60068-2-32 Ed (Free fall)

Industrial Compliance

NEMA TS2

Application Diagram

CONTROL CENTER

OUTDOOR

α (Alpha)-Ring

EX74000 Series

Speed Dome

Fiber-optic

PoE Ethernet

Fisheye Cameras

Wireless APs

Dimensions

50mm (1.97")

Front

200

134mm (5.2")

Top

Side

Power

115200,8,n,1

− +

Back

Ordering Information

Model

EX74X62-0VT	6-port 10/100BASE-TX + 2-port Gigabit SFP (DDM) combo Hardened Managed Ethernet Switch (Terminal Block Input)

PoE Options (X)

0	Non-PoE
1	15.4W (4-port 802.3af)
2	30W (4-port 802.3af+ 30W)

Optional Accessories

KP-BK6212	Panel mounting kit
DD-85-48	85W/1.78A 48VDC Industrial Power Supply *(for 15.4W 802.3af)*
DR-75-48	75W/1.6A DIN-Rail 48VDC Industrial Power Supply *(for 15.4W 802.3af)*
DR-120-48	120W/2.5A DIN-Rail 48VDC Industrial Power Supply *(for 15.4W 802.3af)*
SDR-240-48	240W/5A DIN-Rail 48VDC Industrial Power Supply *(for 30W 802.3af+)*

EX48000 Series

Hardened Web-Smart 5-port 10/100BASE PoE (4 x PoE) Ethernet Switch

Overview

EtherWAN's EX48000 Series provides a hardened 5-port switching platform supporting IEEE802.3af+ Power over Ethernet, high performance switching with robust management features required for mission-critical and harsh environments where sustained connectivity is crucial.

The EX48000 Series is equipped with four 10/100BASE-TX PoE ports, in combination with one 100FX Fiber option. The IEEE802.3af+ PoE ports provide up to 30W/port with a total power budget of 120W, making the switch truly versatile for connecting with PoE Powered Devices (PD) with different bandwidth and power consumption requirements.

Users are able to access management features such as QoS based on 802.1p, DSCP, and IP precedence. With the hardened specifications, the EX48000 Series is designed to operate at -40°C to 75°C in harsh environments where high ESD, shock and vibration may be present.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Hardened Grade**
  - Supports -40°C to 75°C (-40°F to 167°F) operating temperature

- **PoE Connectivity**
  - Port 1 to 4 supports IEEE802.3af+ Power over Ethernet

- **Fiber Connectivity**
  - Up to one 100BASE-FX port with SC or ST option

- **Web-Managed Interface**
  - Comprehensive QoS based on 802.1p, DSCP, and IP precedence

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x Full duplex and flow control
- IEEE802.3af+ Power over Ethernet (PoE)

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 512K 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
- 1024 MAC addresses

Power

Input
- Redundant power inputs:
  Terminal Block: 47 - 57VDC
  DC Jack: 47 - 57VDC

Power Consumption
- Device: Max. 10W (without PoE)
- PoE power budget (depends on power input): 120W Max.

PoE Power Output
- Port 1 to 4
- IEEE802.3af+: up to 30W/port, 47 - 57VDC, 600mA Max.

Protection
- Reverse polarity protection
- Overload current protection

Mechanical

Casing
- Metal case
- IP30

Dimensions
- 200mm (W) x 134.3mm (D) x 35mm (H)
  (7.87" (W) x 5.29" (D) x 1.38" (H))

Weight
- 0.8Kg (1.76lbs.)

Installation
- Desktop, Wall, or DIN-Rail mounting

Interface

Ethernet Ports
- 10/100BASE-TX: 5 or 4 ports
- 100BASE-FX: 0 or 1 ports

LED Indicators
- Per Unit: Power 1 (Green)
  Power 2 (Green)
  Power 3 (Green)
  Fault (Red)
- Per Port: Link/Activity (Green)

Alarm Contact
- One relay output with current 1A @ 250VAC

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated FRI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance
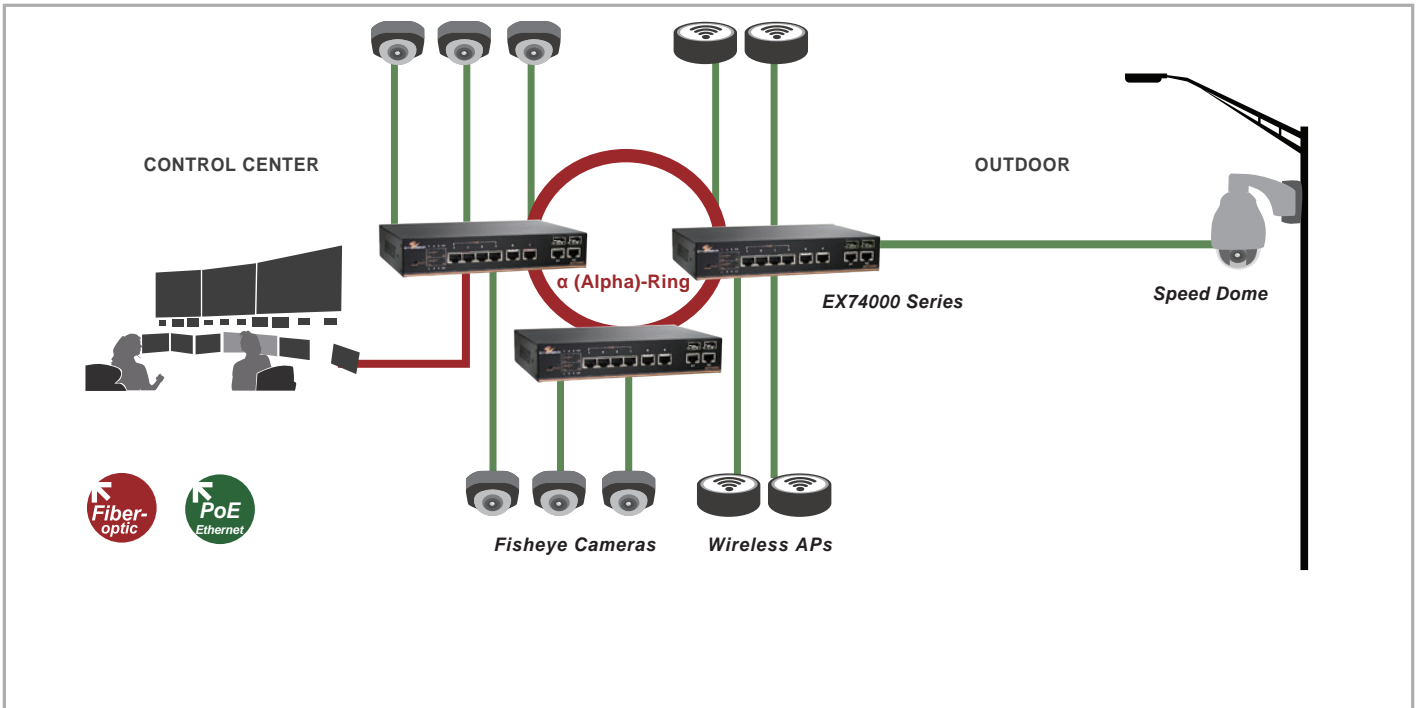
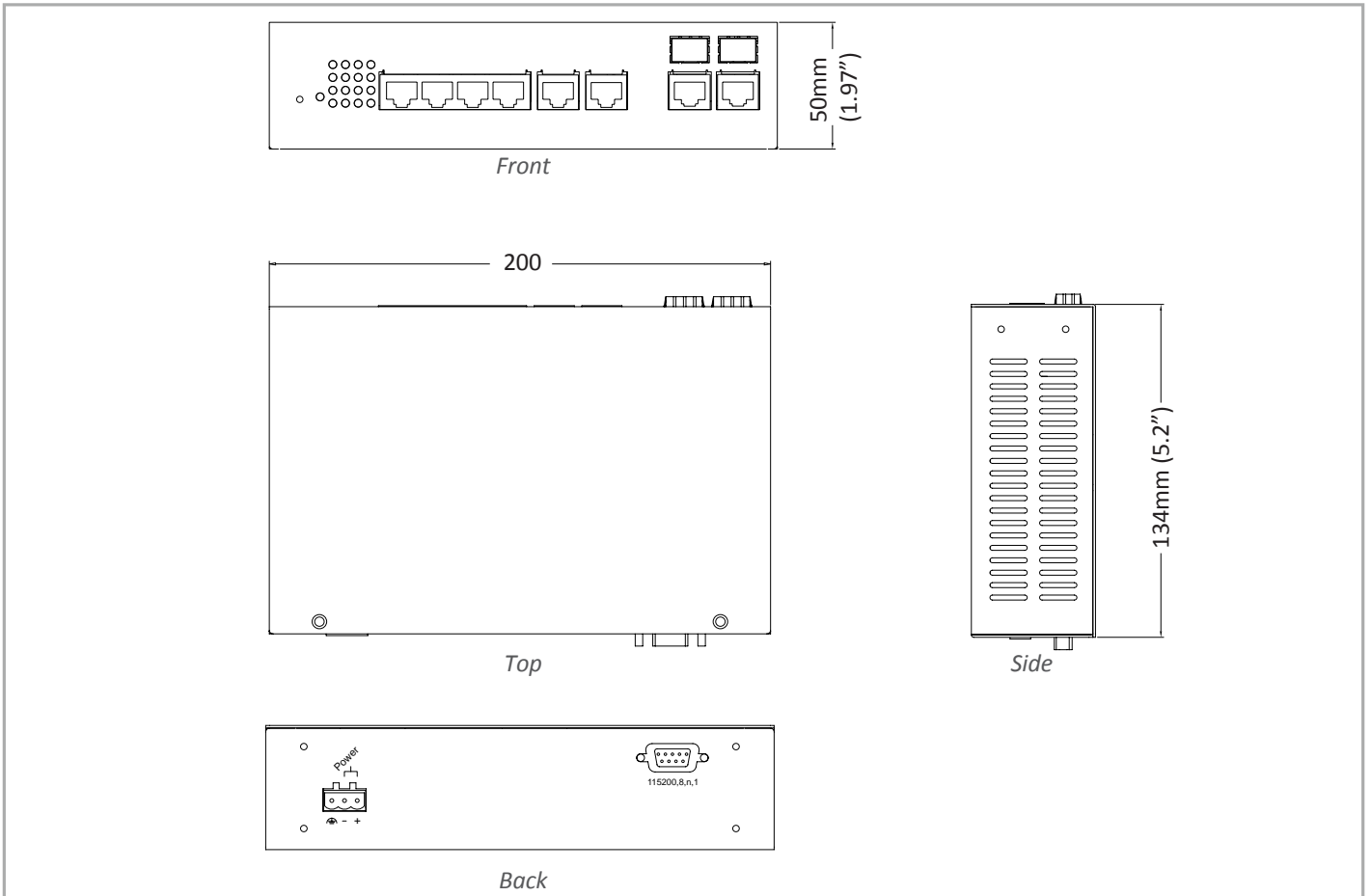**IEC60068-2-6 Fc (Vibration)**

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

NEMA TS2

Dimensions

Back

200mm (7.87")

134.3mm (5.29")

Top

Side

Front

35mm (1.38")

Front

Ordering Information

Model

EX48050-00B	Hardened Web-smart 5-port 10/100BASE-TX PoE Ethernet Switch
EX48041-X0B	Hardened Web-smart 4-port 10/100BASE-TX + 1-port 100BASE-FX PoE Ethernet Switch

* DIN-Rail mounting kit included

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

*More 100FX Fiber options also available upon request.

Optional Accessories

KD-AA78000X	DIN-Rail Mounting Kit
SDR-240-48	240W/5A DIN-Rail 48VDC Industrial Power Supply
SDR-480-48	480W/10A DIN-Rail 48VDC Industrial Power Supply

EX46100 Series

Hardened Web-smart 8-port 10/100BASE High Power PoE (4 x PoE) Ethernet Switch

Overview

EtherWAN's EX46100 Series provides a hardened 8-port switching platform supporting IEEE802.3af+ Power over Ethernet, high performance switching with robust features required for mission-critical and harsh environments where sustained connectivity is crucial.

The EX46100 Series is equipped with 4 10/100BASE-TX PoE ports, in combination with two 100FX Fiber options.

The IEEE802.3af+ PoE ports provide up to 30W/port with a total power budget of 120W, 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.

Users are able to access management features such as QoS based on 802.1p, DSCP, and IP precedence. With the hardened specifications, the EX46100 Series is designed to operate at -40°C to 75°C in harsh environments where high ESD, shock and vibration may be present.

Spotlight

- **Hardened Grade**
  - Supports -40°C to 75°C (-40°F to 167°F) operating temperature

- **PoE Connectivity**
  - Port 1 to 4 supports IEEE802.3af+ Power over Ethernet

- **Fiber Connectivity**
  - Up to two 100BASE-FX ports with SC and ST options

- **Web-Managed Interface**
  - Comprehensive QoS based on 802.1p, DSCP, and IP precedence

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x Full duplex and flow control
- IEEE802.3af+ Power over Ethernet (PoE)

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 1M 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
- 1024 MAC addresses

Power

Input
- Redundant power inputs:
  Terminal Block: 47 - 57VDC
  DC Jack: 47 - 57VDC

Power Consumption
- Device: Max. 10W (without PoE)
- PoE power budget (depends on power input): 120W Max.

PoE Power Output
- Port 1 to 4
- IEEE802.3af+: up to 30W/port, 47 - 57VDC, 600mA Max.

Protection
- Reverse polarity protection
- Overload current protection

Mechanical

Casing
- Aluminum case
- IP30

Dimensions
- 68mm (W) x 110mm (D) x 135mm (H)
  (2.68" (W) x 4.33" (D) x 5.31" (H))

Weight
- 1Kg (2.2lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel or Rack mounting

Interface

Ethernet Ports
- 10/100BASE-TX: 8, 7 or 6 ports
- 100BASE-FX: 0, 1 or 2 ports

LED Indicators
- Per Unit: Power 1 (Green)
  Power 2 (Green)
  Power 3 (Green)
- Per Port: Link/Act (Green)
- Per PoE port: PoE Status (Amber)

Alarm Contact
- One relay output with current 1A @ 24VDC

Environment

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

Web-smart Function Operating Temperature
- -20°C to 75°C (-4°F to 167°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022 Class A

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated FRI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

NEMA TS2

Dimensions

110mm (4.33")

68mm (2.68")

Top

Back

Side

135mm (5.31")

Front

Bottom

Ordering Information

Model

EX46180-00B	Hardened Web-smart 8-port 10/100BASE-TX PoE+ Ethernet Switch
EX46171-X0B	Hardened Web-smart 7-port 10/100BASE-TX + 1-port 100BASE-FX PoE+ Ethernet Switch
EX46162-X0B	Hardened Web-smart 6-port 10/100BASE-TX + 2-port 100BASE-FX PoE+ Ethernet Switch

* DIN-Rail mounting kit included

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

*More 100FX Fiber options also available upon request.

Optional Accessories

KP-AA96-480	Panel Mounting Kit
KR-BK-43-400	Rack Mounting Kit
DR-120-48	120W/2.5A DIN-Rail 48VDC Industrial Power Supply
SDR-240-48	240W/5A DIN-Rail 48VDC Industrial Power Supply

EX49000 Series

Hardened Web-smart 16-port 10/100BASE PoE and 2-port Gigabit Ethernet Switch

Overview

EtherWAN's EX49000 Series provides a hardened 18-port switching platform supporting IEEE802.3at Power over Ethernet, high performance switching with robust features required for mission-critical and harsh environments where sustained connectivity is crucial.

The EX49000 Series is equipped with 16 10/100BASE-TX PoE ports, in combination with two Gigabit SX/LX/BX/WDM Fiber or SFP options.

The IEEE802.3at PoE ports provide up to 30W/port with a total power budget of 480W, 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.

Users are able to access management features such as QoS based on 802.1p, DSCP, and IP precedence. With the hardened specifications, the EX49000 Series is designed to operate at -40°C to 75°C in harsh environments, where high ESD, shock, and vibration may be present.

Spotlight

- **Hardened Grade**
  ◦ Supports -40°C to 75°C (-40°F to 167°F) operating temperature

- **PoE Connectivity**
  ◦ Port 1 to 16 supports IEEE802.3at Power over Ethernet

- **Fiber Connectivity**
  ◦ Up to two 1000BASE-SX ports with SC, ST and SFP options

- **Web-Managed Interface**
  ◦ Comprehensive QoS based on 802.1p, DSCP, and IP precedence

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x Full duplex and flow control
- IEEE802.3z 1000BASE-SX/LX
- IEEE802.3ab 1000BASE-T
- 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
- 2.25M 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
- 4096 MAC addresses

Power

Input Voltage
- 47 - 57VDC

Power Consumption
- Device: Max. 15W (without PoE)
- PoE power budget (depends on power input): 480W Max.

PoE Power Output
- IEEE 802.3at: up to 30W/port, 50 - 57VDC, 600mA Max.

Protection
- Reverse polarity protection

Mechanical

Casing
- Metal case

Dimensions
- 442mm (W) x 205mm (D) x 44.2mm (H)
  (17.40" (W) x 8.07" (D) x 1.73" (H))

Weight
- 3Kg (6.61lbs.)

Installation
- Rack mounting

Interface

Ethernet Ports
- 10/100 BASE: 16 ports
- Gigabit: 2 ports

LED Indicators
- Per Unit: Power 1 (Green)
            Power 2 (Green)
            Fault (Red)
- Per Port: Link/Activity (Green)
            Speed (Amber)
- Per PoE Port: PoE Status (Amber)

Environment

Operating Temperature
- -40°C to 75°C (-40°F to 167°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022 Class A

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated FRI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

NEMA TS2

Dimensions

Back

442mm (17.4")

205mm (8.07")

Top

44.2mm (1.73")

Side

Front

Ordering Information

Model

EX49162-0XT	Hardened Web-smart 16-port 10/100BASE-TX + 2-port Gigabit PoE Ethernet Switch

* Rack mounting kit included

Gigabit Port Options (X)

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
B	1000BASE-LX (SC) - 20Km
R	1000BASE-BX (SC) WDM-TX:1310nm/RX:1550nm - 20Km
S	1000BASE-BX (SC) WDM-TX:1550nm/RX: 1310nm - 20Km
V	1000BASE SFP Combo with 10/100/1000BAST-T

*More 100FX Fiber options also available upon request.

Accessories

SDR-480-48	480W/10A DIN-Rail 48VDC Industrial Power Supply

EX49000A Series

Hardened Unmanaged 16-port 10/100BASE PoE and 2-port Gigabit Ethernet Switch

Overview

EtherWAN's EX49000A Series provides a hardened 18-port switching platform supporting IEEE802.3at Power over Ethernet, high performance switching with robust features required for mission-critical and harsh environments where sustained connectivity is crucial.

The EX49000A Series is equipped with 16 10/100BASE-TX PoE ports, in combination with two Gigabit SX/LX/BX/WDM Fiber or SFP options.

The IEEE802.3at PoE ports provide up to 30W/port with a total power budget of 480W, 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.

With the hardened specifications, the EX49000A Series is designed to operate at -40°C to 75°C in harsh environments, where high ESD, shock, and vibration may be present.

Spotlight

- **Hardened Grade**
  - Supports -40°C to 75°C (-40°F to 167°F) operating temperature

- **PoE Connectivity**
  - Port 1 to 16 supports IEEE802.3at Power over Ethernet

- **Fiber Connectivity**
  - Up to two 1000BASE-SX ports with SC, ST and SFP options

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x full duplex and flow control
- IEEE802.3z 1000BASE-SX/LX
- IEEE802.3ab 1000BASE-T
- 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
- 2.25M 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
- 4096 MAC addresses

Power

Input
- 47 - 57VDC

Power Consumption
- Device: Max. 15W (without PoE)
- PoE power budget (depends on power input): 480W Max.

PoE Power Output
- IEEE 802.3at: up to 30W/port, 50 - 57VDC, 600mA Max.

Protection
- Reverse polarity protection

Mechanical

Casing
- Metal case

Dimensions
- 442mm (W) x 205mm (D) x 44.2mm (H)
  (17.40" (W) x 8.07" (D) x 1.73" (H))

Weight
- 3Kg (6.61lbs.)

Installation
- Rack mounting

Interface

Ethernet Ports
- 10/100 BASE: 16 ports
- Gigabit: 2 ports

LED Indicators
- Per Unit: Power 1 (Green)
            Power 2 (Green)
            Fault (Red)
- Per Port: Link/Activity (Green)
            Speed (Amber)
- Per PoE Port: PoE Status (Amber)

Environment

Operating Temperature
- -40°C to 75°C (-40°F to 167°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022 Class A

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated FRI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

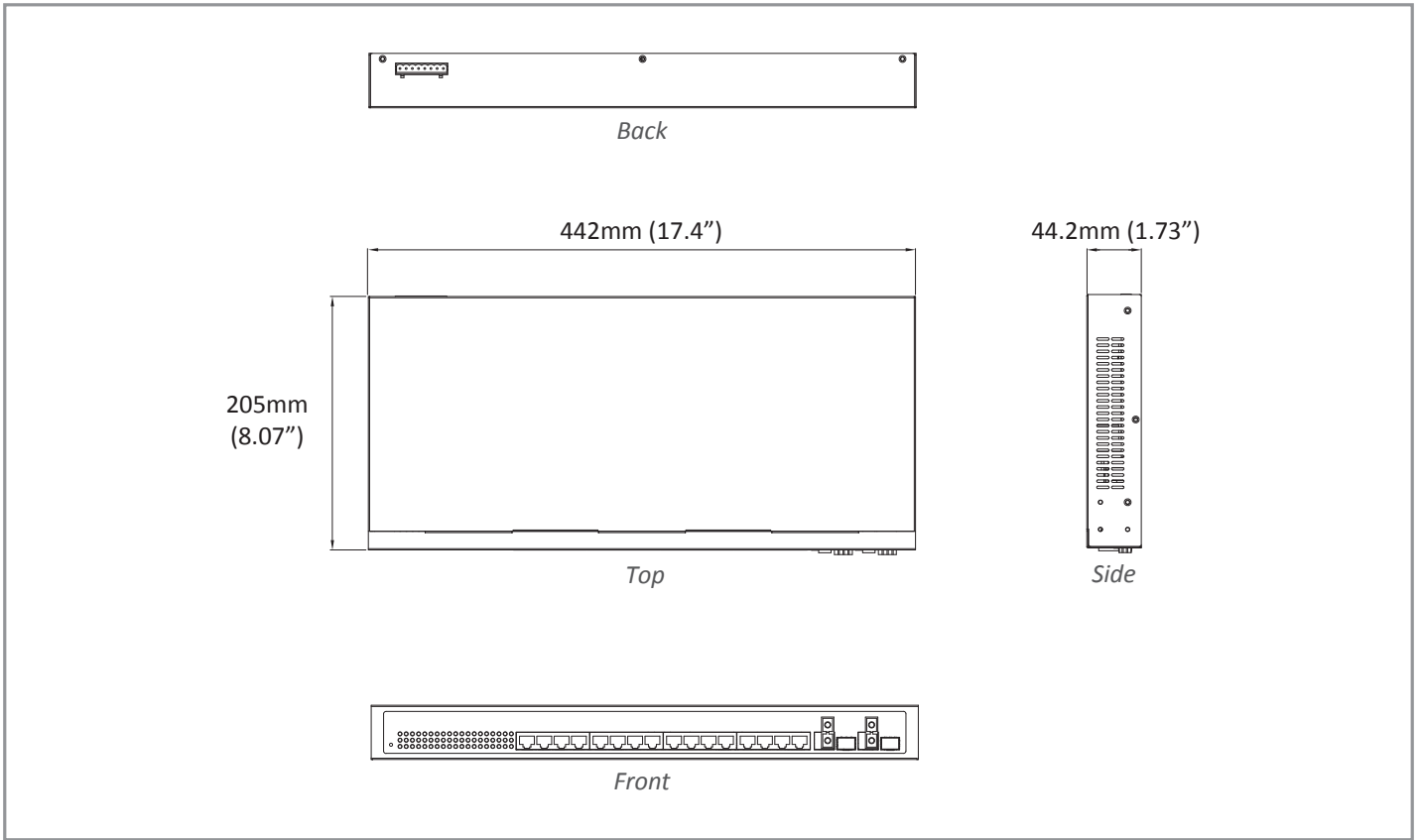**Environmental Test Compliance**

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

NEMA TS2

Dimensions

Back

442mm (17.4")

205mm (8.07")

Top

44.2mm (1.73")

Side

Front

Ordering Information

Model

EX49162A-0XT	Hardened Unmanaged 16-port 10/100BASE-TX + 2-port Gigabit PoE Ethernet Switch
EX49122A-0XT	Hardened Unmanaged 12-port 10/100BASE-TX + 2-port Gigabit PoE Ethernet Switch
EX49082A-0XT	Hardened Unmanaged 8-port 10/100BASE-TX + 2-port Gigabit PoE Ethernet Switch

* Rack mounting kit included

Gigabit Port Options (X)

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
B	1000BASE-LX (SC) - 20Km
R	1000BASE-BX (SC) WDM-TX:1310nm/RX:1550nm - 20Km
S	1000BASE-BX (SC) WDM-TX:1550nm/RX: 1310nm - 20Km
V	1000BASE SFP Combo with 10/100/1000BASE-T

*More 100FX Fiber options also available upon request.

Optional Accessories

SDR-480-48	480W/10A DIN-Rail 48VDC Industrial Power Supply (Optional)

EX42900 Series

Hardened Unmanaged 5/8-port 10/100/1000BASE Gigabit Ethernet Switch

Overview

EtherWAN's EX42900 Series is a compact Hardened Unmanaged Gigabit switching platform, designed for easy deployment in harsh environments.

The EX42900 Series is equipped with five or eight Gigabit Ethernet ports, or a combination of Gigabit copper ports and one Gigabit fiber port for long distance connectivity. Although unmanaged, the EX42900 is feature-rich with Jumbo Frame support, full wire speed Gigabit throughput, QoS support and eco-friendly IEEE802.3az EEE (Energy Efficient Ethernet) compliant, making the EX42900 Series a powerful yet energy efficient network switch.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Hardened Grade**
  - Supports -40°C to 75°C (-40°F to 167°F) operating temperature

- **Jumbo Frame Support**
  - Up to 10K bytes (EX42905/EX42914 Series)
  - Up to 9720 bytes (EX42908/EX42917 Series)

- **Fiber Connectivity**
  - Up to one 1000BASE-SX ports with SC and ST options

- **High Reliability**
  - Fanless Design
  - No moving part

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.1x, Full duplex flow control
- IEEE802.1az Energy Efficient Ethernet
- IEEE802.1p Quality of Service (QoS)

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- EX42905/EX42914: 1M bits
- EX42908/EX42917: 192KB

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Jumbo Frame
- EX42905/EX42914: 10K bytes
- EX42908/EX42917: 9720 bytes

Address Table Size
- EX42905/EX42914: 8K MAC addresses
- EX42908/EX42917: 4K MAC addresses

Power

Input Voltage
- 12 to 48VDC

Power Consumption
- 6.5W Max. 0.25A @ 24VDC

Protection
- Reverse polarity protection
- Overload current protection

Mechanical

Casing
- Metal case
- IP30

Dimensions
- EX42905/EX42914:
  30mm (W) x 76.3mm (D) x 110mm (H)
  (1.18" (W) x 3.05" (D) x 4.4" (H))
- EX42908/EX42917:
  30mm (W) x 100mm (D) x 149mm (H)
  (1.18" (W) x 4" (D) x 5.96" (H))

Weight
- EX42905/EX42914: 0.34Kg (0.75lb.)
- EX42908/EX42817: 0.39Kg (0.841lb.)

Installation
- DIN-Rail (Top hat type 35mm)

Interface

Ethernet Ports
- EX42905/EX42914:
  10/100/1000BASE-T: 5 or 4 ports
  1000BASE-X: 0 or 1 ports
- EX42908/EX42917:
  10/100/1000BASE-T: 8 or 7 ports
  1000BASE-X: 0 or 1 ports

LED Indicators
- EX42905/EX42914:
  Per Unit: Power (Green)
  Per Port: 10/100M(Green),
            1000M (Yellow)
- EX42908/EX42917:
  Per Unit : Power 1 (Green),
             Power 2 (Green),
             Alarm (Red)
  Per Port: 10/100M(Green) ,
            1000M (Yellow)

Alarm Contact (EX42908/EX42917 only)
- One relay output with current 1A@250VAC
- Supports normal close and normal open

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL60950 (EX42905/EX42914 Series only)

EMI

FCC Part 15B, Class A

VCCI, Class A

EN61000-6-4

EN55022 Class A

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliances
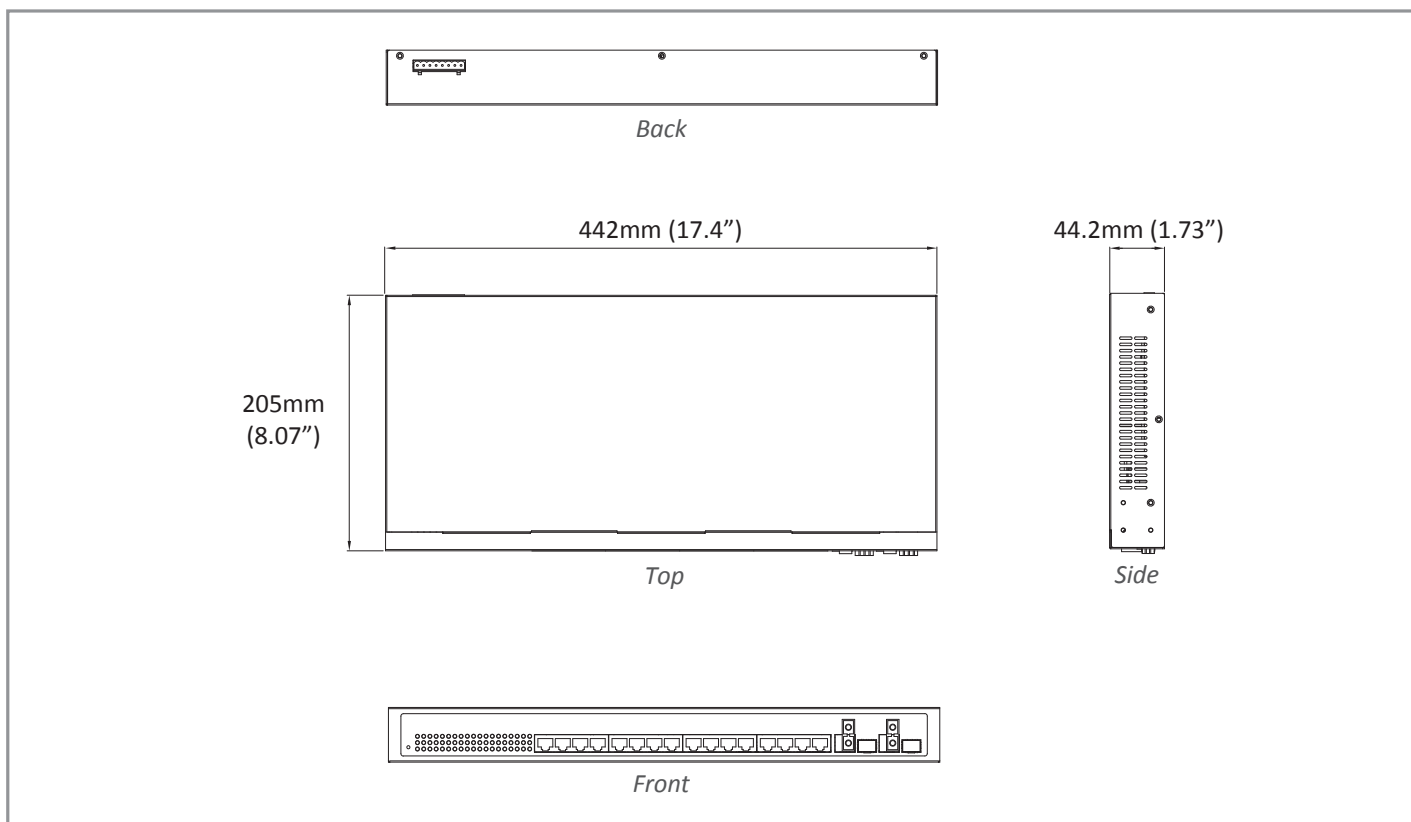
IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Dimensions

8-port model

Top

30mm (1.18") 100mm (4")

149mm (5.96")

front *Side* *back*

Bottom

5-port model

Top

30mm (1.18") 76.3mm (3.05")

114mm (4.33")

front *Side* *back*

Bottom
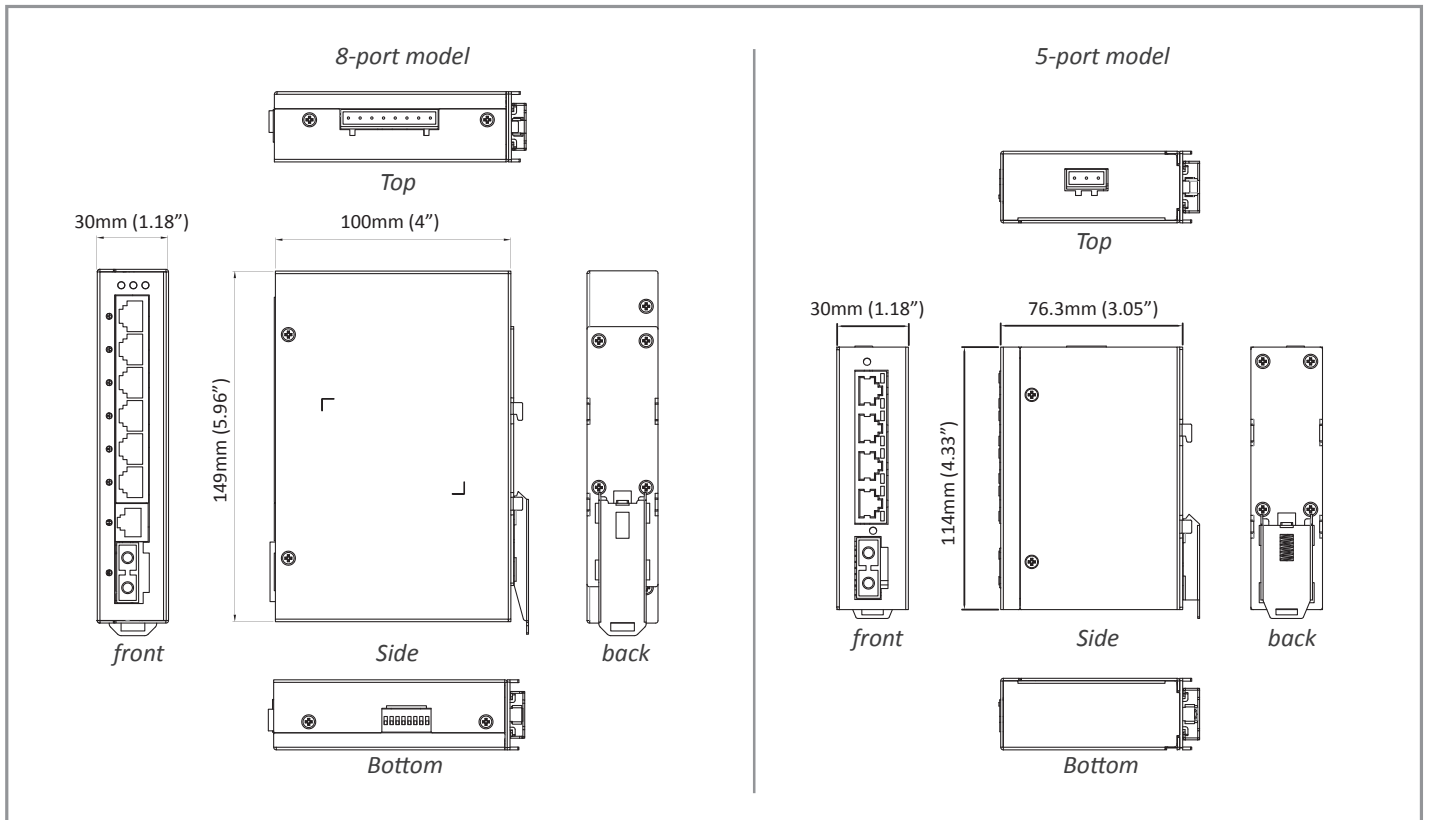
Ordering Information

Model

EX42905	Hardened Unmanaged 5-port 10/100/1000BASE-T Gigabit Ethernet Switch
EX42914-X	Hardened Unmanaged 4-port 10/100/1000BASE-T+ 1-port 1000BASE-X Gigabit Ethernet Switch
EX42908	Hardened Unmanaged 8-port 10/100/1000BASE-T Gigabit Ethernet Switch
EX42917-X	Hardened Unmanaged 7-port 10/100/1000BASE-T + 1-port 1000BASE-X Gigabit Ethernet Switch

* DIN-Rail mounting kit included

Optical Port Options (X)

3	1000BASE-SX(SC)-550m
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

Optional Accessories

DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for Terminal Block) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EX42300 Series

Hardened Unmanaged 5/6 port Ethernet Switch
4-port 10/100BASE (4 x PoE) + 1-port 10/100/1000BASE-T
Optional 1-port 1000BASE-X Gigabit

Overview

EtherWAN's EX42300 Series is a compact Hardened Unmanaged PoE switching platform, designed for easy deployment in harsh environments.

The EX42300 Series is equipped 6 Ethernet ports, with a combination of Fast Ethernet copper ports with 4-port PoE (IEEE802.3at), one Gigabit copper port, and one Gigabit fiber port for long distance connectivity. The EX42300 is feature rich with 10K Jumbo Frame support on the Gigabit ports, full wire speed throughput, QoS support and eco-friendly IEEE802.3az EEE (Energy Efficient Ethernet) compliant, making the EX42300 Series a powerful yet energy efficient network switch.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Power over Ethernet**
  - Port 1-4 are PoE ports that provide power up to 30W

- **Energy Efficient Ethernet (EEE)**
  - Supports IEEE802.3az standard

- **Fiber Connectivity**
  - Up to one 1000BASE-SX port with SC, ST and SFP options

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.1x Full duplex flow control
- IEEE802.1az Energy Efficient Ethernet
- IEEE802.1p Quality of Service(QoS)
- 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
- 1M bits

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Jumbo Frame
- 10K bytes

Address Table Size
- 8192 MAC addresses

Power

Input Voltage
- 24/48VDC

Power Consumption
- Device: Max. 7W (without PoE)
- PoE Power budget: 120W

Protection
- Reverse polarity protection
- Overload current protection

Mechanical

Casing
- Metal case
- IP30

Dimensions
- 30mm (W) x 100mm (D) x 149mm (H) (1.18" (W) x 4" (D) x 5.96" (H))

Weight
- 0.34Kg (0.75lb.)

Installation
- DIN-Rail

Interface

Ethernet Ports
- 10/100BASE-TX: 4 ports
- 10/100/1000BASE-T: 1 port
- 1000BASE-X: 0 or 1 ports

LED Indicators
- Per Unit: Power 1 (Green)
          Power 2 (Green)
          Alarm (Red)
- Per Port: 10/100M (Green)
          1000M (Amber)
- Per PoE Port: PoE status (Amber)

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL60950

EMI

FCC Part 15B, Class A

VCCI Class A

EN61000-6-4

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliances

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Dimensions

Top

100mm (4")

30mm (1.18")

149mm (5.96")

Back

Side

Front

Bottom

Ordering Information

Model

EX42305	Hardened Unmanaged 4-port 10/100BASE-TX (4 x PoE) + 1-port 10/100/1000BASE-T Gigabit Ethernet Switch
EX42315-X	Hardened Unmanaged 4-port 10/100BASE-TX (4 x PoE) + 1-port 10/100/1000BASE-T + 1-port 1000BASE-X Gigabit Ethernet Switch

* DIN-Rail mounting kit included

Ordering Information - continued

100FX Fiber Options (X)

3	1000BASE-SX(SC)-550m
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	1000BASE SFP

Optional Accessories

SDR-240-48	240W/5A DIN-Rail 48VDC Industrial Power Supply (for terminal block)

EX45900 Series

Hardened Unmanaged 5-port 10/100/1000BASE (4 x PoE) + 1-port 1000BASE-X Gigabit Ethernet Switch

Overview

EtherWAN's EX45900 Series provides a hardened 5-port switching platform supporting IEEE802.3at Power over Ethernet, high performance switching with robust features required for mission-critical and harsh environments where sustained connectivity is crucial.

The EX45900 Series is equipped with 4 10/100/1000BASE-TX PoE ports, in combination with one Gigabit Fiber option. The EX45900 is feature rich with 10K Jumbo Frame support, full wire speed Gigabit throughput, QoS support and eco-friendly IEEE802.3az EEE (Energy Efficient Ethernet) compliant, making the EX45900 Series a powerful yet energy efficient network switch.

The IEEE802.3at PoE ports provide up to 30W/port with a total power budget of 120W, 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.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Power over Ethernet**
  - Port 1-4 are PoE ports that provide power up to 30W

- **Energy Efficient Ethernet (EEE)**
  - Supports IEEE802.3az standard

- **Fiber Connectivity**
  - Up to one 1000BASE-SX ports with SC, ST and SFP options

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.1x Full duplex flow control
- IEEE802.1az Energy Efficient Ethernet
- IEEE802.1p Quality of Service(QoS)
- 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
- 1M bits

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Jumbo Frame
- 10K bytes

Address Table Size
- 8192 MAC addresses

Power

Input Voltage
- 24/48VDC

Power Consumption
- Device: Max. 7W (without PoE)
- PoE Power budget: 120W

Protection
- Reverse polarity protection
- Overload current protection

Mechanical

Casing
- Metal case
- IP30

Dimensions
- 30mm (W) x 100mm (D) x 149mm (H)
  (1.18" (W) x 4" (D) x 5.96" (H))

Weight
- 0.34Kg (0.75lb.)

Installation
- DIN-Rail

Interface

Ethernet Ports
- 10/100/1000BASE-T: 5 ports
- 1000BASE-X: 0 or 1 ports

LED Indicators
- Per Unit: Power 1 (Green)
  Power 2 (Green)
  Alarm (Red)
- Per Port: 10/100M (Green)
  1000M (Amber)
- Per PoE Port: PoE status (Amber)

Alarm Contact
- One relay output with current 1A@250VAC
- Supports normal open

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL60950

EMI

FCC Part 15B, Class A

VCCI Class A

EN61000-6-4

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliances

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Dimensions

Top

100mm (4")

30mm (1.18")

149mm (5.96")

Back

Side

Front

Bottom

Ordering Information

Model

EX45905	Hardened Unmanaged 5-port 10/100/1000BASE-T (4 x PoE) Gigabit Ethernet Switch
EX45915-X	Hardened Unmanaged 5-port 10/100/1000BASE-T (4 x PoE) + 1-port 1000BASE-X Gigabit Ethernet Switch

* DIN-Rail mounting kit included

Optical Port Options (X)

3	1000BASE-SX(SC)-550m
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	1000BASE SFP

Optional Accessories

SDR-240-48	240W/5A DIN-Rail 48VDC Industrial Power Supply (for terminal block)

EX47000 Series

IEC61850-3/IEEE1613 Hardened Unmanaged 8-port 10/100BASE Ethernet Switch

Overview

EtherWAN's EX47000 Series is a hardened unmanaged Fast Ethernet switching platform, designed for easy deployment in harsh environments.

The EX47000 Series is equipped with 8 Fast Ethernet ports, with a combination of Fast Ethernet copper ports and 100FX ports for long distance connectivity. Although unmanaged, the EX47000 is feature-rich with full wire speed Fast Ethernet throughput, making the EX47000 Series a powerful network switch. With its hardened-grade specifications and IEC61850 & IEEE1613 certifications, the EX47000 Series is capable of operating under high EMI environments at the temperatures ranging from -40°C to 75°C, making it an ideal choice for harsh applications.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Hardened Grade**
  ◦ Supports -40°C to 75°C (-40°F to 167°F) operating temperature

- **Versatile mounting Options**
  ◦ DIN-Rail or panel mounting

- **Fiber Connectivity**
  ◦ Up to two 100BASE-FX ports with SC, ST and WDM options

Hardware Specifications

Technology

Standards
- IEEE802.3, 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x Full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 448K 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
- 2048 MAC addresses

Power

Input
- Redundant power inputs:
  12 to 48VDC (Terminal Block)
  12VDC (DC Jack)

Power Consumption
- 6W Max. 12VDC @ 0.5A
  24VDC @ 0.25A
  48VDC @ 0.125A

Protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 60mm (W) x 125mm (D) x 145mm (H)
  (2.36" (W) x 4.92" (D) x 5.7" (H))

Weight
- 1Kg (2.2lbs.)

Installation
- DIN-Rail (Top hat type 35mm) or Panel mounting

Interface

Ethernet Ports
- 10/100BASE-TX: 16, 15 or 14 ports
- 100BASE-FX: 0, 1 or 2 ports

LED Indicators
- Per Unit: Power 1 (Green)
  Power 2 (Green)
  Power 3 (Green)
  Fault (Red)
- Per Port: Link/Act (Green)
  100M (Green)

Alarm Contact
- One relay output with current 1A @ 24VDC

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated FRI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

IEC61850 / IEEE1613

EN50121-4

NEMA TS2

Dimensions

Top

125mm (4.92")

60mm (2.36")

145mm (5.7")

Back

Side

Front

Bottom
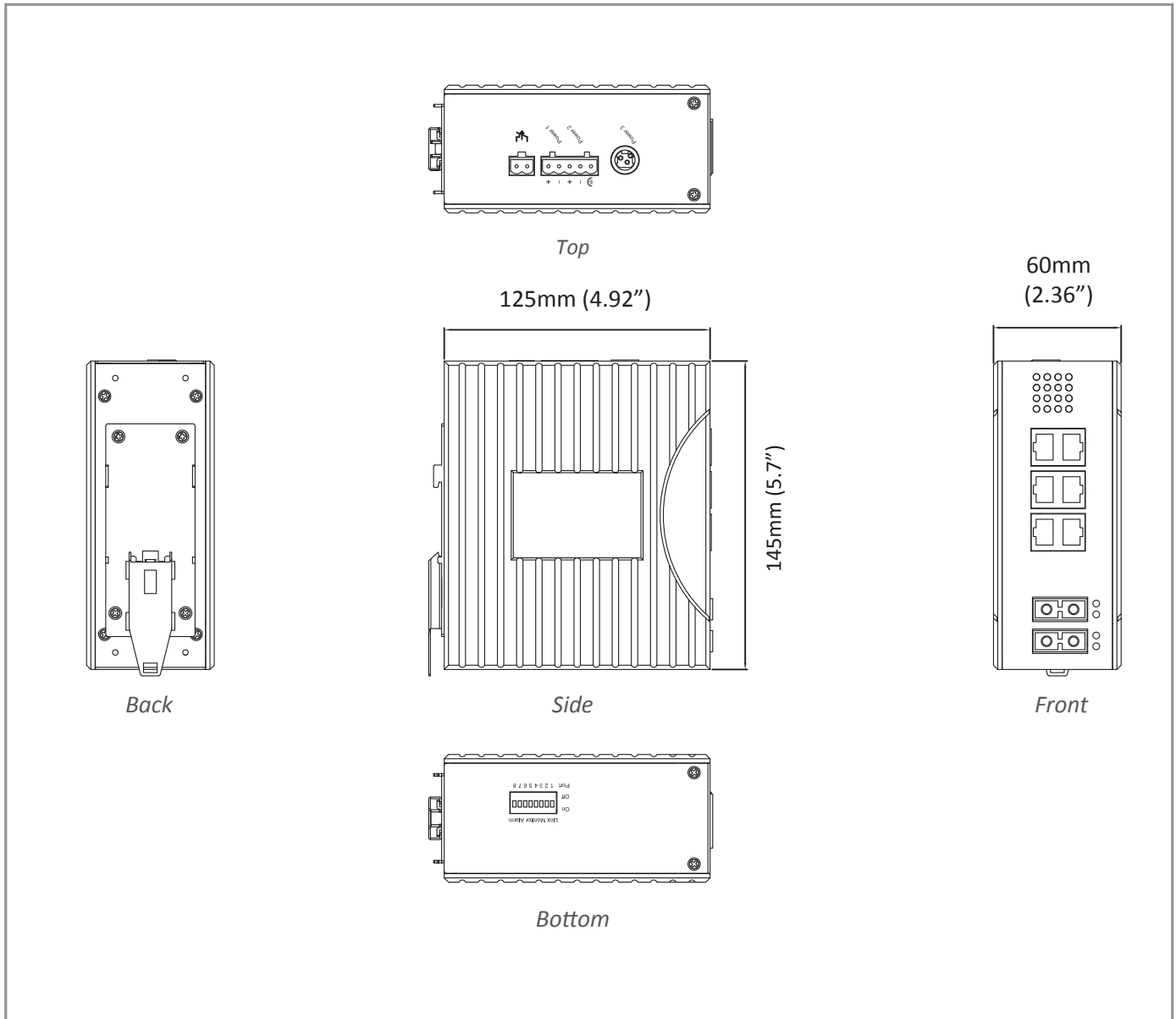
Ordering Information

Model

EX47080-00B	8-port 10/100BASE-TX Hardened Unmanaged Ethernet Switch
EX47062-X0B	6-port 10/100BASE-TX + 2-port 100BASE-FX Hardened Unmanaged Ethernet Switch
EX47061-X0B	6-port 10/100BASE-TX + 1-port 100BASE-FX Hardened Unmanaged Ethernet Switch
EX47042-X0B	4-port 10/100BASE-TX + 2-port 100BASE-FX Hardened Unmanaged Ethernet Switch
EX47041-X0B	4-port 10/100BASE-TX + 1-port 100BASE-FX Hardened Unmanaged Ethernet Switch
EX47026-X0B	2-port 10/100BASE-TX + 6-port 100BASE-FX Hardened Unmanaged Ethernet Switch

* DIN-Rail mounting kit included

Ordering Information - continued

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

*More 100FX Fiber options also available upon request.

Optional Accessories

KP-AA96-480	Panel mounting kit
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for Terminal Block) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC Jack in aluminum housing (for DC Jack) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EX45000 Series

Hardened Unmanaged 8-port 10/100BASE PoE (4 x PoE) Ethernet Switch

Overview

EtherWAN's EX45000 Series provides a hardened 8-port switching platform supporting IEEE802.3af Power over Ethernet, high performance switching with robust features required for mission-critical and harsh environments where sustained connectivity is crucial.

The EX45000 Series is equipped with 4 10/100BASE-TX PoE ports, in combination with two 100FX Fiber options.

The IEEE802.3af PoE ports provide up to 15.4W/port with a total power budget of 61.6W, making the switch truly versatile for connecting with PoE Powered Devices (PD) with different bandwidth and power consumption requirements.

The EX45000 Series is designed to operate at -40°C to 75°C in harsh environments, where high ESD, shock, and vibration may be present.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Hardened Grade**
  ◦ Supports -40°C to 75°C (-40°F to 167°F) operating temperature

- **PoE Connectivity**
  ◦ Port 1 to 4 supports IEEE802.3af Power over Ethernet

- **Fiber Connectivity**
  ◦ Up to two 100BASE-FX ports with SC and ST options

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x Full duplex and flow control
- IEEE802.3af Power over Ethernet

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 1M 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
- 1024 MAC addresses

Power

Input
- Redundant power inputs:
  Terminal Block: 47 - 55VDC
  DC Jack: 47 - 55VDC

Power Consumption
- Device: Max. 10W (without PoE)
- PoE power budget (depends on power input):
  61.6W Max.

PoE Power Output
- Port 1 to 4
- IEEE802.3af: up to 15.4W/port, 47 - 55VDC, 350mA Max.

Protection
- Reverse polarity protection
- Overload current protection

Mechanical

Casing
- Aluminum case
- IP30

Dimensions
- 68mm (W) x 110mm (D) x 135mm (H)
  (2.68" (W) x 4.33" (D) x 5.31" (H))

Weight
- 1Kg (2.2lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel, or Rack mounting

Interface

Ethernet Ports
- 10/100BASE-TX: 8, 7 or 6 ports
- 100BASE-FX: 0, 1 or 2 ports

LED Indicators
- Per Unit: Power 1 (Green)
          Power 2 (Green)
          Power 3 (Green)
- Per Port: Link/Activity (Green)

Alarm Contact
- One relay output with current 1A @ 24VDC

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

VCCI Class A

EN61000-6-4

EN55022 Class A

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliances

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliances

NEMA TS2

Dimensions

68mm (2.68")

Top

110mm (4.33")

135mm (5.31")

Back

Side

Front

Bottom
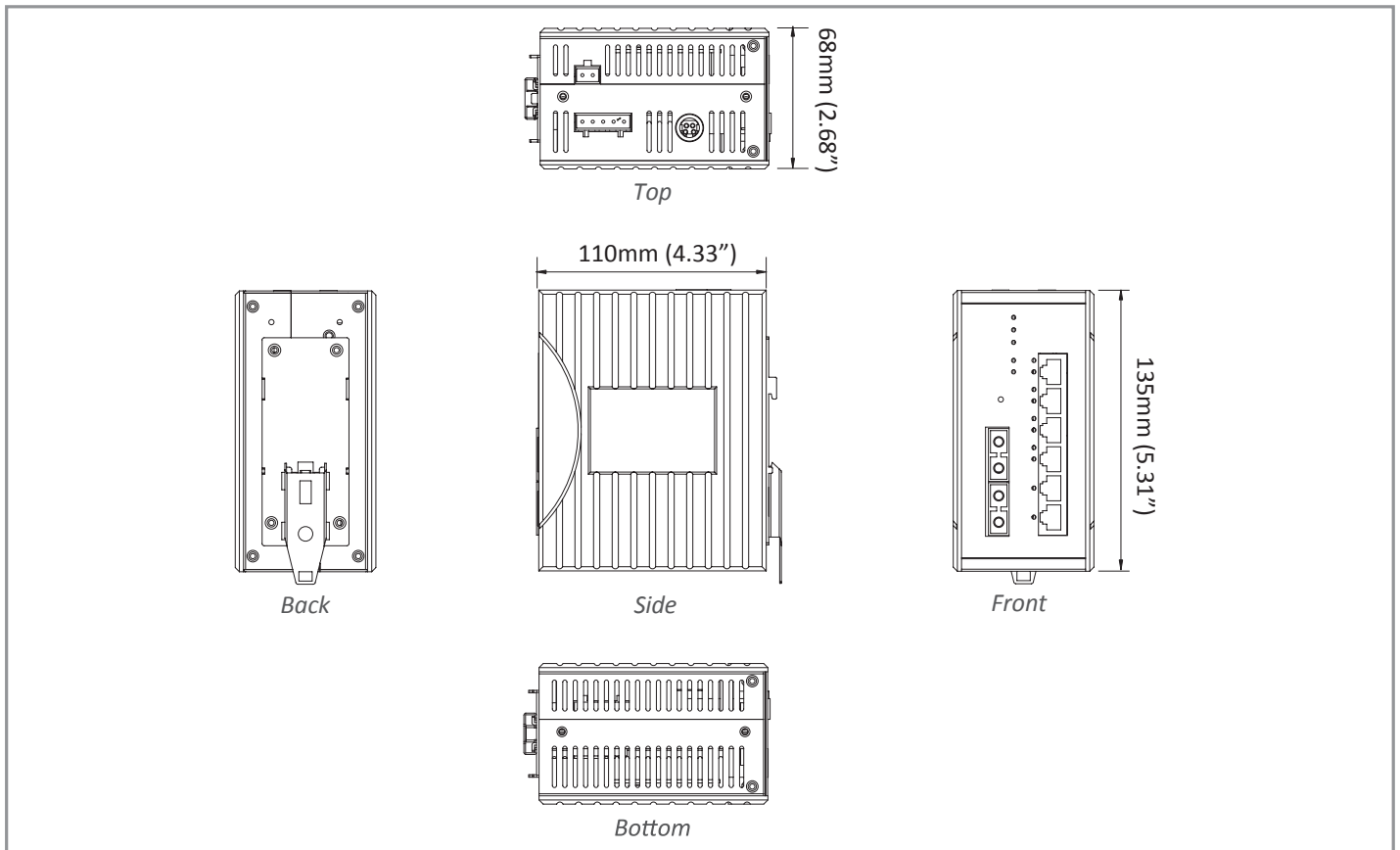
Ordering Information

Model

EX45080-00B	8-port 10/100BASE-TX Hardened Unmanaged PoE Ethernet Switch
EX45071-X0B	7-port 10/100BASE-TX + 1-port 100BASE-FX Hardened Unmanaged PoE Ethernet Switch
EX45062-X0B	6-port 10/100BASE-TX + 2-port 100BASE-FX Hardened Unmanaged PoE Ethernet Switch

* DIN-Rail mounting kit included

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

*More 100FX Fiber options also available upon request.

Ordering Information - continued

Optional Accessories

KP-AA96-480	Panel mounting Kit
KR-BK43-400	Rack mounting Kit
DR-120-48	120W/2.5A DIN-Rail 48VDC Industrial Power Supply (for terminal block)

EX94000 Series

Hardened Unmanaged 8-port 10/100BASE Ethernet Switch

Overview

EtherWAN's EX94000 Series is a hardened unmanaged Fast Ethernet switching platform, designed for easy deployment in harsh environments. The EX94000 Series supports 12 to 48VDC redundant power input, and also provides relay alarm while power failure or port link down occur. The EX94000 provides 4kV surge protection, and is designed for hazardous locations (Class 1 Div.2 / ATEX Zone 2).

The EX94000 is equipped with eight Fast Ethernet ports, or a combination of Fast Ethernet copper ports and two 100FX ports for long distance connectivity. This versatile switch features 10/100Mbps transfer speeds, full/half-duplex auto-negotiation and auto MDI/MDIX operation allowing you to connect your network devices without hassles.

The EX94000 is feature-rich with full wire speed Fast Ethernet throughput, QoS (Quality of Service), IEEE802.3az EEE (Energy Efficient Ethernet) and Broadcast storm protection. The EX94000 Series is built with relay alarm to notify users when power fails or link down occurs. It also supports Broadcast storm protection by enabling the DIP switch. The 94000 Series is housed with DIN rail mountable metal compact case which is an ideal solution for applications in harsh environments.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Hardened Grade**
  ◦ Supports -40°C to 75°C (-40°F to 167°F) operating temperature

- **Broadcast Storm Protection**
  ◦ Enable/disable broadcast storm protection by DIP switch that provide another level of flexibility on industrial applications

- **Fiber Connectivity**
  ◦ Up to two 100BASE-FX ports with SC, ST, WDM and SFP options

- **High Surge Protection and Hazardous Location Certification**
  ◦ Provides 4kV surge protection
  ◦ Designed for hazardous locations (Class 1 Div.2 / ATEX Zone 2)

- **High Reliability**
  ◦ Fanless design
  ◦ No moving parts

Hardware Specifications

Technology

Standards
- IEEE802.3u 100BASE-TX/FX
- IEEE802.3x full-duplex flow control
- IEEE802.3az Energy Efficient Ethernet
- IEEE802.1p Quality of Service (QoS)

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 448K 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
- 1K MAC addresses

Power

Input Voltage
- 12 to 48VDC (Terminal Block)

Power Consumption
- 2.47W@24VDC

Protection
- Reverse polarity protection
- Overload current protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 50mm (W) x 110mm (D) x 135mm (H)
  (1.97" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.62Kg (1.37lbs)

Installation
- DIN-Rail (Top hat type 35mm) or Panel mounting

Interface

Ethernet Ports
- 10/100BASE-TX: 8, 6 or 4 ports
- 100BASE-FX: 0, 2 or 1 ports

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

Alarm Contact
- One relay output with current 1A @ 250VAC
- Supports normal close and normal open

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL60950-1 (Pending)

UL ISA12.12.01 Class I Div. 2 / ATEX Zone 2 for hazardous locations (Pending)

EMI

FCC Part 15B, Class A

VCCI Class A

EN61000-6-4

EN55022 Class A

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated FRI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
  Signal ports: ±4kV line-to-earth
  DC power ports: ±4kV line-to-earth
                  ±2kV line-to-line
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

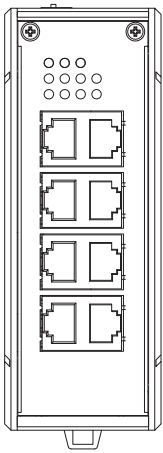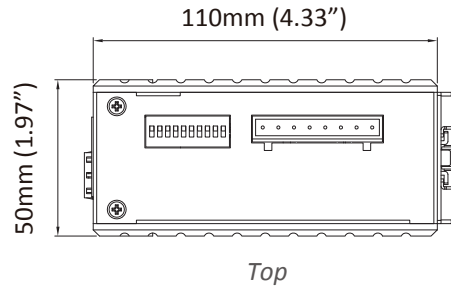### Environmental Test Compliance

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

FED STD 101C Method 5007.1 (Free fall w/ package)
- Tested with Cross Weight and Drop High standard table

Dimensions

110mm (4.33")

50mm (1.97")

Top

135mm (5.31")
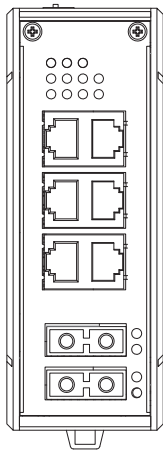
Front
EX94008
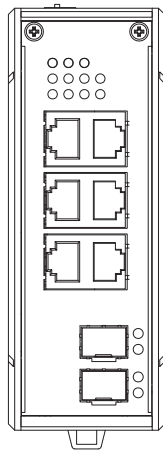
Front
EX94026

Front
EX94026

Side

Back
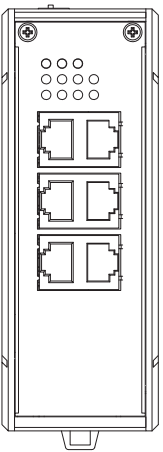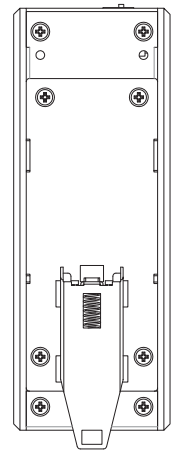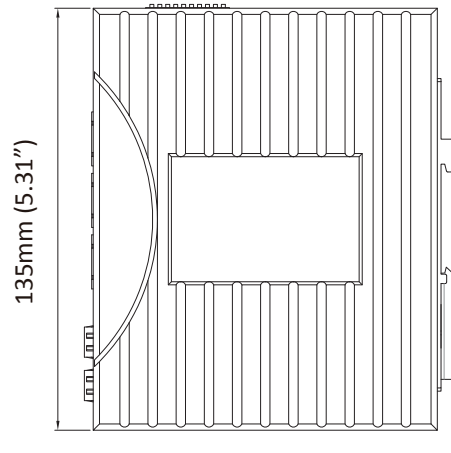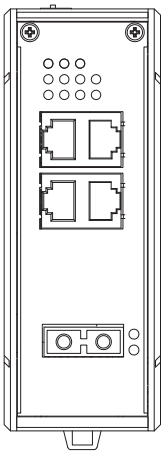
Front
EX94006

Front
EX94014

Front
EX94014

Bottom
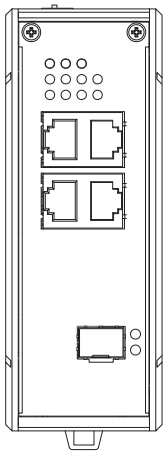
Ordering Information

Model

EX94008-00-1-AA	Hardened Unmanaged 8-port 10/100BASE-TX Ethernet Switch
EX94006-00-1-AA	Hardened Unmanaged 6-port 10/100BASE-TX Ethernet Switch
EX94026-XY-1-AA	Hardened Unmanaged 6-port 10/100BASE-TX + 2-port 100BASE-FX Ethernet Switch
EX94014-XY-1-AA	Hardened Unmanaged 4-port 10/100BASE-TX + 1-port 100BASE-FX Ethernet Switch

* DIN-Rail mounting kit included

100FX Fiber Options (XY)

1A	Multi Mode (SC) -2Km
1B	Multi Mode (ST) -2Km
2A	Single Mode (SC) -20Km
2D	Single Mode (ST) -20Km
2E	Single Mode (SC) WDM-TX:1310nm/RX:1550nm -20Km
2G	Single Mode (SC) WDM-TX:1550nm/RX:1310nm -20Km
V	100BASE SFP

*More 100FX Fiber options also available upon request.

Optional Accessories

KP-AA96-480	Panel Mounting Kit
KR-BKEL900	Rack Mounting Kit
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)

EX95000 Series

Hardened Unmanaged 16-port 10/100BASE Ethernet Switch

Overview

EtherWAN's EX95000 Series is a hardened unmanaged Fast Ethernet switching platform, designed for easy deployment in harsh environments.

The EX95000 Series is equipped with sixteen Fast Ethernet ports, or a combination of Fast Ethernet copper ports and two 100FX ports for long distance connectivity. Although unmanaged, the EX95000 is feature-rich with full wire speed Fast Ethernet throughput, making the EX95000 Series a powerful network switch.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Hardened Grade**
  - Supports -40°C to 75°C (-40°F to 167°F) operating temperature

- **Versatile mounting Options**
  - DIN-Rail, panel or rack mounting

- **Fiber Connectivity**
  - Up to two 100BASE-FX ports with SC, ST and WDM options

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x Full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 1.625M 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
- 4096 MAC addresses

Latency
- Less than 10µs

Power

Input Voltage
- 12 to 48VDC (Terminal Block)
- 12VDC (DC Jack)

Power Consumption
- 7.4W Max. 0.6A @ 12VDC
- 0.3A @ 24VDC
- 0.15A @ 48VDC

Protection
- Overload current protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 75.5mm (W) x 110mm (D) x 135mm (H)
  (2.98" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.87Kg (1.92lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel, Rack mounting

Interface

Ethernet Ports
- 10/100BASE-TX: 16, 15 or 14 ports
- 100BASE-FX: 0, 1 or 2 ports

LED Indicators
- Per Unit: Power 1 (Green),
            Power 2 (Green),
            Power 3 (Green)
- Per Port: Link/Activity (Green)

Alarm Contact
- One relay output with current 1A @ 24VDC

Environment

Operating Temperature
- -40°C to 75°C (-40°F to 167°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL508

EMI

FCC Part 15B, Class A

VCCI Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

NEMA TS2

Dimensions

Top

75.5mm (2.98")

135mm (5.31")

Front

110mm (4.33")

Side

Back

Bottom

Ordering Information

Model

EX95160-00B	16-port 10/100BASE-TX Hardened Unmanaged Ethernet Switch
EX95151-X0B	15-port 10/100BASE-TX + 1-port 100BASE-FX Hardened Unmanaged Ethernet Switch
EX95142-X0B	14-port 10/100BASE-TX + 2-port 100BASE-FX Hardened Unmanaged Ethernet Switch

* DIN-Rail mounting kit included

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

Optional Accessories

KP-AA96-480	Panel mounting kit
KR-BK-43-400	Rack mounting Kit
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for Terminal Block) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC Jack in aluminum housing (for DC Jack) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EX48000A Series

Hardened Unmanaged 5-port 10/100BASE PoE (4 x PoE) Ethernet Switch

Overview

EtherWAN's EX48000A Series provides a hardened 5-port switching platform supporting IEEE802.3af Power over Ethernet, high performance switching with robust features required for mission-critical and harsh environments where sustained connectivity is crucial.

The EX48000A Series is equipped with four 10/100BASE-TX PoE ports, in combination with one 100FX Fiber option. The IEEE802.3af PoE ports provide up to 15.4W/port with a total power budget of 61.6W, making the switch truly versatile for connecting with PoE Powered Devices (PD) with different bandwidth and power consumption requirements.

The EX48000A Series is designed to operate at -40°C to 75°C in harsh environments, where high ESD, shock, and vibration may be present.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Hardened Grade**
  - Supports -40°C to 75°C (-40°F to 167°F) operating temperature

- **PoE Connectivity**
  - Port 1 to 4 supports IEEE802.3af Power over Ethernet

- **Fiber Connectivity**
  - Up to one 100BASE-FX ports with SC and ST options

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3af Power over Ethernet
- IEEE802.3x Full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 512K 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
- 1024 MAC addresses

Power

Input
- Redundant power inputs:
  Terminal Block: 47 - 57VDC
  DC Jack: 47 - 57VDC

Power Consumption
- Device: Max. 10W (without PoE)
- PoE power budget (depends on power input): 61.6W Max.

PoE Power Output
- Port 1 to 4
- IEEE802.3af: up to 15.4W/port, 47 - 55VDC, 350mA Max.

Protection
- Reverse polarity protection
- Overload current protection

Mechanical

Casing
- Metal case
- IP30

Dimensions
- 200mm (W) x 134.3mm (D) x 35mm (H)
  (7.87" (W) x 5.29" (D) x 1.38" (H))

Weight
- 0.8Kg (1.76lbs.)

Installation
- Desktop, Wall, or DIN-Rail mounting

Interface

Ethernet Ports
- 10/100BASE-TX: 5 or 4 ports
- 100BASE-FX: 0 or 1 ports

LED Indicators
- Per Unit: Power 1 (Green),
  Power 2 (Green),
  Power 3 (Green),
  Fault (Red)
- Per Port: Link/Activity (Green)

Alarm Contact
- One relay output with current 1A @ 250VAC

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022 Class A

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated FRI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliances

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Dimensions

Back

200mm (7.87")

Top

134.3mm (5.29")

Side

Front

35mm (1.38")

Front

Ordering Information

Model

EX48050A-00B	Hardened Unmanaged 5-port 10/100BASE-TX PoE Ethernet Switch
EX48041A-X0B	Hardened Unmanaged 4-port 10/100BASE-TX + 1-port 100BASE-FX PoE Ethernet Switch

* DIN-Rail mounting kit included

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

*More 100FX Fiber options also available upon request.

Optional Accessories

KD-AA78000X	DIN-Rail Mounting Kit
DR-120-48	120W/2.5A DIN-Rail 48VDC Industrial Power Supply (for terminal block)
SDR-240-48	240W/5A DIN-Rail 48VDC Industrial Power Supply (for terminal block)
GS-120A-48	120W/2.5A 48VDC Power Adapter with Latched DC Jack in Plastic Housing

EX27000 Series

IEC61850-3/IEEE1613 Managed 24-port 10/100BASE and 4-port Gigabit Ethernet Switch with SFP options

Overview

EtherWAN's EX27000 Series provides an Industrial Fully Managed 28-port switching platform combining high performance switching backbone with robust and secure management features required for mission critical and industrial environments where sustained connectivity is crucial.

The EX27000 Series is equipped with twenty-four 10/100BASE Fast Ethernet ports, in combination with up to four Gigabit, Fixed Fiber, or SFP Combo port options. Mountable on a 1U rack, the EX27000 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, VLANs, GARP protocols, LACP to name a few, via web browser, Telnet, SNMP, RMON, TFTP, and RS-232 console interfaces.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Certified for applications in electric power substations and railway managements**
  ◦ Compliant with IEC61850-3 & IEEE1613, and EN50121-4 standards

- **Redundant power inputs**
  ◦ Supports AC Inlet and DC Terminal Block

- **SFP Options**
  ◦ Supports a list of SFP modules, and the user can flexibly configure each port via SFP module management

- **Fan-less Metal Casing**
  ◦ For easy maintenance with -10°C to 60°C wide operating temperature

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 by port security
- 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
- ACL

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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
  - EtherWAN's Alpha-Ring network fault recovery (<15ms) and Alpha-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 (8 groups, support MAC base)
  - IEEE802.3ad Link Aggregation Control Protocol
- IGMP Snooping
  - IGMP snooping v1/v2/v3

Performance

- Switching Capability: 12.8Gbps
- Packet Buffer Size: 3Mbits
- MAC Address Table: 8192

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

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 3M 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
- (T) : + / - 48VDC (36 - 75VDC) Internal Universal PSU
- (W) : 88 - 370VDC and 90 - 264VAC Internal Universal PSU
- (C) : 90 - 264VAC, 50 - 60Hz Internal Universal PSU

Power Consumption
- 42.7W Max.

Protection
- Overload current protection

Mechanical

Casing
- Metal Case
- IP30

Dimensions
- Single Power:
  442mm (W) x 284mm (D) x 44.2mm (H)
  (17.4" (W) x 11.1" (D) x 1.74" (H))
- Redundant Power:
  442mm (W) x 360mm (D) x 44.2mm (H)
  (17.4" (W) x 14.1" (D) x 1.74" (H))

Weight
- 6.2Kg (13.7lbs)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 24, 20, 16, 12, 8, 4 or 0 port
- 100BASE-FX: 0, 4, 8, 12, 16, 20 or 24 ports
- 100BASE-SFP:0 or 24 ports
- Gigabit: 0, 2 or 4 ports
- Gigabit-SFP Combo: 0 or 4 ports

Console Port
- Port: One DB9 RS-232 port LED Indicators
- Per Unit: Power Status
- Per port 10/100TX and 100FX: Link/Activity (Green)
- Per port 10/100/1000TX, 1000SX/LX: Link/Activity (Green)

LED Indicators
- Port Unit: Power
- Per Port: Link/Act (Green)

Environment

Operating Temperature
- -10°C to 60°C (14°F to 140°F)
  Tested @ -20°C to 70°C (-4°F to 158°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)
- IEC61000-4-10 (Oscillatory wave magnetic field test)
- IEC61000-4-16 (Power frequency immunity test)
- IEC61000-4-18 (Oscillatory wave immunity test)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

IEC61850-3 / IEEE1613

EN50121-4

Application Diagram

The EX27000 switch deployed in an intelligent tunnel system provides high-bandwidth communication to the control center

Exhaust Control System

Fire Detection System

IP Camera System

PLC

Speed Display

Exhaust Control System

PLC

Emergency Phone

Alpha-Ring < 15ms

Fiber-optic

Cat.5 Ethernet

Serial-Cable

EX27000

Dimensions

Back

44.2mm (1.74")

284mm (11.1")

442mm (17.4")

Top

Side

Front

Ordering Information

Model

EX27604-0XYZ	24-port 10/100BASE-TX + 4-port Gigabit Managed Ethernet Switch
EX27424-WXYZ	16-port 10/100BASE-TX + 8-port 100BASE-FX + 4-port Gigabit Managed Ethernet Switch
EX27244-WXYZ	8-port 10/100BASE-TX + 16-port 100BASE-FX + 4-port Gigabit Managed Ethernet Switch
EX27064-WXYZ	24-port 100BASE-FX + 4-port Gigabit Managed Ethernet Switch
EX27064-V0VZ	24-port 100BASE-SFP + 4-port Gigabit SFP Combo Managed Ethernet Switch

* Rack mounting kit included

100FX Fiber Options (W)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
F	Single Mode (FC) - 20Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

Number of Fixed Gigabit Fibers (X)

0	None
1	One Gigabit fiber port
2	Two Gigabit fiber ports
3	Three Gigabit fiber ports
4	Four Gigabit fiber ports

Gigabit Port Options (Y)

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

*More Gigabit options also available upon request.

Ordering Information - continued

Power Input Interface (Z)

T	± 48VDC (Terminal Block)
W	88 - 370VDC and 90 - 264VAC (Terminal Block)
C	90 - 264VAC (AC Inlet)
TR	± 48VDC Redundant (Terminal Block)
WR	88 - 370VDC and 90 - 264VAC Redundant (Terminal Block)
CR	90 - 264VAC Redundant (AC Inlet)

EX29000 Series

IEC61850-3/IEEE1613 Modulized Managed 24-port 10/100BASE and 4-port Gigabit Ethernet Switch with SFP options
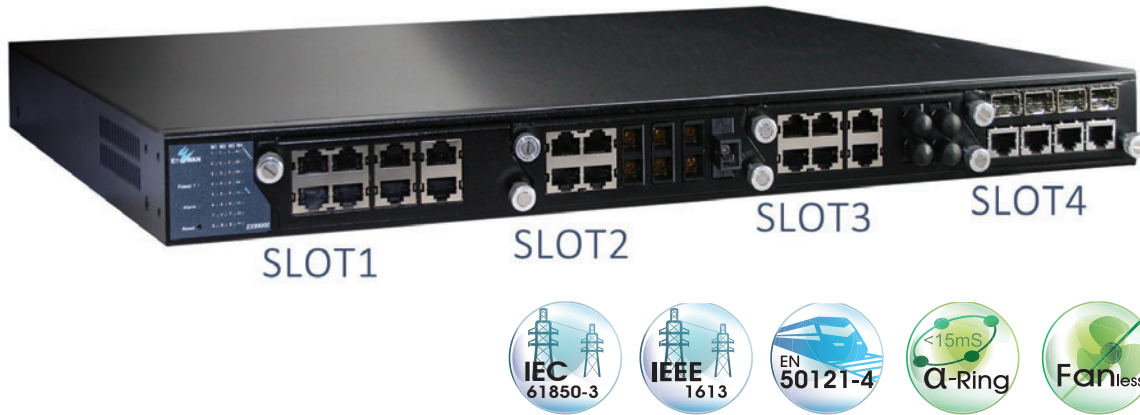
Overview

EtherWAN's EX29000 Series provides an industrial Fully Managed 28-port switching platform combining high performance switching backbone with robust and secure management features required for mission critical and industrial environments where sustained connectivity is crucial.

Highly modularized, the EX29000 switch supports up to 28 electrical and/or optical interfaces with data transfer rates of 10/100 Mbit/s.and up to four Gigabit, Fixed Fiber, or SFP Combo port options. Mountable on a 1U rack, the EX29000 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, VLANs, GARP protocols, LACP to name a few via web browser, Telnet, SNMP, RMON, TFTP, and RS-232 console interface.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Versatile Connectivity**
    - Modularized Ethernet Switch of 24-port 10/100BASE-TX/FX/BX and 4-port Gigabit-TX/SX/LX/BX/SFP

- **Hardened Grade**
    - Wide operating temperature range for extreme environments
    - Fanless and ruggedized housing
    - High shock and electric noise immunity

- **IEC61850-3 Compliance**
    - Meets the standards for operating in power substation zones

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

Security

- MAC Address by port security
- Enable/disable port
- Storm control (broadcast and multicast types)
- IEEE802.1x LAN access control
- Remote authentication through RADIUS

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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
  - EtherWAN's Alpha-Ring network fault recovery (<15ms) and Alpha-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 (8 groups, support MAC base)
  - IEEE802.3ad Link Aggregation Control Protocol
- IGMP Snooping
  - IGMP snooping v1/v2/v3

Performance

- Switching Capability: 12.8Gbps
- Packet Buffer Size: 3Mbits
- 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

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 3M bits

Processing Type
- Store-and-Forward
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control

Address Table Size
- 8192 MAC addresses

Power

Input
- (T) : + / - 48VDC (36 - 75VDC) Internal Universal PSU
- (W) : 88 - 370VDC and 90 - 264VAC Internal Universal PSU
- (C) : 90 - 264VAC, 50 - 60Hz Internal Universal PSU

Power Consumption
- 42.7W Max.

Protection
- Overload current protection

Mechanical

Casing
- Metal Case
- IP30

Dimensions
- Single Power:
  442mm (W) x343mm (D) x 44.2mm (H)
  17.4" (W) x 13.5" (D) x 1.74" (H)
- Redundant Power:
  442mm (W) x404mm (D) x 44.2mm (H)
  (17.4" (W) x 15.9"(D) x 1.74" (H))

Weight
- Single Power: 4.4Kg (9.68lbs.)
- Redundant Power: 4.6 kg (10.1 lbs.)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 24, 16, 8 or 0 port
- 100BASE-FX: 0, 4, 8, 12, 16, 20 or 24 ports
- Gigabit: 0, 2 or 4 portss

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power
- Per Port: Link/Act (Green)
- Per SFP Slot: Selected/Unselected (Green)

Environment

Operating Temperature
- -10°C to 60°C (14°F to 140°F)
  Tested @ -20°C to 70°C (-4°F to 158°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)
- IEC61000-4-10 (Oscillatory wave magnetic field test)
- IEC61000-4-16 (Power frequency immunity test)
- IEC61000-4-18 (Oscillatory wave immunity test)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

Industrial Compliance

IEC61850-3 / IEEE1613

Application Diagram

An EX29000 deployed in a factory automation system

Dimensions

Back

Top

442mm (17.4")

Side

343mm (13.5")

Front

44.2mm (1.74")

35.8mm (1.41")

90.4mm (3.56")

1000M MODULE

113.4mm (44.65")

10/100M MODULE
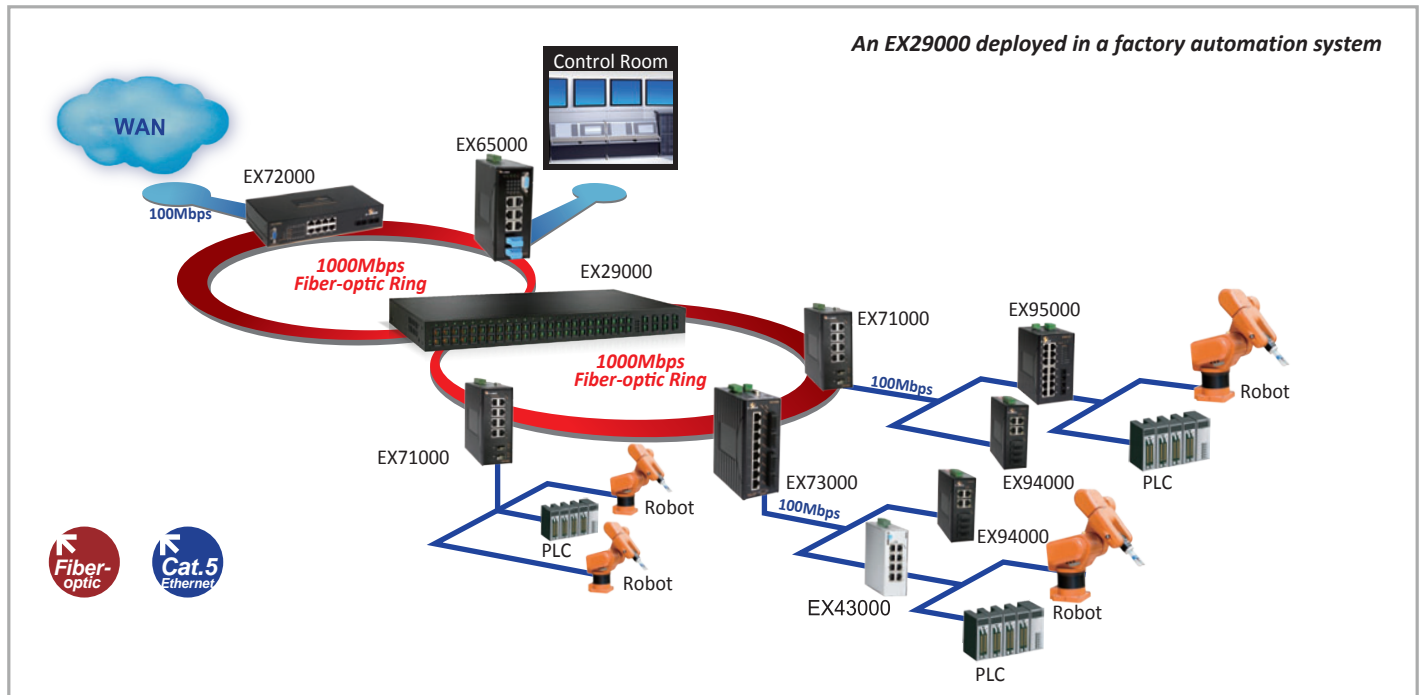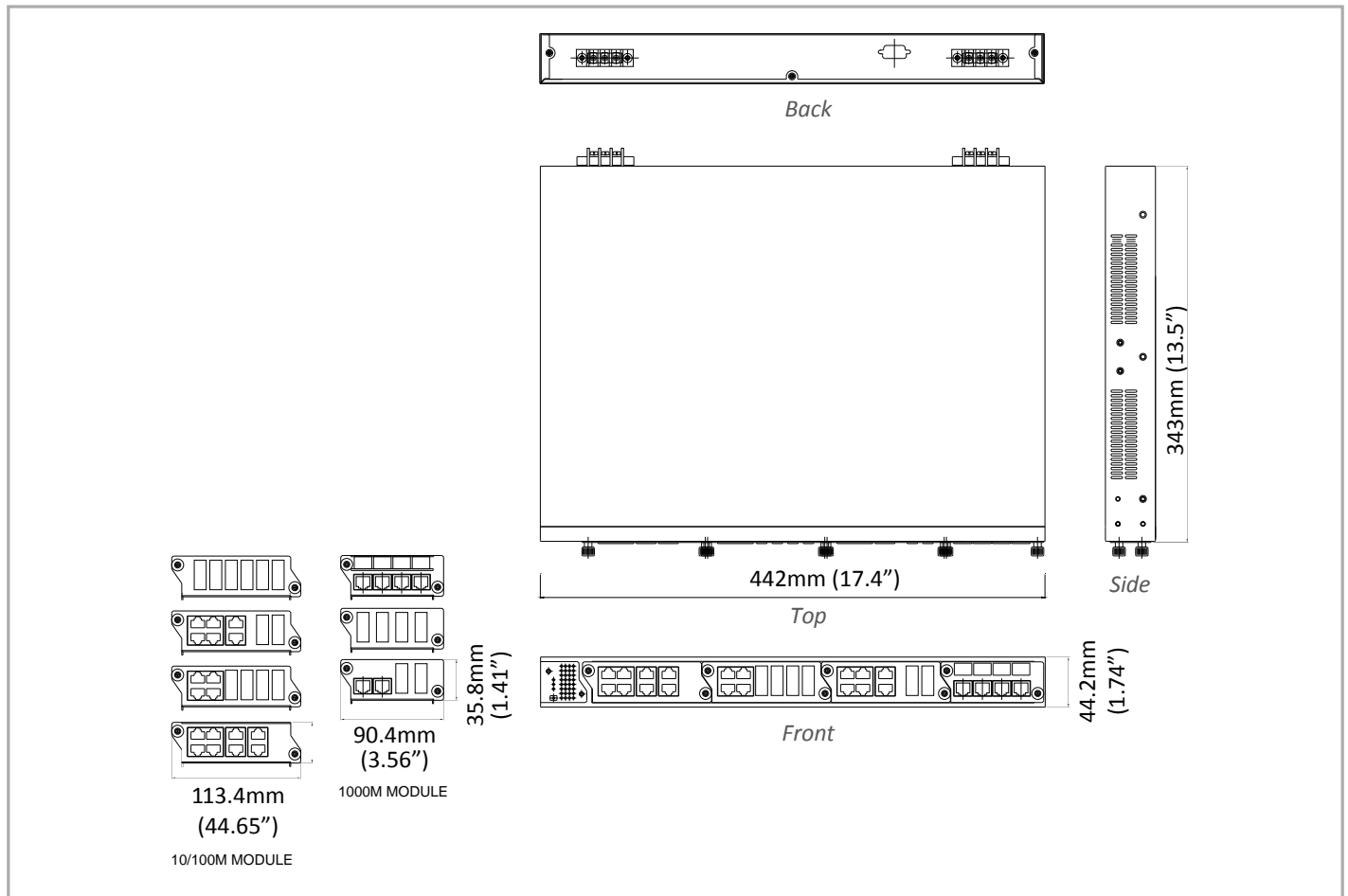
Ordering Information

Model

EX29000-00Z	IEC61850-3/IEEE1613 Modulized Managed 24-port 10/100BASE and 4-port Gigabit Ethernet Switch with SFP options

* Rack mounting kit included

Modules for EX29000 Series

Model	Description	Slot 1	Slot 2	Slot 3	Slot 4
M29800-000	8-Port 10/100BASE TX	√	√	√	
M29620-W00	6-Port 10/100BASE TX + 2-Port 100BASE FX	√	√	√	
M29420-W00	4-Port 10/100BASE TX + 2-Port 100BASE FX	√	√	√	
M29060-W00	6-Port 10/100BASE FX	√	√	√	
M29240-W00	2-Port 10/100BASE TX + 4-Port 100BASE FX	√	√	√	
M29440-W00	4-Port 10/100BASE TX + 4-Port 100BASE FX	√	√	√	
M29004-0XY	4-Port Gigabit				√

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
B	1000BASE-LX (SC) - 20Km
R	1000BASE-BX (SC) WDM-TX:1310nm/RX: 1550nm - 20Km
S	1000BASE-BX (SC) WDM-TX:1550nm/RX: 1310nm - 20Km
V	4-port 1000BASE SFP Combo with 10/100/1000BASE-TX

* More Gigabit options also available upon request.

100FX Fiber Options (W)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

Number of Fixed Gigabit Fibers (X)

0	None
4	Four Gigabit fiber ports

*More Gigabit options also available upon request.

Power Input Interface (Z)

T	± 48VDC (Terminal Block)
W	88 - 370VDC and 90 - 264VAC (Terminal Block)
C	90 - 264VAC (AC Inlet)
TR	± 48VDC Redundant (Terminal Block)
WR	88 - 370VDC and 90 - 264VAC Redundant (Terminal Block)
CR	90 - 264VAC Redundant (AC Inlet)

EX63000 Series

Industrial Managed 16-port 10/100BASE with 2-port Gigabit combo Ethernet Switch

Overview

EtherWAN's EX63000 Series provides an industrial Fully Managed 18-port switching platform combining high performance switching backbone with robust and secure management features required for mission critical and harsh environments where sustained connectivity is crucial.

The EX63000 Series is equipped with sixteen 10/100BASE Fast Ethernet ports, in combination with up to two Gigabit combo ports with Fixed Fiber options. Mountable on a DIN-rail, the EX63000 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, VLANs, GARP protocols, LACP, and via web browser, Telnet, SNMP, RMON, TFTP, and RS-232 console interfaces.

EtherWAN - "When Connectivity is Crucial."

Spotlight

- **Versatile Connectivity**
  - Provides 16-port 10/100BASE-TX/FX/BX/SFP plus 2-port Gigabit-SX/LX/BX/SFP combo

- **Hardened Grade**
  - Wide operating temperature range from -10°C to 60°C (-14°F to 140°F) for extreme environments
  - Fanless and ruggedized housing

- **Secure Remote Access**
  - IEEE802.1x,and RADIUS support

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
- System log (remote/local)

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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
- 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: 7.2Gbps
- Packet Buffer Size: 2M bits
- MAC Address Table: 8192

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

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:
  12 - 48VDC (Terminal Block) ,
  12VDC (DC Jack)

Power Consumption
- 15W Max. 1.25A @ 12VDC, 0.625A @ 24VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Metal Case
- IP30

Dimensions
- 59mm (W) x 125mm (D) x145mm (H)
  (2.32" (W) x 4.92" (D) x 5.71" (H))

Weight
- 1Kg (2.2lbs.)

Installation
- DIN-Rail (Top hat type 35mm) or Wall mounting

Interface

Ethernet Port
- 10/100BASE-TX: 16, 12 or 8 ports
- 100BASE-FX: 0, 1, 2 or 4 ports
- Gigabit: 0, 1 or 2 ports

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power 1, Power 2, Power 3
- Per Port: Link/Activity
  (Green: Copper; Orange: Fiber)

Alarm Contact
- One relay output with current 1A @ 24VDC

Environment

Operating Temperature
- -10°C to 60°C (-14°F to 140°F)
  Tested @ -20°C to 70°C (-4°F to 158°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 ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
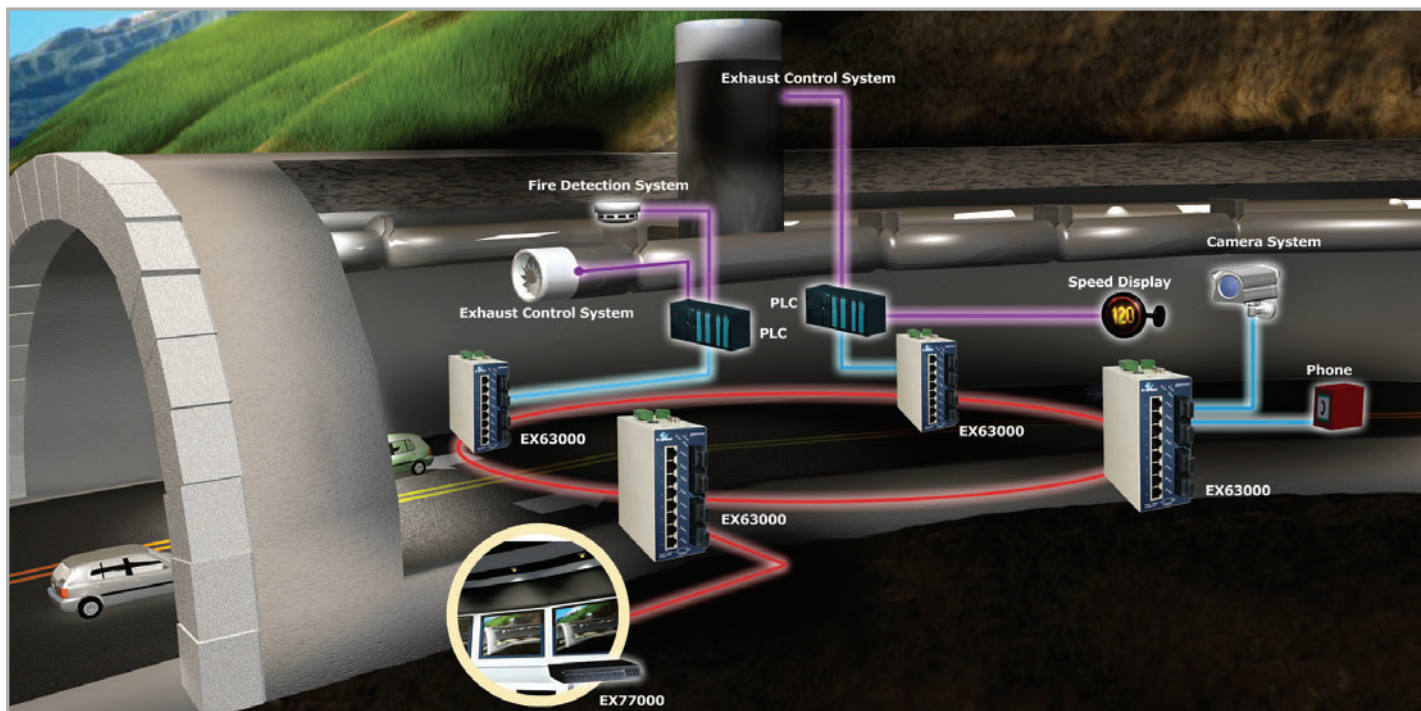- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliances

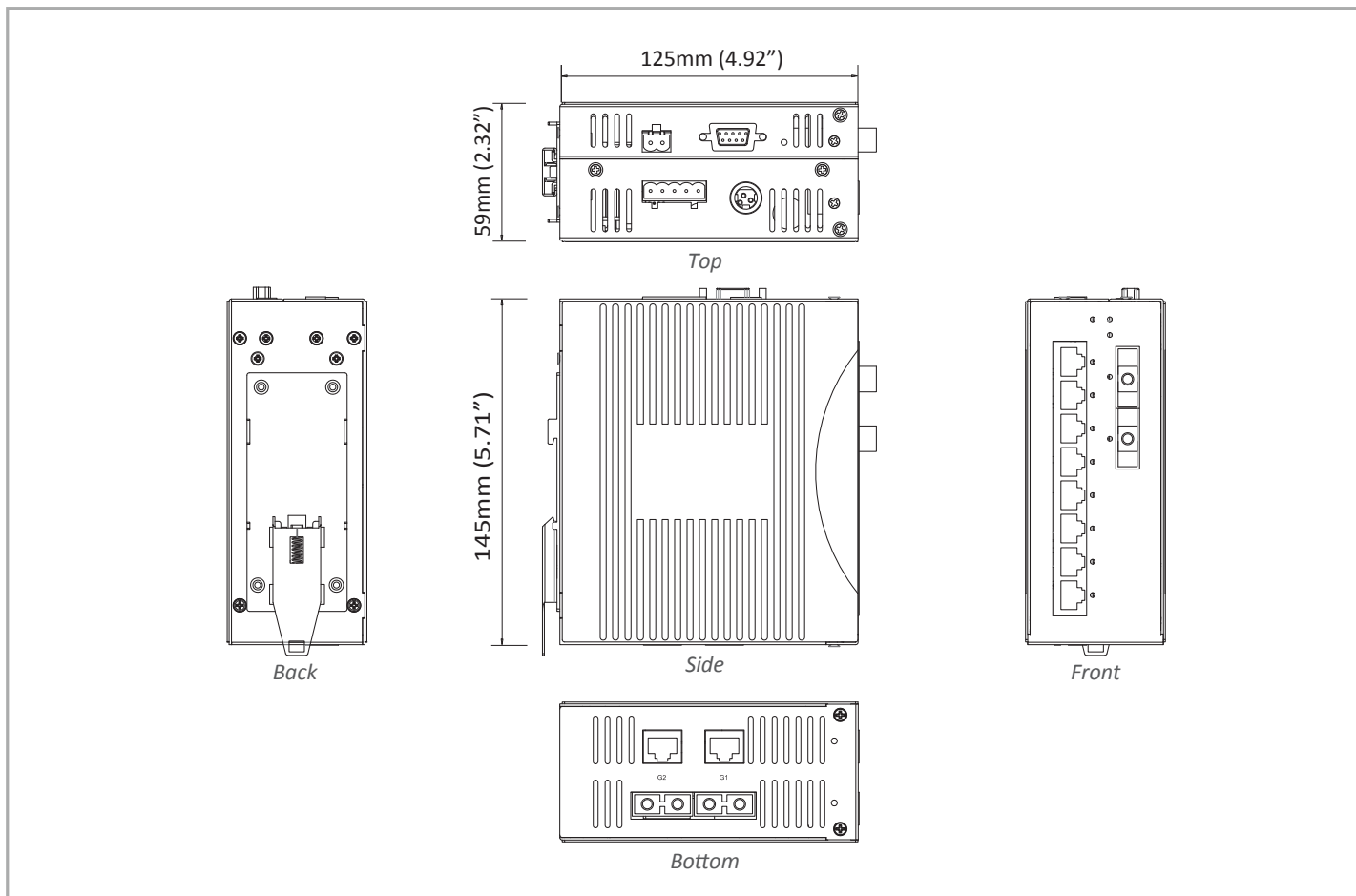**IEC60068-2-6 Fc (Vibration Resistance)**

IEC60068-2-27 Ea (Shock)

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

Application Diagram

Dimensions

125mm (4.92")

59mm (2.32")

Top

145mm (5.71")

Back

Side

Front

G2 G1

Bottom

Ordering Information

Model

EX63400-00B	16-port 10/100BASE-TX Industrial Managed Ethernet Switch
EX63401-0YB	16-port 10/100BASE-TX + 1-port Gigabit Industrial Managed Ethernet Switch
EX63402-0YB	16-port 10/100BASE-TX + 2-port Gigabit Industrial Managed Ethernet Switch
EX63310-X0B	12-port 10/100BASE-TX + 1-port 100BASE-FX Industrial Managed Ethernet Switch
EX63311-XYB	12-port 10/100BASE-TX + 1-port 100BASE-FX + 1-port Gigabit Industrial Managed Ethernet Switch
EX63312-XYB	12-port 10/100BASE-TX + 1-port 100BASE-FX + 2-port Gigabit Industrial Managed Ethernet Switch
EX63320-X0B	12-port 10/100BASE-TX + 2-port 100BASE-FX Industrial Managed Ethernet Switch
EX63321-XYB	12-port 10/100BASE-TX + 2-port 100BASE-FX + 1-port Gigabit Industrial Managed Ethernet Switch
EX63322-XYB	12-port 10/100BASE-TX + 2-port 100BASE-FX + 2-port Gigabit Industrial Managed Ethernet Switch
EX63200-00B	8-port 10/100BASE-TX Industrial Managed Ethernet Switch
EX63201-0YB	8-port 10/100BASE-TX + 1-port Gigabit Industrial Managed Ethernet Switch
EX63202-0YB	8-port 10/100BASE-TX + 2-port Gigabit Industrial Managed Ethernet Switch
EX63210-X0B	8-port 10/100BASE-TX + 1-port 100BASE-FX Industrial Managed Ethernet Switch
EX63211-XYB	8-port 10/100BASE-TX + 1-port 100BASE-FX + 1-port Gigabit Industrial Managed Ethernet Switch
EX63212-XYB	8-port 10/100BASE-TX + 1-port 100BASE-FX + 2-port Gigabit Industrial Managed Ethernet Switch
EX63220-X0B	8-port 10/100BASE-TX + 2-port 100BASE-FX Industrial Managed Ethernet Switch
EX63221-XYB	8-port 10/100BASE-TX + 2-port 100BASE-FX + 1-port Gigabit Industrial Managed Ethernet Switch
EX63222-XYB	8-port 10/100BASE-TX + 2-port 100BASE-FX + 2-port Gigabit Industrial Managed Ethernet Switch
EX63240-X0B	8-port 10/100BASE-TX + 4-port 100BASE-FX Industrial Managed Ethernet Switch
EX63241-XYB	8-port 10/100BASE-TX + 4-port 100BASE-FX + 1-port Gigabit Industrial Managed Ethernet Switch
EX63242-XYB	8-port 10/100BASE-TX + 4-port 100BASE-FX + 2-port Gigabit Industrial Managed Ethernet Switch

* DIN-Rail mounting kit included

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

Ordering Information - continued

Gigabit Port Options (Y)

1	10/100/1000BASE-TX (No Gigabit Fiber port supported)
3	Combo port: 10/100/1000BASE-TX with 1000BASE-SX (SC) - 550m
4	Combo port: 10/100/1000BASE-TX with 1000BASE-SX (SC) - 2Km
5	Combo port: 10/100/1000BASE-TX with 1000BASE-SX (ST) - 550m
A	Combo port: 10/100/1000BASE-TX with 1000BASE-LX (SC) - 10Km
B	Combo port: 10/100/1000BASE-TX with 1000BASE-LX (SC) - 20Km
R	Combo port: 10/100/1000BASE-TX with 1000BASE-BX (SC) WDM-TX:1310nm/RX:1550nm - 20Km
S	Combo port : 10/100/1000BASE-TX with 1000BASE-LX (SC) WDM-TX:1550nm/RX: 1310nm - 20Km

Optional Accessories

KP-AA96-480	Panel Mounting Kits
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60--24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for Terminal Block); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC Jack in aluminum housing (for DC Jack); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EX61000A Series

Industrial Managed 8-port 10/100BASE and 2-port Gigabit Ethernet Switch with SFP options

Overview

EtherWAN's EX61000A Series provides an industrial Fully Managed 10-port switching platform combining high performance switching backbone with robust and secure management features required for mission critical and harsh environments where sustained connectivity is crucial.

The EX61000A Series is equipped with ten 10/100BASE Fast Ethernet ports, or a combination with up to two Gigabit, Fixed Fiber, or SFP port options. Mountable on a DIN-rail, the EX61000A 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, VLANs, GARP protocols, LACP, and via web browser, Telnet, SNMP, RMON, TFTP, and RS-232 console interfaces.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Versatile Connectivity**
  - Provides 8-port 10/100BASE-TX/FX/BX/SFP plus 2-port Gigabit-SX/LX/BX/SFP

- **Hardened Grade**
  - Operating temperature range from -10°C to 60°C (-14°F to 140°F) for industrial environments
  - Fanless and ruggedized housing

- **Secure Remote Access**
  - IEEE802.1x and RADIUS support

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
- System log (remote/local)

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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
  - EtherWAN's Alpha-Ring network fault recovery (<15ms)
- 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: 5.6Gbps
- Packet Buffer Size: 2M bits
- MAC Address Table: 8192

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

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:
  12 - 48VDC (Terminal Block)
  12VDC (DC Jack)

Power Consumption
- 11W Max. 0.92A @ 12VDC, 0.46A @ 24VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 60mm (W) x 125mm (D) x 145mm (H)
  (2.36" (W) x 4.92" (D) x 5.7" (H))

Weight
- 1.1Kg (2.42lbs.)

Installation
- DIN-Rail (Top hat type35mm), Rack, or Wall mounting

Interface

Ethernet Port
- 10/100BASE-TX: 8, 6 or 4 port
- 100BASE-FX: 0 to 4 ports
- Gigabit: 0, 1 or 2 ports

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power 1, Power 2, Power 3
- Per Port: Link/Activity, Speed

Alarm Contact
- One relay output with current 1A @ 24VDC

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety
UL508

EMI
FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS
EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance
IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Application Diagram

Exhaust Control System

Fire Detection System

Exhaust Control System

PLC

PLC

EX71000

EX71000

Speed Display

IP Camera System

Emergency Phone

EX71000

Alpha-Ring < 15ms

Fiber-optic

Cat.5 Ethernet

Serial-Cable

The EX71000 utilized in an intelligent tunnel solution

Dimensions

Top

60mm (2.36")

125mm (4.92")

145mm (5.7")

Front

Side

Back

Bottom

Ordering Information

Model

EX61800A-00B	8-port 10/100BASE-TX Industrial Managed Ethernet Switch
EX61801A-0YB	8-port 10/100BASE-TX + 1-port Gigabit Industrial Managed Ethernet Switch
EX61802A-0YB	8-port 10/100BASE-TX + 2-port Gigabit Industrial Managed Ethernet Switch
EX61620A-X0B	6-port 10/100BASE-TX + 2-port 100BASE-FX Industrial Managed Ethernet Switch
EX61621A-XYB	6-port 10/100BASE-TX + 2-port 100BASE-FX + 1-port Gigabit Industrial Managed Ethernet Switch
EX61622A-XYB	6-port 10/100BASE-TX + 2-port 100BASE-FX + 2-port Gigabit Industrial Managed Ethernet Switch
EX61420A-X0B	4-port 10/100BASE-TX + 2-port 100BASE-FX Industrial Managed Ethernet Switch
EX61422A-XYB	4-port 10/100BASE-TX + 2-port 100BASE-FX + 2-port Gigabit Industrial Managed Ethernet Switch
EX61440A-X0B	4-port 10/100BASE-TX + 4-port 100BASE-FX Industrial Managed Ethernet Switch

* DIN-Rail mounting kit included

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km
V	100BASE SFP

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
B	1000BASE-LX (SC) - 20Km
R	1000BASE-BX (SC) WDM-TX:1310nm/RX:1550nm - 20Km
S	1000BASE-BX (SC) WDM-TX: 1550nm/RX: 1310nm - 20Km
V	1000BASE SFP

Optional Accessories

KP-AA96-480	Panel mounting Kits
KR-BK71000	Rack mounting Kits
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60--24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for Terminal Block) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC Jack in aluminum housing (for DC Jack) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EX62000 Series

Industrial Managed 8 to 14 ports 10/100BASE and 2-port Gigabit Ethernet Switch with SFP options

Overview

EtherWAN's EX62000 Series provides an industrial Fully Managed 14-port switching platform combining high performance switching backbone with robust and secure management features required for mission critical and harsh environments where sustained connectivity is crucial.

The EX62000 Series is equipped with eight to fourteen 10/100BASE Fast Ethernet ports, or in combination with up to two Gigabit, Fixed Fiber, or SFP Combo port options. Panel mountable, the EX62000 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, VLANs, GARP protocols, LACP, and via web browser, Telnet, SNMP, RMON, TFTP, and RS-232 console interfaces.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Versatile Connectivity**
  - Provides flexibility of 8-port to 14-port 10/100BASE-TX/FX/BX plus 2-port Gigabit-TX/SX/LX/BX/SFP combos

- **Intelligent Data Management**
  - Optimize network performance with QoS, VLAN etc.

- **Secure Remote Access**
  - IEEE802.1x and RADIUS support

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
- System log (remote/local)

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 Alpha-Ring network fault recovery (<15ms)
- 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: 6.8Gbps
- Packet Buffer Size: 2M bits
- MAC Address Table: 8192

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

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:
  12 - 48VDC (Terminal Block)
  12VDC (DC Jack)

Power Consumption
- 15W Max. 1.25A @ 12VDC, 0.625A @ 24VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Metal Case
- IP30

Dimensions
- 235mm (W) x 125mm (D) x 50mm (H)
  (9.25" (W) x 4.92" (D) x 1.97" (H))

Weight
- 1.5Kg (3.3lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel or Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 14, 13, 12 or 8 port
- 100BASE-FX: 0, 1 or 2 ports
- Gigabit: 0, 1 or 2 ports

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power 1, Power 2, Power 3
- Per Port: Link/Activity, Speed

Environment

Operating Temperature
- -10°C to 60°C (-40°F to 167°F)
  Tested @ -20°C to 70°C (-40°F to 158°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

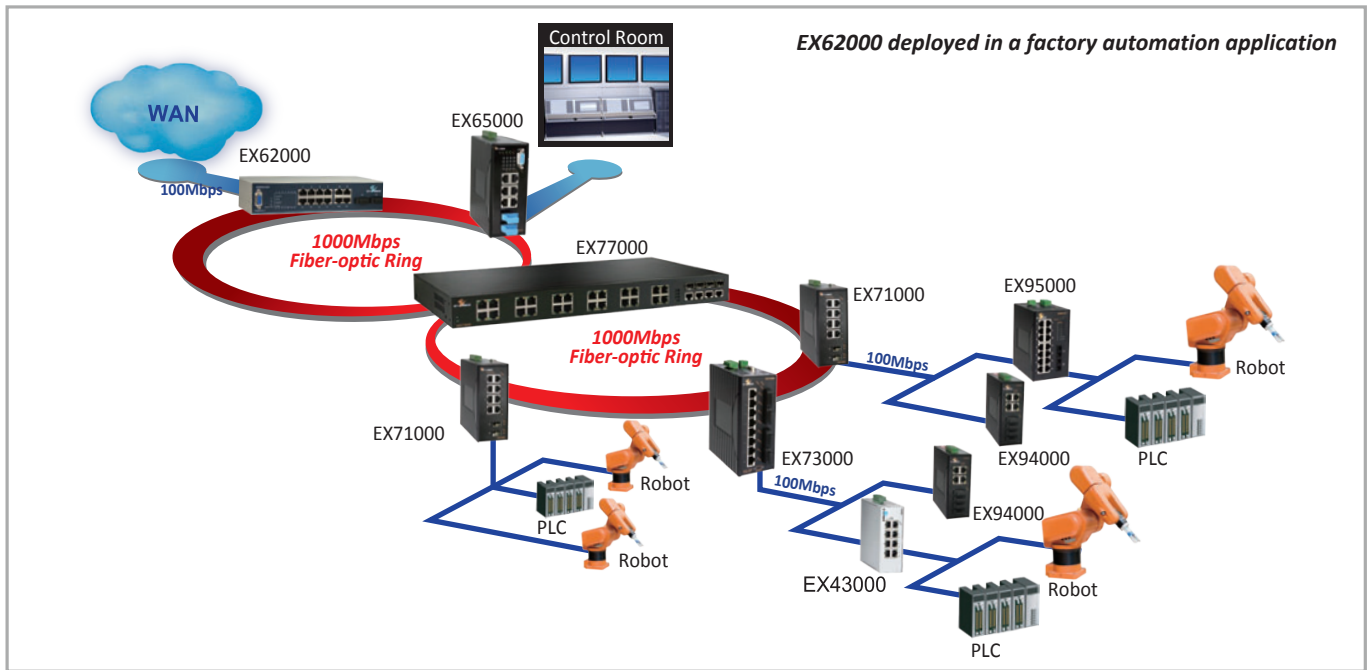### Environmental Test Compliance

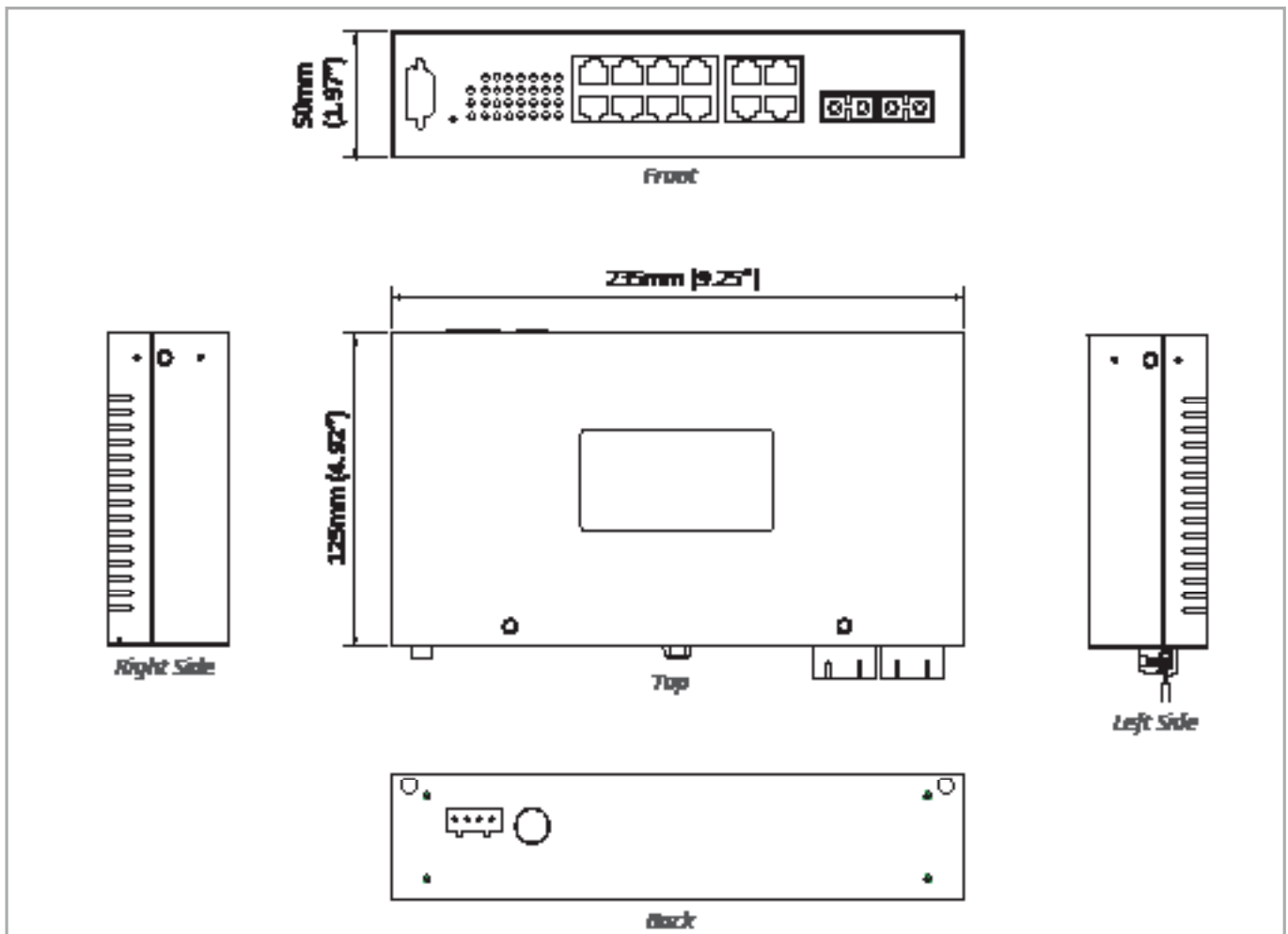**IEC60068-2-6 Fc (Vibration Resistance)**

IEC60068-2-27 Ea (Shock)

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

Application Diagram

EX62000 deployed in a factory automation application

Dimensions

Ordering Information

Model

EX62140-00B	14-port 10/100BASE-TX Industrial Managed Ethernet Switch
EX62141-X0B	13-port 10/100BASE-TX + 1-port 100BASE-FX Industrial Managed Ethernet Switch
EX62142-X0B	12-port 10/100BASE-TX + 2-port 100BASE-FX Industrial Managed Ethernet Switch
EX62102-X0B	8-port 10/100BASE-TX + 2-port 100BASE-FX Industrial Managed Ethernet Switch
EX62128-0YB	12-port 10/100BASE-TX + 1-port Gigabit Industrial Managed Ethernet Switch
EX62129-0YB	12-port 10/100BASE-TX + 2-port Gigabit Indusrial Managed Ethernet Switch
EX62088-0YB	8-port 10/100BASE-TX + 1-port Gigabit Industrial Managed Ethernet Switch
EX62089-0YB	8-port 10/100BASE-TX + 2-port Gigabit Industrial Managed Ethernet Switch

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

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
B	1000BASE-LX (SC) - 20Km
R	1000BASE-BX (SC) WDM-TX:1310nm/RX:1550nm - 20Km
S	1000BASE-BX (SC) WDM-TX: 1550nm/RX: 1310nm - 20Km
V	2-port 1000BASE SFP combo 10/100/1000BASE-TX

Optional Accessories

KD-AA96000	DIN-Rail mounting kit
KP-BK6212	Panel mounting kit
KR-BK72-400	Rack mounting kit
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60--24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for Terminal Block); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC Jack in aluminum housing (for DC Jack); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EX38000 Series

Industrial Web-Smart 5-port 10/100BASE PoE (4 x PoE) Ethernet Switch

Overview

EtherWAN's EX38000 Series provides an industrial 5-port switching platform supporting IEEE802.3af+ Power over Ethernet, high performance switching with robust management features required for mission-critical and harsh environments where sustained connectivity is crucial.

The EX38000 Series is equipped with four 10/100BASE-TX PoE ports, in combination with one 100FX Fiber options. The IEEE802.3af+ PoE ports provide up to 30W/port with a total power budget of 120W, making the switch truly versatile for connecting with PoE Powered Devices (PD) with different bandwidth and power consumption requirements.

Users are able to access management features such as QoS based on 802.1p, DSCP, and IP precedence. With the hardened specifications, the EX38000 Series is designed to operate at -10°C to 60°C in harsh environments.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Industrial Grade**
  - Supports -10°C to 60°C (14°F to 140°F) operating temperature

- **PoE Connectivity**
  - Port 1 to 4 supports IEEE802.3at Power over Ethernet

- **Fiber Connectivity**
  - Up to one 100BASE-FX ports with SC and ST options

- **Web-Managed Interface**
  - Comprehensive QoS based on 802.1p, DSCP, and IP precedence

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3af Power over Ethernet
- IEEE802.3x Full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 512K 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
- 1024 MAC addresses

Power

Input
- Redundant power inputs:
  Terminal Block: 47 - 57VDC
  DC Jack: 47 - 57VDC

Power Consumption
- Device: Max. 10W (without PoE)
- PoE power budget (depends on power input): 120W Max.

PoE Power Output
- Port 1 to 4
- IEEE802.3af+: up to 30W/port, 47 - 57VDC, 600mA Max.

Protection
- Reverse polarity protection
- Overload current protection

Mechanical

Casing
- Metal case
- IP30

Dimensions
- 200mm (W) x 134.3mm (D) x 35mm (H)
  (7.87" (W) x 5.29" (D) x 1.38" (H))

Weight
- 0.8Kg (1.76lbs.)

Installation
- Desktop, Wall, or DIN-Rail mounting

Interface

Ethernet Ports
- 10/100BASE-TX: 5 or 4 ports
- 100BASE-FX: 0 or 1 ports

LED Indicators
- Per Unit:Power 1,
          Power 2,
          Power 3 (Green),
          Fault (Red)
- Per Port: Link/Activity (Green)

Alarm Contact
- One relay output with current 1A @ 250VAC

Environment

Operating Temperature
- -10°C to 60°C (14°F to 140°F)
  Tested @ -20°C to 70°C (-4°F to 158°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022 Class A

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated FRI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

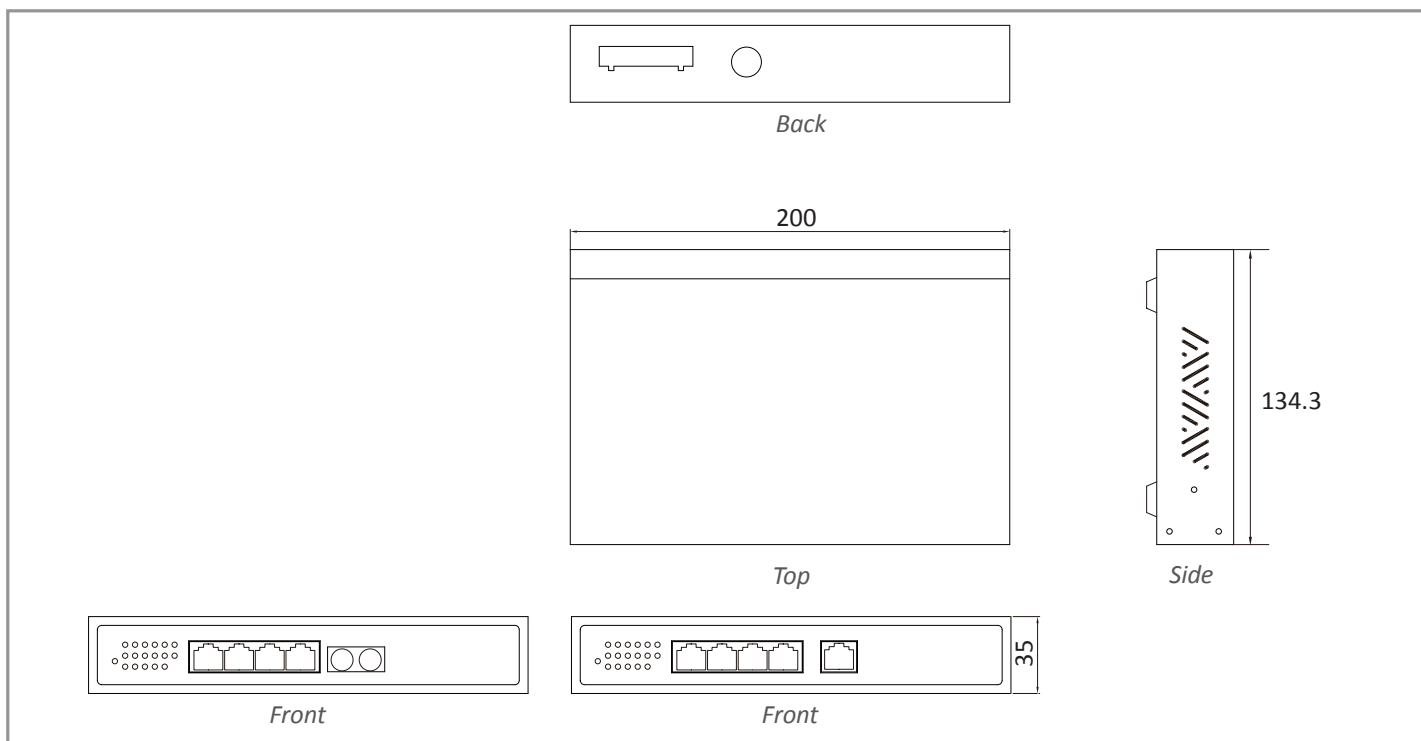**Environmental Test Compliance**

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

NEMA TS2

Dimensions

Back

200

Top

134.3

Side

35

Front

Front

Ordering Information

Model

EX38050-00B	Industrial Web-smart 5-port 10/100BASE-TX PoE Ethernet Switch
EX38041-X0B	Industrial Web-smart 4-port 10/100BASE-TX + 1-port 100BASE-FX PoE Ethernet Switch

* DIN-Rail mounting kit included

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

*More 100FX Fiber options also available upon request.

Optional Accessories

KD-AA78000X	DIN-Rail Mounting Kit
SDR-240-48	240W/5A DIN-Rail 48VDC Industrial Power Supply
SDR-480-48	480W/10A DIN-Rail 48VDC Industrial Power Supply

EX39924 Series

Industrial Unmanaged 24-port Gigabit Switch with 4/16-port combo SFP Slots

Overview

EtherWAN's EX39924 Series is an industrial Unmanaged Gigabit switching platform, designed for easy deployment in harsh environments.

The EX39924 Series is equipped with twenty-four Gigabit Ethernet ports, or a combination of Gigabit copper ports and four or sixteen combo SFP Gigabit ports for long distance connectivity. Although unmanaged, the EX39924 is feature rich with 16379 bytes jumbo frame support, full wire speed Gigabit throughput, QoS support and eco-friendly IEEE802.3az EEE (Energy Efficient Ethernet) compliant, making the EX39924 Series a powerful yet energy efficient network switch.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Industrial Grade**
  - Supports -10°C to 60°C (14°F to 140°F) operating temperature

- **Jumbo Frame Support**
  - Up to 16379 bytes

- **Fiber Connectivity**
  - Up to 4 or 16 combo 1000BASE SFP ports

- **High Reliability**
  - Fanless Design
  - No moving parts

- **Full Wire Speed**
  - Non Blocking
  - Full Duplex Simultaneous Communication on all ports

- **Rack Mount**
  - Enterprise level 1U Rackmount

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.3x Full duplex and flow control
- IEEE802.1az Energy Efficient Ethernet
- IEEE802.1p Quality of Service (QoS)

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 512 KB

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Jumbo Frame
- 16379 bytes

Address Table Size
- 8192 MAC addresses

Power

Input
- 100 - 240VAC, 50 - 60Hz Internal Universal PSU

Mechanical

Casing
- Metal
- IP30

Dimensions
- 440mm (W) x 210mm (D) x 44mm (H) (17.32" (W) x 8.19" (D) x 1.73" (H))

Weight
- 2.9Kg (6.4lbs.)

Installation
- Rack mounting

Interface

Ethernet Ports
- Gigabit: 24 ports
- Combo SFP: 16 or 4 ports

LED Indicators
- Per Unit: Power (Green)
- Per Port: 10/100M (Green)
          1000M (Green)

Environment

Operating Temperature
- -10°C to 60°C (14°F to 140°F) Tested@-20°C to 70°C (-4°F to 158°C)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

VCCI Class A

EN61000-6-4

EN55022 Class A

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)
- EN61000-4-11 (Voltage Dips & Voltage Variations)

Environmental Test Compliances

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

IEC60068-2-32 Ed (Free fall)

Dimensions

Back

210mm (8.19")

Top

Front

44mm (1.73")

44mm (1.73")

440mm (17.32")

Front
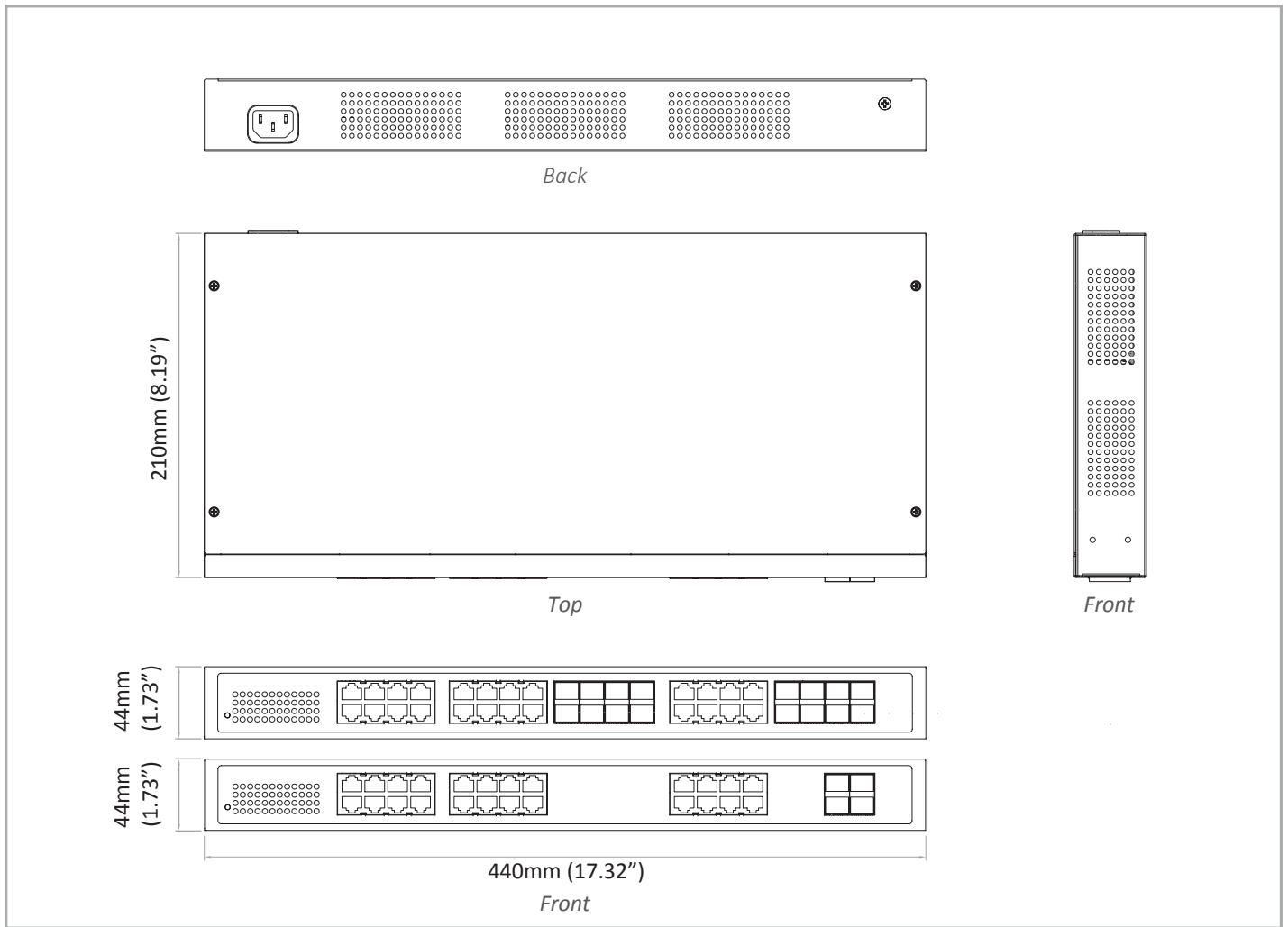
Ordering Information

Model

EX39924-16	Industrial Unmanaged 24-port 10/100/1000BASE-T (16-port combo SFP) Ethernet Switch
EX39924-4	Industrial Unmanaged 24-port 10/100/1000BASE-T (4-port combo SFP) Ethernet Switch

EX32900 Series

Industrial Unmanaged 5/8-port 10/100/1000BASE Gigabit Ethernet Switch

Overview

EtherWAN's EX32900 Series is a compact industrial Unmanaged Gigabit switching platform, designed for easy deployment in harsh environments.

The EX32900 Series is equipped with five or eight Gigabit Ethernet ports, or a combination of Gigabit copper ports and one Gigabit fiber port for long distance connectivity. Although unmanaged, the EX32900 is feature-rich with Jumbo Frame support, full wire speed Gigabit throughput, QoS support and eco-friendly IEEE802.3az EEE (Energy Efficient Ethernet) compliant, making the EX32900 Series a powerful yet energy efficient network switch.

EtherWAN—"When Connectivity is Crucial."

Spotlight

- **Industrial Grade**
  - Supports -10°C to 60°C (14°F to 140°F) operating temperature
  - Supports DIN-Rail mounting

- **Jumbo Frame Support**
  - Up to 10K bytes (EX32905/EX32914 Series)
  - Up to 9720 bytes (EX32908/EX32917 Series)

- **Fiber Connectivity**
  - Up to one 1000BASE-SX port with SC and ST options

- **High Reliability**
  - Fanless Design
  - No moving parts

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.1x, Full duplex flow control
- IEEE802.1az Energy Efficient Ethernet
- IEEE802.1p Quality of Service (QoS)

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- EX31905/EX32914: 1M bits
- EX32908/EX32917: 192KB

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Jumbo Frame
- EX32905/EX32914: 10K bytes
- EX32908/EX32917: 9720 bytes

Address Table Size
- EX32905/EX32914: 8K MAC addresses
- EX32908/EX32917: 4K MAC addresses

Power

Input Voltage
- 12 to 48VDC

Power Consumption
- 6.5W Max. 0.25A @ 24VDC

Protection
- Reverse polarity protection
- Overload current protection

Mechanical

Casing
- Plastic case
- IP30

Dimensions
- EX32905/EX32914:
  26mm (W) x 76.5mm (D) x 114mm (H)
  (1.02" (W) x 3.06" (D) x 4.33" (H))
- EX32908/EX32917:
  35mm (W) x 86mm (D) x 149mm (H)
  (1.4" (W) x 3.44" (D) x 5.96" (H))

Weight
- EX32905/EX32914: 0.2Kg (0.44lb.)
- EX32908/EX32917: 0.3Kg (0.66lb.)

Installation
- DIN-Rail (Top hat type 35mm)

Interface

Ethernet Ports
- EX32905/EX32914:
  10/100/1000BASE-T: 5 or 4 ports
  1000BASE-X: 0 or 1 ports

- EX32908/EX32917:
  10/100/1000BASE-T: 8 or 7 ports
  1000BASE-X: 0 or 1 ports

LED Indicators
- EX32905/EX32914:
  Per Unit: Power (Green)
  Per Port: 10/100M(Green),
            1000M (Yellow)
- EX32908/EX32917:
  Per Unit: Power 1 (Green),
            Power 2 (Green),
            Alarm (Red)
  Per Port: 10/100M(Green),
            1000M (Yellow)

Alarm Contact (EX32908/EX32917 only)
- One relay output with current 1A@250VAC
- Supports normal close and normal open

Environment

Operating Temperature
- -10°C to 60°C (14°F to 140°F)
  Tested @ -20°C to 70°C (-4°F to 158°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL60950 (EX32905/EX32914 Series only)

EMI

FCC Part 15B, Class A

VCCI Class A

EN61000-6-4

EN55022 Class A

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
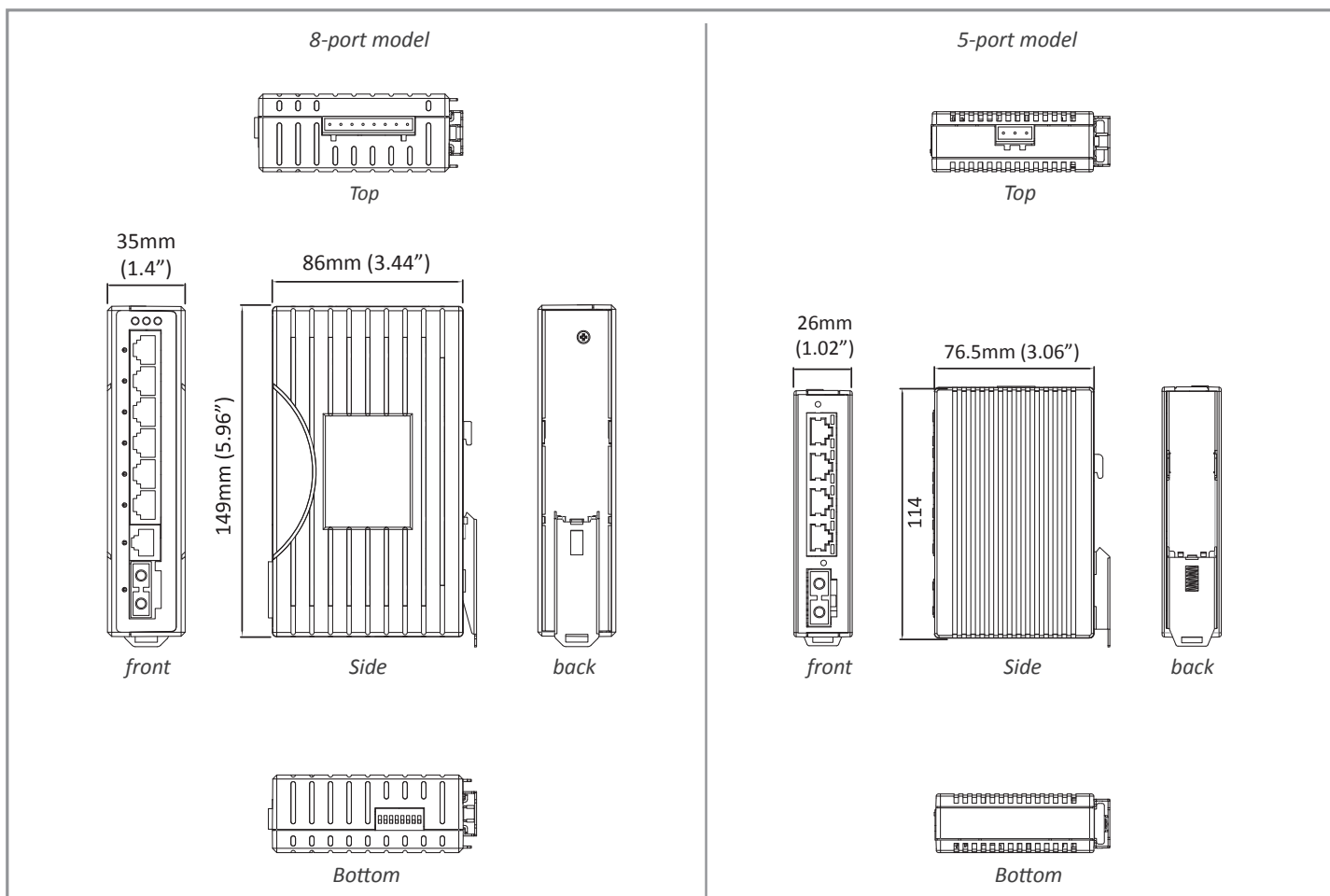- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliances

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Dimensions

8-port model

Top

35mm (1.4")

86mm (3.44")

149mm (5.96")

front *Side* *back*

Bottom

5-port model

Top

26mm (1.02")

76.5mm (3.06")

114

front *Side* *back*

Bottom

Ordering Information

Model

EX32905	Industrial Unmanaged 5-port 10/100/1000BASE-T Gigabit Ethernet Switch
EX32914-X	Industrial Unmanaged 4-port 10/100/1000BASE-T+ 1-port 1000BASE-X Gigabit Ethernet Switch
EX32908	Industrial Unmanaged 8-port 10/100/1000BASE-T Gigabit Ethernet Switch
EX32917-X	Industrial Unmanaged 7-port 10/100/1000BASE-T+ 1-port 1000BASE-X Gigabit Ethernet Switch

* DIN-Rail mounting kit included

Optical Port Options (X)

3	1000BASE-SX(SC)-550m
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

Optional Accessories

DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for Terminal Block) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EX35000 Series

Industrial Unmanaged 8-port Gigabit Ethernet Switch

Overview

EtherWAN's EX35000 Series is an industrial unmanaged Gigabit switching platform, designed for easy deployment in harsh environments.

The EX35000 Series is equipped with eight Gigabit Ethernet ports, or a combination of Gigabit copper ports and two Gigabit fiber ports for long distance connectivity. Although unmanaged, the EX35000 is feature-rich with full wire speed Gigabit throughput, making the EX35000 Series a powerful network switch.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Industrial Grade**
  - Supports -20°C to 60°C (-4°F to 140°F) operating temperature

- **Versatile mounting Options**
  - DIN-Rail or panel mounting

- **Fiber Connectivity**
  - Up to two 1000BASE ports with SC, ST and SFP options

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3ab 100BASE-T
- IEEE802.3az 1000VASE-SX/LX
- IEEE802.3x Full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 1.125M 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

Jumbo Frame
- 9K

Power

Input
- Redundant power inputs:
  9 to 32VDC (Terminal Block);
  12VDC (DC Jack)

Power Consumption
- 6.7W Max. 0.52A @ 12VDC, 0.26A @ 24VDC

Protection
- Reverse polarity protection
- Overload current protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 68mm (W) x 110mm (D) x 135mm (H)
  (2.68" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.8Kg (1.76lbs.)

Installation
- DIN-Rail (Top hat type 35mm) or Panel mounting

Interface

Ethernet Ports
- Gigabit: 8 ports (2 Fiber combo ports included)

LED Indicators
- Per Unit: Power 1 (Green)
  Power 2 (Green)
  Power 3 (Green)
  10/100M (Green)
  1000M (Orange)

Alarm Contact
- One relay output with current 1A @ 24VDC

Environment

Operating Temperature
- -20°C to 60°C (-4°F to 140°F)
  Tested @ -30°C to 70°C (-22°F to 158°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL508

EMI

FCC Part 15B Class A, VCCI Class A

EN61000-6-4

EN55022 Class A

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated FRI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

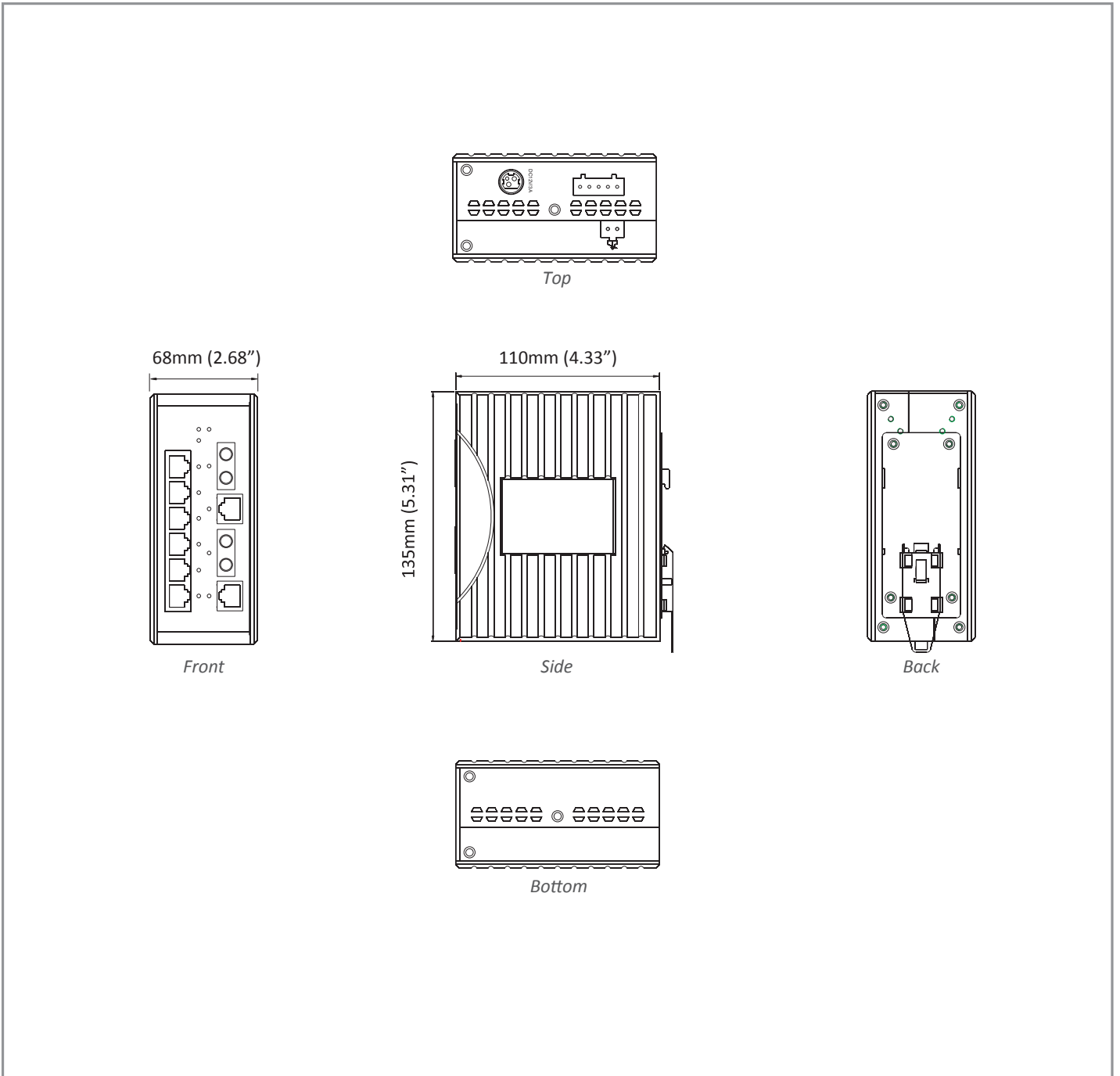### Environmental Test Compliances

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Dimensions

Top

68mm (2.68")

Front

110mm (4.33")

135mm (5.31")

Side

Back

Bottom

Ordering Information

Model

EX35080-00B (EOL)	Industrial Unmanaged 8-port 10/100/1000BASE-TX Ethernet Switch
EX35081-0YB (EOL)	Industrial Unmanaged 7-port 10/100/1000BASE-TX + 1-port combo Gigabit Ethernet Switch
EX35082-0YB	Industrial Unmanaged 6-port 10/100/1000BASE-TX + 2-port combo Gigabit Ethernet Switch

* DIN-Rail mounting kit included

Gigabit Port Options (Y)

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

*More 100FX Fiber options also available upon request.

Optional Accessories

KP-AA96-480	Panel Mounting Kit
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for Terminal Block) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC Jack in aluminum housing (for DC Jack) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EX33000 Series

Industrial Unmanaged 16-port 10/100BASE Ethernet Switch

Overview

EtherWAN's EX33000 Series is an industrial unmanaged Fast Ethernet switching platform, designed for easy deployment in harsh environments.

The EX33000 Series is equipped with sixteen Fast Ethernet ports, or a combination of Fast Ethernet copper ports and two 100FX ports for long distance connectivity. Although unmanaged, the EX33000 is feature rich with full wire speed Fast Ethernet throughput, making the EX33000 Series a powerful network switch.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Industrial Grade**
  - Supports -10°C to 60°C (14°F to 140°F) operating temperature

- **Versatile mounting Options**
  - Supports DIN-Rail, panel and rack mounting

- **Fiber Connectivity**
  - Up to two 100BASE-FX ports with SC, ST and WDM options

Hardware Specifications

Technology

Standards
- IEEE802.3, 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x Full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 1.625M 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
- 4096 MAC addresses

Latency
- Less than 10µs

Power

Input
- Redundant power inputs:
  12 to 48VDC (Terminal Block),
  12VDC (DC Jack)

Power Consumption
- 7.4W Max. 0.6A @ 12VDC,
  0.3A @ 24VDC,
  0.15A @48VDC

Protection
- Overload current protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 69mm (W) x 110mm (D) x 135mm (H)
  (2.72" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.87Kg (1.92lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel, or Rack mounting

Interface

Ethernet Ports
- 10/100BASE-TX: 16, 15 or 14 ports
- 100BASE-FX: 0, 1 or 2 ports

LED Indicators
- Per Unit: Power 1 (Green),
            Power 2 (Green),
            Power 3 (Green)
- Per Port: Link/Act

Alarm Contact
- One relay output with current 1A @ 24VDC

Environment

Operating Temperature
- -10°C to 60°C (14°F to 140°F)
  Tested @ -20°C to 70°C (-4°F to 158°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

VCCI Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

Safety

UL508

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
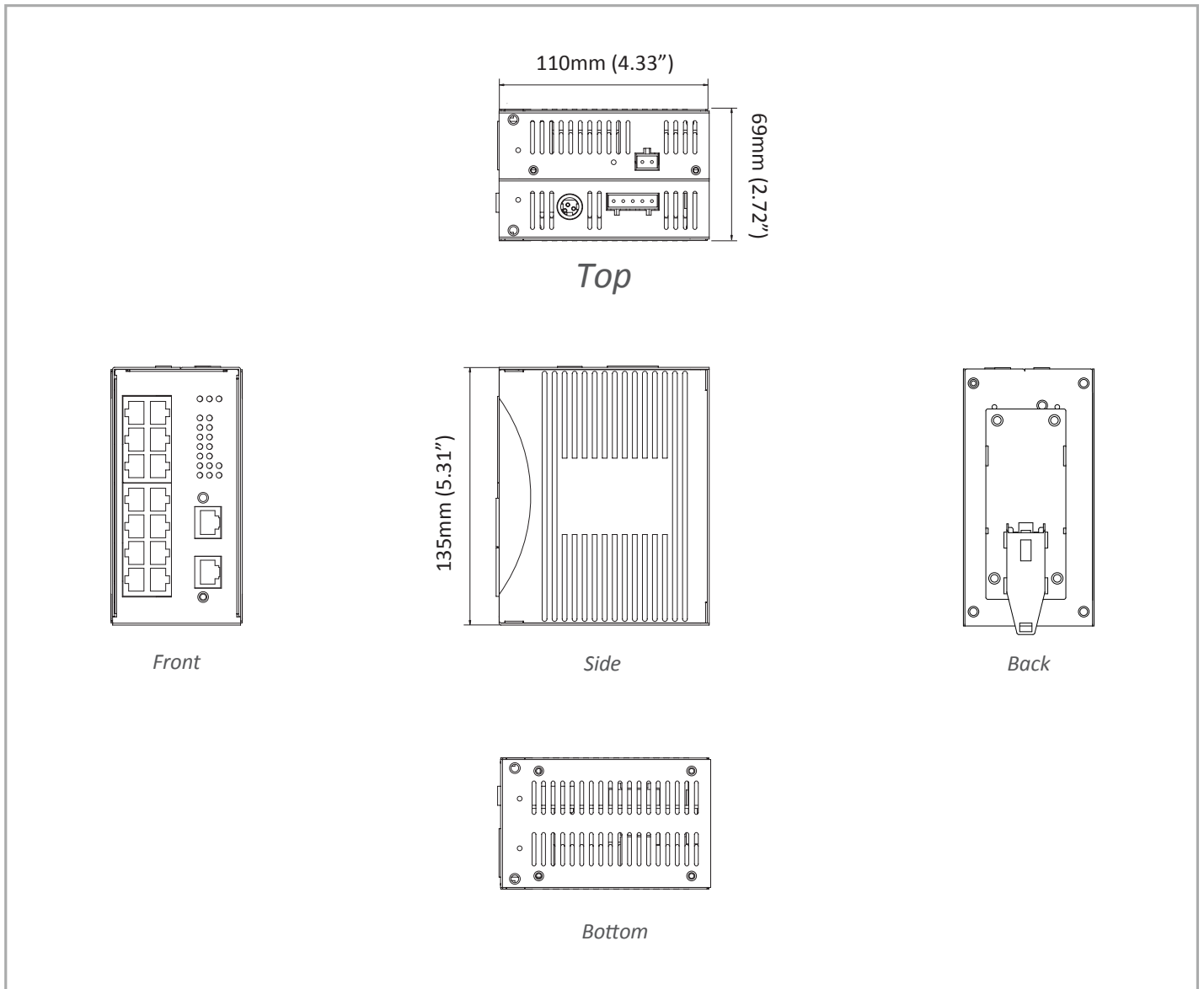- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliances

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Dimensions

110mm (4.33")

69mm (2.72")

Top

135mm (5.31")

Front

Side

Back

Bottom

Ordering Information

Model

EX33160-00B	16-port 10/100BASE-TX Industrial Unmanaged Ethernet Switch
EX33151-X0B	15-port 10/100BASE-TX + 1-port 100BASE-FX Industrial Unmanaged Ethernet Switch
EX33142-X0B	14-port 10/100BASE-TX + 2-port 100BASE-FX Industrial Unmanaged Ethernet Switch

* DIN-Rail mounting kit included

Ordering Information - continued

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

Optional Accessories

KP-AA96-480	Panel Mounting Kit
KR-BK-43-400	Rack Mounting Kit
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC Hardened Power Adapter with Open Wire in Aluminum Housing (for Terminal Block) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC Hardened Power Adapter with Latched DC Jack in Aluminum Housing (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EX34000 Series

Industrial Unmanaged 8-port 10/100BASE PoE (4 x PoE) Ethernet Switch

Overview

EtherWAN's EX34000 Series provides an industrial 8-port switching platform supporting IEEE802.3af Power over Ethernet, high performance switching with robust features required for mission-critical and harsh environments where sustained connectivity is crucial.

The EX34000 Series is equipped with 4 10/100BASE-TX PoE ports, in combination with two 100FX Fiber options.

The IEEE802.3af PoE ports provide up to 15.4W/port with a total power budget of 61.6W, making the switch truly versatile for connecting with PoE Powered Devices (PD) with different bandwidth and power consumption requirements.

EtherWAN—"When Connectivity is Crucial."

Spotlight

- **Industrial Grade**
  - Supports -10°C to 60°C (14°F to 140°F) operating temperature

- **PoE Connectivity**
  - Port 1 to 4 supports IEEE802.3af Power over Ethernet

- **Fiber Connectivity**
  - Up to two 100BASE-FX ports with SC and ST options

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3af Power over Ethernet
- IEEE802.3x Full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 1M 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
- 1024 MAC addresses

Power

Input
- Redundant power inputs:
  Terminal Block: 47 - 55VDC
  DC Jack: 47 - 55VDC

Power Consumption
- Device: Max. 10W (without PoE)
- PoE power budget (depends on power input): 61.6W Max.

PoE Power Output
- Port 1 to 4
- IEEE802.3af: up to 15.4W/port, 47 - 55VDC, 350mA Max.

Protection
- Reverse polarity protection
- Overload current protection

Mechanical

Casing
- Aluminum case
- IP30

Dimensions
- 62mm (W) x 110mm (D) x 135mm (H)
  (2.44" (W) x 4.33" (D) x 5.31" (H))

Weight
- 1Kg (2.2lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel, or Rack mounting

Interface

Ethernet Ports
- 10/100BASE-TX: 8, 7 or 6 ports
- 100BASE-FX: 0, 1 or 2 ports

LED Indicators
- Per Unit: Power 1 (Green),
  Power 2 (Green),
  Power 3 (Green)
- Per Port: Link/Activity (Green)

Alarm Contact
- One relay output with current 1A @ 24VDC

Environment

Operating Temperature
- -10°C to 60°C (14°F to 140°F)
  Tested @ -20°C to 70°C (-4°F to 158°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

VCCI, Class A

EN61000-6-4

EN55022 Class A

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
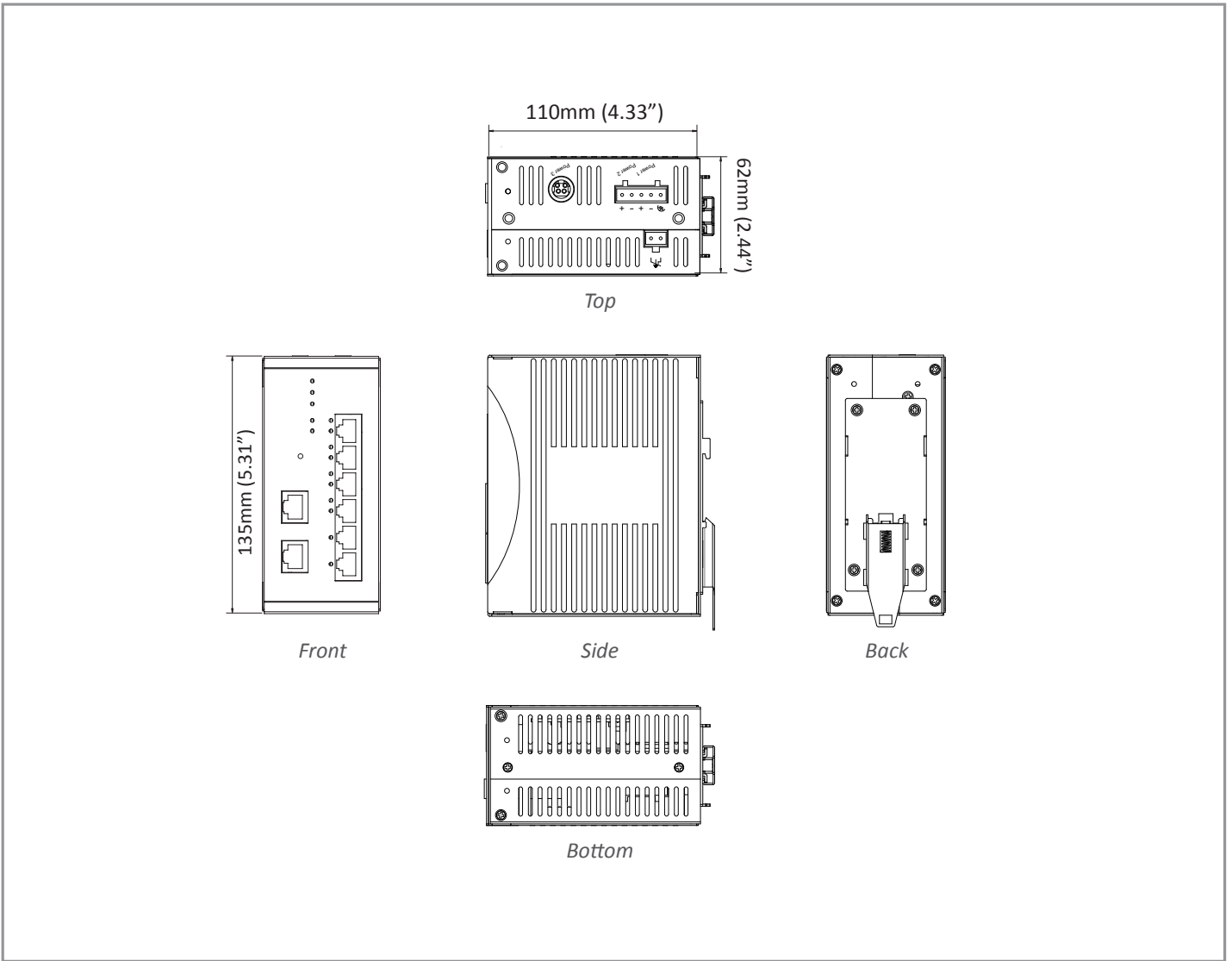- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliances

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Dimensions

110mm (4.33")

62mm (2.44")

Top

135mm (5.31")

Front

Side

Back

Bottom

Ordering Information

Model

EX34080-00B	Industrial Unmanaged 8-port 10/100BASE-TX PoE Ethernet Switch
EX34071-X0B	Industrial Unmanaged 7-port 10/100BASE-TX + 1-port 100BASE-FX PoE Ethernet Switch
EX34062-X0B	Industrial Unmanaged 6-port 10/100BASE-TX + 2-port 100BASE-FX PoE Ethernet Switch

* DIN-Rail mounting kit included

Ordering Information - continued

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km
2	Multi Mode (ST) - 2Km
6	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
A	Single Mode (SC) - 20Km
B	Single Mode (SC) - 40Km
H	Single Mode (ST) - 20Km
P	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km

More 100FX Fiber options also available upon request.

Optional Accessories

KP-AA96-480	Panel Mounting Kit
KR-BK-43-400	Rack Mounting Kit
GS120A-48	120W/2.5A 48VDC Power Adapter with Latched DC Jack in Plastic Housing (for DC Jack)
DR-120-48	120W/2.5A DIN-Rail 48VDC Industrial Power Supply (for Terminal Block)

EX43000 Series

Industrial Unmanaged 8-port 10/100BASE Ethernet Switch

Overview

EtherWAN's EX43000 Series is an industrial unmanaged Fast Ethernet switching platform, designed for easy deployment in industrial environments.

The EX43000 Series is equipped with eight Fast Ethernet ports, or a combination of Fast Ethernet copper ports and two 100FX ports for long distance connectivity. This versatile switch features 10/100Mbps transfer speeds, full/half-duplex auto-negotiation and auto MDI/MDIX operation allowing you to connect your network devices without hassles.

The EX43000 is feature-rich with full wire speed Fast Ethernet throughput, QoS (Quality of Service), IEEE802.3az EEE (Energy Efficient Ethernet) and Broadcast storm protection. The EX43000 Series is built with relay alarm to notify users when power fails or link down occurs. It also supports Broadcast storm protection by enabling the DIP switch. The EX43000 Series is housed with a DIN rail mountable metal compact case which is an ideal solution for network applications in harsh environments.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Industrial Grade**
  - Supports -20°C to 60°C (-4°F to 140°F) operating temperature

- **Port Failure Alarm and Broadcast Storm Protection**
  - Provide relay alarm to notify users when power fails or link down occurs by DIP switch
  - Selectable DIP switch to set a threshold level to prevent from performance degradation or network choking

- **Fiber Connectivity**
  - Up to two 100BASE-FX ports with SC, ST, WDM and SFP options

- **Energy Efficient Ethernet (EEE)**
  - Supports IEEE802.3az standard

- **High Reliability**
  - Fanless design
  - No moving parts

Hardware Specifications

Technology

Standards
- IEEE802.3u 100BASE-TX/FX
- IEEE802.3x full-duplex flow control
- IEEE802.3az Energy Efficient Ethernet
- IEEE802.1p Quality of Service (QoS)

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 448K 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
- 1K MAC addresses

Power

Input Voltage
- 12 to 48VDC (Terminal Block)

Power Consumption
- 2.47W@24VDC

Protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum case
- IP30

Dimensions
43.6mm (W) x 110mm (D) x 135mm (H)
(1.74" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.51Kg (1.12lbs)

Installation
- DIN-Rail (Top hat type 35mm) or Panel mounting

Interface

Ethernet Ports
- 10/100BASE-TX: 8 or 6 ports
- 100BASE-FX: 0 or 2 ports

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

Alarm Contact
- One relay output with current 1A @ 250VAC
- Supports normal close and normal open

Environment

Operating Temperature
- -20°C to 60°C (-4°F to 140°F)
  Tested @ -30°C to 70°C (-22°F to 158°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety
UL60950-1 (Pending)

EMI
FCC Part 15B, Class A

VCCI Class A

EN61000-6-4

EN55022 Class A

EMS
EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
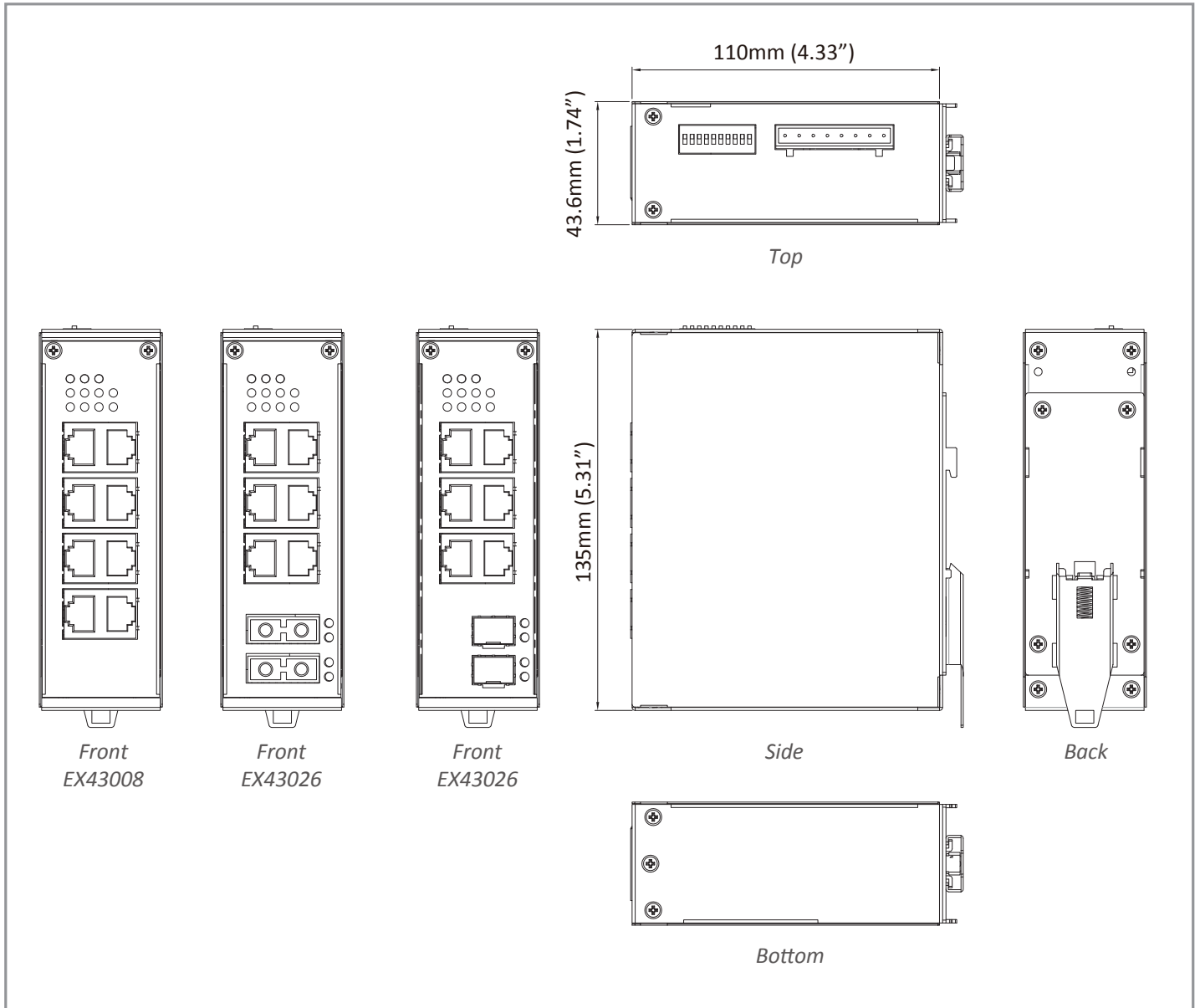- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliances
IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Dimensions

110mm (4.33")

43.6mm (1.74")

Top

Front
EX43008

Front
EX43026

Front
EX43026

135mm (5.31")

Side

Back

Bottom

Ordering Information

Model

EX43008-00-I-AA	Industrial Unmanaged 8-port 10/100BASE-TX Ethernet Switch
EX43026-XY-I-AA	Industrial Unmanaged 6-port 10/100BASE-TX + 2-port 100BASE-FX Ethernet Switch

* DIN-Rail mounting kit included

100FX Fiber Options (XY)

1A	Multi Mode (SC) - 2Km
1B	Multi Mode (ST) - 2Km
2A	Single Mode (SC) - 20Km
2D	Single Mode (ST) - 20Km
2E	Single Mode (SC) WDM -TX:1310nm/RX:1550nm - 20Km
2G	Single Mode (SC) WDM -TX:1550nm/RX:1310nm - 20Km
V	100BASE SFP

* More 100FX Fiber options also available upon request.

Optional Accessories

KP-AA96-480	Panel Mounting Kit
KR-BKEL900	Rack Mounting Kit
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)

EX42000 Series

Industrial Unmanaged 5-port 10/100BASE Ethernet Switch

Overview

EtherWAN's EX42000 Series is a compact Industrial Unmanaged Fast Ethernet switching platform, designed for easy deployment in harsh environments.

The EX42000 Series is equipped with 5 Fast Ethernet copper ports, or a combination of 4 Fast Ethernet copper ports and 1 Fast Ethernet fiber port for long distance connectivity. This versatile switch features 10/100Mbps transfer speeds, full/half-duplex auto-negotiation and auto MDI/MDIX operation allowing you to connect your network devices without hassles.

Although unmanaged, the EX42000 is feature-rich with full wire speed Fast Ethernet throughput, QoS (Quality of Service), and IEEE802.3az EEE (Energy Efficient Ethernet). The EX42000 can be DIN rail mounted and features a compact casing that can be an ideal solution for factory floors, warehouses, and outdoor locations without temperature control.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Industrial Grade**
  - Supports -10°C to 60°C (14°F to 140°F) operating temperature
  - Supports DIN-Rail mounting

- **Fiber Connectivity**
  - Up to one 100BASE-FX port with SC and ST options

Hardware Specifications

Technology

Standards
- IEEE802.3u 100BASE-TX/FX
- IEEE802.3x full-duplex flow control
- IEEE802.3az Energy Efficient Ethernet
- IEEE802.1p Quality of Service (QoS)

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 448K 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
- 1K MAC addresses

Power

Input Voltage
- Terminal block: 12 to 48VDC

Power Consumption
- 2.12W Max. 0.17A @ 12VDC, 0.08A @ 24VDC, 0.04A @ 48VDC

Protection
- Reverse polarity proetction
- Overload current protection

Mechanical

Casing
- Plastic case
- IP30

Dimensions
- 26mm (W) x 70mm (D) x 110mm (H)
  (1.02" (W) x 2.76" (D) x 4.33" (H))

Weight
- 0.2Kg (0.44lbs.)

Installation
- DIN-Rail (Top hat type 35mm)

Interface

Ethernet Ports
- 10/100BASE-TX: 5 or 4 ports
- 100BASE-FX: 0 or 1 port

LED Indicators
- Per Unit: Power (Green)
- Per Port: Link/Activity (Green),
            Speed (Yellow)

Environment

Operating Temperature
- -10°C to 60°C (14°F to 140°F)
  Tested @ -20°C to 70°C (-4°F to 158°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL60950

EMI

FCC Part 15B, Class A

VCCI Class A

EN61000-6-4

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
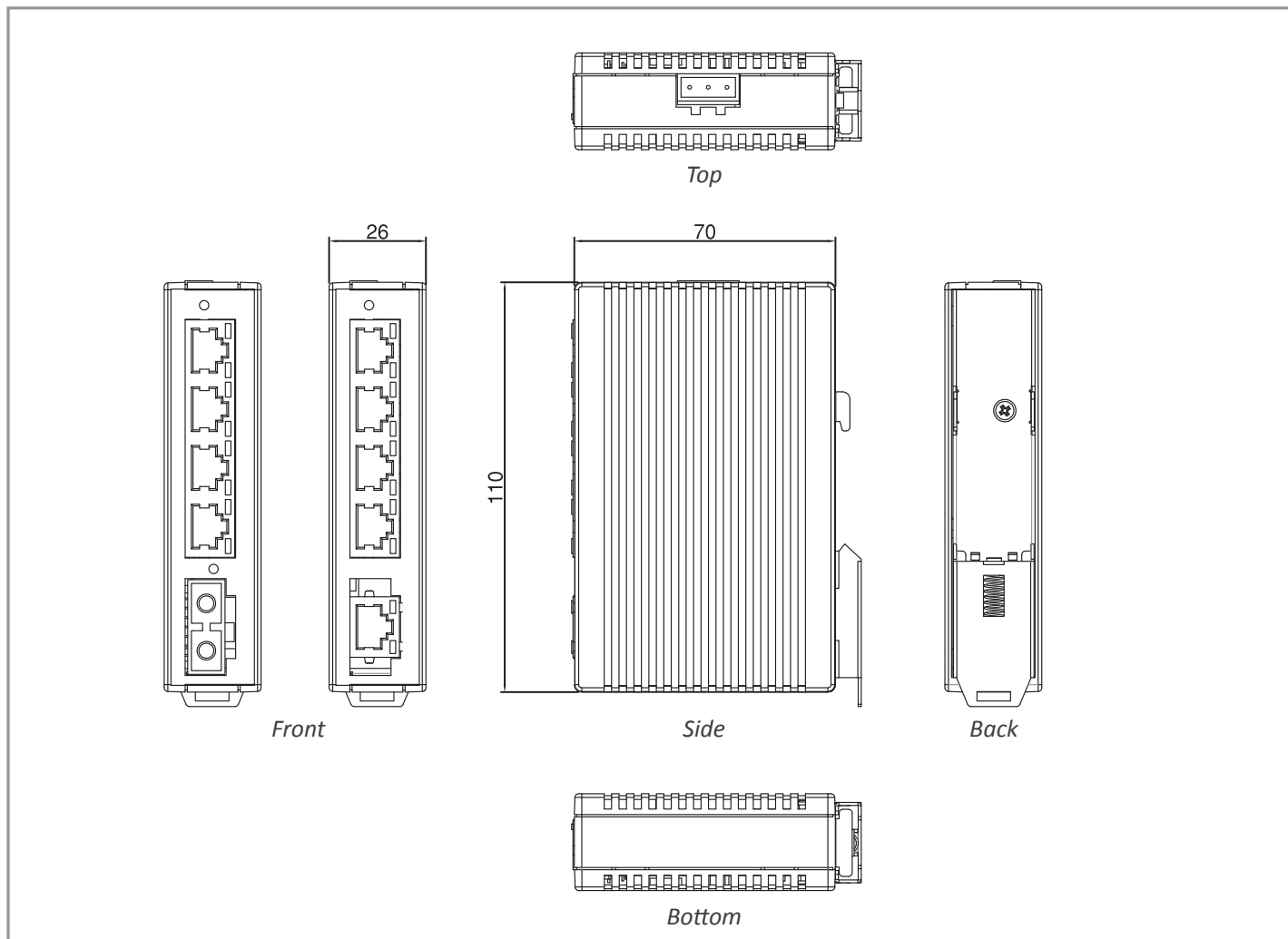- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliances

IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

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

Dimensions

Top

Front

Side

Back

Bottom

Ordering Information

Model

EX42005-00-1-A	Industrial Unmanaged 5-port 10/100BASE-TX Ethernet Switch
EX42014-XY-1-A	Industrial Unmanaged 4-port 10/100BASE-TX + 1-port 100BASE-FX Ethernet Switch

* DIN-Rail mounting kit included

100FX Fiber Options (XY)

1A	Multi Mode (SC) - 2Km
1B	Multi Mode (ST) - 2Km
2A	Single Mode (SC) - 20Km
2D	Single Mode (ST) - 20Km
2E	Single Mode (SC) WDM-TX: 1310nm/RX:1550nm - 20Km
2G	Single Mode (SC) WDM-TX: 1550nm/RX:1310nm - 20Km

** More 100FX fiber options also available upon request*

Ordering Information - continued

Optional Accessories

DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for Terminal Block) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EX24402

Managed 16-port 10/100BASE PoE with 2-port Gigabit SFP Combo Ethernet Switch
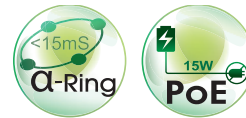
Overview

The EX24402 Managed 10/100BASE PoE Ethernet Switch is an ideal choice for your large, managed enterprise network. It packs 16 autosensing 10/100BASE Ethernet ports plus two SFP combo slots for Gigabit uplinks into a compact chassis that takes only 1U of rack space.

The switch acts as a PoE power source device, enabling you to supply power to PoE end devices such as wireless access points, IP cameras, VoIP phones, etc, on your 10/100BASE network. By using PoE, you free yourself from restrictions imposed by limited AC outlets and you can centralize your power distribution and backup power.

The 16 auto negotiating PoE ports provide up to 15.4 watts each for all ports, up to a total power budget of 195 watts. The EX24402 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 RS-232 console interfaces.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **PoE Connectivity**
  - ◦ Sixteen 10/100BASE IEEE802.3af Power over Ethernet ports
  - ◦ Two Gigabit SFP combo ports

- **Intelligent Management**
  - ◦ Optimize network performance with QoS, VLAN, and PoE scheduling, etc. Network redundancy is secured by EtherWAN's α-Ring, with fault recovery time < 15ms

- **Remote Secure Access**
  - ◦ IEEE802.1x, and RADIUS support

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
- System log (remote/local)

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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
  - Supports EtherWAN's Alpha-Ring topology for less than 15ms fault recovery time

Performance

- Switching Capability: 7.2Gbps
- Packet Buffer Size: 2M
- MAC Address Table: 8192

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
- IEEE802.3af 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
- 100 to 240VAC, 50/60Hz

Power Consumption
- Max. 12W (without PoE)
- PoE power budget (depends on power input): 195W

PoE Power Output
- IEEE802.3af: up to 15.4W/port

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Metal Case
- IP30

Dimensions
- 443.6mm (W) x 285mm (D) x 44mm (H) (17.5" (W) x 11.2" (D) x 1.73" (H))

Weight
- 3.8Kg (8.38lbs.)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 16 ports
- 100BASE-FX: N/A
- Gigabit: 2 ports

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power 1
- Per PoE Port: PoE (Amber)
- Per Port: Link/Act (Green), Speed (Green)

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
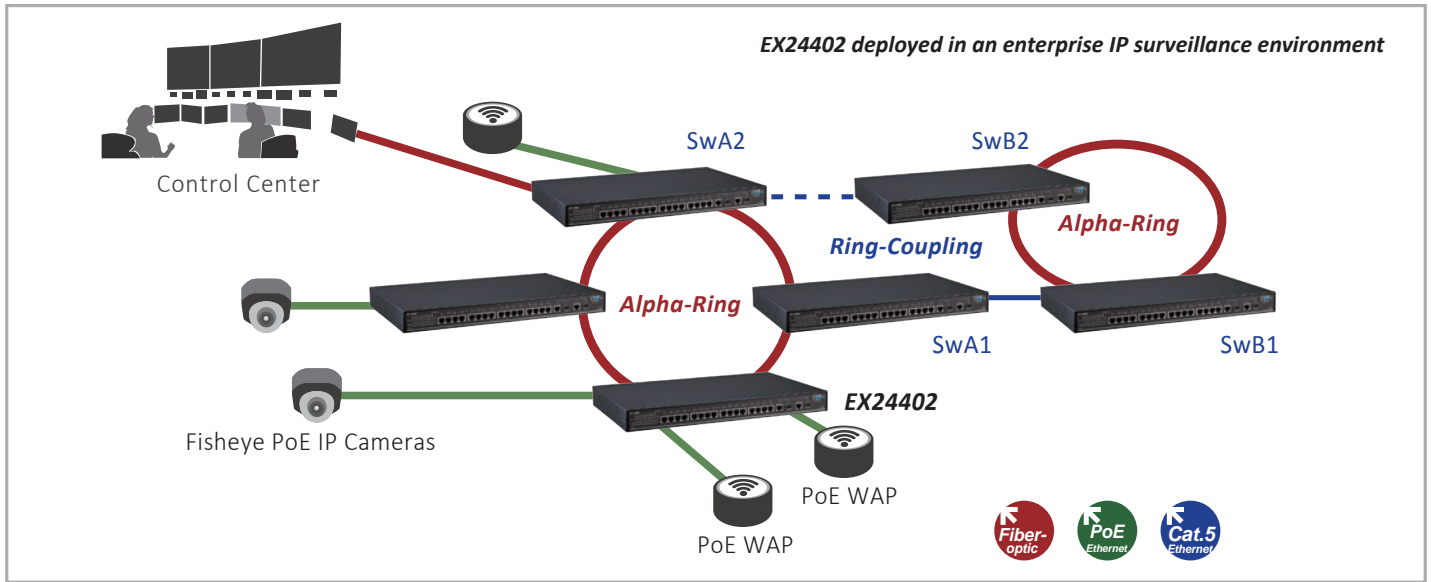- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

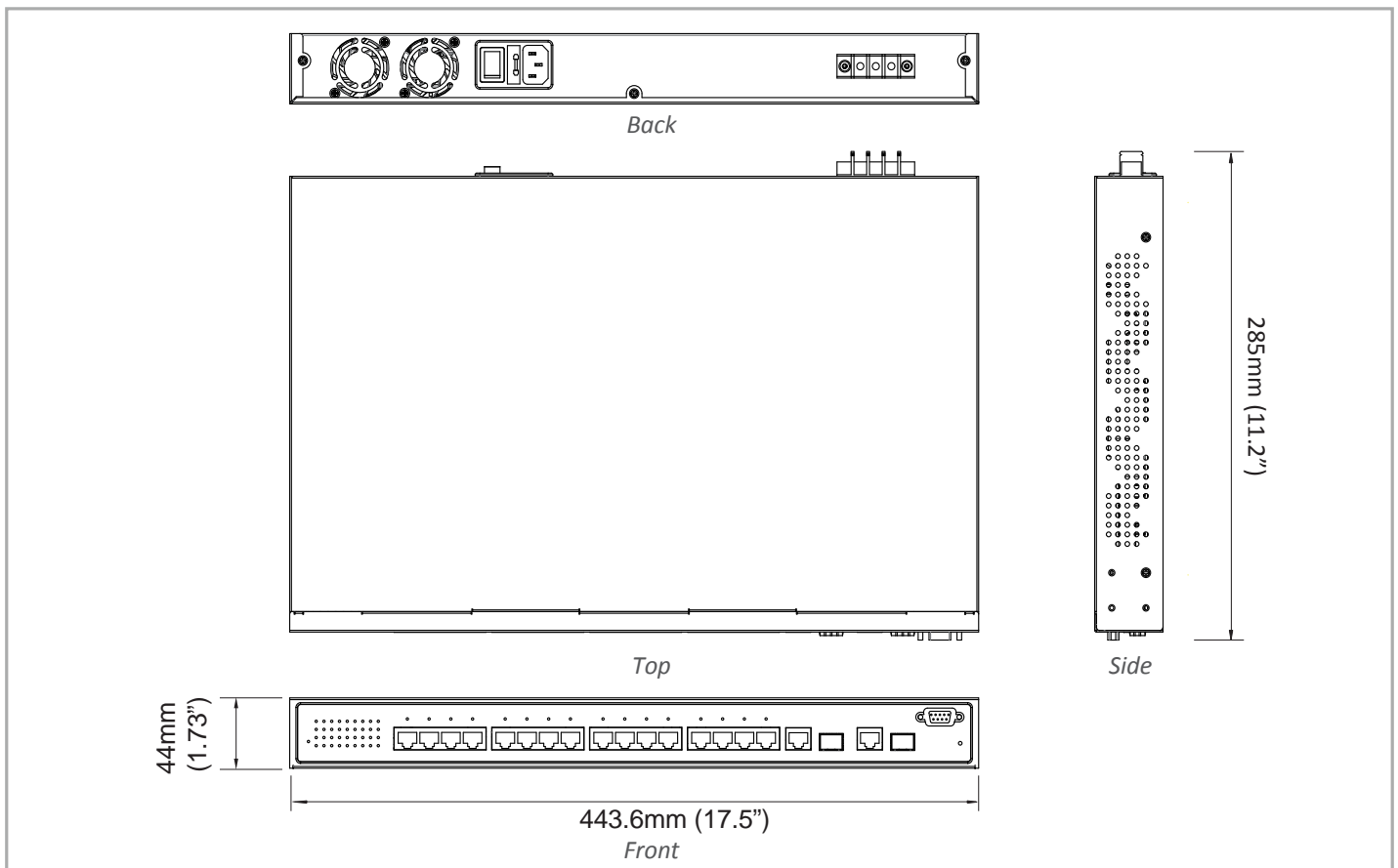**IEC60068-2-6 Fc (Vibration Resistance)**

IEC60068-2-27 Ea (Shock)

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

Application Diagram

EX24402 deployed in an enterprise IP surveillance environment

Control Center

SwA2

SwB2

Ring-Coupling

Alpha-Ring

Alpha-Ring

SwA1

SwB1

EX24402

Fisheye PoE IP Cameras

PoE WAP

PoE WAP

Fiber-optic

PoE Ethernet

Cat.5 Ethernet

Dimensions

Back

Top

Side

285mm (11.2")

44mm (1.73")

443.6mm (17.5")

Front

Ordering Information

Models

EX24402-0VCU	Managed 16-port 10/100BASE PoE with 2-port Gigabit SFP Combo Ethernet Switch

EX26262

Web-managed 26-port Gigabit PoE Switch
with 24 Gigabit + 2 SFP ports

Overview

EtherWAN's EX26262 provides a 26-port switching platform supporting IEEE802.3at Power over Ethernet, high performance switching with management features required for enterprise environments where sustained connectivity is crucial.

The EX26262 is equipped with 24 10/100/1000BASE-TX PoE ports, in combination with 2 Gigabit SFP options. The EX26262 is feature rich with 10K Jumbo Frame support, full wire speed Gigabit throughput, QoS support, making the EX26262 Series a powerful network switch.

The IEEE802.3at PoE ports provide up to 30W/port with a total power budget of 190W, 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.

Users are able to access management features such as port security, IGMP snooping, VLANs, GARP protocols, LACP, and via web browser, SNMP and RMON interfaces.

Spotlight

- **IEEE802.3at Power over Ethernet**
  ◦ Max. PoE output power per port up to 30W, with max. PoE power budget 190W

- **High Switching Performance**
  ◦ 52Gbps wire-speed switching performance across all 26 ports

- **Web-managed Interface**
  ◦ Comprehensive QoS based on 802.1p, DSCP, and IP precedence
  ◦ High availability based on RSTP/MSTP/LACP
  ◦ Integrated port security with ACL and 802.1x

Software Features

Management

- Interface
  - CLI, Telnet and Web Browser
  - SNMP v1/v2c/v3
- Firmware and configuration upgrade and backup via TFTP
- LLDP / LLDP-MED
- Supports DHCP Client
- RMON (Remote monitoring): group 1, 2, 3, 9
- Port mirroring: TX/RX and both

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
- ACL

Quality of Service (QoS)

- Priority Queues: 8 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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
- VLANs
  - Port-based VLANs
  - IEEE802.1Q Tag VLANs
- Link Aggregation
  - Static Trunk (13 groups, 12 ports per group)
  - IEEE802.3ad Link Aggregation Control Protocol
- IGMP Snooping
  - IGMP snooping v1/v2/v3
  - IGMP immediate leave

Performance

- Switching Capability: 52Gbps
- Packet Buffer Size: 512KB
- MAC Address Table: 8K
- Jumbo frame: 10K

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
- IEEE802.1s MSTP
- IEEE802.1w, RSTP
- IEEE802.1x Port-based Network Access Control
- IEEE802.3ad LACP
- IEEE802.3at Power over Ethernet

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 10K

Packet Buffer
- 512KB

Address Table Size
- 8K MAC address

Power

Input
- 100 to 240VAC, 50/60Hz

Power Consumption
- Device: Max. 25W (without PoE)
- PoE power budget: 190W Max.

PoE Power Output
- IEEE802.3at: up to 30W/port, 50VDC, 600mA

Mechanical

Casing
- Metal Case

Dimensions
- 440mm(W) x 350mm(D) x 44mm(H) (17.3"(W) x 13.8"(D) x 1.73"(H))
- Standard 19" rack-mount size, one-unit-height

Weight
- 4.5Kg (9.92lbs.)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100/1000BASE-T: 24 ports
- 100/1000BASE-X SFP 2 ports

LED Indicators
- Per Unit: PWR, DIAG
- Per Port: Link/ACT, PoE

Environment

Operating Temperature
- 0°C to 50°C (32°F to 122°F)

Storage Temperature
- -40°C to 70°C (-40°F to 158°F)

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

Regulatory Approvals
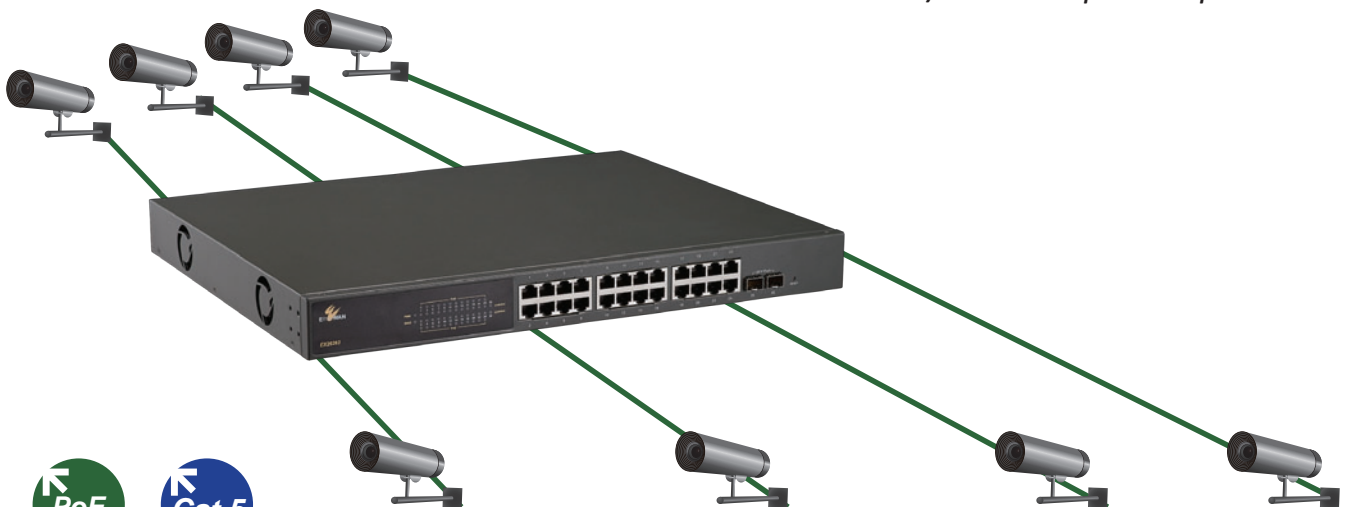
ISO
- Manufactured in an ISO9001 facility

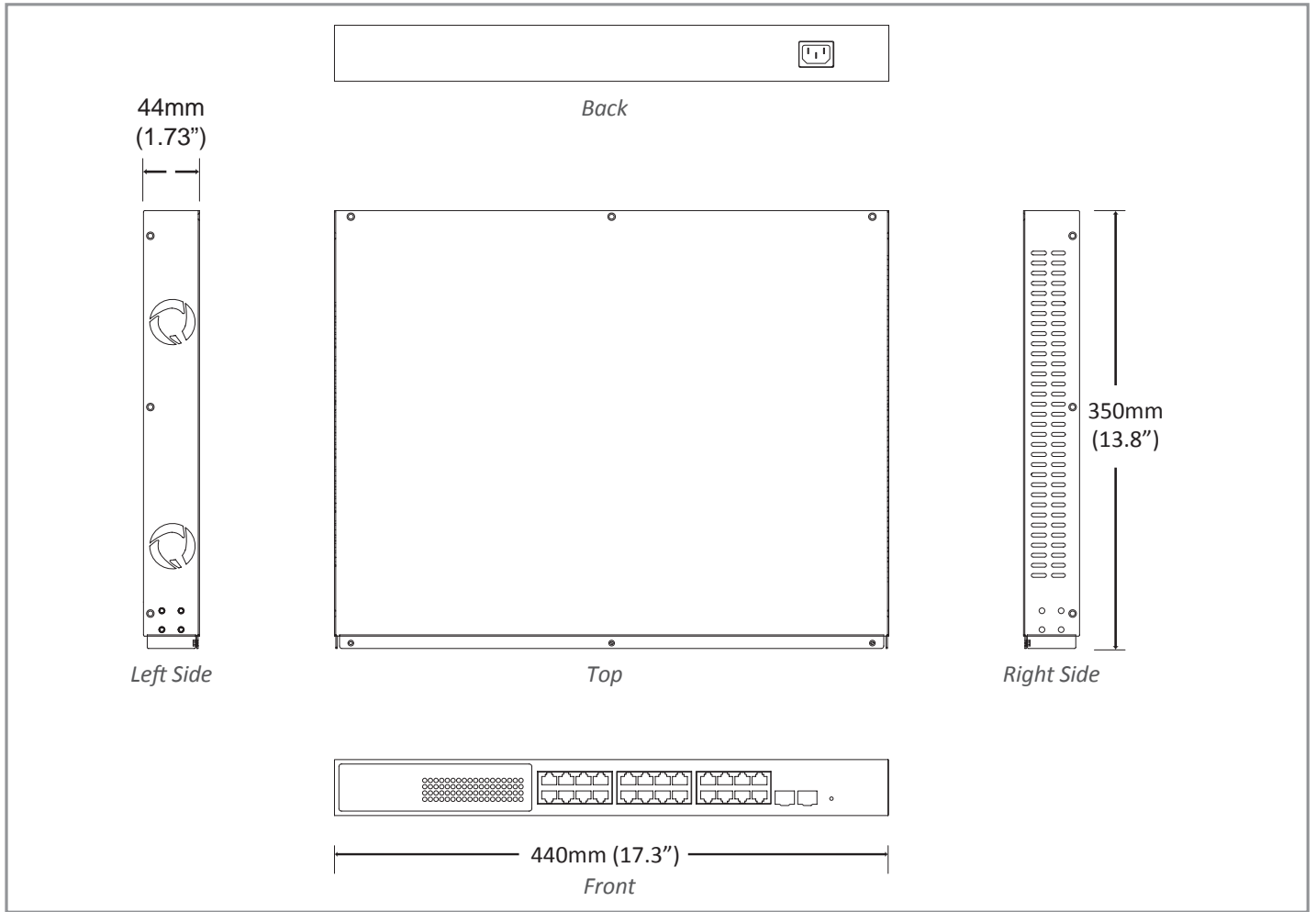**Safety**

UL60950-1, EN60950-1, IEC60950-1

EMI

CE Mark Class A, FCC Part 15 ClassA

Application Diagram

The EX26262 PoE/PSE connects up to 24 PoE powered devices

Dimensions

Back

44mm
(1.73")

Left Side

Top

Right Side

350mm
(13.8")

440mm (17.3")

Front

Ordering Information

Model

EX26262	Web-managed 26-port Gigabit PoE Switch with 24 Gigabit + 2 SFP ports

* Rack mounting kit included

EX26182

Web-Managed 18-port Gigabit PoE Switch with 16 Gigabit + 2 SFP ports

Overview

EtherWAN's EX26182 provides a 18-port switching platform supporting IEEE802.3at Power over Ethernet, high performance switching with management features required for enterprise environments where sustained connectivity is crucial.

The EX26182 is equipped with 16 10/100/1000BASE-TX PoE ports, in combination with two Gigabit SFP options. The EX26182 is feature-rich with 10K Jumbo Frame support, full wire speed Gigabit throughput, QoS support, making the EX26182 Series a powerful network switch.

The IEEE802.3at PoE ports provide up to 30W/port with a total power budget of 190W, 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.

Users are able to access management features such as port security, IGMP snooping, VLANs, GARP protocols, LACP, and via web browser, SNMP and RMON interfaces.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **IEEE802.3at Power over Ethernet**
  - Max. PoE output power per port up to 30W, with max. PoE power budget 190W

- **High Switching Performance**
  - 36Gbps wire-speed switching performance across all 18 ports

- **Web-Managed Interface**
  - Comprehensive QoS based on 802.1p, DSCP, and IP precedence
  - High availability based on RSTP/MSTP/LACP
  - Integrated port security with ACL and 802.1x

Software Features

Management

- Interface
  - CLI, Telnet and Web Browser
  - SNMP v1/v2c/v3
- Firmware and configuration upgrade and backup via TFTP
- LLDP / LLDP-MED
- Supports DHCP Client
- RMON (Remote monitoring): group 1, 2, 3, 9
- Port mirroring: TX/RX and both

Security

- MAC Address by port security
- 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
- ACL

Quality of Service (QoS)

- Priority Queues: 8 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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
- VLANs
  - Port-based VLANs
  - IEEE802.1Q Tag VLANs
- Link Aggregation
  - Static Trunk (13 groups, 12 ports per group)
  - IEEE802.3ad Link Aggregation Control Protocol
- IGMP Snooping
  - IGMP snooping v1/v2/v3
  - IGMP immediate leave

Performance

- Switching Capability: 36Gbps
- Packet Buffer Size: 512KB
- MAC Address Table: 8K
- Jumbo frame: 10K

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
- IEEE802.1s MSTP
- IEEE802.1w RSTP
- IEEE802.1x Port-based Network Access Control
- IEEE802.3ad LACP
- IEEE802.3at Power over Ethernet

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 10K

Packet Buffer
- 512KB

Address Table Size
- 8K MAC address

Power

Input
- 100 to 240VAC, 50/60Hz

Power Consumption
- Device: Max. 25W (without PoE)
- PoE power budget: 190W Max.

PoE Power Output
- IEEE802.3at: up to 30W/port, 50VDC, 600mA

Mechanical

Casing
- Metal Case

Dimensions
- 440mm(W) x 350mm(D) x 44mm(H) (17.3"(W) x 13.8"(D) x 1.73"(H))
- Standard 19" rack-mount size, one-unit-height

Weight
- 4.1 Kg (9.0 lbs)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100/1000BASE-T: 16 ports
- 100/1000BASE-X SFP 2 ports

LED Indicators
- Per Unit: PWR, DIAG
- Per Port: Link/ACT, PoE

Environment

Operating Temperature
- 0°C to 50°C (32°F to 122°F)

Storage Temperature
- -40°C to 70°C (-40°F to 158°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

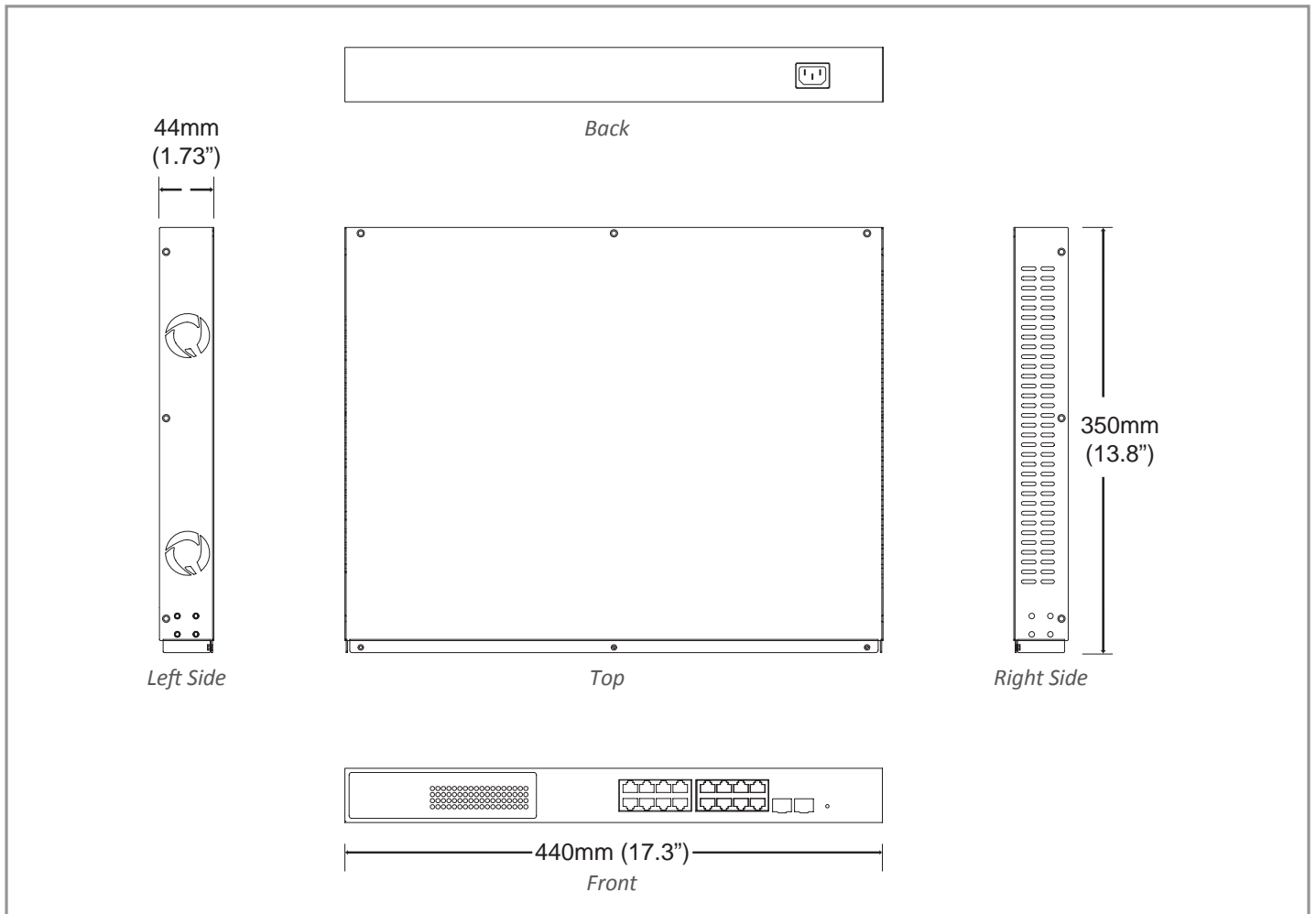### Safety
UL60950-1, EN60950-1, IEC60950-1

EMI
CE Mark Class A, FCC Part 15 ClassA

Application Diagram

The EX26182 PoE/PSE connects up to 18 PoE powered devices

Dimensions

Back

44mm
(1.73")

Left Side

Top

350mm
(13.8")

Right Side

440mm (17.3")

Front

Ordering Information

Model

EX26182	Web-Managed 18-port Gigabit PoE Switch 16 Gigabit + 2 SFP ports

* Rack mounting kit included

EX25611

Managed 24-port 10/100/1000BASE-T (4-port SFP Combo) and 4-port 1G/10G SFP+ Ethernet Switch

Overview

EtherWAN's EX25611 Series is a rack-mount Gigabit switch equipped with twenty-eight ports, or a combination of twenty-four Gigabit copper ports and four 1G/10G SFP+ for connecting the switch to the core network. The EX25611 is a feature-rich and powerful network switch with full wire speed Gigabit throughput ideal for small businesses, the network edge, or workgroups within larger organizations.

The simplified user interface enables users to quickly use the comprehensive feature set of the switch, for a better-optimized network. The EX25611 features comprehensive and useful functions such as DHCP Snooping, QoS, Spanning Tree, RSTP/MSTP, VLAN, Port Trunking, Bandwidth Control, Port Security, SNMP/RMON, LLDP and IGMPv3 Snooping capability via the intelligent software. Users are able to access management features via web browser, Telnet, SNMP, RMON, TFTP, and RS-232 console interfaces.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **High Bandwidth**
  - Uplink Ports up to 10Gbps

- **High Switching Performance**
  - 128Gbps wire-speed switching performance across all 28 ports

- **Managed Interface**
  - Comprehensive QoS based on 802.1p, DSCP, and IP precedence
  - High availability based on RSTP/MSTP/LACP
  - Integrated port security with ACL and 802.1x

Software Features

Management

- Interface
  - CLI, Telnet and Web Browser
  - SNMP v1/v2c/v3
- Firmware and configuration upgrade and backup via TFTP
- Supports DHCP Client, DHCP relay with DHCP option 82
- RMON (Remote monitoring): group 1, 2, 3, 9
- Port mirroring: TX/RX and both
- LLDP / LLDP-MED
- IPv4 and IPv6 dual stack

Security

- MAC Address by port security
- IP source guard: supports illegal IP address to specific port
- Enable/disable port
- Storm control (broadcast, multicast and unicast types)
- IEEE802.1x LAN access control
- Remote authentication through RADIUS and TACACS+
- SSH for CLI and Telnet security
- SSL for web security
- ACL

Quality of Service (QoS)

- Priority Queues: 8 queues per port
- Traffic classification based on IEEE802.1p CoS, DSCP, WRR (Weighted Round Robin) and strict mode
- Rate Limiting (Ingress/Egress)
- Supports IPv6 applications (Web, Telnet, ping, SNTP, TFTP, SNMP and Syslog)

Layer 2 Features

- Auto-negotiation for port speed and duplex mode
- Flow Control
  - IEEE802.3x full duplex mode
  - Back-Pressure half duplex mode
- Redundant Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
- VLANs
  - Port-based VLANs
  - GVRP
  - IEEE802.1Q Tag VLANs
- Link Aggregation
  - Static Trunk (14 groups, 8 ports per group)
  - IEEE802.3ad Link Aggregation Control Protocol
- IGMP Snooping
  - IGMP Snooping v1/v2/v3
  - MLD v1/v2 Snooping
  - IGMP Querier and Proxy

Performance

- Switching Capability: 128Gbps
- Packet Buffer Size: 3Mbits
- MAC Address Table: 32K
- Jumbo frame: 9K

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
- IEEE802.1s MSTP
- IEEE802.1w RSTP
- IEEE802.1x Port-based Network Access Control
- IEEE802.3ad LACP

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps
- 14,880,952pps for 10Gbps

Address Table Size
- 32K MAC address

Jumbo Frame
- 9K

Power

Input
- 100 to 240VAC, 50/60Hz

Power Consumption
- 47W Max.

Mechanical

Casing
- Metal Case

Dimensions
- 442mm(W) x 300mm(D) x 44mm(H) (17.4"(W) x 11.81"(D) x 1.73"(H))
- Standard 19" rack-mount size, one-unit-height

Weight
- 3.9 Kg (8.6 lbs)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100/1000BASE-T: 20 ports
- 10/1000/1000BASE-T/SFP combo: 4 ports
- 10G SFP+: 4 ports

LED Indicators
- Per Unit: System
- Per Port: Link/ACT, SPEED

Environment

Operating Temperature
- 0°C to 40°C (32°F to 104°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

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

Regulatory Approvals

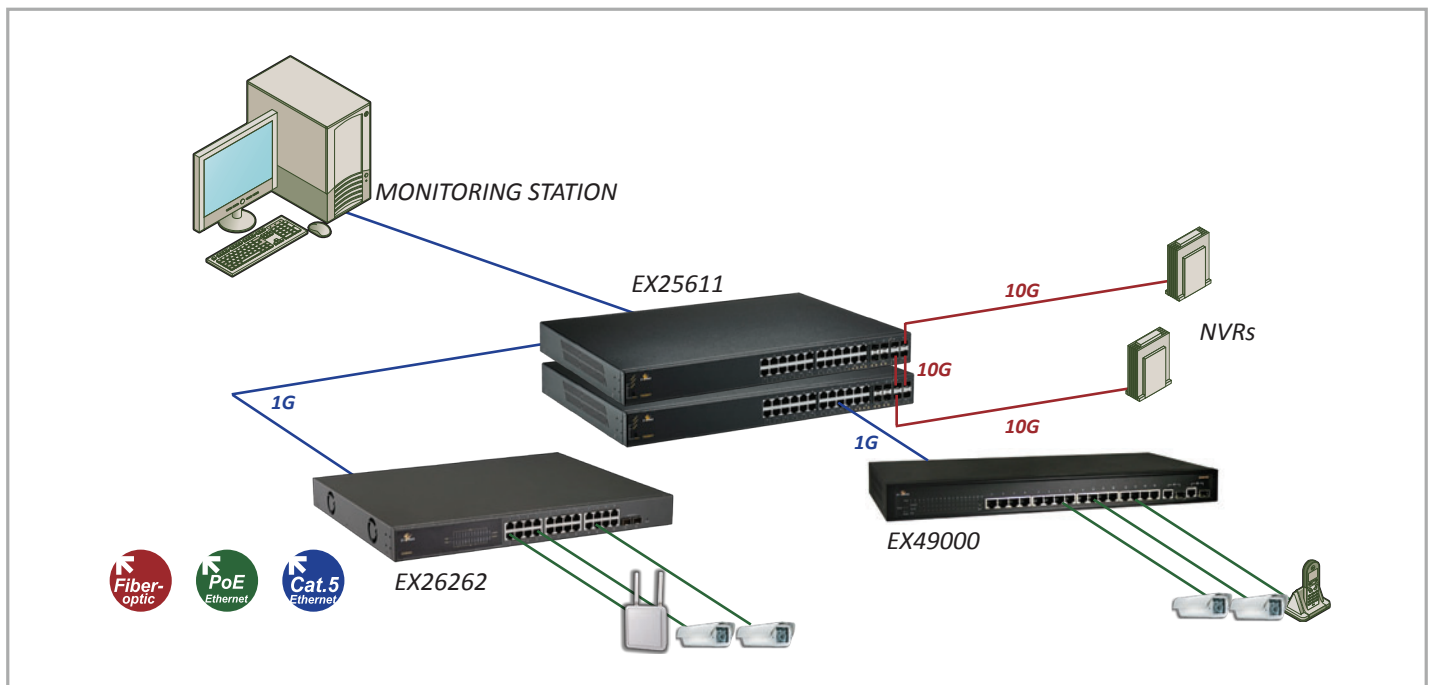### ISO
- Manufactured in an ISO9001 facility
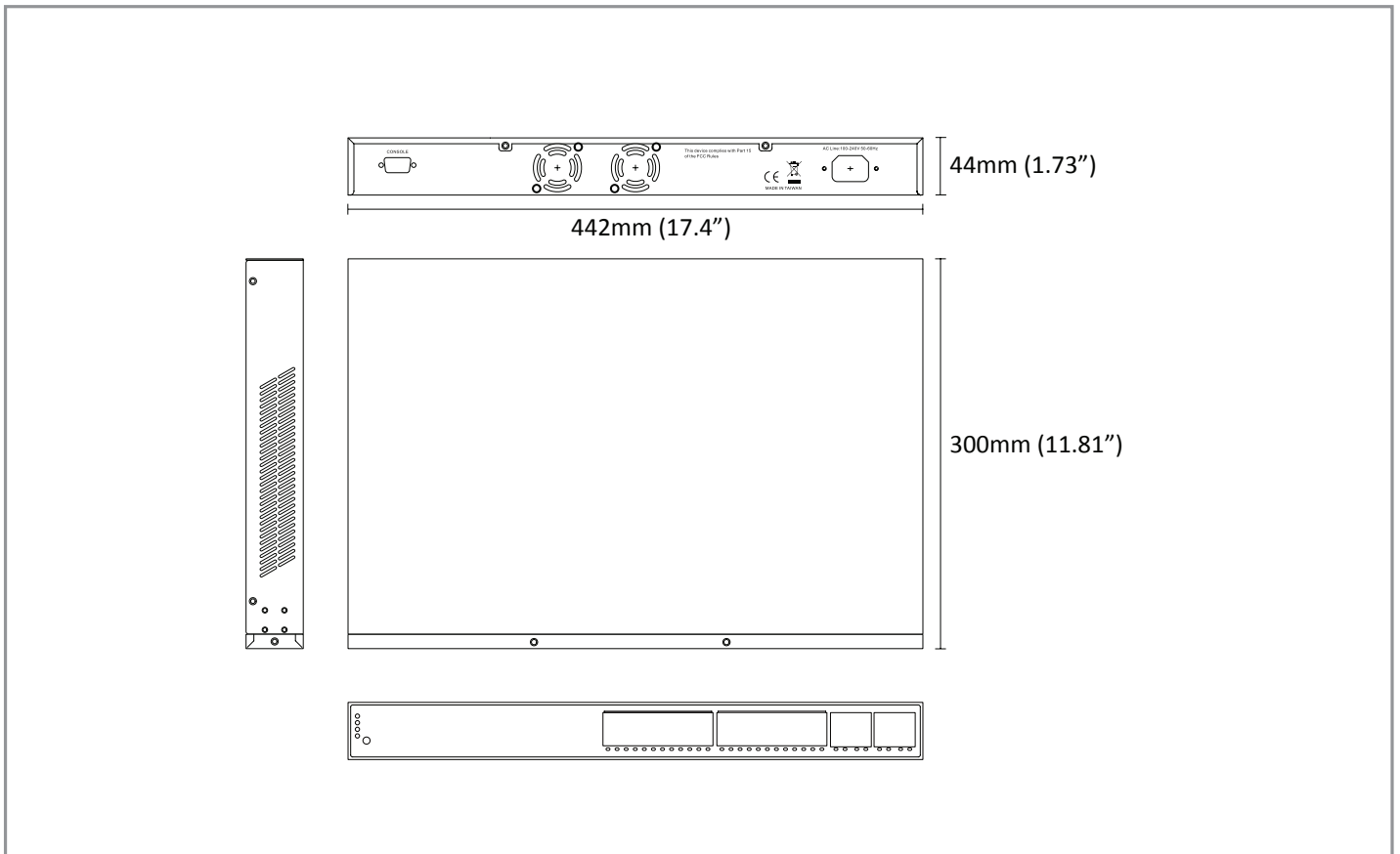
EMI

CE Mark Class A

FCC Part 15 ClassA

VCCI Class A

Application Diagram

Dimensions

44mm (1.73")

442mm (17.4")

300mm (11.81")

Ordering Information

Model

EX25611	Managed 24-port 10/100/1000BASE-T and 4-port 1G/10G SFP+ Ethernet Switch

* Rack mounting kit included

Optional 10G SFP Series

Model Number	Designation	Distance	Wavelength (nm)	Cable Type
EX-LM28-H3S-TC-N	**10GBASE-SR**	**300m**	**850**	Multi-mode OM3 (LC)
EX-LS38-H3S-TC-N	**10GBASE-LR**	**10Km**	**1310**	Single Mode (LC)

*More SFP options also available upon request.

EX17242 Series

Web-smart 24-port 10/100BASE-TX PoE and 2-port combo Gigabit SFP Ethernet Switch

Overview

EtherWAN's EX17242 provides a 26-port switching platform supporting IEEE802.3af Power over Ethernet, high performance switching with features required for small-business or enterprise environments.

The EX17242 is equipped with 24 10/100BASE-TX PoE ports, in combination with two Gigabit SFP options. The EX17242 is feature rich with full wire speed throughput, QoS support, making the EX17242 Series a powerful network switch.

The IEEE802.3af PoE ports provide up to 15.4W/port with a total power budget of 369.6W or 195W, making the switch truly versatile for connecting with PoE Powered Devices (PD) with different bandwidth and power consumption requirements.

Users are able to access management features such as IP configuration, QoS, VLANs, trunking and via web browser interfaces.

Spotlight

- **Power over Ethernet**
  ◦ Supports 24-port IEEE802.3af Power over Ethernet (PoE) and Power Sourcing Equipment (PSE)

- **SFP Connectivity**
  ◦ Built-in 2-port combo Gigabit SFP for either Gigabit copper or SFP connectivity

- **Web-Managed Interface**
  ◦ Comprehensive IP configuration, QoS, VLANs and trunking

Ordering Information

Model

EX17242	Web-smart 24-port 10/100BASE-TX PoE and 2-port combo Gigabit SFP Ethernet Switch (390W)
EX17242L	Web-smart 24-port 10/100BASE-TX PoE and 2-port combo Gigabit SFP Ethernet Switch (195W)

NOTES:
* EX17242 PoE power: 15.4W per port/ 390W per switch
* EX17242L PoE power: 15.4W per 12 port or 7.5W per 24 port/195W per switch
* Rack mounting kit included

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
- IEEE802.3af Power over Ethernet (PoE)

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 2.75M 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
- 4096 MAC addresses

Power

Input
- 100 to 240VAC, 50/60Hz

Power Consumption
- EX17242: 390W Max.; PoE power budget: 369.6W
- EX17242L: 195W Max.; PoE power budget: 180W

PoE Power Output
- IEEE802.3af: up to 15.4W/port, 47 - 55VDC, 350mA Max

Mechanical

Casing
- Metal Case

Dimensions
- 440mm (W) x 330mm (D) x 44mm (H) (17.32" (W) x 13.2" (D) x 1.73" (H))
- Standard 19" rack-mount size, one-unit-height

Weight
- 4Kg (8.81lbs.)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 24 PoE ports
- Gigabit: 2 ports

LED Indicators
- Per Unit: Power Status
- Per Port 10/100TX: Link/Activity,
- Per Port PoE: Act/status
- Per Port Gigabit: Link/Activity

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
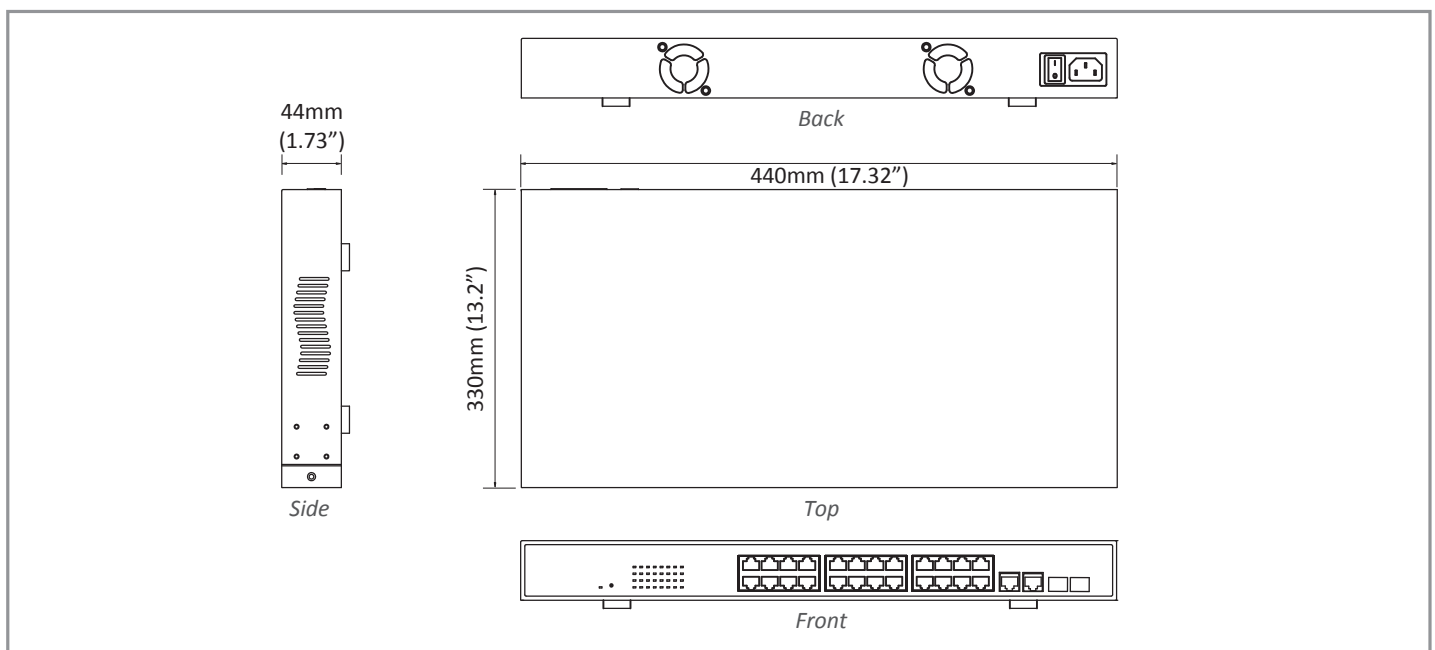- 10% to 95% (non-condensing)

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

CE Mark Class A, FCC Part 15 ClassA

Dimensions

EX1616W Series

Web-Smart 16-port 10/100BASE-TX and 1-port 100BASE-FX Ethernet Switch

Overview

EtherWAN's EX1616W Series is a Web-smart Fast Ethernet switching platform, designed for easy deployment in small business or enterprise environments.

The EX1616W Series is equipped with sixteen ports, with the combination of sixteen Fast Ethernet copper ports and one expansion fiber slot. Although web-managed, the EX1616W is feature rich with full wire speed Fast Ethernet throughput, making the EX1616W Series a powerful network switch.

Users are able to access management features such as; IP configuration, QoS, VLANs, trunking and via web browser interfaces.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Fiber Uplink**
  - Modulized fiber port configurations

- **Web-Smart**
  - Web management for port configuration, port-base VLAN, Trunking and QoS

- **Built-in AC Power Supply**
  - For hassle-free power input

Hardware Specifications

Technology

Standards
- IEEE802.3, 10BASE-T
- IEEE802.3u, 100BASE-TX
- IEEE802.3x, Full duplex flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 1.5M 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
- 4096 MAC addresses

Power

Input
- 100 - 240VAC, 50 - 60Hz Internal Universal PSU

Power Consumption
- 11.7W Max. (EX1616W)
- 15.6W Max. (EX1624W)

Mechanical

Casing
- Metal Case

Dimensions
- 440mm (W) x 207mm (D) x 44mm (H)
  (17.32" (W) x 8.15" (D) x 1.73" (H))
- Standard 19" rack-mount size, one-unit-height

Weight
- 2.8Kg (6.16lbs.)

Installation
- Rack Mounting

Interface

Ethernet Port
- 10/100BASE-TX: 16 ports
- 100BASE-FX: 1 port

LED Indicators
- Per Unit: Power Status (Power)
- Per Port: 10/100TX, 100FX: Link/Activity

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
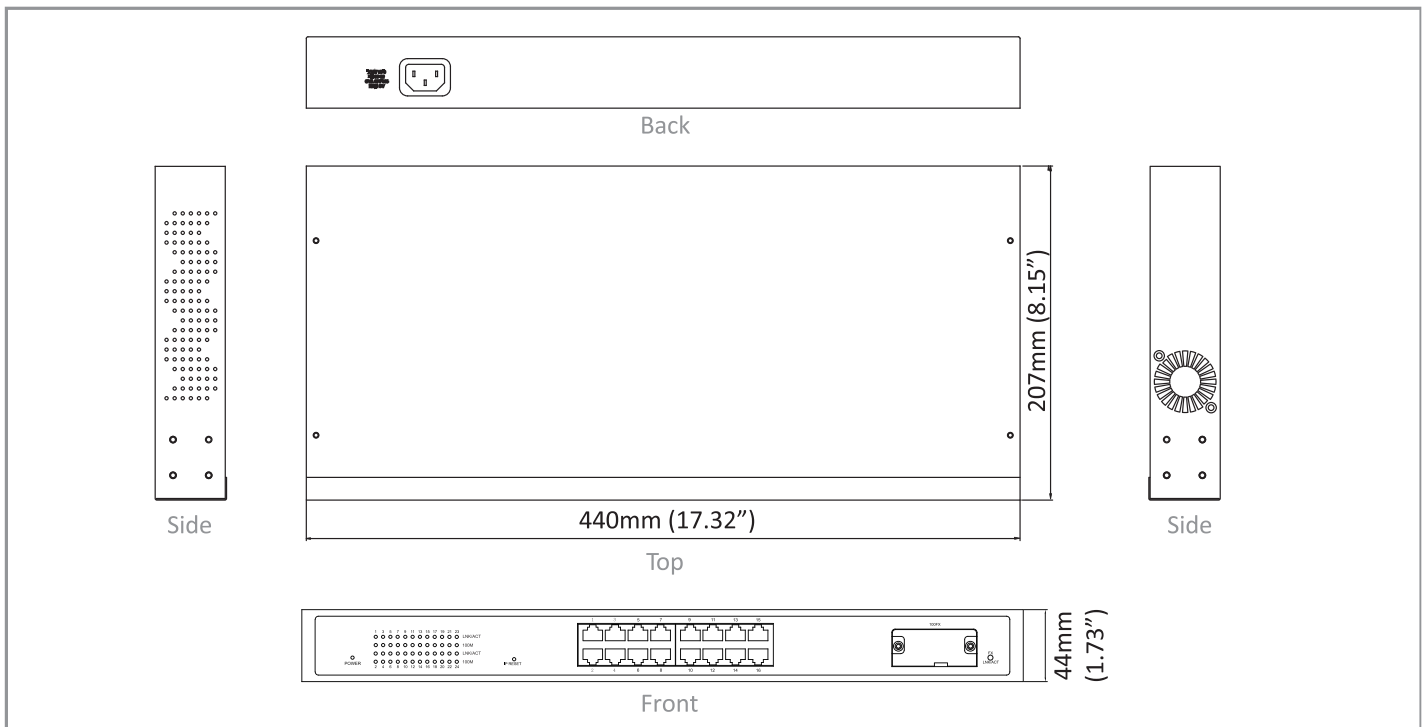- 10% to 95% (non-condensing)

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliance

CE Mark Class A

FCC Part 15 B ClassA

Dimensions

Ordering Information

Model

EX1616W	16-port 10/100BASE-TX + 1 slot for M100M Series Modules

M100M Series Modules

FC100M	1-port 100BASE-FX Multi Mode (SC) -2Km Module
FC100M-20	1-port 100BASE-FX Signal Mode (SC) -20Km Module
FM100M	1-port 100BASE-FX Multi Mode (MT-RJ) -2Km Module
FT100M	1-port 100BASE-FX Multi Mode (ST) Module1-port 100BASE-FX Multi Mode (MT-RJ) -20Km Module
FV100M	1-port 100BASE-FX Multi Mode (VF-45) Module
SFC115M	1-port 100BASE-FX Single Mode (SC) -15Km Module
SFC140M	1-port 100BASE-FX Single Mode (SC) -40Km Module
SFT120M	1-port 100BASE-FX Single Mode (ST) -20Km Module
SFC175M	1-port 100BASE-FX Single Mode (SC) -75Km Module
SFCA120M	1-port 100BASE-FX Single Mode (SC) WDM-TX:1310nm/RX:1550nm -20Km Module
SFCB120M	1-port 100BASE-FX Single Mode (SC) WDM-TX:1550nm/RX:1310nm -20Km Module
SFCA140M	1-port 100BASE-FX Single Mode (SC) WDM-TX:1310nm/RX:1550nm -40Km Module
SFCB140M	1-port 100BASE-FX Single Mode (SC) WDM-TX:1550nm/RX:1310nm -40Km Module

EX17008

Web-smart 8-port 10/100BASE-TX PoE Ethernet Switch

Overview

EtherWAN's EX17008 provides an 8-port switching platform supporting IEEE802.3af Power over Ethernet, high performance switching with features required for enterprise environments.

The EX17008 is equipped with 8 10/100BASE-TX PoE ports. The EX17008 is feature-rich with full wire speed throughput, QoS support, making the EX17008 Series a powerful network switch.

The IEEE802.3af PoE ports provide up to 15.4W/port with a total power budget of 123.2W, making the switch truly versatile for connecting with PoE Powered Devices (PD) with different bandwidth and power consumption requirements.

Users are able to access management features such as; IP configuration, QoS, VLANs, trunking and via web browser interfaces.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Power over Ethernet**
  - Supports 8-port IEEE802.3af Power over Ethernet (PoE) and Power Sourcing Equipment (PSE)

- **Web-Managed Interface**
  - Comprehensive IP configuration, QoS, VLANs and trunking

Ordering Information

Model

EX17008	Web-smart 8-port 10/100BASE-TX PoE Ethernet Switch

Optional Accessories

KR-BK17		Rack mounting kit (black)

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x, Full duplex and flow control
- IEEE802.3af, Power over Ethernet

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 512K 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
- 1024 MAC addresses

Power

Input Voltage
- 100 to 240VAC, 50/60Hz

Power Consumption
- Device: Max. 8.8W (without PoE)
- PoE power budget: 123.2W Max.

PoE Power Output
- IEEE802.3af: up to 15.4W/port, 47 - 55VDC, 350mA Max.

Mechanical

Casing
- Metal Case
- IP30

Dimensions
- 266mm (W) x 160mm (D) x 44mm (H) (10.47" (W) x 6.30" (D) x 1.73" (H))

Weight
- 1.4Kg (3.08lbs.)

Installation
- Desktop, Rack Mounting

Interface

Ethernet Port
- 10/100BASE-TX: 8 PoE ports

LED Indicators
- Per Unit: Power Status
- Per Port: Link/Activity
- Per port PoE: Act/status

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
- 10% to 95% (non-condensing)

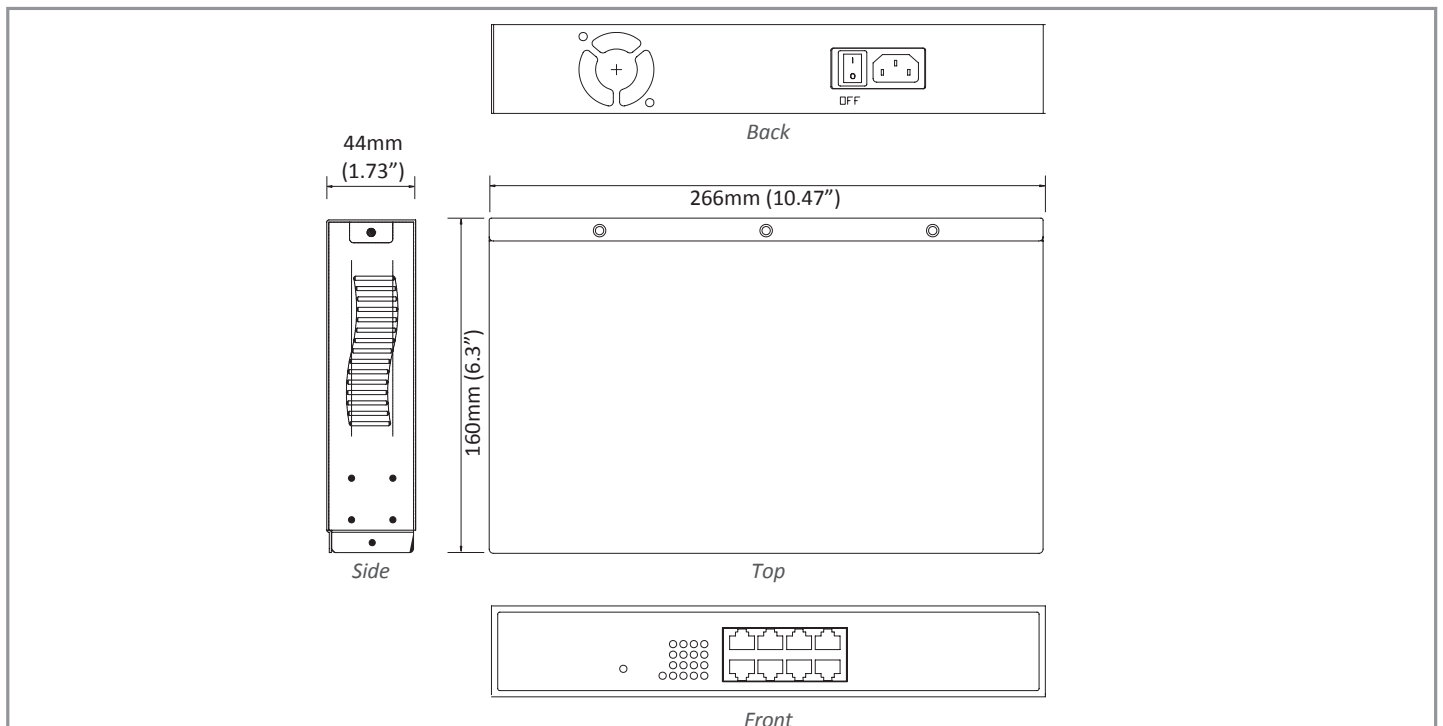## Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliance

FCC Part 15, Class B and CE mark Class B

Safety

UL60950-1, EN60950-1, and IEC60950-1

Dimensions

44mm (1.73")

266mm (10.47")

160mm (6.3")

Back

Side

Top

Front

EX17016

Web-smart 16-port 10/100BASE-TX PoE Ethernet Switch

Overview

EtherWAN's EX17016 provides a 16-port switching platform supporting IEEE802.3af Power over Ethernet, high performance switching with features required for enterprise environments.

The EX17016 is equipped with 16 10/100BASE-TX PoE ports. The EX17016 is feature rich with full wire speed throughput, making the EX17016 Series a powerful network switch.

The IEEE802.3af PoE ports provide up to 15.4W/port with a total power budget of 246.4W, making the switch truly versatile for connecting with PoE Powered Devices (PD) with different bandwidth and power consumption requirements.

Users are able to access management features such as; IP configuration, QoS, VLANs, trunking and via web browser interfaces.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Power over Ethernet**
  ◦ Supports 16-port IEEE802.3af Power over Ethernet (PoE) and Power Sourcing Equipment (PSE)

- **Web-Managed Interface**
  ◦ Comprehensive IP configuration, QoS, VLANs and trunking

Ordering Information

Model

EX17016	Web-smart 16-port 10/100BASE-TX PoE Ethernet Switch

* Rack mounting kit included

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3x full duplex and flow control
- IEEE 802.3af Power over Ethernet (PoE)

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 1.5M bits

Processing Type
- Store-and-Forward
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control

Address Table Size
- 4096 MAC addresses

Power

Input
- 100 to 240VAC, 50/60Hz

Power Consumption
- Device: Max. 13.5W (without PoE)
- PoE power budget: 246.4W Max.

PoE Power Output
- IEEE802.3af: up to 15.4W/port, 47 - 55VDC, 350mA Max

Mechanical

Casing
- Metal Case

Dimensions
- 440mm (W) x 220mm (D) x 44mm (H) (17.32" (W) x 8.66" (D) x 1.73" (H))
- Standard 19" rack-mount size, one-unit-height

Weight
- 3.8Kg (8.37lbs.)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 16 PoE ports

LED Indicators
- Per Unit: Power Status
- Per port 10/100TX: Link/Activity
- Per port PoE: Act/status
- Per port Gigabit: Link/Act

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
- 10% to 95% (non-condensing)

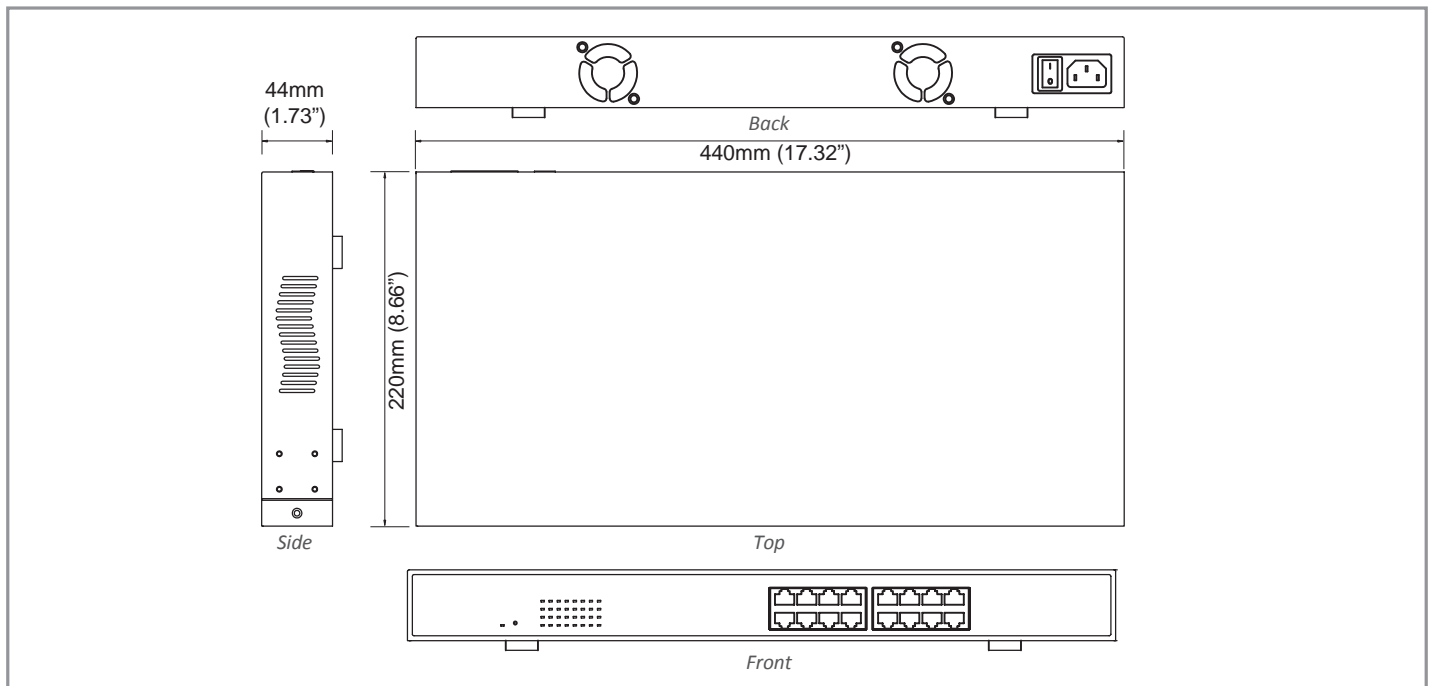## Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15, Class B

CE mark Class B

Safety

UL60950-1, EN60950-1, and IEC60950-1

Dimensions

EX17082

**Web-Smart 8-port 10/100BASE-TX PoE (IEEE802.3at) and
2-port combo Gigabit SFP Ethernet Switch**

Overview

EtherWAN's EX17082 provides a 10-port switching platform supporting IEEE802.3at Power over Ethernet, high performance switching with features required for small-business or enterprise environments where sustained connectivity is crucial.

The EX17082 is equipped with 8 10/100BASE-TX PoE ports, in combination with two Gigabit SFP ports. The EX17082 is feature rich with full wire speed throughput, QoS support, making the EX17082 Series a powerful network switch.

The IEEE802.3at PoE ports provide up to 30W/port with a total power budget of 246.4W, 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.

Users are able to access management features such as; IP configuration, QoS, VLANs, trunking and via web browser interfaces.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Power over Ethernet**
  - Supports 8-port IEEE802.3at Power over Ethernet (PoE) and Power Sourcing Equipment (PSE)

- **SFP Connectivity**
  - Built-in 2-port combo Gigabit SFP for either Gigabit copper or SFP connectivity

- **Web-Managed Interface**
  - Comprehensive IP configuration, QoS, VLANs and trunking

Ordering Information

Model

EX17082	Web-smart 8-port 10/100BASE-TX PoE (IEEE802.3at) and 2-port combo Gigabit SFP Ethernet Switch

* Rack mounting kit included

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x Full duplex and flow control
- IEEE802.3ab 1000BASE-T,
- IEEE802.3z 1000BASE-SX/LX
- IEEE802.1p QoS
- IEEE802.3at PoE

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 2.75M bits

Processing Type
- Store-and-Forward
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control

Address Table Size
- 4096 MAC addresses

Power

Input
- 100 to 240VAC, 50/60Hz

Power Consumption
- Device: Max. 9W (without PoE)
- PoE power budget: 246.4W Max.

PoE Power Output
- IEEE 802.3at: up to 30W/port, 50 - 57VDC, 600mA Max.

Mechanical

Casing
- Metal Case

Dimensions
- 440mm (W) x 220mm (D) x 44mm (H) (17.32" (W) x 8.66" (D) x 1.73" (H))
- Standard 19" rack-mount size, one-unit-height

Weight
- 3.1Kg (6.83lbs.)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 8 PoE ports
- Gigabit: 2ports

LED Indicators
- Per Unit: Power Status
- Per Port 10/100TX: Link Activity
- Per port PoE: Act/status
- Per port Gigabit: Link/Activity, 1000M

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
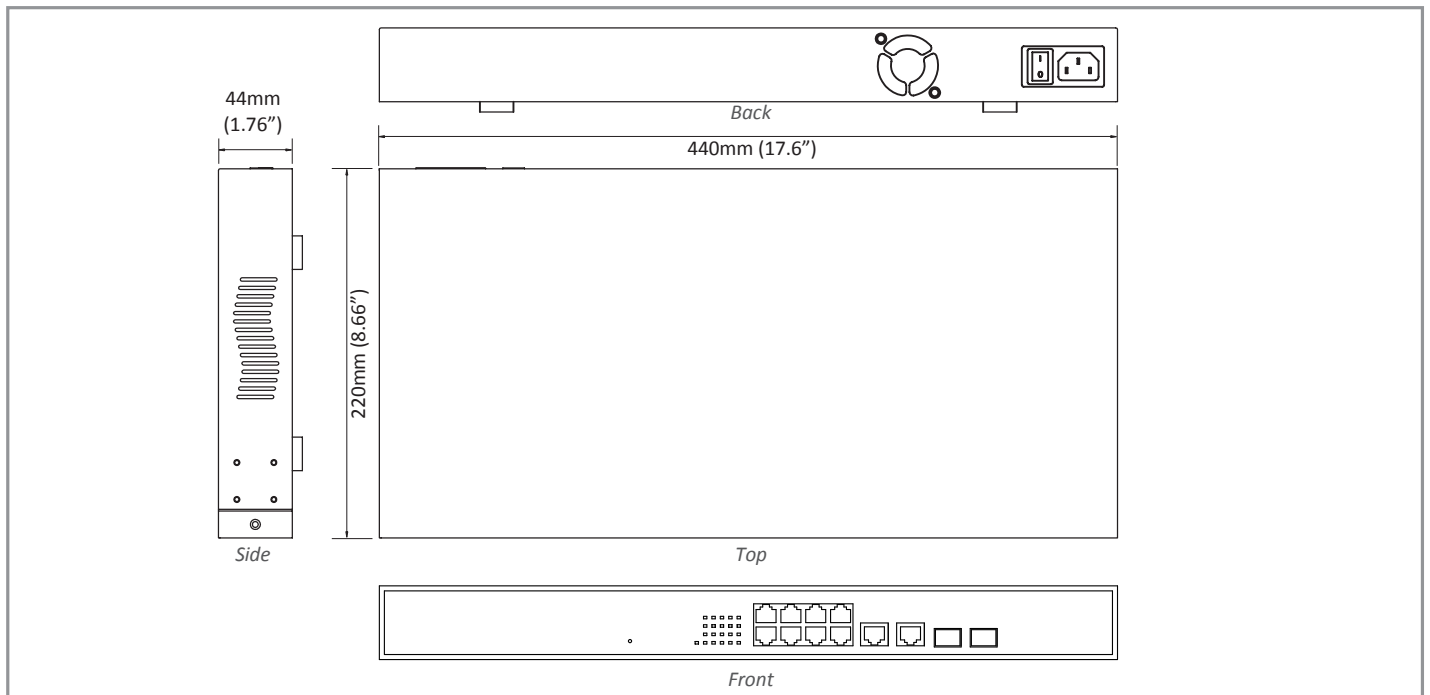- 10% to 95% (non-condensing)

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliance

CE Mark Class A, FCC Part 15 ClassA

Dimensions

44mm (1.76")

Back

440mm (17.6")

220mm (8.66")

Side

Top

Front

EX17162

Web-smart 16-port 10/100BASE-TX PoE and 2-port combo Gigabit SFP Ethernet Switch

Overview

EtherWAN's EX17162 provides an 18-port switching platform supporting IEEE802.3af Power over Ethernet, high performance switching with features required for small-business or enterprise environments where sustained connectivity is crucial.

The EX17162 is equipped with 16 10/100BASE-TX PoE ports, in combination with two Gigabit SFP ports. The EX17162 is feature rich with full wire speed throughput, QoS support, making the EX17162 Series a powerful network switch.

The IEEE802.3af PoE ports provide up to 15.4W/port with a total power budget of 260W, making the switch truly versatile for connecting with PoE Powered Devices (PD) with different bandwidth and power consumption.

Users are able to access management features such as IP configuration, QoS, VLANs, trunking and via web browser interfaces.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Power over Ethernet**
  - ◦ Supports 16-port IEEE802.3af Power over Ethernet (PoE) and Power Sourcing Equipment (PSE)

- **SFP Connectivity**
  - ◦ Built-in 2-port combo Gigabit SFP for either Gigabit copper or SFP connectivity

- **Web-Managed Interface**
  - ◦ Comprehensive IP configuration, QoS, VLANs and trunking

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.3x Full duplex and flow control
- IEEE802.1p QoS
- IEEE802.3af Power over Ethernet (PoE)

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 2.75M bits

Processing Type
- Store-and-Forward
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control

Address Table Size
- 4096 MAC addresses

Power

Input
- 100 to 240VAC, 50/60Hz

Power Consumption
- Device: Max. 12W (without PoE)
- PoE power budget: 246.4W Max.

PoE Power Output
- IEEE802.3af: up to 15.4W/port, 47 - 55VDC, 350mA Max

Mechanical

Casing
- Metal Case

Dimensions
- 440mm (W) × 330mm (D) × 44mm (H) (17.32" (W) x 13.2" (D) x 1.73" (H))
- Standard 19" rack-mount size, one-unit-height

Weight
- 4.3Kg (9.46lbs.)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 16 PoE ports
- Gigabit: 2 ports

LED Indicators
- Per Unit: Power Status
- Per Port 10/100TX: Link/Activity
- Per Port PoE: Act/status
- Per Port Gigabit: Link/Activity

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
- 10 to 90% (non-condensing)

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

CE Mark Class A, FCC Part 15 ClassA

Safety

UL60950-1, EN60950-1, IEC60950-1

Dimensions

44mm
(1.73")

Back

440mm (17.32")

330mm (13.2")

Side

Top

Front

Ordering Information

Model

EX17162	Web-smart 16-port 10/100BASE-TX PoE and 2-port combo Gigabit SFP Ethernet Switch

* Rack mounting kit included

EX17908

Web-smart 8-port 10/100/1000BASE-T PoE Ethernet Switch

Overview

EtherWAN's EX17908 provides an 8-port switching platform supporting IEEE802.3at Power over Ethernet, high performance switching with features required for small-business enterprise environments.

The EX17908 is equipped with 8 10/100/1000BASE-TX PoE ports. The EX17908 is feature-rich with full wire speed throughput, QoS support, making the EX17908 Series a powerful network switch.

The IEEE802.3at 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.

Users are able to access management features such as IP configuration, QoS, VLANs, trunking and via web browser interfaces.

Spotlight

- **Power over Ethernet**
  ◦ Supports IEEE802.3at Power over Ethernet (PoE) and Power Sourcing Equipment (PSE)
  ◦ PoE power output up to 30W/port, power budget up to 240W

- **Web-Smart Switch**
  ◦ PoE (Power status, Link status), System, IP configuration, Port-based VLAN, QoS Priority through the web browser interface.

- **Easy to Install**
  ◦ Internal universal PSU 100VAC - 240VAC, 50 - 60HZ

Ordering Information

Model

EX17908	Web-smart 8-port PoE 10/100/1000BASE-T Ethernet Switch

Optional Accessories

KR-BK17		Rack mounting kit (black)

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x Full duplex and flow control
- IEEE802.3ab 1000BASE-TX
- IEEE802.3z 1000BASE-SX/LX
- IEEE802.3af/at Power over Ethernet

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 2M bits

Processing Type
- Store-and-Forward
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control

Jumbo Frame
- 9.6K bytes

Address Table Size
- 8192 MAC addresses

Power

Input
- 100 to 240VAC, 50/60Hz

Power Consumption
- Device: Max. 8.8W (without PoE)
- PoE power budget: 240W Max.

PoE Power Output
- IEEE802.3at: up to 30W/port, 55VDC, 545mA Max.

Mechanical

Casing
- Metal Case

Dimensions
- 266mm (W) x 160mm (D) x 44mm (H) (10.47" (W) x 6.30" (D) x 1.73" (H))

Weight
- 1.52Kg (3.35lbs.)

Installation
- Desktop, Rack Mounting

Interface

Ethernet Port
- 10/100/1000BASE-T: 8 ports (PoE)

LED Indicators
- Per Unit: Power Status
- Per Port: Link/Activity
- Per Port PoE: Act/status

Environment

Operating Temperature
- 0°C to 40°C (32°F to 104°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
- 10% to 95% (non-condensing)

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliance

CE Mark Class A

FCC Part 15 ClassA

Dimensions

Back

44mm (1.73")

266mm (10.47")

160mm (6.3")

Side

Top

Front

EX17162A

Unmanaged 16-port 10/100BASE-TX PoE and 2-port combo Gigabit SFP Ethernet Switch

Overview

EtherWAN's 17162A provides an 18-port switching platform supporting IEEE802.3af Power over Ethernet, high performance switching with features required for small-business or enterprise environments where sustained connectivity is crucial.

The EX17162A is equipped with 16 10/100BASE-TX PoE ports, in combination with two Gigabit SFP combo ports. The EX17162A is feature rich with full wire speed throughput, making the EX17162A Series a powerful network switch.

The IEEE802.3af PoE ports provide up to 15.4W/port with a total power budget of 260W, making the switch truly versatile for connecting with PoE Powered Devices (PD) with different bandwidth and power consumption requirements.

EtherWAN — "When Connectivity is Crucial."

Spotlight

● **Power over Ethernet**
   ◦ Supports 16-port IEEE802.3af Power over Ethernet (PoE) and Power Sourcing Equipment (PSE)

● **SFP Connectivity**
   ◦ Built-in 2-port combo Gigabit SFP for either Gigabit copper or SFP connectivity

● **Easy to Install**
   ◦ Supports rack mounting
   ◦ Plug-and-play operation

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.3x full duplex and flow control
- IEEE802.3af Power over Ethernet

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 2.75M 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
- 4096 MAC addresses

Power

Input
- 100 to 240VAC, 50/60Hz

Power Consumption
- Device: Max. 12W (without PoE)
- PoE power budget: 246.4W Max.

PoE Power Output
- IEEE802.3af: up to 15.4W/port, 47 - 55VDC, 350mA Max

Mechanical

Casing
- Metal Case

Dimensions
- 440mm (W) × 330mm (D) × 44mm (H) (17.32" (W) x 13.2" (D) x 1.76" (H))
- Standard 19" rack-mount size, one-unit-height

Weight
- 4.3 kg (9.46lbs.)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 16 PoE ports
- Gigabit: 2 ports

LED Indicators
- Per Unit: Power Status
- Per Port 10/100TX: Link/Activity
- Per port PoE: Act/status
- Per Port Gigabit: Link/Activity

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
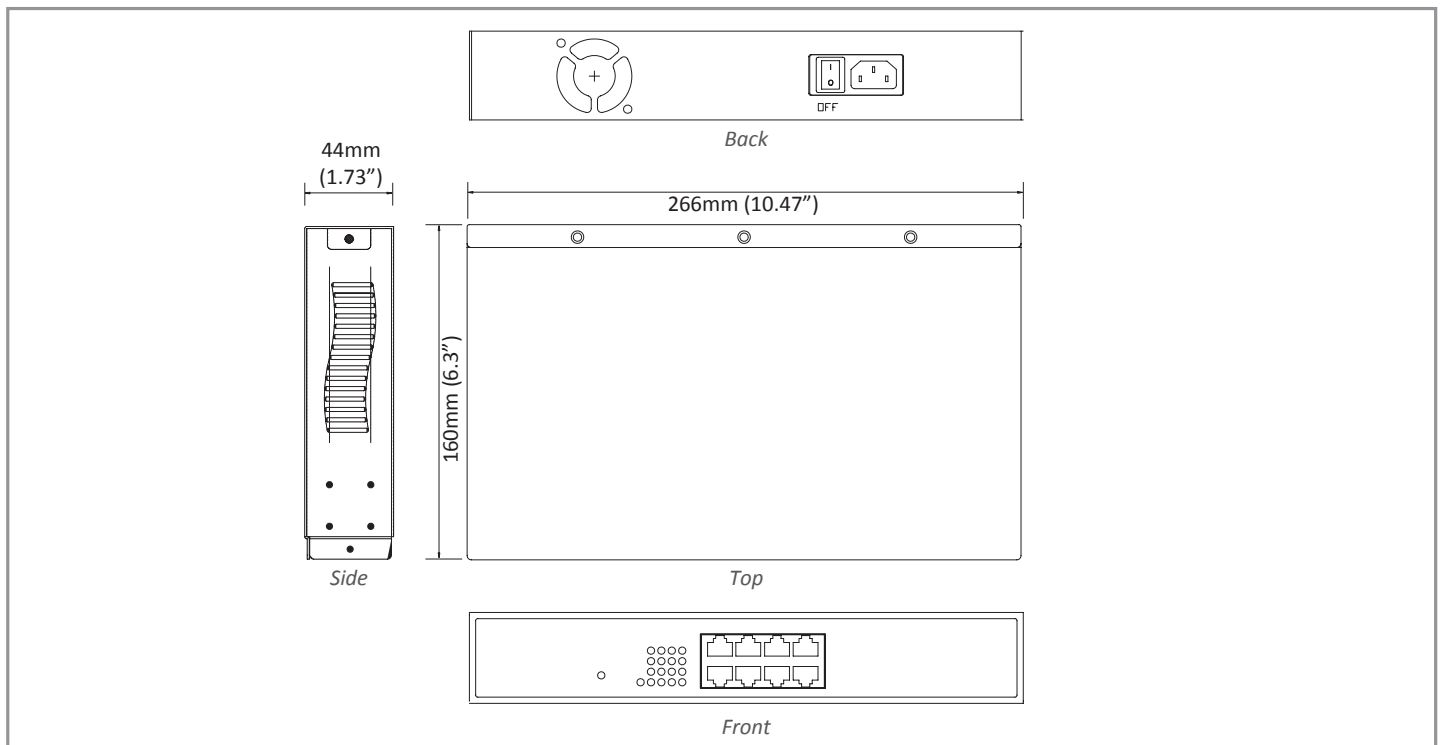- 10 to 90% (non-condensing)

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

CE Mark Class A, FCC Part 15 ClassA

Safety

UL60950-1, EN60950-1, IEC60950-1

Dimensions

44mm
(1.73")

330mm (13.2")

440mm (17.32")

Back

Side

Top

Front

Ordering Information

Model

EX17162A	Unmanaged 16-port 10/100BASE-TX PoE and 2-port combo Gigabit SFP Ethernet Switch

* Rack mounting kit included

EX17044A

Unmanaged 8-port 10/100BASE-TX (4 x PoE) Ethernet Switch

Overview

EtherWAN's EX17044A Series provides a 8-port switching platform supporting IEEE802.3af Power over Ethernet, high performance switching with features required for enterprise environments.

The EX17044A Series is equipped with 4 10/100BASE-TX PoE ports. The EX17044A is feature-rich with full wire speed throughput, making the EX17044A Series a powerful network switch.

The IEEE802.3af PoE ports provide up to 15.4W/port with a total power budget of 59W, making the switch truly versatile for connecting with PoE Powered Devices (PD) with different bandwidth and power consumption requirements.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Power over Ethernet**
  ◦ Supports 4-port IEEE802.3af Power over Ethernet (PoE) and Power Sourcing Equipment (PSE)

- **Easy to Install**
  ◦ Plug-and-play operation

Ordering Information

Model

EX17044A	Unmanaged 8-port 10/100BASE-TX (4 x PoE) Ethernet Switch

Optional Accessories

KR-BK17		Rack mounting kit (black)

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x Full duplex and flow control
- IEEE802.3af Power over Ethernet

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 512K bits

Processing Type
- Store-and-Forward
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control

Address Table Size
- 1024 MAC addresses

Power

Input
- 100 to 240VAC, 50/60Hz

Power Consumption
- Device: 6W Max. (without PoE)

PoE Power Budget
- 59W Max.

PoE Power Output
- IEEE802.3af: up to 15.4W/port, 47 - 55VDC, 350mA Max.

Mechanical

Casing
- Metal Case

Dimensions
- 266mm (W) x 160mm (D) x 44mm (H) (10.47" (W) x 6.30" (D) x 1.73" (H))
- Standard 19" rack-mount size, one-unit-height

Weight
- 1.4Kg (3.08lbs.)

Installation
- Desktop, Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 8 PoE ports (4 x PoE)

LED Indicators
- Per Unit: Power
- Per Port: Link/Activity and PoE Act/status

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
- 10% to 95% (non-condensing)

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

CE Mark Class A, FCC Part 15 ClassA

Safety

UL60950-1

Dimensions

Back

44mm (1.73")

266mm (10.47")

160mm (6.3")

Side *Top*

Front
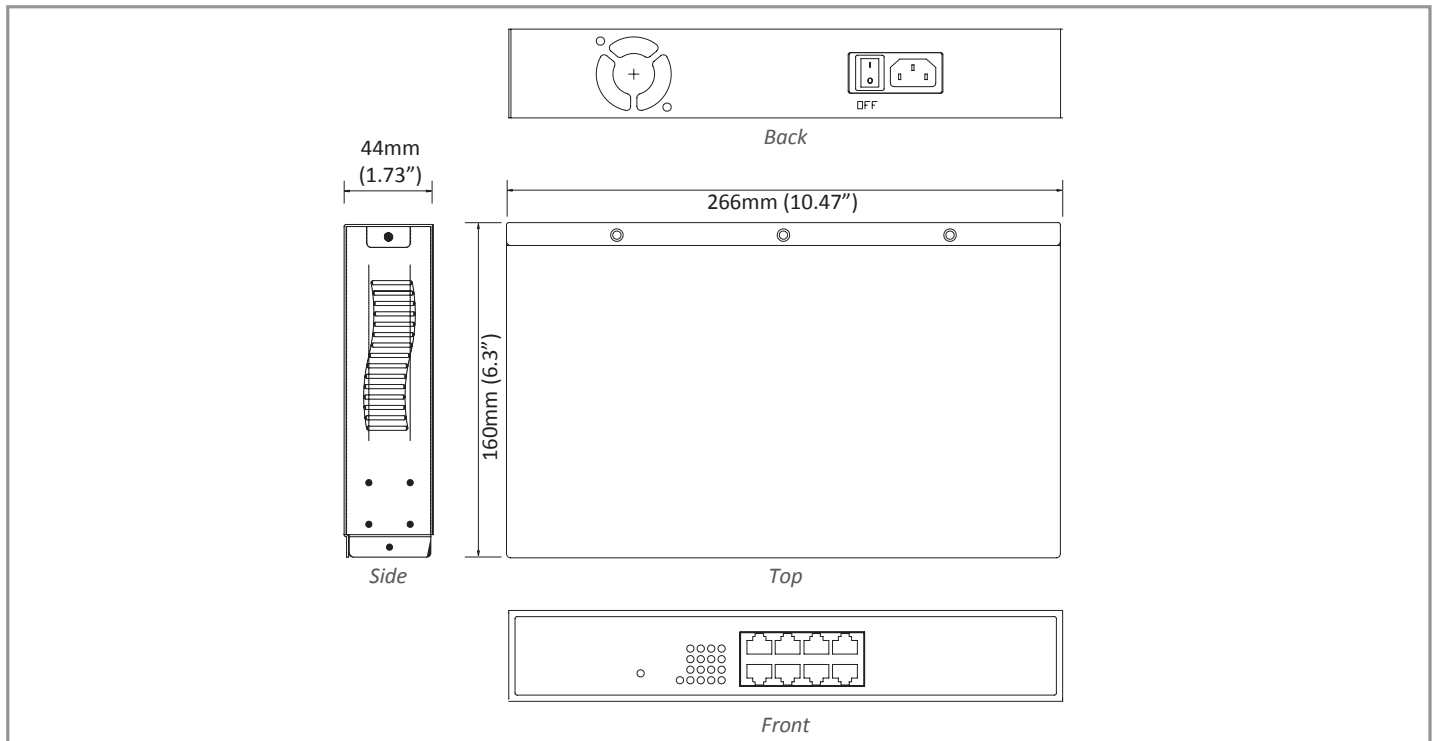
EX17016A

Unmanaged 16-port 10/100BASE-TX PoE Ethernet Switch

Overview

EtherWAN's 17016A provides a 16-port switching platform supporting IEEE802.3af Power over Ethernet, high performance switching with features required for small-business or enterprise environments where sustained connectivity is crucial.

The EX17016A is equipped with 16 10/100BASE-TX PoE ports. The EX17016A is feature rich full with wire speed throughput, making the EX17016A Series a powerful network switch.

The IEEE802.3af PoE ports provide up to 15.4W/port with a total power budget of 246.4W, making the switch truly versatile for connecting with PoE Powered Devices (PD) with different bandwidth and power consumption requirements.

Spotlight

• **Power over Ethernet**
  ◦ Supports 16-port IEEE802.3af Power over Ethernet (PoE) and Power Sourcing Equipment (PSE)

• **Easy to Install**
  ◦ Supports rack mounting
  ◦ Plug-and-play operation

Ordering Information

Model

EX17016A	Unmanaged 16-port 10/100BASE Fast Ethernet PoE Ethernet Switch

* Rack mounting kit included

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x Full duplex and flow control
- IEEE802.3af Power over Ethernet

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 1.5M bits

Processing Type
- Store-and-Forward
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control

Address Table Size
- 4096 MAC addresses

Power

Input
- 100 to 240VAC, 50/60Hz

Power Consumption
- 260W Max.

Power Consumption
- Device: Max. 13.5W (without PoE)
- PoE power budget: 246.4W Max.

PoE Power Output
- IEEE802.3af: up to 15.4W/port, 47 - 55VDC, 350mA Max

Mechanical

Casing
- Metal Case

Dimensions
- 440mm (W) x 220mm (D) x 44mm (H) (17.32" (W) x 8.66" (D) x 1.73" (H))
- Standard 19" rack-mount size, one-unit-height

Weight
- 3.8Kg (8.37lbs.)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 16 PoE ports

LED Indicators
- Per Unit: Power Status
- Per Port 10/100TX: Link/Activity
- Per port PoE: Act/status

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
- 10% to 95% (non-condensing)

## Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

CE Mark Class B, FCC Part 15, Class B

Safety

UL60950-1, EN60950-1, IEC60950-1
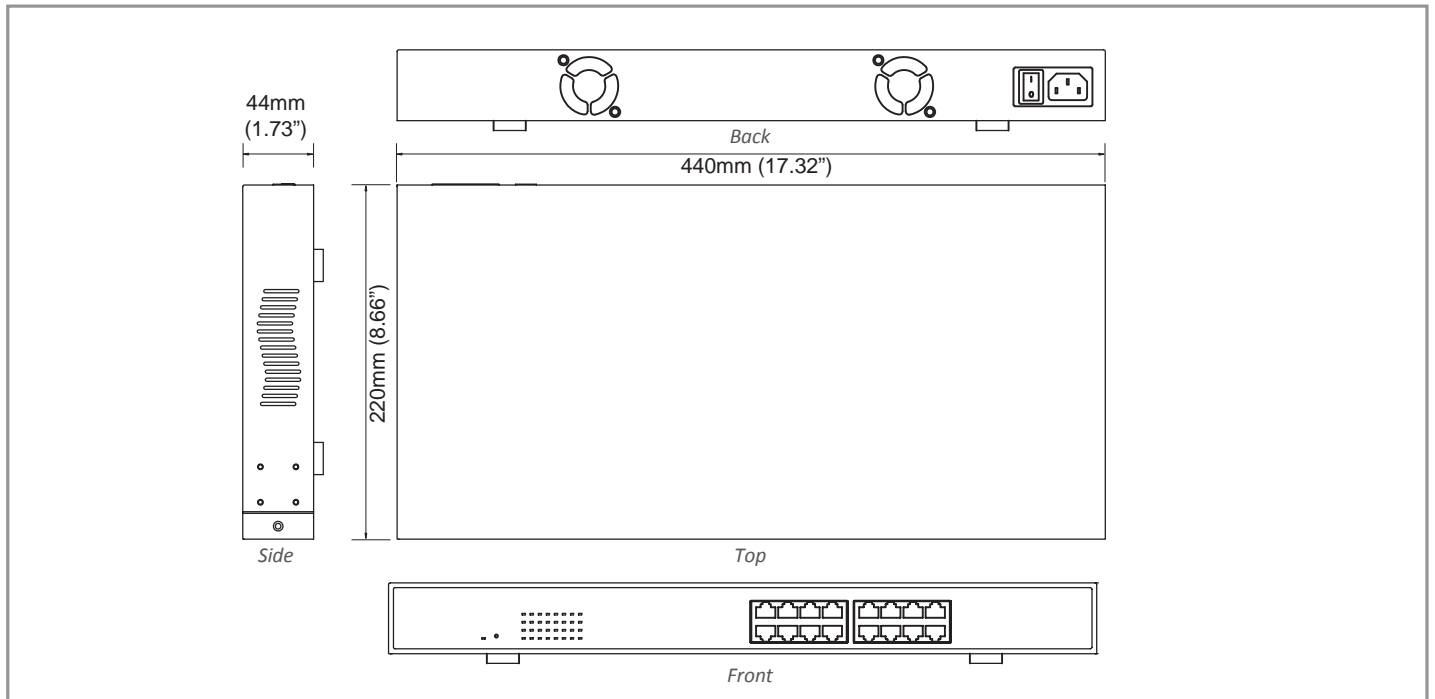
Dimensions

44mm (1.73")

Back

440mm (17.32")

220mm (8.66")

Side

Top

Front

EX17082A

Unmanaged 8-port PoE (IEEE802.3at) 10/100BASE-TX and 2-port combo Gigabit SFP Ethernet Switch

Overview

EtherWAN's EX17082A provides a 10-port switching platform supporting IEEE802.3at Power over Ethernet, high performance switching with robust features required for small-business or enterprise environments where sustained connectivity is crucial.

The EX17082A is equipped with 8 10/100BASE-TX PoE ports, in combination with two Gigabit SFP ports. The EX17082A is feature rich with full wire speed throughput, making the EX17082A Series a powerful network switch.

The IEEE802.3at PoE ports provide up to 30W/port with a total power budget of 246.4W, 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.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Power over Ethernet**
  - Supports 8-port IEEE802.3at Power over Ethernet (PoE) and Power Sourcing Equipment (PSE)

- **SFP Connectivity**
  - Built-in 2-port combo Gigabit SFP for either Gigabit copper or SFP connectivity

Ordering Information

Model

EX17082A	Unmanaged 8-port PoE (IEEE802.3at) 10/100BASE-TX and 2-port combo Gigabit SFP Ethernet Switch

* Rack mounting kit included

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x full duplex and flow control
- IEEE802.3ab 1000BASE-TX
- IEEE802.3z 1000BASE-SX/LX
- IEEE802.3af/at Power over Ethernet

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 2.75M bits

Processing Type
- Store-and-Forward
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control

Address Table Size
- 4096 MAC addresses

Power

Input
- 100 to 240VAC, 50/60Hz Internal Universal PSU

Power Consumption
- 260W Max.

Mechanical

Casing
- Metal Case

Dimensions
- 440mm (W) x 220mm (D) x 44mm (H) (17.6" (W) x 8.8" (D) x 1.76" (H))
- Standard 19" rack-mount size, one-unit-height

Weight
- 3.1Kg (6.83lbs.)

Installation
- Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 8 PoE ports
- Gigabit: 2ports

LED Indicators
- Per Unit: Power Status
- Per Port 10/100TX and 100FX: Link/Activity
- Per Port PoE: Act/status

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
- 10% to 90% (non-condensing)

## Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

CE Mark Class A, FCC Part 15 ClassA

Dimensions

44mm (1.76")

Back

440mm (17.6")

220mm (8.66")

Side

Top

Front
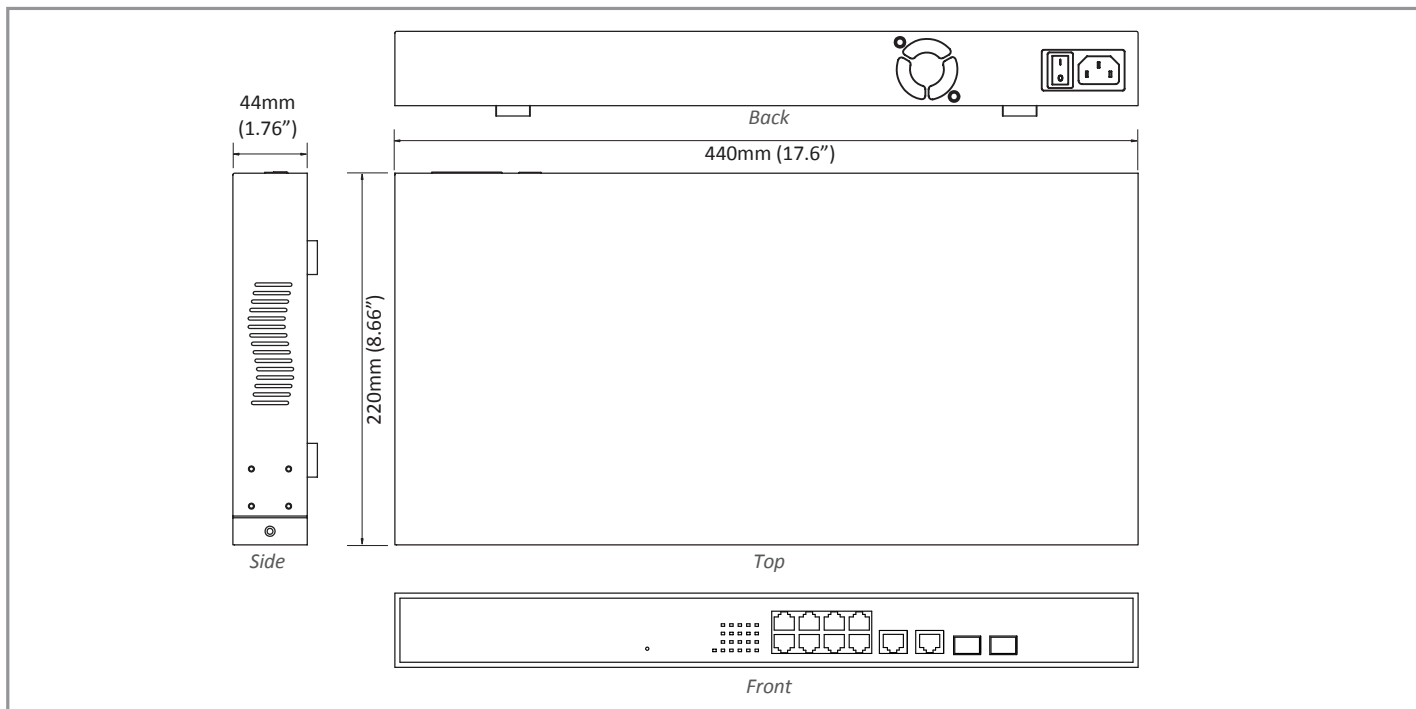
EX17908A

Unmanaged 8-port 10/100/1000BASE-T PoE Ethernet Switch

Overview

EtherWAN's EX17908A provides an 8-port switching platform supporting IEEE802.3at Power over Ethernet, high performance switching with features required for enterprise environments.

The EX17908A is equipped with 8 10/100/1000BASE-TX PoE ports. The EX17908A is feature-rich with full wire speed throughput, making the EX17908A Series a powerful network switch.

The IEEE802.3at 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.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Power over Ethernet**
  - Supports IEEE802.3at Power over Ethernet (PoE) and Power Sourcing Equipment (PSE)
  - PoE power output up to 30W/port, power budget up to 240W

- **Easy to Install**
  - Internal universal PSU 100VAC - 240VAC, 50 - 60HZ

Ordering Information

Model

EX17908A	Unmanaged 8-port PoE 10/100/1000BASE-T Ethernet Switch

Optional Accessories

KR-BK17		Rack mounting kit (black)

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x Full duplex and flow control
- IEEE802.3ab 1000BASE-TX
- IEEE802.3z 1000BASE-SX/LX
- IEEE802.3af/at Power over Ethernet

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 100Mbps

Packet Buffer Memory
- 2M bits

Processing Type
- Store-and-Forward
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control

Jumbo Frame
- 9.6K bytes

Address Table Size
- 8192 MAC addresses

Power

Input
- 100 to 240VAC, 50/60Hz

Power Consumption
- Device: Max. 8.8W (without PoE)
- PoE power budget: 240W Max.

PoE Power Output
- IEEE802.3at: up to 30W/port, 55VDC, 545mA Max.

Mechanical

Casing
- Metal Case

Dimensions
- 266mm (W) x 160mm (D) x 44mm (H) (10.47" (W) x 6.30" (D) x 1.73" (H))

Weight
- 1.52Kg (3.35lbs.)

Installation
- Desktop, Rack Mounting

Interface

Ethernet Port
- 10/100/1000BASE-T: 8 ports (PoE)

LED Indicators
- Per Unit: Power Status
- Per Port: Link/Activity, PoE Act/status

Environment

Operating Temperature
- 0°C to 40°C (32°F to 104°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
- 10% to 95% (non-condensing)

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliance

CE Mark Class A, FCC Part 15B ClassA

Dimensions

Back

44mm (1.73")

266mm (10.47")

160mm (6.3")

Side

Top

Front

EX17008A

Unmanaged 8-port 10/100BASE-TX PoE Ethernet Switch

Overview

EtherWAN's EX17008A provides a 8-port switching platform supporting IEEE802.3af Power over Ethernet, high performance switching with features required for enterprise environments.

The EX17008A is equipped with 8 10/100BASE-TX PoE ports. The EX17008A is feature rich with full wire speed throughput, making the EX17008A Series a powerful network switch.

The IEEE802.3af PoE ports provide up to 15.4W/port with a total power budget of 123.2W, making the switch truly versatile for connecting with PoE Powered Devices (PD) with different bandwidth and power consumption requirements.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Power over Ethernet**
  - Supports 8-port IEEE802.3af Power over Ethernet (PoE) and Power Sourcing Equipment (PSE)

- **Easy to Install**
  - Plug-and-play operation

Ordering Information

Model

EX17008A	Unmanaged 8-port 10/100BASE-TX PoE Ethernet Switch

Optional Accessories

KR-BK17		Rack mounting kit (black)

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x, Full duplex and flow control
- IEEE802.3af, Power over Ethernet

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 512K 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
- 1024 MAC addresses

Power

Input
- 100 to 240VAC, 50/60Hz

Power Consumption
- Device: Max. 8.8W (without PoE)
- PoE power budget: 123.2W Max.

PoE Power Output
- IEEE802.3af: up to 15.4W/port, 47 - 55VDC, 350mA Max..

Mechanical

Casing
- Metal Case

Dimensions
- 266mm (W) x 160mm (D) x 44mm (H)
  (10.47" (W) x 6.30" (D) x 1.73" (H))

Weight
- 1.4Kg (3.08lbs.)

Installation
- Desktop, Rack Mounting

Interface

Ethernet Port
- 10/100BASE-TX: 8 PoE ports

LED Indicators
- Per Unit: Power Status
- Per Port: Link/Activity, PoE Act/status

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
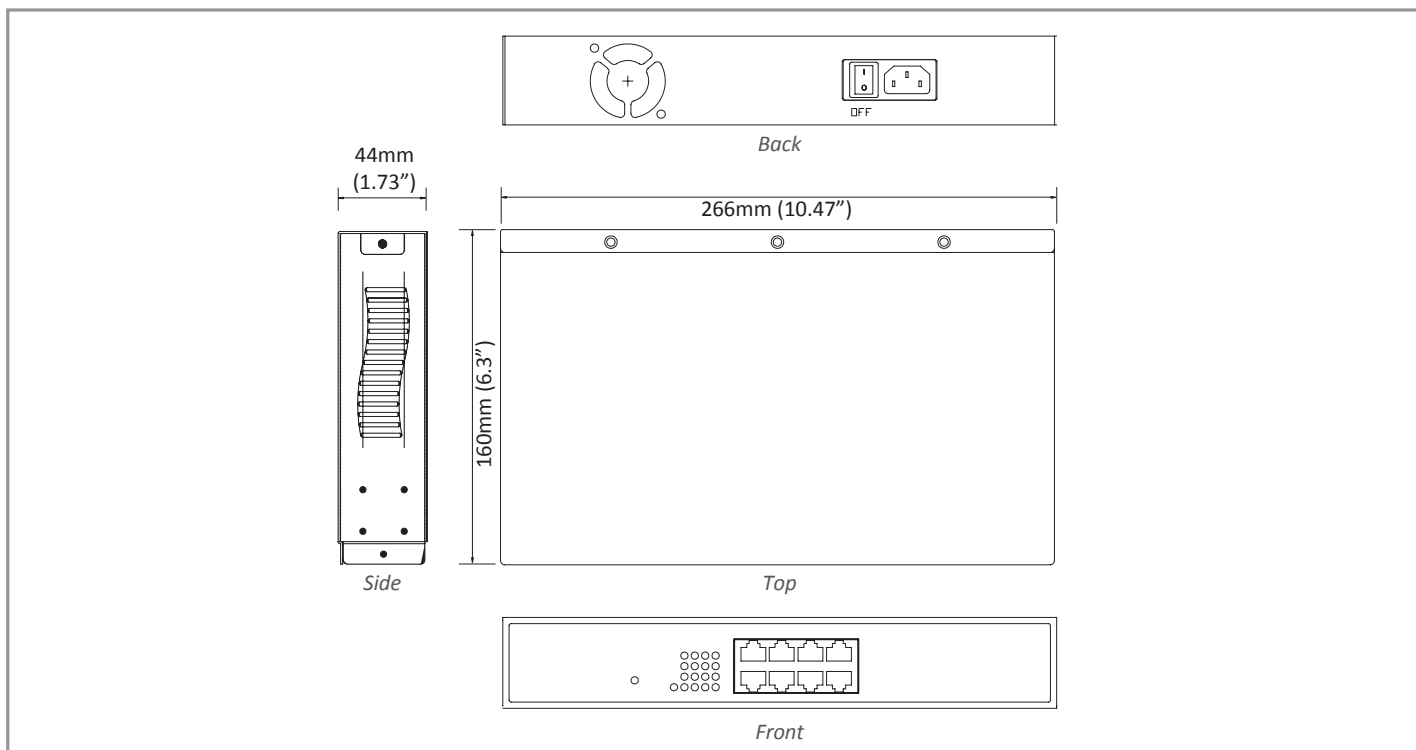- 10% to 95% (non-condensing)

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliance

FCC Part 15, Class B

CE mark Class B

Safety

UL60950-1, EN60950-1, IEC60950-1

Dimensions

Back

44mm (1.73")

266mm (10.47")

160mm (6.3")

Side

Top

Front

EX16916 Series

Unmanaged 16-port Gigabit Ethernet Switch

Overview

The EX16916 Series is equipped with sixteen Gigabit Ethernet ports and feature rich with 9K Jumbo Frame support, full wire speed Gigabit throughput, QoS support and eco-friendly IEEE802.3az EEE (Energy Efficient Ethernet) compliant, making the EX16916 Series a powerful yet energy efficient network switch.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Jumbo Frame Support**
  - ◦ Up to 9K bytes

- **High Reliability**
  - ◦ Fanless design
  - ◦ No moving parts

- **Eco-friendly support**
  - ◦ IEEE802.3az EEE (Energy Efficient Ethernet) allow less consumption during periods of low data activity

- **QoS**
  - ◦ Traffic classification based on IEEE802.1p CoS

Ordering Information

Model

EX16916	Unmanaged 16-port 10/100/1000BASE-T Gigabit Ethernet Switch

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3ab 1000BASE-T
- IEEE802.1x, Full duplex flow control
- IEEE802.1az Energy Efficient Ethernet
- IEEE802.1p Quality of Service (QoS)

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 256KB

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Jumbo Frame
- 9K bytes

Address Table Size
- 8K MAC addresses

Power

Input Voltage
- 100 to 240VAC

Power Consumption
- 8.1W Max. 0.85A.

Mechanical

Casing
- Metal case
- IP30

Dimensions
- 42mm (H) x 216mm (W) x 133mm (D)
  (1.68" (H) x 8.64" (W) x 5.32" (D))

Weight
- 0.9Kg (1.98lbs.)

Installation
- Rack-mount (rack mounting kit included)

Interface

Ethernet Port
- 10/100/1000BASE-T: 16 ports

LED Indicators
- Per Unit: Power (Green)
- Per Port: Link & Activity (Green)

Environment

Operating Temperature
- 0°C to 50°C (32°F to 122°F)

Storage Temperature
- -40°C to 70°C (-40°F to 158°F)

Ambient Relative Humidity
- 10% to 95% (non-condensing)

Regulatory Approvals

ISO
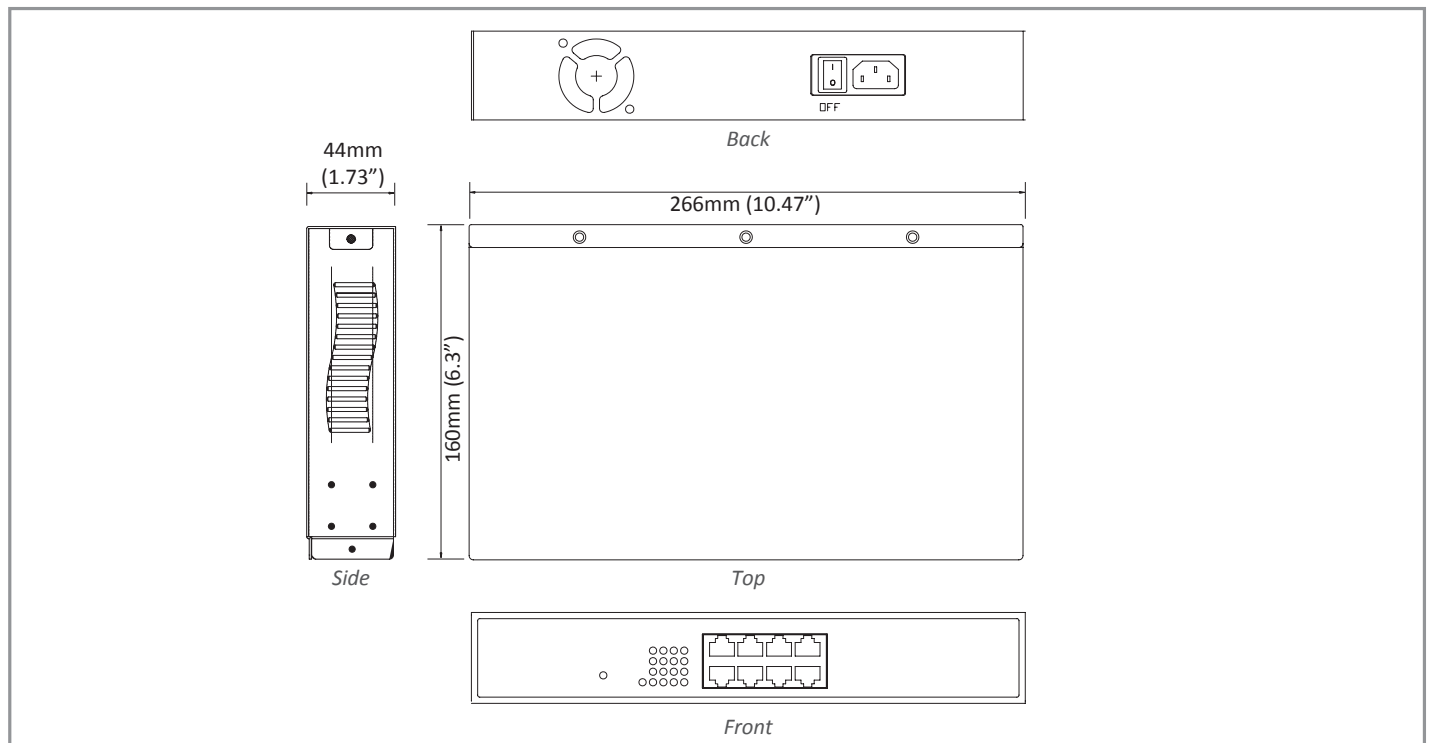- Manufactured in an ISO9001 facility

EMI

FCC Class B

CE Class B

LVD EN60950-1

Dimensions

216mm (8.64")

Back

Top

Side

133mm
(5.32")

42mm (1.68")

Front

Application Diagram

Gigabit

EX16916 Switch

EX16905 Switch

EX16905 Switch

PCs

File Server

Laptop computers

EX16926 Series

Unmanaged 26 Port Gigabit Switch with 24 RJ45 Gigabit Ports and 2 Gigabit SFP Slots

Overview

The EX16926 provides 24 Gigabit Ethernet RJ45 ports and 2 SFP ports supporting Gigabit fiber for long distance connectivity. The EX16926 is feature-rich with 10K Jumbo Frame support, full wire speed Gigabit throughput, QoS support and eco-friendly IEEE802.3az EEE (Energy Efficient Ethernet) compliant, making the EX16926 Series a powerful yet energy efficient network switch.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Jumbo Frame Support**
  - Up to 10K bytes

- **Fiber Connectivity**
  - Two 1000BASE SFP ports

- **High Reliability**
  - Fanless design
  - No moving parts

- **Eco-friendly support**
  - IEEE802.3az EEE (Energy Efficient Ethernet) allow less consumption during periods of low data activity

- **QoS**
  - Traffic classification based on IEEE802.1p CoS

Ordering Information

Model

EX16926	Unmanaged 24-port 10/100/1000BASE with 2-port Gigabit SFP Slots Ethernet Switch

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.1x, Full duplex flow control
- IEEE802.1az Energy Efficient Ethernet
- IEEE802.1p Quality of Service (QoS)

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 4.1MB

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Jumbo Frame
- 10K bytes

Address Table Size
- 4K MAC addresses

Power

Input Voltage
- 100 to 240VAC

Power Consumption
- 14.6W Max. 0.15A

Mechanical

Casing
- Metal case
- IP30

Dimensions
- 44mm (H) x 441mm (W) x 131mm (D) (1.76" (H) x 17.64" (W) x 5.24" (D))

Weight
- 1.9Kg (4.18lbs.)

Installation
- Rack-mount (rack mounting kit included

Interface

Ethernet Port
- 10/100/1000BASE-T: 24 ports
- 1000BASE SFP: 2 ports

LED Indicators
- Per Unit: Power (Green)
- Per Port: Link & Activity (Green)

Environment

Operating Temperature
- 0°C to 50°C (32°F to 122°F)

Storage Temperature
- -40°C to 70°C (-40°F to 158°F)

Ambient Relative Humidity
- 10% to 95% (non-condensing)

Regulatory Approvals
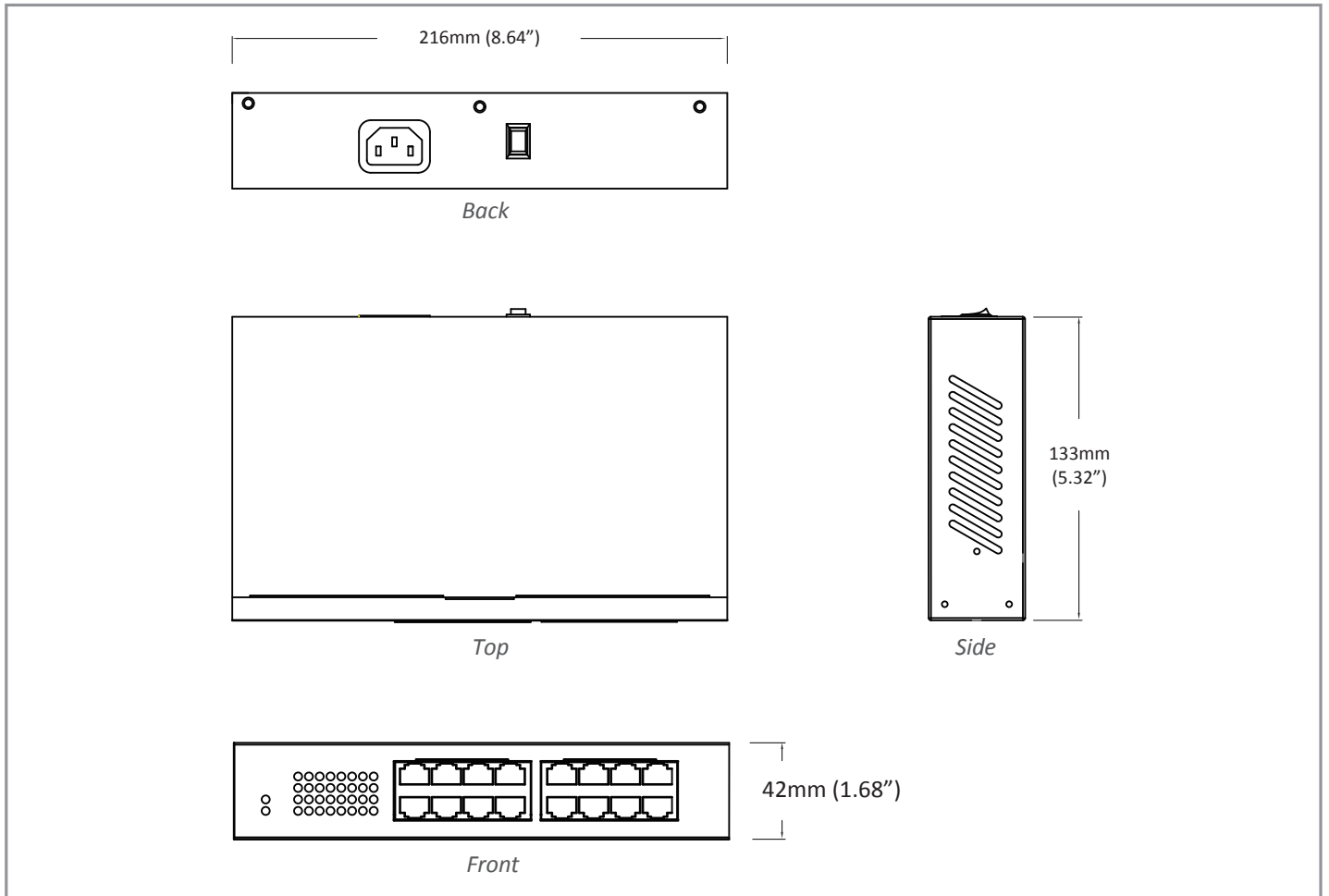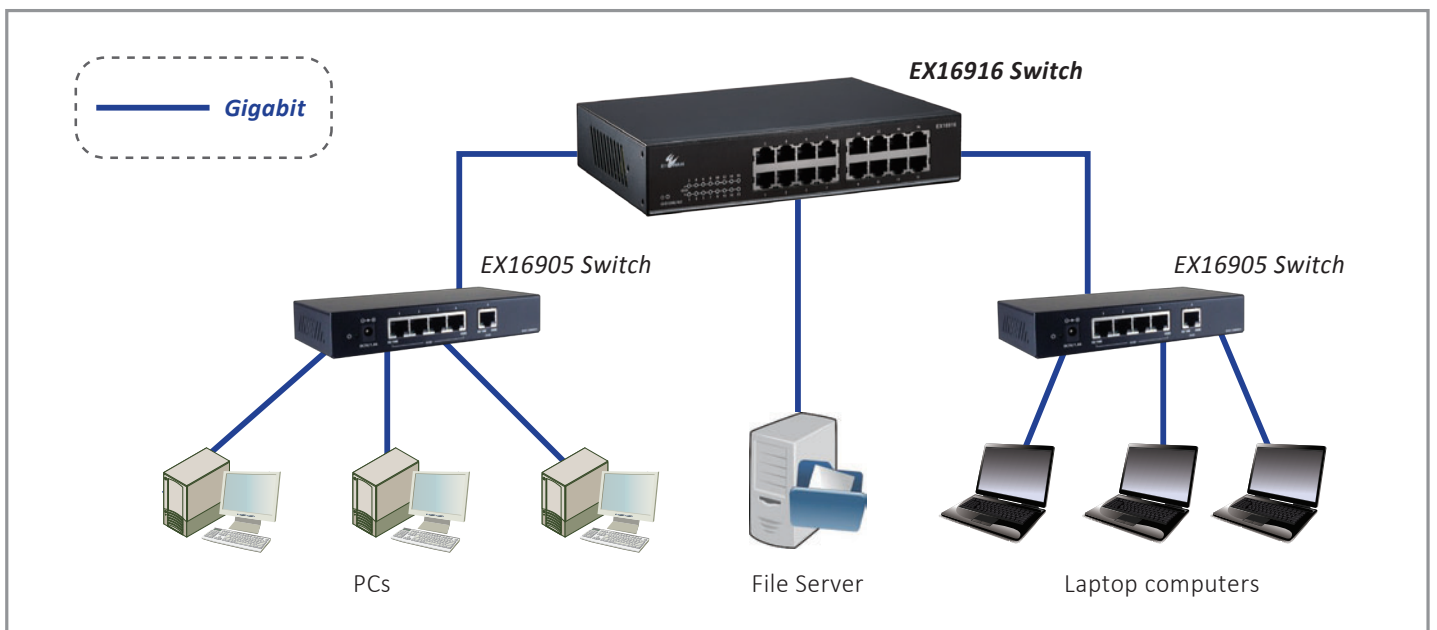
ISO
- Manufactured in an ISO9001 facility

EMI

FCC Class B, CE Class B and LVD EN60950-1

Dimensions

Back

131mm (5.24")

441mm (17.64")

Top

44mm (1.76")

Side

Front
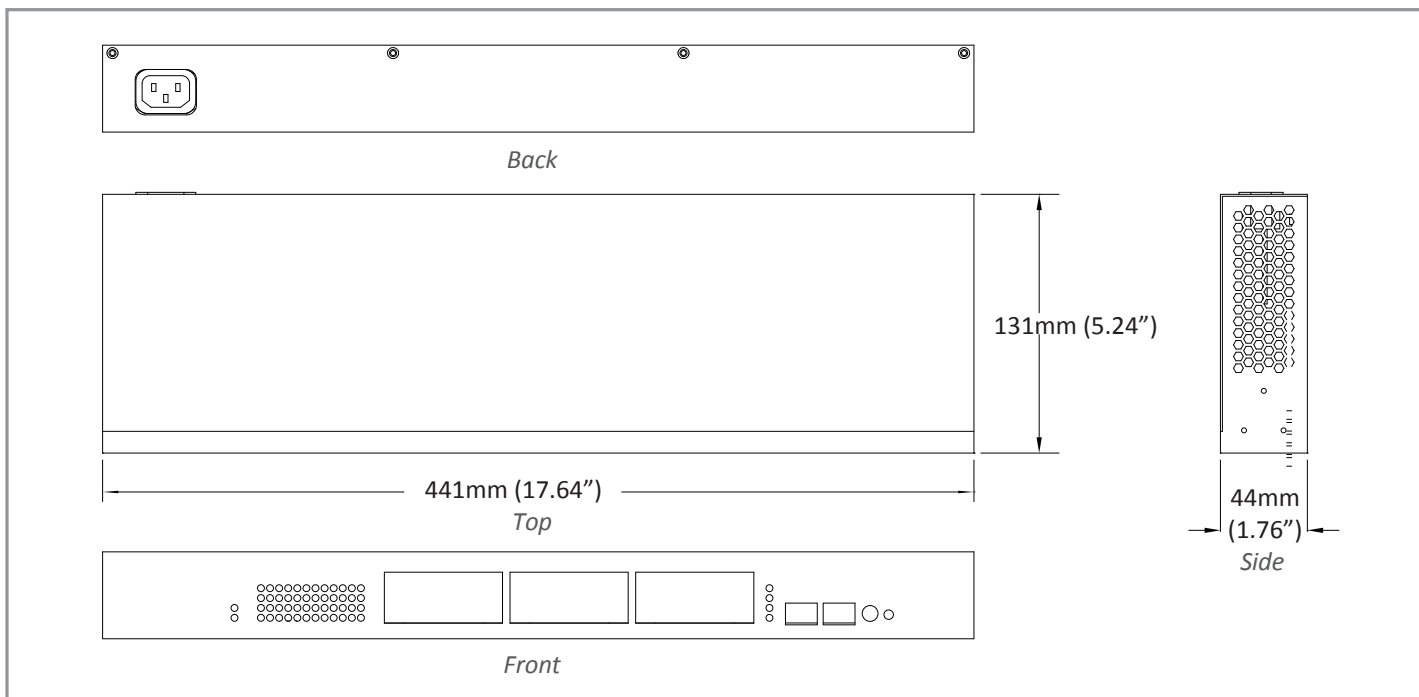
Application Diagram
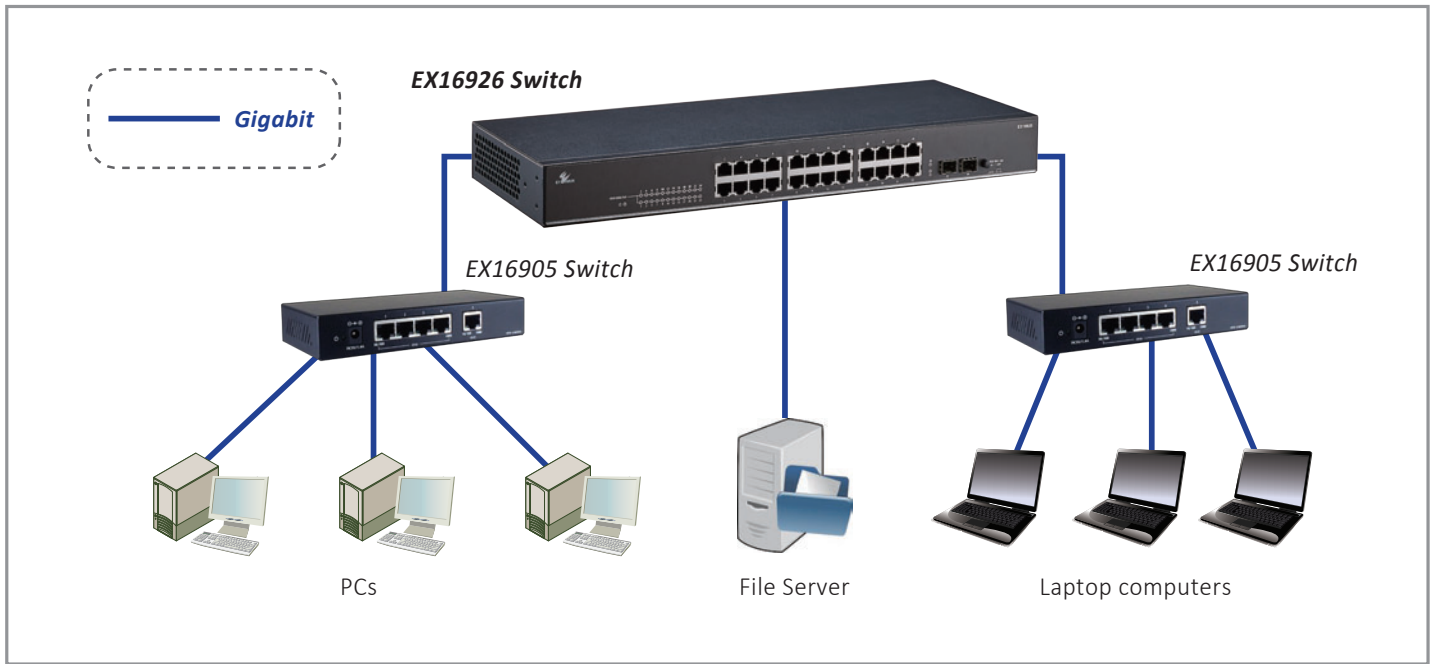
EX16900 Series

Unmanaged 5/8-port 10/100/1000BASE Ethernet Switch

Overview

EtherWAN's EX16900 Series is a compact Unmanaged Gigabit switching platform, designed for easy deployment in enterprise and small office/branch office environments

The EX16900 Series is equipped with five or eight Gigabit Ethernet ports, or a combination of Gigabit copper ports and one Gigabit fiber port for long distance connectivity. Although unmanaged, the EX16900 is feature rich with Jumbo Frame support, full wire speed Gigabit throughput, QoS support and eco-friendly IEEE802.3az EEE (Energy Efficient Ethernet) compliant, making the EX16900 Series a powerful yet energy efficient network switch.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Jumbo Frame Support**
  - Up to 9K bytes (EX16905/EX16914 Series)
  - Up to 9720 bytes (EX16908/EX16917 Series)

- **Fiber Connectivity**
  - Up to one 1000BASE-SX port with SC, ST and SFP options

- **Compact Size**
  - Easy to place on the desktop with the dimensions of 160mm (W) x 80.5mm (D) x 28mm (H)

- **High Reliability**
  - Fanless Design
  - No moving parts

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u, 100BASE-TX
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.3x Full duplex flow control
- IEEE802.3az Energy Efficient Ethernet
- IEEE802.3p Quality of Service (QoS)

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- EX16905/EX16914: 1M bits
- EX16908/EX16917: 192 KB

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Jumbo Frame
- EX16905/EX16914: 9K
- EX16908/EX16917: 9720 bytes

Address Table Size
- EX16905/EX16914: 2048 MAC addresses
- EX16908/EX16917: 4K MAC addresses

Power

Input Voltage
- 5VDC

Power Consumption
- EX16905/EX16914: 3.5W Max.
- EX16908/EX16917: 4W Max.

Mechanical

Casing
- Metal Case

Dimensions
- 160mm (W) x 80.5mm (D) x 28mm (H)
  (6.3" (W) x 3.17" (D) x 1.1" (H))

Weight
- 0.42Kg (0.92lb.)

Installation
- Wall or Shelf Mounting

Interface

Ethernet Port
- EX16905/EX16914:
  10/100/1000BASE-T: 5 or 4 ports
  1000BASE-SX/LX/SFP: 0 or 1 port
- EX16908/EX16917:
  10/100/1000BASE-T: 8 or 7 ports
  1000BASE-SX/LX/SFP: 0 or 1 port

LED Indicators
- Per Unit: Power (Green)
- Per Port: 10/100M (Green);
           1000Mbps (Amber)

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
- 10% to 95% (non-condensing)

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL60950

Emission Compliance

CE Mark Class A

FCC Part 15B ClassA,

VCCI Class A

Dimensions

160mm (6.3")

Front

Top

Side

80.5mm
(3.17")

28mm (1.1")

Back (EX16908/EX16917)

Back (EX16905/EX16914)
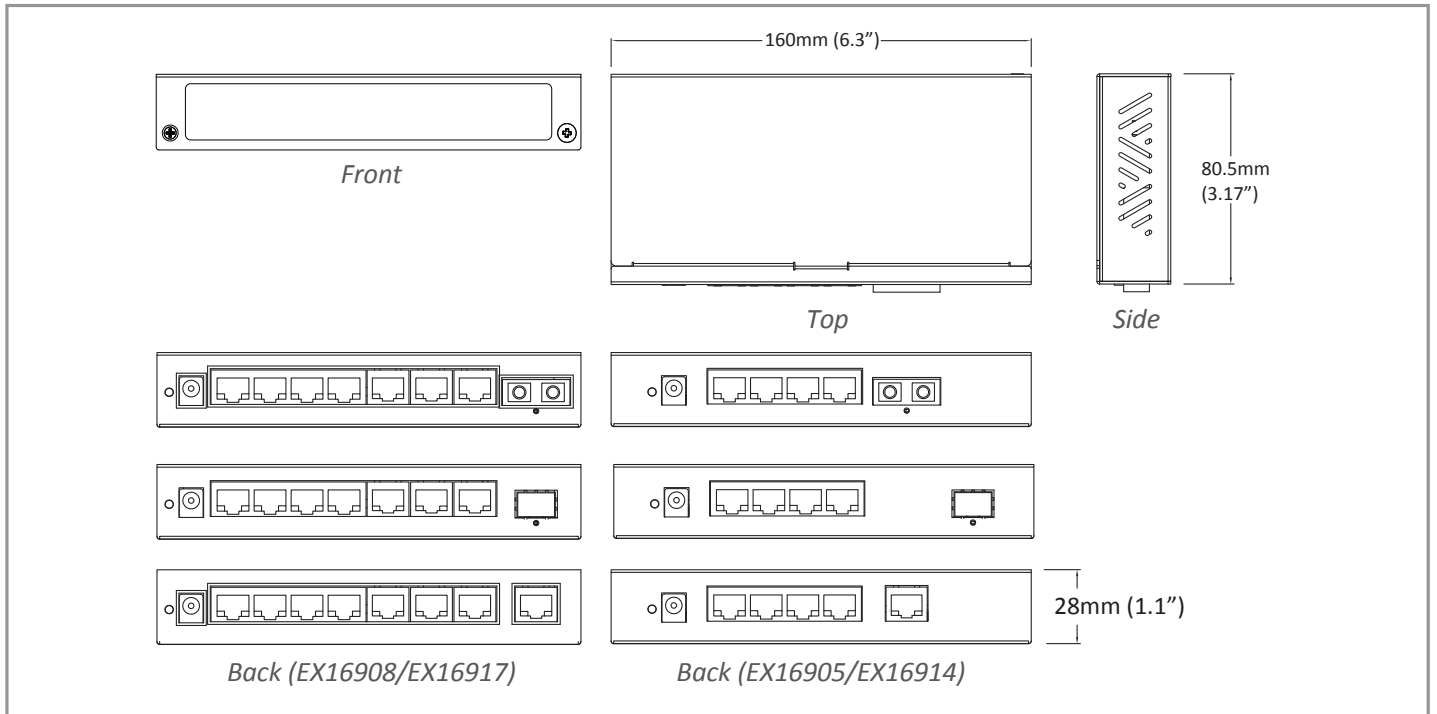
Ordering Information

Model

EX16905	Unmanaged 5-port 10/100/1000BASE-TX Gigabit Ethernet Switch
EX16914-X	Unmanaged 4-port 10/100/1000BASE-TX + 1-port 1000BASE-X Gigabit Ethernet Switch
EX16908	Unmanaged 8-port 10/100/1000BASE-TX Gigabit Ethernet Switch
EX16917-X	Unmanaged 7-port 10/100/1000BASE-TX + 1-port 1000BASE-X Gigabit Ethernet Switch

1000FX Fiber Options(X)

3	1000BASE-SX(SC)-550m
5	1000BASE-SX(ST)-550m
V	1000BASE SFP

EX1605PB/PBF1 Series
EX1608PB/PBF1 Series (US Only)

Unmanaged 5/8-port 10/100BASE Ethernet Switch

Overview

EtherWAN's EX1605PB/EX1608PBF1 Series is a compact unmanaged Fast Ethernet switching platform, designed for easy deployment in small business or enterprise environments.

The EX1605PB/EX1608PBF1 Series is equipped with 5/8 Fast Ethernet ports, with the combination of Fast Ethernet copper ports and one 100FX fiber port for long distance connectivity. Although unmanaged, the EX1608PB/EX1608PBF1 is feature-rich with full wire speed Fast Ethernet throughput, making the EX1608PB/EX1608PBF1 Series a powerful network switch.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Fiber Connectivity**
  - Up to one 100BASE-FX port with SC and ST options
  - Fiber port is available with SC or ST with a fiber connection that can reach up to 120Km (74.4miles)

- **Easy to Install**
  - External 12VDC power adaptor
  - Support wall mounting

Hardware Specifications

Technology

Standards
- IEEE802.3, 10BASE-T
- IEEE802.3u, 100BASE-TX
- IEEE802.3x, Full duplex flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 1M 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
- 2048 MAC addresses

Power

Input Voltage
- 12VDC

Power Consumption
- 3.24W Max. 0.27A @ 12VDC

Mechanical

Casing
- Metal Case

Dimensions
- 160mm (W) x 80.5mm (D) x 28mm (H)
  (6.3" (W) x 3.17" (D) x 1.1" (H))

Weight
- 0.42Kg (0.92lb.)

Installation
- Wall, Shelf Mounting

Interface

Ethernet Port
- 5 or 4 10/100BASE-TX ports (EX1605PB/PBF1)
- 8 or 7 10/100BASE-TX ports (EX1608PB/PBF1)
- 0 or 1 100BASE-FX port

LED Indicators
- Per Unit: Power Status (Power)
- Per Port: 10/100TX, 100FX: Link/Activity

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
- 10% to 95% (non-condensing)

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliance

CE Mark Class A and FCC Part 15 ClassA

Dimensions

160mm (6.3")

Front

80.5mm (3.17")

Top

Side

28mm (1.1")

Back
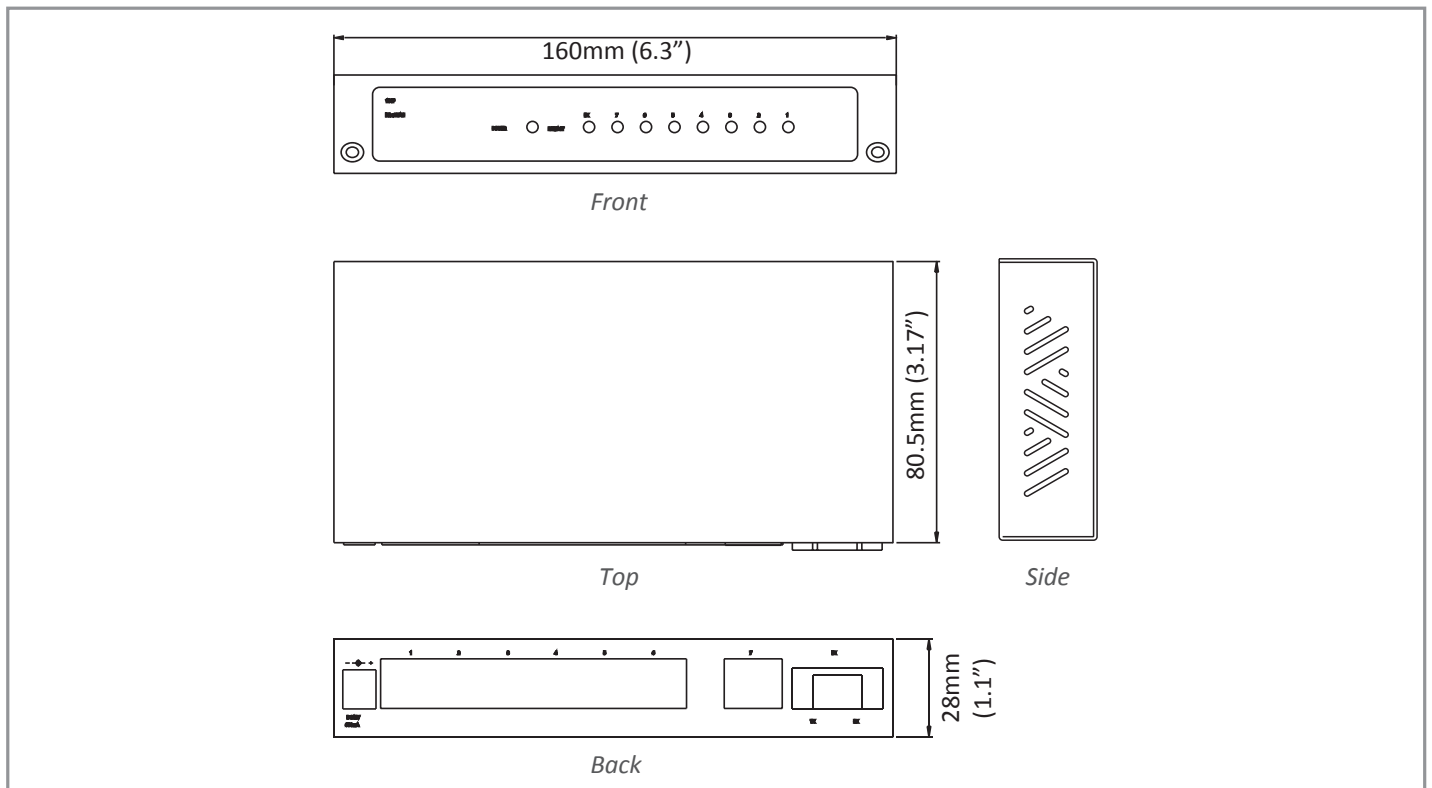
Ordering Information

Model

EX1605PB	5-port 10/100BASE-TX Unmanaged Ethernet Switch
EX1605PBFT	4-port 10/100BASE-TX + 1-port 100BASE-FX Multi Mode (ST) -2Km Unmanaged Ethernet Switch
EX1605PBFC	4-port 10/100BASE-TX + 1-port 100BASE-FX Multi Mode (SC) -2Km Unmanaged Ethernet Switch
EX1605PBFT-20	4-port 10/100BASE-TX + 1-port 100BASE-FX Single Mode (ST) -20Km Unmanaged Ethernet Switch
EX1608PB	8-port 10/100BASE-TX Unmanaged Ethernet Switch
EX1608PBFT	7-port 10/100BASE-TX + 1-port 100BASE-FX Multi Mode (ST) -2Km Unmanaged Ethernet Switch
EX1608PBFC	7-port 10/100BASE-TX + 1-port 100BASE-FX Multi Mode (SC) -2Km Unmanaged Ethernet Switch
EX1608PBFT-20	7-port 10/100BASE-TX + 1-port 100BASE-FX Single Mode (ST) -20Km Unmanaged Ethernet Switch
EX1608PBFC-15	7-port 10/100BASE-TX + 1-port 100BASE-FX Single Mode (SC) -15Km Unmanaged Ethernet Switch
EX1608PBFCA-20	7-port 10/100BASE-TX + 1-port 100BASE-FX Single Mode (SC) WDM-TX:1310nm/RX:1550nm-20Km Unmanaged Ethernet Switch

EX1608SF Series

Unmanaged 8-port 10/100BASE Ethernet Switch

Overview

EtherWAN's EX1608SF Series is an Unmanaged Fast Ethernet switching platform, designed for easy deployment in small-business or enterprise environments.

The EX16008SF Series is equipped with eight Fast Ethernet ports, with the option of eight 100FX fiber ports for long distance connectivity. Although unmanaged, the EX1608SF is feature rich with full wire speed Fast Ethernet throughput, making the EX1608SF Series a powerful network switch.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Fiber Connectivity**
  - Up to eight 100BASE-FX ports with SC and ST options

- **Easy to Install**
  - Internal universal PSU 100VAC - 240VAC, 50 - 60HZ

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x, Full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 768K bits

Processing Type
- Store-and-Forward
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control

Address Table Size
- 2048 MAC addresses

Power

Input
- 100 - 240VAC, 50 - 60Hz Internal Universal PSU

Power Consumption
- 12W Max.

Mechanical

Casing
- Metal Case

Dimensions
- 443.6mm (W) x 203.2mm (D) x 44mm (H) (17.47" (W) x 8.07" (D) x 1.73" (H))
- Standard 19" rack-mount size, one-unit-height

Weight
- 2.8Kg (6.16lbs.)

Installation
- Rack Mounting

Interface

Ethernet Port
- 10/100BASE-TX: 6, 2 or 0 ports
- 100BASE-FX: 2, 6 or 8 ports

LED Indicators
- Per Unit: Power Status (Power)
- Per Port: 10/100TX, 100FX: Link/Activity, Speed,
- Full-duplex/Collision

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
- 10% to 95% (non-condensing)

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliance

CE Mark Class A, FCC Part 15 ClassA

Dimensions
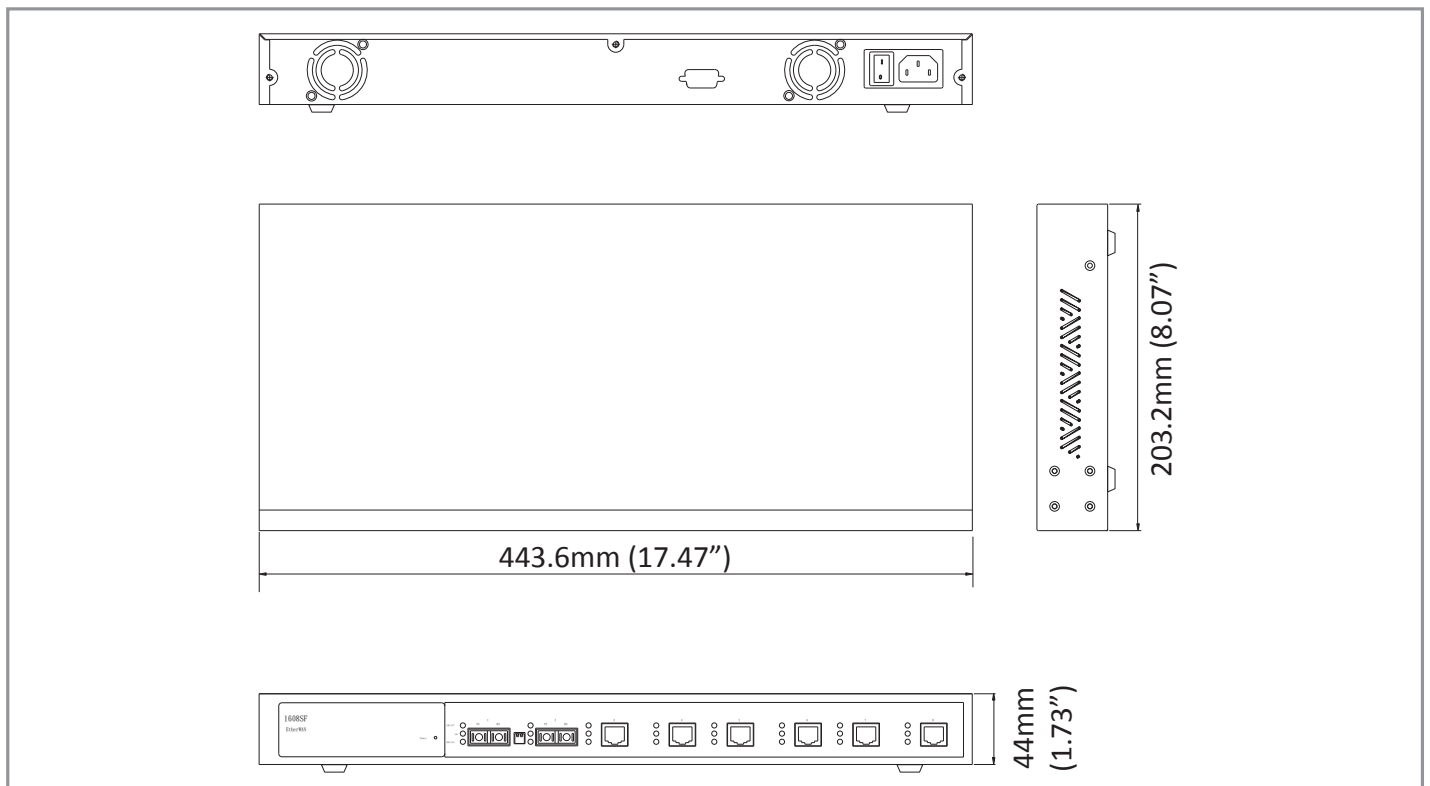
Ordering Information

Model

EX1608SFT2	6-port 10/100BASE-TX + 2-port 100BASE-FX Multi Mode (ST) - 2Km Unmanaged Ethernet Switch
EX1608SFC2	6-port 10/100BASE-TX + 2-port 100BASE-FX Multi Mode (SC) - 2Km Unmanaged Ethernet Switch
EX1608SFT2-20	6-port 10/100BASE-TX + 2-port 100BASE-FX Single Mode (ST) - 20Km Unmanaged Ethernet Switch
EX1608SFC2-15	6-port 10/100BASE-TX + 2-port 100BASE-FX Single Mode (SC) - 15Km Unmanaged Ethernet Switch
EX1608SFT6	2-port 10/100BASE-TX + 6-port 100BASE-FX Multi Mode (ST) - 2Km Unmanaged Ethernet Switch
EX1608SFC6	2-port 10/100BASE-TX + 6-port 100BASE-FX Multi Mode (SC) - 2Km Unmanaged Ethernet Switch
EX1608SFT6-20	2-port 10/100BASE-TX + 6-port 100BASE-FX Single Mode (ST) - 20Km Unmanaged Ethernet Switch
EX1608SFC6-15	2-port 10/100BASE-TX + 6-port 100BASE-FX Single Mode (SC) - 15Km Unmanaged Ethernet Switch
EX1608SFC6-40	2-port 10/100BASE-TX + 6-port 100BASE-FX Single Mode (SC) - 40Km Unmanaged Ethernet Switch
EX1608SFT8	8-port 100BASE-FX Multi Mode (ST) - 2Km Unmanaged Ethernet Switch
EX1608SFC8	8-port 100BASE-FX Multi Mode (SC) - 2Km Unmanaged Ethernet Switch
EX1608SFC8-15	8-port 100BASE-FX Single Mode (SC) -15Km Unmanaged Ethernet Switch

Optional Accessories

KR-EW612-400		Rack mounting kit (white)

Media Converters

» **Hardened Media Converters**
» **WDM Media Converters**
» **PoE Media Converters**
» **OAM Media Converters**
» **Media Converters with SFP**
» **Gigabit Media Converters**
» **Serial to Fast Ethernet Media Converters**
» **Media Converter Chassis**

From Climate Controlled Rooms to Harsh Environments,
We Have You Covered.

Media Converter Glossary

Far End Fault

The optional link integrity check on the 100BASE-FX fiber optic segments is called the Far End Fault function. In operation, Far End Fault detection occurs when a constant stream of IDLE symbols is no longer detected on a 100BASE-FX link. At this point, any device that detects the failure of the IDLE symbols on the receive side of the link will transmit a constant stream of Far End Fault signals. A device equipped with Far End Fault capability will interpret the incoming Far End Fault signals as a link failure and will be able to signal that failure to the management interface in the device.

The Far End Fault detection feature is useful, since fiber links can be very long. A system that can detect a link that is working in one direction but not the other can save valuable time when troubleshooting links.

Link Fault Pass Through

When the link fault pass through function is enabled, the link status on the TX port will inform the FX port of the same device and vice versa. In the link fault pass through explanation shown below, if the link failure occurs on the TX port (1), the local FX port will send a non-idle pattern to notify the remote FX port (2). The remote FX port then forces its TX port to show a link failure, after receiving the non-idle pattern (4). This mechanism will alert the link fault status of the local TX port to the remote converter's TX port, and the link status of the remote TX port will show a fault. The link status LED will also shut off for both ports.
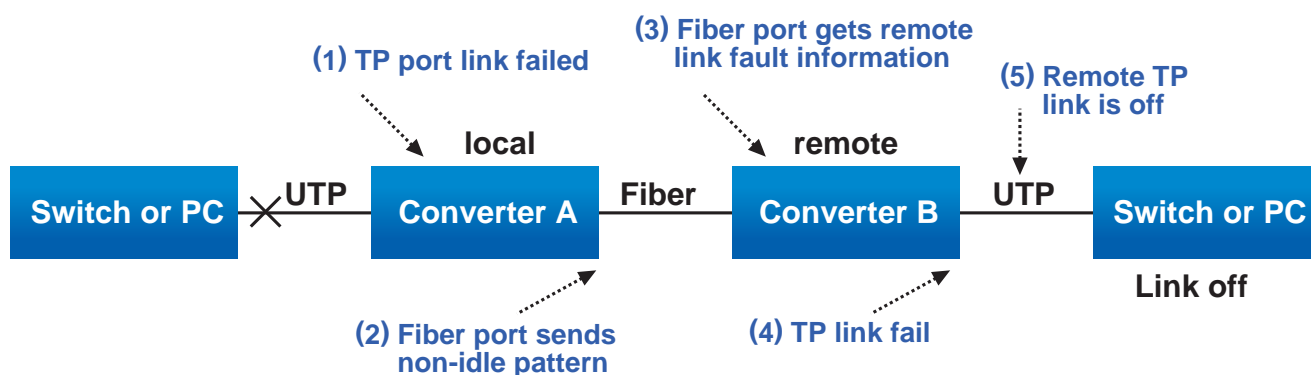
OAM

Operations, administration and management, or operations, administration and maintenance (OA&M or OAM) is a general term used to describe a set of functions to detect the network faults and measure the network performance. They can be processes, activities, tools and standards involved with operating, administering, managing and maintaining a system. It is more commonly used in the context of computer networks or computer hardware.

In particular, Ethernet operations, administration and maintenance (EOAM) refers to protocols for installing, monitoring, and troubleshooting Ethernet metropolitan area networks (MANs) and Ethernet WANs. It relies on a new, optional sub layer in the data link layer of the Open Systems Interconnection (OSI) model. The OAM features covered by this protocol are discovery, link monitoring, remote fault detection, and remote loopback.

Media Converter Connection Guide

ISA 12.12.01

Gigabit >>				
Model Name	**EL9100**	**EL9000**	**EL9020**	**EL2321**
Interface				
Max. 100 BASE-T	-	-	-	-
Max. 10/100 BASE-TX	-	-	-	-
Max. 1000 BASE-T	-	1	-	-
Max. 10/100/1000 BASE-T	1	-	1	1
Max. 100 BASE-FX/BX WDM	-	-	-	1
Max. 100 BASE-SFP	-	-	-	-
Max. 1000 BASE-SX/LX/BX	1	1	-	1
Max. 1000 BASE-SFP	-	-	1	-
Max. PoE Ports	-	-	-	-
Web Management	-	-	-	√
Alarm Contact	√	√	√	-
Mode of Operations				
Auto-negotiation, Auto-MDI/MDI-X	√	√	√	√
Flow Control	√	-	√	√
Store & Forward	√	-	√	√
Link Fault Pass Through	√	√	√	√
Mechanical				
Casing	aluminum	aluminum	aluminum	aluminum
Installation*	D, P, R	D, P, R	D, P, R	C, W
Dimensions (WxDxH)	50x110x135	50x110x135	50x110x135	80.3x109.2x23.8
Power Input				
No. of Power Inputs	3	2/1	3	1
Terminal Block	12 - 48VDC	12 - 48VDC	12 - 48VDC	-
DC Jack	12VDC	12VDC	12VDC	12VDC
AC to DC Adapter	-	-	-	√
Operating Temperature				
0˚C to 50˚C	-	-	-	√
-10˚C to 60˚C	-	-	-	-
-40˚C to 75˚C	√	√	√	-
Regulatory Approvals				
CE / FCC	√	√	√	√
VCCI	√	√	√	√
UL508	√	-	√	-
ISA12.12.01 / UL1604	-	√	-	-
EN50121-4	-	-	-	-
UL/cUL 60950-1	-	√	-	-

* C: Chassis, D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

Gigabit >>						
Model Name	EL2211	EL2315	EM1100 EM2100	EM1000S EM2000S	EM1000 EM2000	EM1020
Interface						
Max. 100 BASE-T	-	-	-	-	-	-
Max. 10/100 BASE-TX	-	-	-	-	-	-
Max. 1000 BASE-T	-	-	-	-	1	1
Max. 10/100/1000 BASE-T	1	1	1	-	-	-
Max. 100 BASE-FX/BX WDM	-	-	-	-	-	-
Max. 100 BASE-SFP	-	1	-	-	-	-
Max. 1000 BASE-SX/LX/BX	1	-	1	2	1	-
Max. 1000 BASE-SFP	-	1	-	-	-	1
Max. PoE Ports	-	-	-	-	-	-
Web Management	-	-	-	-	-	-
Alarm Contact	-	-	-	-	-	-
Mode of Operations						
Auto-negotiation, Auto-MDI/MDI-X	√	√	√	-	√	√
Flow Control	√	√	√	-	-	-
Store & Forward	√	√	√	-	-	-
Link Fault Pass Through	√	√	-	-	√	√
Mechanical						
Casing	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum
Installation*	C, W	C, W	C, W	C, W	C, W	C, W
Dimensions (WxDxH)	80.3x109.2x23.8	80.3x109.2x23.8	80.3x109.2x23.8	80.3x109.2x23.8	80.3x109.2x23.8	80.3x109.2x23.8
Power Input						
No. of Power Inputs	1	1	1	1	1	1
Terminal Block	-	-	-	-	-	-
DC Jack	12VDC	12VDC	12VDC	12VDC	12VDC	12VDC
AC to DC Adapter	√	√	√	√	√	√
Operating Temperature						
0˚C to 45˚C	√	√	√	√	√	√
-10˚C to 60˚C	-	-	-	-	-	-
-40˚C to 75˚C	-	-	-	-	-	-
Regulatory Approvals						
CE / FCC	√	√	√	√	√	√
VCCI	√	√	√	√	√	√
UL508	-	-	-	-	-	-
ISA12.12.01 / UL1604	-	-	-	-	-	-
EN50121-4	-	-	-	-	-	-
UL/cUL 60950-1	-	-	-	-	-	-

* C: Chassis, D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

ISA 12.12.01

Fast Ethernet >>			
Model Name	EL900	EL910 NEW	EL950 NEW
Interface			
Max. 100 BASE-T	-	-	-
Max. 10/100 BASE-TX	1	1	1
Max. 1000 BASE-T	-	-	-
Max. 10/100/1000 BASE-T	-	-	-
Max. 100 BASE-FX/BX WDM	1	1	1
Max. 100 BASE-SFP	-	-	-
Max. 1000 BASE-SX/LX/BX	-	-	-
Max. 1000 BASE-SFP	-	-	-
Max. PoE Ports	-	-	-
Web Management	-	-	√
Alarm Contact	√	√	√
Mode of Operations			
Auto-negotiation, Auto-MDI/MDI-X	√	√	√
Flow Control	√	√	√
Store & Forward	√	√	√
Link Fault Pass Through	√	√	√
Mechanical			
Casing	aluminum	aluminum	aluminum
Installation*	D, P, R	D	D
Dimensions (WxDxH)	50x110x135	42x90x100	42x90x100
Power Input			
No. of Power Inputs	2 / 1	3	3
Terminal Block	10 - 48VDC	12 - 48VDC	12 - 48VDC
DC Jack	12VDC	12VDC	12VDC
AC to DC Adapter	-	-	-
Operating Temperature			
0˚C to 45˚C	-	-	-
-10˚C to 60˚C	-	-	-
-40˚C to 75˚C	√	√	√
Regulatory Approvals			
CE / FCC	√	√	√
VCCI	√	√	√
UL508	-	-	-
ISA12.12.01 / UL1604	√	-	-
IEC61850-3	-	-	-
EN50121-4	-	-	-
UL/cUL 60950-1	√	√	√

* C: Chassis, D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

Fast Ethernet >>				
Model Name	EL1032T	EL1033	EL1141	EX42011
Interface				
Max. 100 BASE-T	-	-	-	-
Max. 10/100 BASE-TX	1	1	1	1
Max. 1000 BASE-T	-	-	-	-
Max. 10/100/1000 BASE-T	-	-	-	-
Max. 100 BASE-FX/BX WDM	1	1	1	1
Max. 100 BASE-SFP	-	-	-	-
Max. 1000 BASE-SX/LX/BX	-	-	-	-
Max. 1000 BASE-SFP	-	-	-	-
Max. PoE Ports	PSE (30W)	PD	-	-
Web Management	-	-	-	-
Alarm Contact	-	-	√	-
Mode of Operations				
Auto-negotiation, Auto-MDI/MDI-X	√	√	√	√
Flow Control	√	√	√	√
Store & Forward	√	√	√	√
Link Fault Pass Through	√	√	√	-
Mechanical				
Casing	aluminum	aluminum	aluminum	plastic
Installation*	D, P	D, P	D, P, R	D
Dimensions (WxDxH)	70x110x30	70x110x30	50x110x135	26x110x70
Power Input				
No. of Power Inputs	2	2	3	1
Terminal Block	48 - 57VDC	48VDC	12 - 48VDC	12 - 48VDC
DC Jack	48VDC	48VDC	12VDC	12VDC
AC to DC Adapter	-	-	-	-
Operating Temperature				
0˚C to 45˚C	-	-	-	-
-10˚C to 60˚C	√	√	-	√
-40˚C to 75˚C	-	-	√	-
Regulatory Approvals				
CE / FCC	√	√	√	√
VCCI	√	√	√	√
UL508	-	-	√	-
ISA12.12.01 / UL1604	-	-	-	-
IEC61850-3	-	-	√	-
EN50121-4	-	-	√	-
UL/cUL 60950-1	-	-	-	√

* C: Chassis, D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

Fast Ethernet >>

Model Name	EL200	EL100	EM120	EL50	EL50 (AC)
Interface					
Max. 100 BASE-T	1	1	-	-	-
Max. 10/100 BASE-TX	1	1	-	1	1
Max. 1000 BASE-T	-	-	-	-	-
Max. 10/100/1000 BASE-T	-	-	-	-	-
Max. 100 BASE-FX/BX WDM	1	1	2	1	1
Max. 100 BASE-SFP	-	-	-	-	-
Max. 1000 BASE-SX/LX/BX	-	-	-	-	-
Max. 1000 BASE-SFP	-	-	-	-	-
Max. PoE Ports	-	-	-	-	-
Web Management	-	-	-	-	-
Alarm Contact	-	-	-	-	-
Mode of Operations					
Auto-negotiation, Auto-MDI/MDI-X	√	√	-	√	√
Flow Control	√	√	-	√	√
Store & Forward	√	√	-	√	√
Link Fault Pass Through	√	√	-	-	-
Mechanical					
Casing	aluminum	aluminum	aluminum	metal	metal
Installation*	C, W	C, W	C, W	W	W
Dimensions (WxDxH)	80.3x109.2x23.8	80.3x109.2x23.8	80.3x109.2x23.8	54.2x80.3x21.9	54.2x80.3x21.9
Power Input					
No. of Power Inputs	1	1	1	1	1
Terminal Block	-	-	-	-	24VAC
DC Jack	12VDC	12VDC	12VDC	12VDC	-
AC to DC Adapter	√	√	√	√	-
Operating Temperature					
0˚C to 45˚C	√	√	√	√	√
-10˚C to 60˚C	-	-	-	-	-
-40˚C to 75˚C	-	-	-	-	-
Regulatory Approvals					
CE / FCC	√	√	√	√	√
VCCI	√	√	√	√	√
UL508	-	-	-	-	-
ISA12.12.01 / UL1604	-	-	-	-	-
EN50121-4	-	-	-	-	-
UL/cUL 60950-1	√	√	-	-	-

* C: Chassis, D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

Multiple Channel Chassis >>

Model Name	EMC1600	EMC400 NEW	EMC1200R
Interface			
Max. 100 BASE-T	16	4	12
Max. 10/100 BASE-TX	16	4	12
Max. 1000 BASE-T	16	4	12
Max. 10/100/1000 BASE-T	16	4	12
Max. 100 BASE-FX/BX WDM	32	8	24
Max. 100 BASE-SFP	16	4	12
Max. 1000 BASE-SX/LX/BX	32	8	24
Max. 1000 BASE-SFP	16	4	12
Max. PoE Ports	-	-	-
Web Management	-	-	-
Alarm Contact	-	-	-
Mode of Operations			
Auto-negotiation, Auto-MDI/MDI-X	√	√	√
Flow Control	√	√	√
Store & Forward	√	√	√
Link Fault Pass Through	√	√	√
Mechanical			
Casing	metal	metal	metal
Installation*	R	D	R
Dimensions (WxDxH)	440x276x90	130x164x92	440x243x45
Power Input			
No. of Power Inputs	2	2	2
Terminal Block	±48VDC	12VDC	±48VDC
DC Jack	100 - 240VDC	-	100 - 240VDC
AC to DC Adapter	-	-	-
Operating Temperature			
0˚C to 45˚C	√	√	√
-10˚C to 60˚C	-	-	-
-40˚C to 75˚C	-	-	-
Regulatory Approvals			
CE / FCC	√	√	√
VCCI	√	√	-
UL508	-	-	-
ISA12.12.01 / UL1604	-	-	-
EN50121-4	-	-	-
UL/cUL 60950-1	√	-	-

* C: Chassis, D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

EL9100 Series

Hardened 10/100/1000BASE-TX to 1000BASE-SX/LX/BX Media Converter

Overview

The EL9100 Series provides media conversion between 10/100/1000BASE-T(X) and 1000BASE-SX-LX Fiber. Built specifically for mission-critical applications in harsh environments, the EL9100's hardened design features high shock & vibration resistance, electrical noise immunity, wide operating temperature range from -40°C to 75°C, and ruggedized aluminum housing. With triple power inputs, link down alarming, Link-Fault-Pass-Through and a wide range of fiber connectivity options, the EL9100 is the ideal media converter for environments where connectivity is crucial.

Spotlight

- **Gigabit Connectivity**
  - Auto 10/100/1000BASE-TX and 1000BASE-SX/LX/BX Ethernet transmission conversion
  - 1000Mbps Full duplex, 10/100MBps Full/Half duplex
  - Full wire-speed forwarding rate

- **UL508 Certification**
  - Specific design for industrial communication applications with UL508 safety certification

- **Wide Operating Temperature**
  - -40°C to 75°C wide operating temperature range design is suitable for installation in outdoor cabinet

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.3x full duplex and flow control

Forward and Filtering Rate
- 1,488,100pps for 1000Mbps

Processing Type
- Auto Negotiation
- Half duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto-MDI/MDIX

Power

Input Voltage
- 12 to 48VDC (Terminal Block)
- 12VDC (DC Jack)

Power Consumption
- 7.68W Max, 0.16A @ 48VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 50mm (W) x 110mm (D) x 135mm (H)
  (1.97" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.8Kg (1.76lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel, or Rack mounting

Interface

Ethernet Port
- 10/100/1000BASE-TX: 1 port
- 1000BASE-SX/LX/BX: 1 port

LED Indicators
- Per Unit: Power1
           Power2
           Power3
           Fault
           LFPT
- Per 10/100/1000BASE-TX Port: Link/ACT
                               100M
                               1000M
                               Full-duplex/Collision
- Per 1000SX/LX/BX Port: Link/Act

DIP Switch
- No.1: LFPT on/off
- No.2: Alarm for copper port on/off
- No.3: Alarm for fiber port on/off
- No.4: Auto-negotiation for fiber port on/off

Alarm Contact
- Relay contact rating with current
  1A @ 30VDC, 0.5A @ 120VAC

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI
FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

Safety
UL508

EMS
EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance
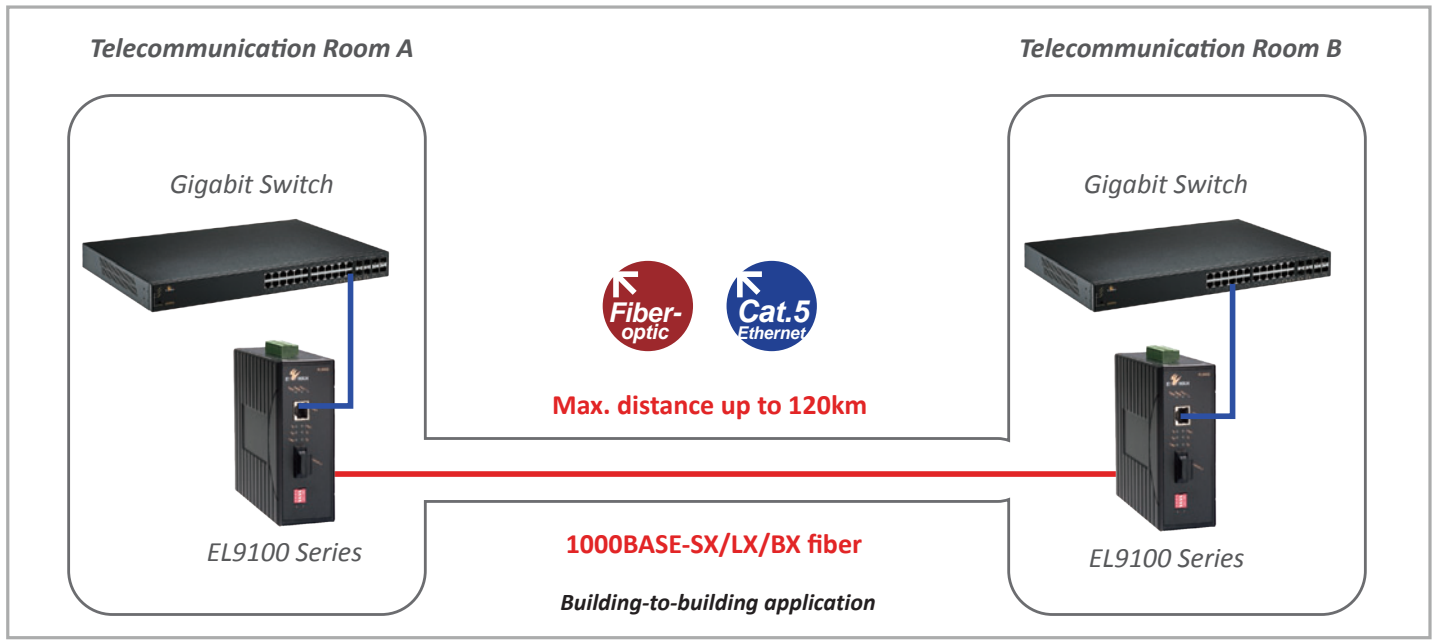**IEC60068-2-6 Fc (Vibration Resistance)**

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance
NEMA TS1 & TS2

Application Diagram

Telecommunication Room A

Telecommunication Room B

Gigabit Switch

Gigabit Switch

EL9100 Series

EL9100 Series

Fiber-optic

Cat.5 Ethernet

Max. distance up to 120km

1000BASE-SX/LX/BX fiber

Building-to-building application

Dimensions

Top

50mm (1.97")

135mm (5.31")

Front

Side

Back

110mm (4.33")

Bottom
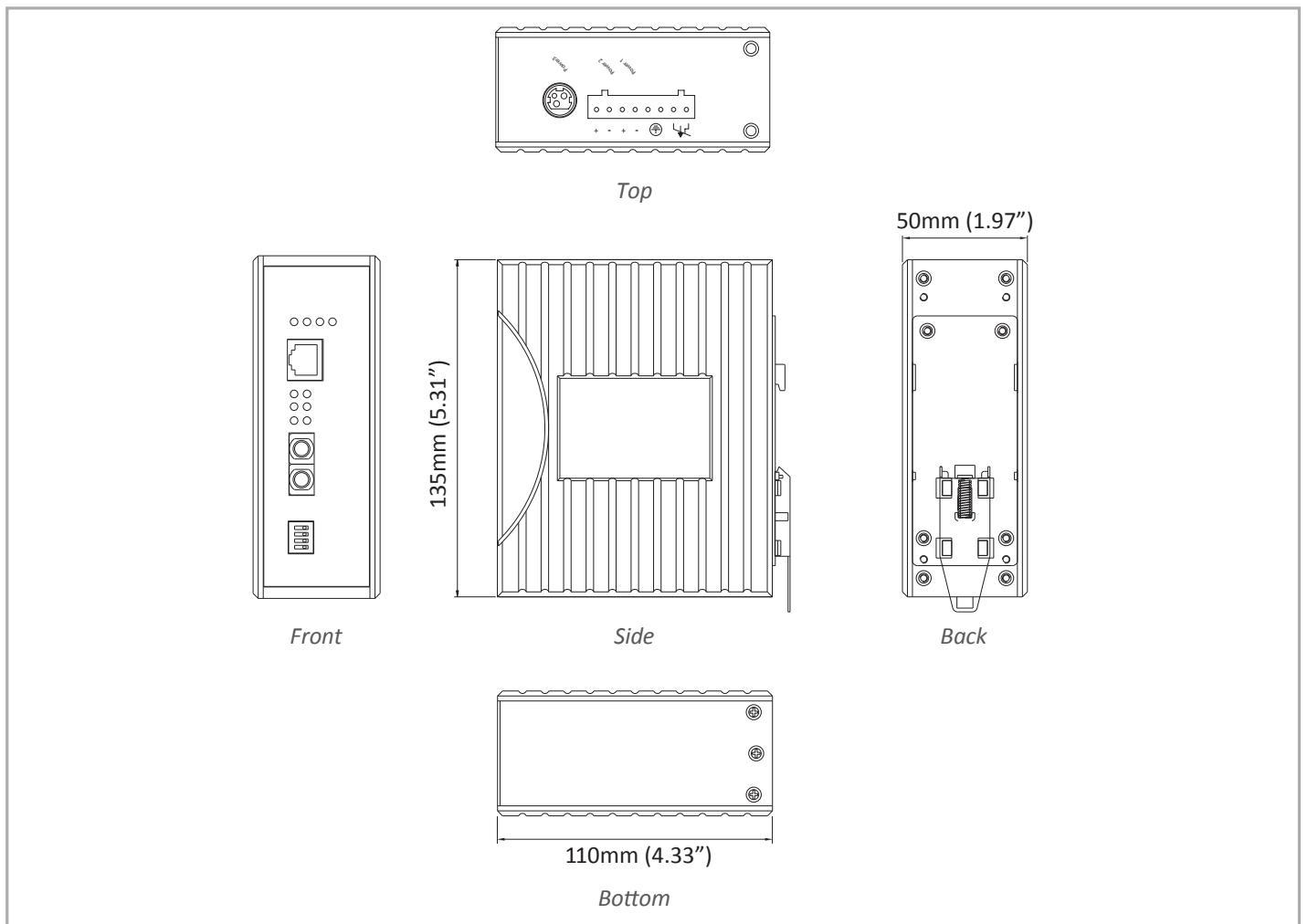
Ordering Information

Model

EL9100-X1B	10/100/1000BASE-TX to 1000BASE-SX/LX/BX Hardened Media Converter

Gigabit Port Options (X)

3	1000BASE-SX(SC) - 550m
4	1000BASE-SX (SC) - 2Km
5	1000BASE-SX (ST) - 550m
A	1000BASE-LX (SC) - 10Km
B	1000BASE-LX (SC) - 20Km
E	1000BASE-LX (SC) - 40Km (1310nm)
H	1000BASE-LX (ST) - 10Km (1310nm)
I	1000BASE-LX (ST) - 20Km (1310nm)
R	1000BASE-BX (SC) WDM-TX:1310nm/RX:1550nm - 20Km
S	1000BASE-BX (SC) WDM-TX:1550nm/RX: 1310nm - 20Km

* DIN-Rail mounting kit included

Optional Accessories

DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (For Terminal Block); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC jack in aluminum housing (For DC Jack); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EL9000 Series

Hardened 1000BASE-T to 1000BASE-SX/LX/BX Media Converter

Overview

The EL9000 Series provides media conversion between 1000BASE-T(X) and 1000BASE-SX-LX Fiber. Built specifically for mission-critical applications in harsh environments, the EL9000's hardened design features high shock & vibration resistance, electrical noise immunity, wide operating temperature range from -40°C to 75°C, and ruggedized aluminum housing. With triple power inputs, link down alarming, Link-Fault-Pass-Through and a wide range of fiber connectivity options, the EL9000 is the ideal media converter for environments where connectivity is crucial.

Spotlight

- **Gigabit Connectivity**
  - 1000BASE-TX and 1000BASE-SX/LX/BX Ethernet transmission conversion
  - 1000Mbps Full duplex and full wire-speed forwarding rate

- **ISA12.12.01 Certification**
  - Highly qualified for explosive environmental applications and certified by UL with ISA12.12.01 Class I, Division 2 classified for use in hazardous locations

- **Wide Operating Temperature**
  - -40°C to 75°C wide operating temperature range design is suitable for installation in outdoor cabinet

Hardware Specifications

Technology

Standards
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.3x full duplex and flow control

Forward and Filtering Rate
- 1,488,100pps for 1000Mbps

Processing Type
- Auto Negotiation
- Half duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto-MDI/MDIX

Power

Input Voltage
- 12 to 48VDC (Terminal Block)
- 12VDC (DC Jack)

Power Consumption
- 9.12W Max, 0.76A @ 12VDC, 0.38A@ 24VDC, 0.19A @ 48VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 50mm (W) x 110mm (D) x 135mm (H) (1.97" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.8Kg (1.76lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel, or Rack mounting

Interface

Ethernet Port
- 1000BASE-T: 1 port
- 1000BASE-SX/LX: 1 port

LED Indicators
- Per Unit: Power, Power2, Fault
- Per Port: LNK, TX, RX

DIP Switch
- No.1: LFPT on/off
- No.2: Alarm for copper port on/off
- No.3: Alarm for fiber port on/off
- No.4: Auto-negotiation for fiber port on/off

Alarm Contact
- Relay contact rating with current 1A @ 30VDC, 0.5A @ 120VAC

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-3

EN55022

EN61000-3-2

EN61000-3-3

Safety

ISA 12.12.01 (UL1604) for Hazardous Locations
- Class 1, Division 2 group A,B,C&D

UL60950-1

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

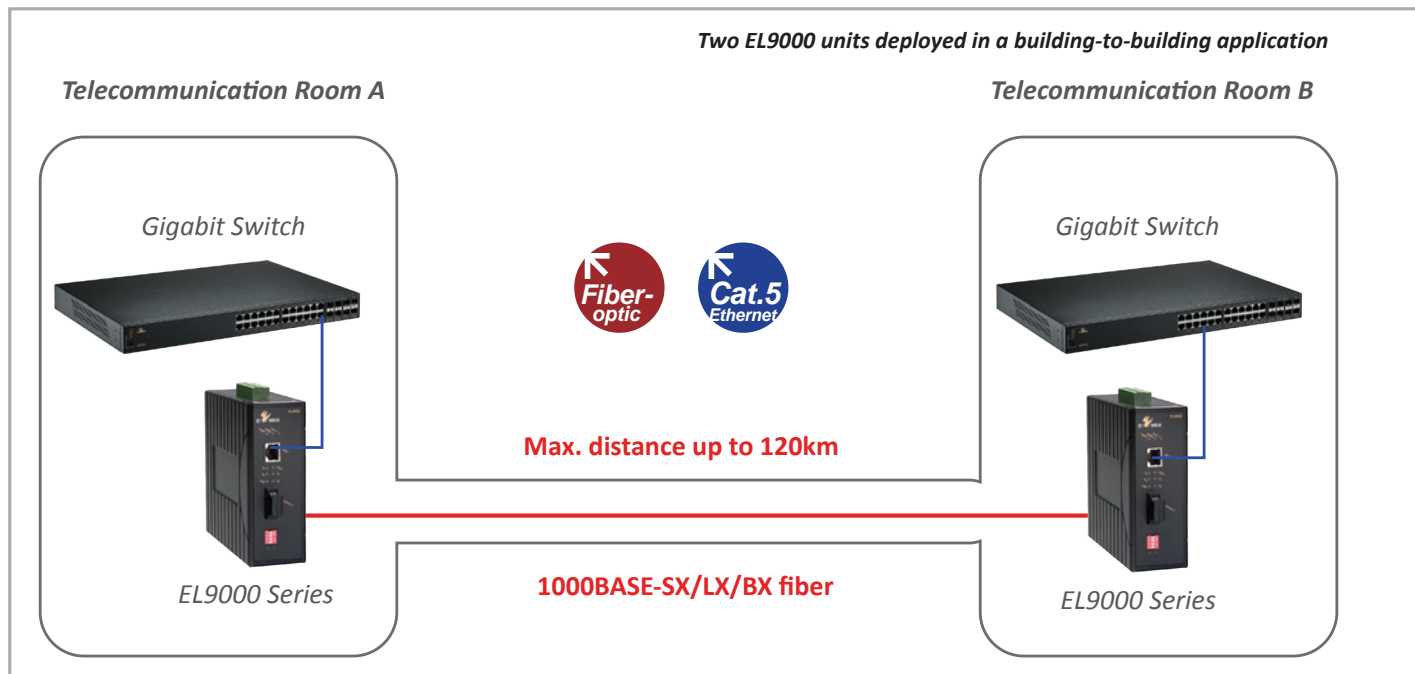### Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)
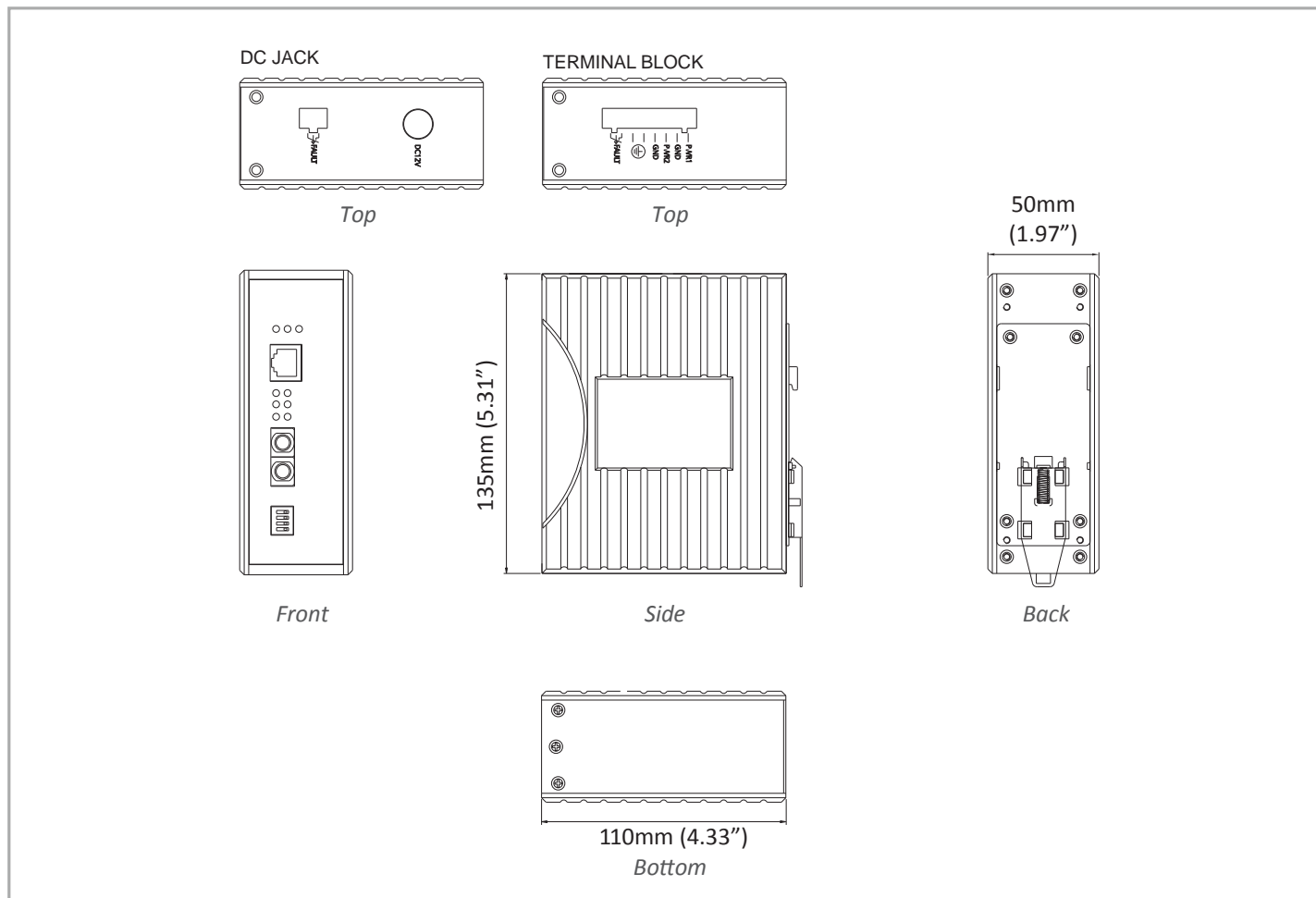
FED STD 101C Method 5007.1 (Free fall w/ package)

Industrial Compliance

NEMA TS2

Application Diagram

Two EL9000 units deployed in a building-to-building application

Telecommunication Room A

Telecommunication Room B

Gigabit Switch

Gigabit Switch

Fiber-optic

Cat.5 Ethernet

Max. distance up to 120km

EL9000 Series

EL9000 Series

1000BASE-SX/LX/BX fiber

Dimensions

DC JACK

TERMINAL BLOCK

Top

Top

50mm (1.97")

135mm (5.31")

Front

Side

Back

110mm (4.33")

Bottom

Ordering Information

Model

EL9000-A-Y-1-P	1000BASE-T to 1000BASE-SX/LX Hardened Media Converter

Gigabit Fiber Options (Y)

B	1000BASE-SX (SC) - 550m (850nm)
C	1000BASE-SX (SC) - 2Km (1310nm)
N	1000BASE-LX (SC) - 10Km (1310nm)
O	1000BASE-LX (SC) - 20Km (1310nm)
R	1000BASE-BX (SC) WDM -TX:1310nm/RX:1550nm - 20Km
S	1000BASE-BX (SC) WDM -TX:1550nm/RX:1310nm - 20Km

* More Gigabit options are also available upon request

Power Connector Options (P)

A	Terminal Block
B	DC Jack

Optional Accessories

KP-AA96-480	Panel mount kit
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (For Terminal Block); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC jack in aluminum housing (For DC Jack); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EL9020 Series

Hardened 10/100/1000BASE-TX to Gigabit SFP Media Converter

Overview

The EL9020 Series provides media conversion between 10/100/1000BASE-TX and 1000BASE SFP Fiber. Built specifically for mission-critical applications in harsh environments, the EL9020's hardened design features high shock & vibration resistance, electrical noise immunity, wide operating temperature range from -40°C to 75°C, and ruggedized aluminum housing. With triple power inputs, link down alarming, Link-Fault-Pass-Through and a wide range of fiber connectivity options the EL9020 is the ideal media converter for environments where connectivity is crucial.

Spotlight

- **Gigabit Connectivity**
  - Auto 10/100/1000BASE-TX and 1000BASE-SX/LX/BX Ethernet transmission conversion
  - 1000Mbps Full duplex, 10/100MBps Full/Half duplex
  - SFP socket flexible for Gigabit fiber optic expansion

- **UL508 Certification**
  - Specific design for industrial communication applications with UL508 safety certification

- **Wide Operating Temperature**
  - -40°C to 75°C wide operating temperature range design is suitable for installation in outdoor cabinet

Hardware Specifications

Technology

Standards
- IEEE802.3, 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.3x Full duplex and flow control

Forward and Filtering Rate
- 1,488,100pps for 1000Mbps

Processing Type
- Auto Negotiation
- Half duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto-MDI/MDIX

Power

Input Voltage
- 12 to 48VDC (Terminal Block)
- 12VDC (DC Jack)

Power Consumption
- 7.68W Max, 0.16A @ 48VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 50mm (W) x 110mm (D) x 135mm (H)
  (1.97" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.8Kg (1.76lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel, or Rack mounting

Interface

Ethernet Port
- 10/100/1000BASE-TX: 1 port
- Gigabit SFP: 1 port

LED Indicators
- Per Unit: Power1
            Power2
            Power3
            Fault
            LFPT
- Per 10/100/1000TX Port : Link/Act
                           100M
                           1000M
                           Full-duplex/Collision
- Per Gigabit SFP Port : Link/Act

DIP Switch
- No.1: LFPT on/off
- No.2: Alarm for copper port on/off
- No.3: Alarm for fiber port on/off
- No.4: Auto-negotiation for fiber port on/off

Alarm Contact
- Relay contact rating with current 1A @ 30VDC,0.5A @ 120VAC

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL508

EMI

FCC Part 15B, Class A

EN61000-6-3

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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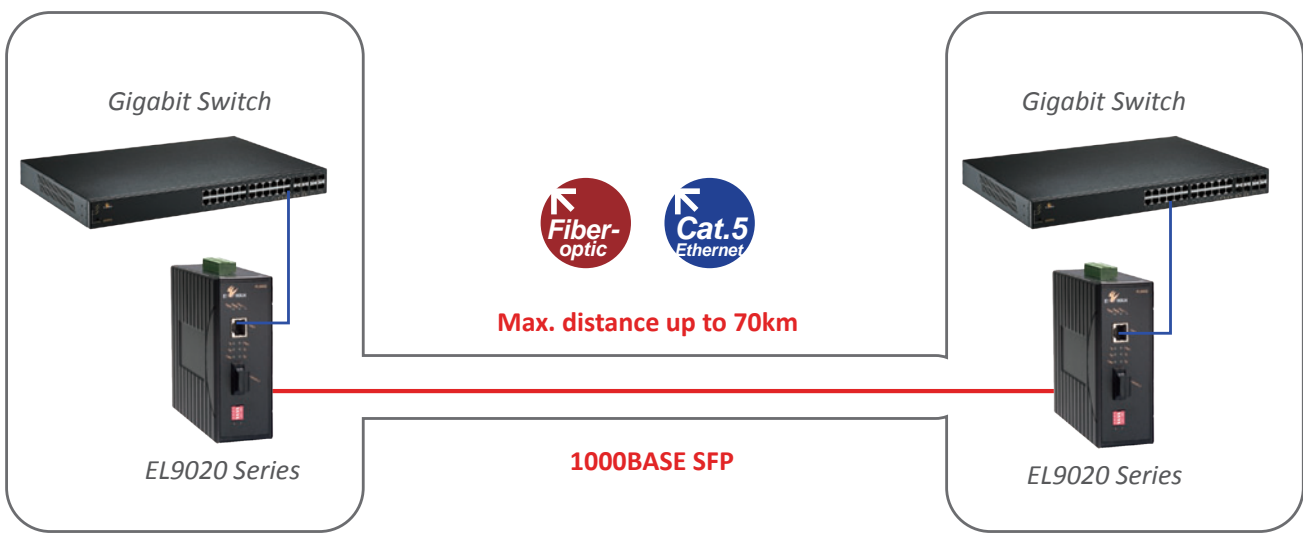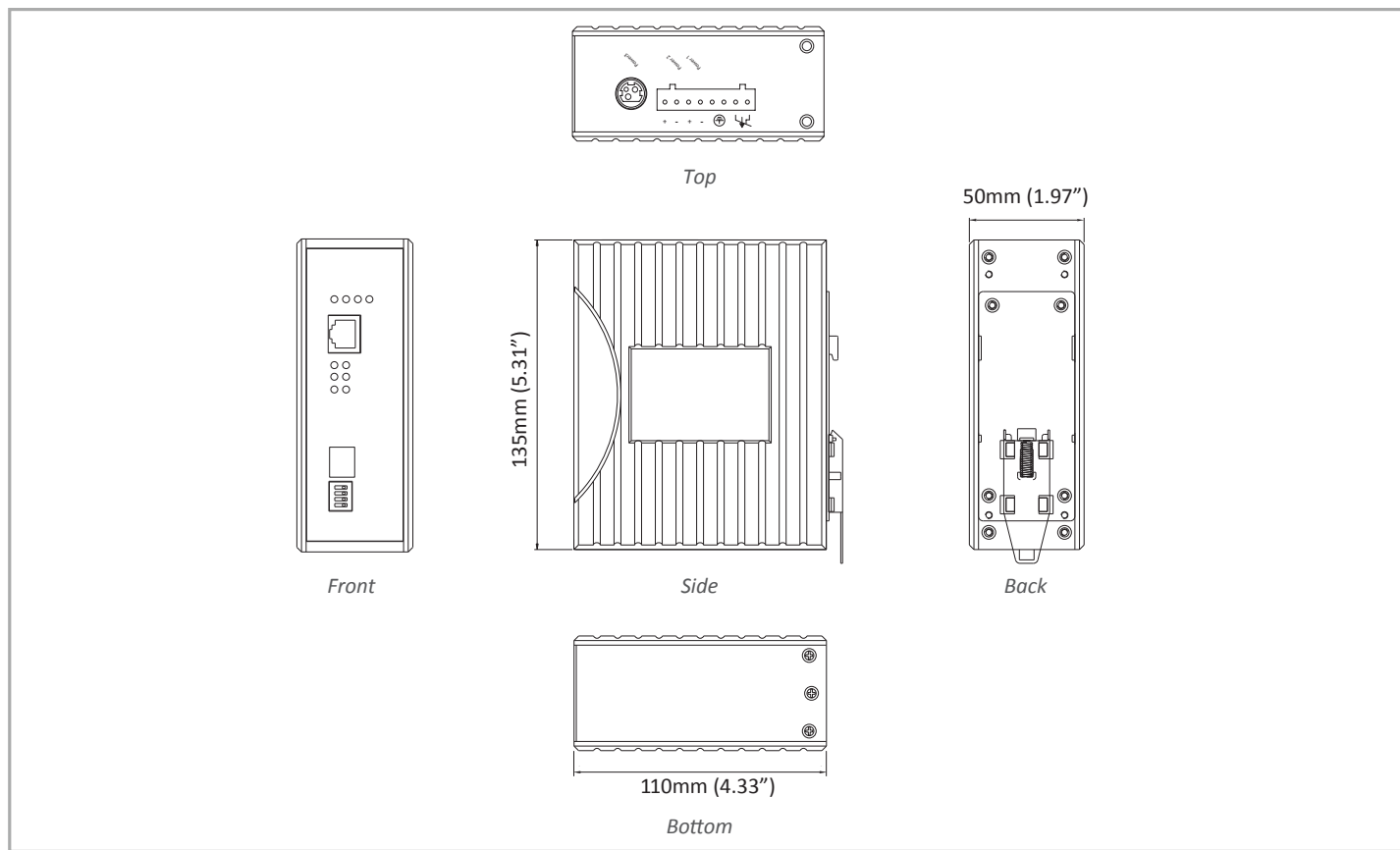
Industrial Compliance

NEMA TS2

Application Diagram

2 EL9020 units deployed in a building-to-building application

Telecommunication Room A

Telecommunication Room B

Gigabit Switch

Gigabit Switch

Fiber-optic

Cat.5 Ethernet

Max. distance up to 70km

EL9020 Series

EL9020 Series

1000BASE SFP

Dimensions

Top

50mm (1.97")

135mm (5.31")

Front

Side

Back

110mm (4.33")

Bottom

Ordering Information

Model

EL9020-00B	10/100/1000BASE-TX to Gigabit SFP Hardened Media Converter

* DIN-Rail mounting kit included

Optional Accessories

KP-AA96-480	Panel mounting kit
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-60--24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (For Terminal Block); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC jack in aluminum housing (For DC Jack); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

Hardened SFP Gigabit Fiber Tranceivers

Part Number	Typical Distance	Wavelength (nm)	Cable Type	Conwnector
EX-1250NSP-SB1L-A	275M/550M	850	MM	Duplex LC
EX-1250TSP-MB4L-A	10KM	1310	SM	Duplex LC
EX-1250TSP-NB6L-A	40KM	1310	SM	Duplex LC
EX-1250TSP-KB8L-A	70KM	1550	SM	Duplex LC
EX-1250TBP-MB1L-A	550M	TX:1310 / RX:1550	MM WDM-A	LC
EX-1250TBP-LB1L-A	550M	TX:1550 / RX:1310	MM WDM-B	LC
EX-1250TBP-MB4L-A	10KM	TX:1310 / RX:1550	SM WDM-A	LC
EX-1250TBP-KB4L-A	10KM	TX:1550 / RX:1310	SM WDM-B	LC
EX-1250TBP-MB5L-A	20KM	TX:1310 / RX:1550	SM WDM-A	LC
EX-1250TBP-KB5L-A	20KM	TX:1550 / RX:1310	SM WDM-B	LC

*More SFP options also available upon request.

EL2321 Series

Managed 10/100/1000BASE-TX to 100BASE/1000BASE-X Dual Rate Media Converter

Overview

The EL2321 Series provides media conversion between 100BASE/1000BASE-SX-L-FX Fiber or 100/1000BASE-SX/LX Fiber. The EL2321's fiber design is compatible to 100BASE fiber or 1000BASE fiber transceiver.

The EL2321 managed media converter supports Telnet, SNMP v1/v2, and web browser management enabling value-added connectivity and bandwidth control. Key features include; 802.3ah OAM compliance, VLAN tagging, broadcast storm protection, Far-End-Fault, and Link-Fault-Pass-Through resulting in reliable communications between networks. With link down alarming and a wide range of fiber connectivity options the EL2321 is the ideal media converter for environments where connectivity is variable.

Spotlight

- **Gigabit Connectivity**
  - Auto 10/100/1000BASE-T X and 1000BASE-SX/LX/BX Ethernet transmission conversion
  - 1000Mbps Full duplex, 10/100MBps Full/Half duplex
  - Fiber interface supports dual rate 100BASE-FX and 1000BASE-SX/LX fiber transmission

- **Managed Functions**
  - Supports IEEE802.3ah OAM standards
  - Supports SNMPv1, SNMPv2
  - Supports bandwidth control and VLAN base priority tag

- **Supports Dying Gasp**
  - Sends SNMP trap for device failure report

Software Features

Management
- Interface
  - Web Browser
  - SNMP v1/v2c
- Firmware and configuration upgrade and backup via TFTP
- Supports DHCP Server/Client

Security
- MAC Address by port security
- Enable/disable port
- Storm control (broadcast and multicast types)
- IEEE802.1x LAN access control
- SSL for web security

Quality of Service (QoS)
- Priority Queues: 4 queues per port
- Traffic classification based on IEEE802.1p CoS, DSCP, WRR (Weighted round robin)
- 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
- VLANs
  - Port-based VLANs
  - IEEE802.1Q Tag VLANs (4096 VID)
  - GVRP (GARP VLAN Registration Protocol)
  - GMRP (GARP Multicast Registration Protocol)
- IGMP Snooping
  - IGMP snooping v1/v2/v3

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

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto-MDI/MDIX

Power Input
- Input Voltage: 12VDC

Power Consumption
- 3W Max. 0.23A @ 12VDC

Mechanical

Casing
- Metal Case
- IP30

Dimensions
- 80.3mm (W) x 109.2mm (D) x 23.8mm (H) (3.16" (W) x 4.3" (D) x 0.94" (H))

Weight
- 150g (0.336lbs.)

Installation
- Wall mounting

Interface

Ethernet Port
- 10/100/1000BASE-TX: 1 port
- 100/1000BASE SFP slot: 1 port

LED Indicators
- Per Unit: Power Status, OAM loop
- Per Port: TX Speed, Link/Activity, Full-duplex

Environment

Operating Temperature
- 0°C to 50°C (32°F to 121°F)

Storage Temperature
- -20°C to 70°C (-4°F to 158°F)

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

Regulatory Approvals
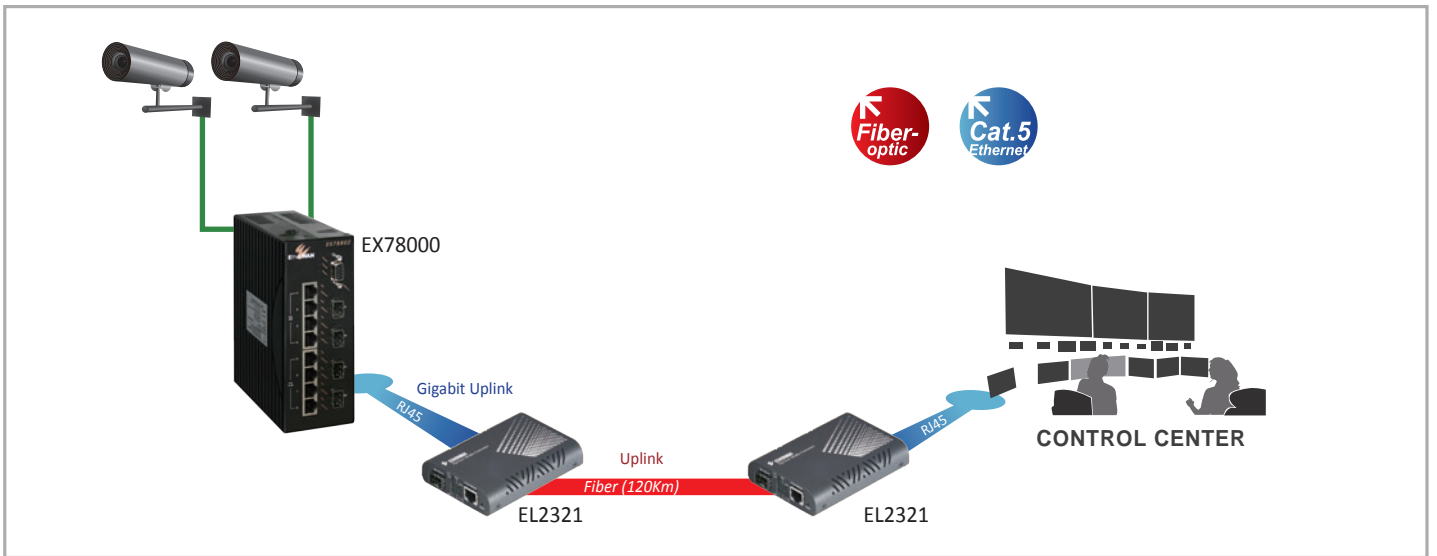
ISO
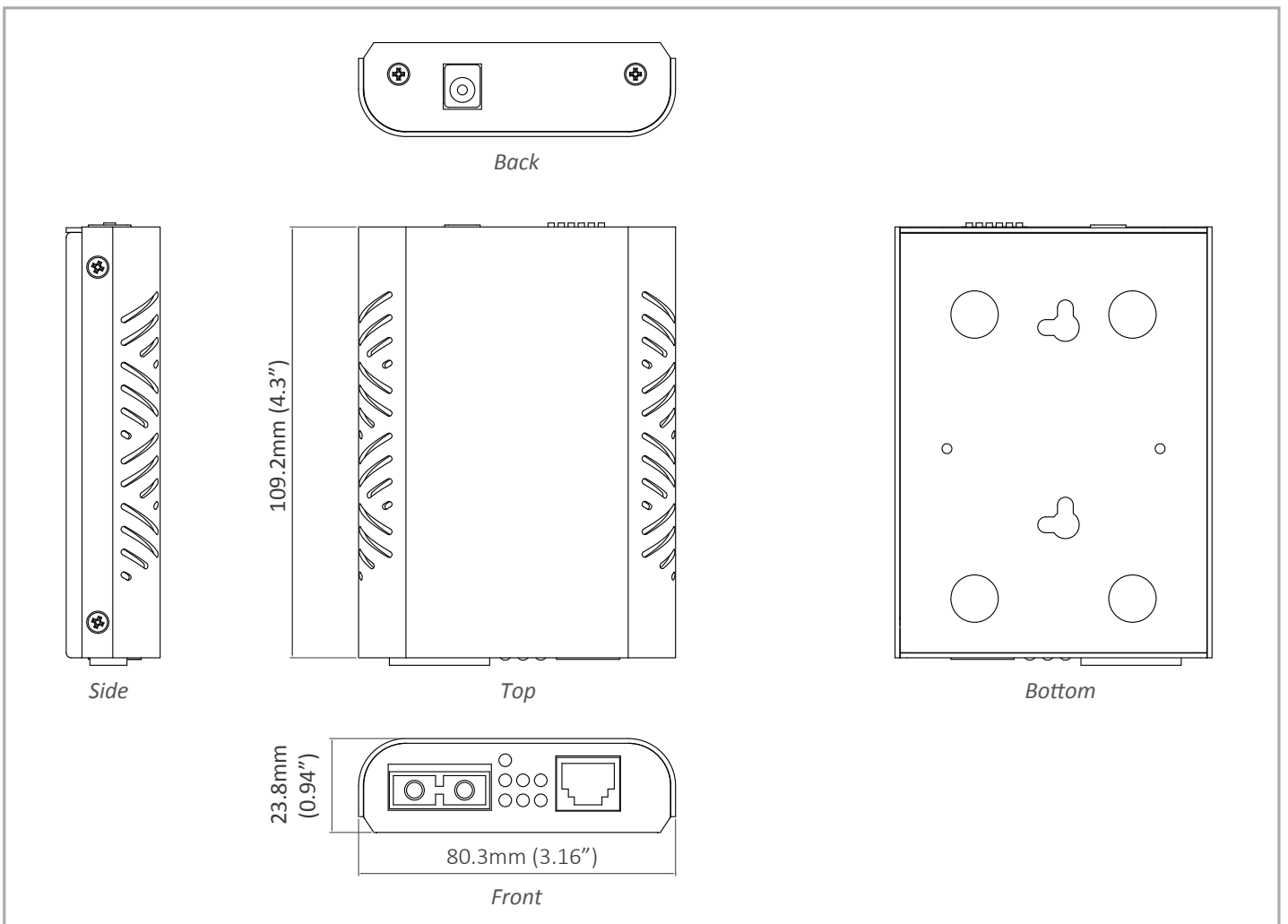- Manufactured in an ISO9001 facility

Emission Compliances

CE Mark Class A

FCC Part 15B Class A

VCCI Class A

Application Diagram

EX78000

Fiber-optic

Cat.5 Ethernet

Gigabit Uplink

RJ45

EL2321

Uplink

Fiber (120Km)

EL2321

RJ45

CONTROL CENTER

Dimensions

Back

109.2mm (4.3")

Side

Top

Bottom

23.8mm (0.94")

80.3mm (3.16")

Front

Ordering Information

Model

EL2321-X1Z	Managed 10/100/1000BASE-TX to 100BASE/1000BASE-X Dual Rate Media Converter

Gigabit Port Options (X)

3	1000BASE-SX (SC) - 550m (850nm)
4	1000BASE-SX (SC) - 2Km (1310nm)
5	1000BASE-SX (ST) - 550Km (850nm)
A	1000BASE-LX (SC) - 10Km (1310nm)
B	1000BASE-LX (SC) - 20Km (1310nm)
E	1000BASE-LX (SC) - 40Km (1310nm)
R	1000BASE-BX (SC) WDM –TX:1310nm/RX:1550nm - 20Km
S	1000BASE-BX (SC) WDM –TX:1550nm/RX:1310nm - 20Km

Power Adapter Options (Z)

A	with external power adapter for AU
E	with external power adapter for EU
J	with external power adapter for JP
K	with external power adapter for UK
U	with external power adapter for USA
3C	with external power adapter for China

EL2315 Series

10/100/1000BASE-TX to 100/1000BASE-X Dual Rate SFP Media Converter

Overview

The EL2315 Series provides media conversion between 10/100/1000BASE-T(X) and 100/1000BASE SFP Fiber. The EL2315's fiber design is compatible to 100BASE fiber or 1000BASE fiber transceiver. Through DIP switch selection, the EL2315's SFP port can support 100BASE SFP fiber or 1000BASE-X SFP fiber port. Also, through DIP switch selection, the Link-Fault-Pass-Through (LFPT) function can be active or disabled.

With Gigabit transmission rate, EL2315 supports Jumbo Frame up to 9K bytes, the EL2315 is the ideal media converter for environments where connectivity is crucial.

Spotlight

- **Gigabit Connectivity**
  - Auto 10/100/1000BASE-T X and 1000BASE-SX/LX/BX Ethernet transmission conversion
  - 1000Mbps Full duplex, 10/100MBps Full/Half duplex
  - Fiber interface supports dual rate 100BASE-FX and 1000BASE-SX/LX fiber transmission

- **100/1000BASE-FX Dual Rate SFP Support**
  - DIP switch controlled 100BASE or 1000BASE SFP options

- **Link-Fault-Pass-Through (LFPT)**
  - LFPT function let network operators be aware of network connection status
  - When fiber link is sown, LFPT function will turn down Ethernet port to inform connected device that the link is down and vise versa

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

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto-MDI/MDIX

Power

Input Voltage
- 12VDC

Power Consumption
- 2.76W Max. 0.23A @ 12VDC

Mechanical

Casing
- Aluminum Case

Dimensions
- 80.3mm (W) x 109.2mm (D) x 23.8mm (H) (3.16" (W) x 4.3" (D) x 0.94" (H))

Weight
- 150g (0.336lbs.)

Installation
- Wall mounting

Interface

Ethernet Port
- 10/100/1000BASE-TX: 1 port
- 100/1000BASE SFP slot: 1 port

DIP Switch
- No.1: LFPT on/off
- No.2: Auto-Negotiation / Force Mode for TX port
- No.3: Full-duplex / Half-duplex for TX port
- No.4: 100Mbps / 10Mbps Force Mode for TX port
- No.5: 100Mbps / 1000Mbps for SFP
- No.6: Function Reserved

LED Indicators
- Per Unit: Power, LFPT
- Per Port: FX/TX Speed, Link/Activity

Environment

Operating Temperature
- 0°C to 50°C (32°F to 122°F)

Storage Temperature
- -10°C to 70°C (-14°F to 158°F)

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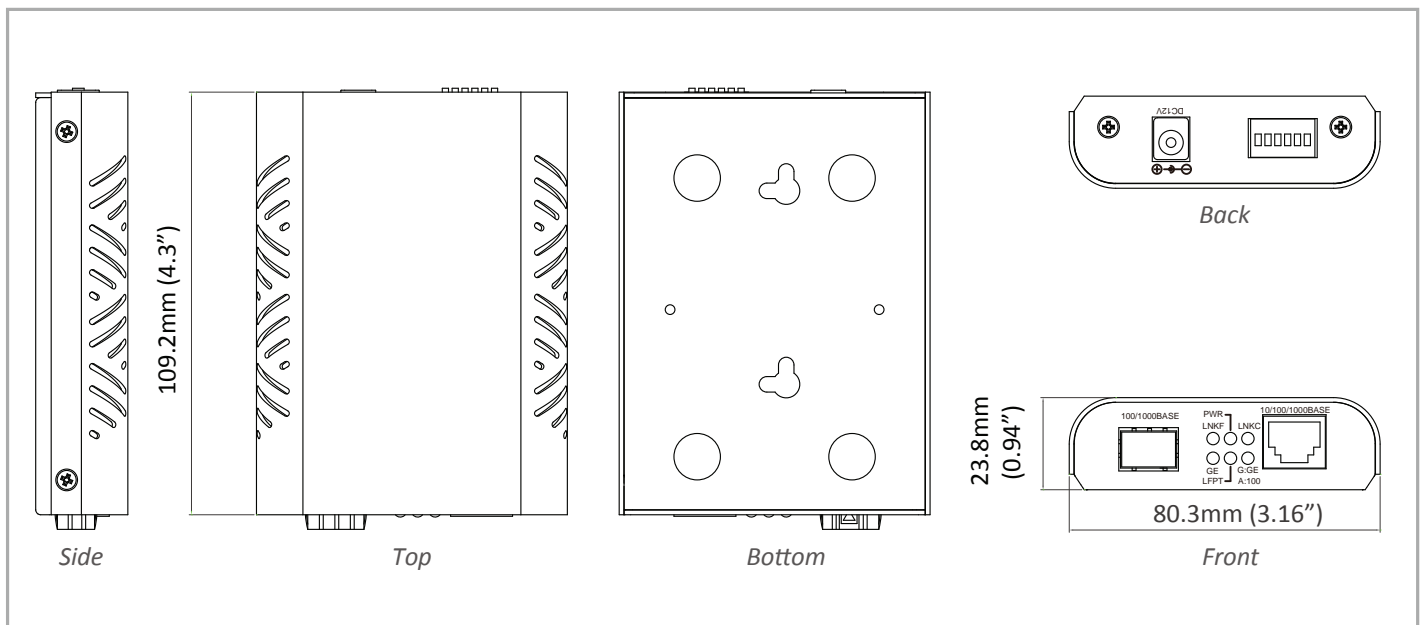- 5% to 95% (non-condensing)

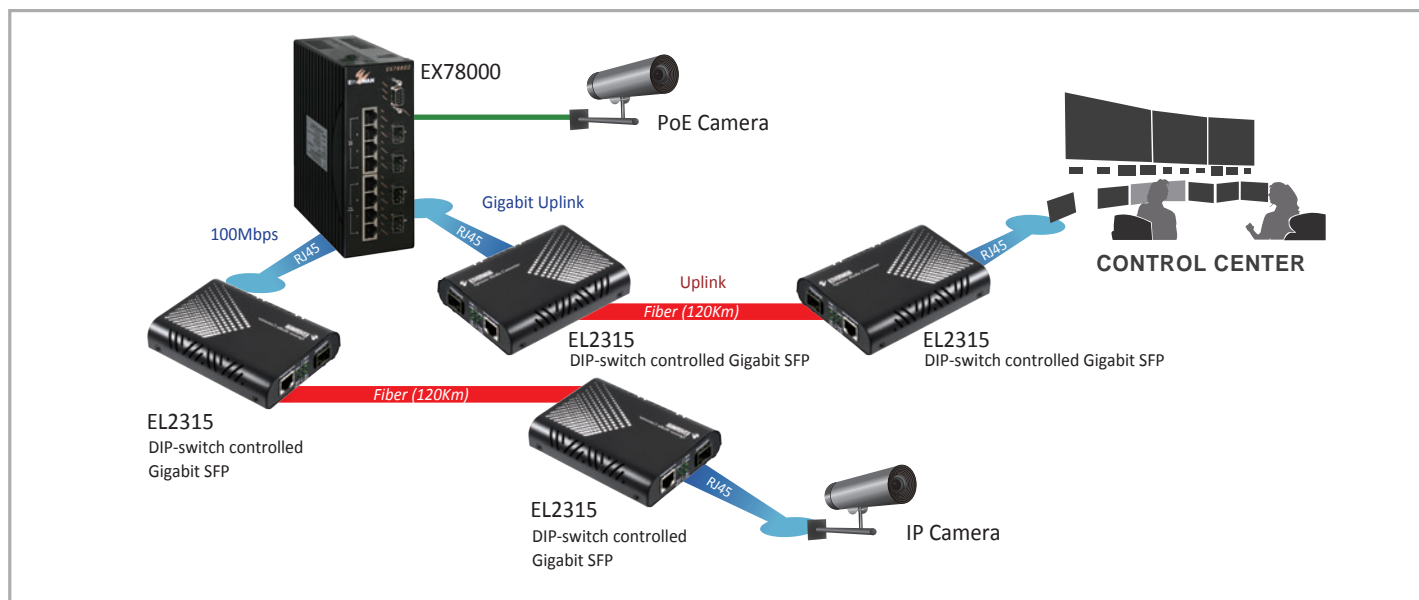## Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliance

CE Mark Class A, FCC Part 15B Class A, and VCCI Class A

Dimensions

Side   *Top*

Bottom

Back

Front

109.2mm (4.3")

23.8mm (0.94")

80.3mm (3.16")

Application Diagram

Ordering Information

Model

EL2315-X	10/100/1000BASE-TX to 100BASE/1000BASE-X Dual Rate SFP Media Converter

Power Adapter Options (X)

A	with external power adapter for AU
E	with external power adapter for EU
J	with external power adapter for JP
K	with external power adapter for UK
U	with external power adapter for USA
3C	with external power adapter for China

Optional SFP Non-Hardened Type Gigabit Fiber Transceivers

Part Number	Typical Distance	Wavelength (nm)	Cable Type	Connector
EX-1250NSP-SB1L	275M/500M	850	MM	Duplex LC
EX-1250TSP-MB4L	10KM	1310	SM	Duplex LC
EX-1250TSP-NB6L	40KM	1310	SM	Duplex LC
EX-1250TBP-MB1L	550M	TX:1310 / RX:1550	MM WDM-A	LC
EX-1250TBP-LB1L	550M	TX:1550 / RX:1310	MM WDM-B	LC
EX-1250TBP-MB4L	10KM	TX:1310 / RX:1550	SM WDM-A	LC
EX-1250TBP-KB4L	10KM	TX:1550 / RX:1310	SM WDM-B	LC
EX-1250TBP-MB5L	20KM	TX:1310 / RX:1550	SM WDM-A	LC
EX-1250TBP-KB5L	20KM	TX:1550 / RX:1310	SM WDM-B	LC
EX-1250TBP-NB6L-D	40KM	TX:1310 / RX:1550	SM WDM-A	LC
EX-1250TBP-KB6L-D	40KM	TX:1550 / RX:1310	SM WDM-B	LC

* More SFP options also available upon request.
* EMC1600 (available separately), a proprietary 19" chassis system, can house up to 16 x EL2315 Series media converters.

EL2326 Series

OAM Managed 10/100/1000BASE-TX to 100/1000BASE-X Dual Rate Media Converter

Overview

The EL2326 Series provides media conversion between 10/100/1000BASE-T(X) and 100BASE-FX Fiber or 1000BASE-SX/LX Fiber. The EL2326's fiber design is compatible to 100BASE fiber or 1000BASE fiber transceiver.

The EL2326 managed media converter supports Telnet, SNMP v1/v2, and web browser management, enabling value-added connectivity and bandwidth control. Key features include; 802.3ah OAM compliance, VLAN tagging, broadcast storm protection, Far-End-Fault, and Link-Fault-Pass-Through resulting in reliable communications between networks.

With link down alarming and a wide range of fiber connectivity options, the EL2326 is the ideal managed media converter for industrial environments where connectivity is crucial.

Spotlight

- **Gigabit Connectivity**
  - Auto 10/100/1000BASE-T X and 1000BASE-SX/LX/BX Ethernet transmission conversion
  - 1000Mbps Full duplex, 10/100MBps Full/Half duplex
  - Fiber interface supports dual rate 100BASE-FX and 1000BASE-SX/LX fiber transmission

- **Managed Functions**
  - Supports IEEE802.3ah OAM standards
  - Supports SNMPv1, SNMPv2
  - Supports bandwidth control and VLAN base priority tag

- **Built-in Fiber Tray**

Software Features

Management
- Interface
  - 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

Security
- MAC Address by port security
- Enable/disable port
- Storm control (broadcast and multicast types)
- IEEE802.1x LAN access control
- Remote authentication through RADIUS
- SSL for web security

Quality of Service (QoS)
- Priority Queues: 4 queues per port
- Traffic classification based on IEEE802.1p CoS, DSCP, WRR (Weighted round robin)
- 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
- VLANs
  - Port-based VLANs
  - IEEE802.1Q Tag VLANs (4096 VID)
  - GVRP (GARP VLAN Registration Protocol)
  - GMRP (GARP Multicast Registration Protocol)
- IGMP Snooping
  - IGMP snooping v1/v2/v3
- Jumbo Frame
  - Gigabit transmission supports 9K bytes jumbo frame

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

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto-MDI/MDIX

Power

Input Voltage
- 12VDC

Power Consumption
- 3W Max. 0.25A @ 12VDC

Mechanical

Casing
- Metal case
- IP30

Dimensions
- 100 mm (W) x 122mm (D) x 32.5mm (H)
  (3.94"(W) x 4.8" (D) x 1.28" (H))

Weight
- 350g (0.77lbs.)

Installation
- Wall mounting

Interface

Ethernet Port
- 10/100/1000BASE-TX: 1 port
- 100/1000BASE SFP slot: 1 port

LED Indicators
- Per Unit: Power Status, OAM loop
- Per Port: FX/TX Speed, Link/Activity, Full-duplex

Environment

Operating Temperature
- -5°C to 55°C (-23°F to 131°C)

Storage Temperature
- -20°C to 70°C (-4°F to 158°F)

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

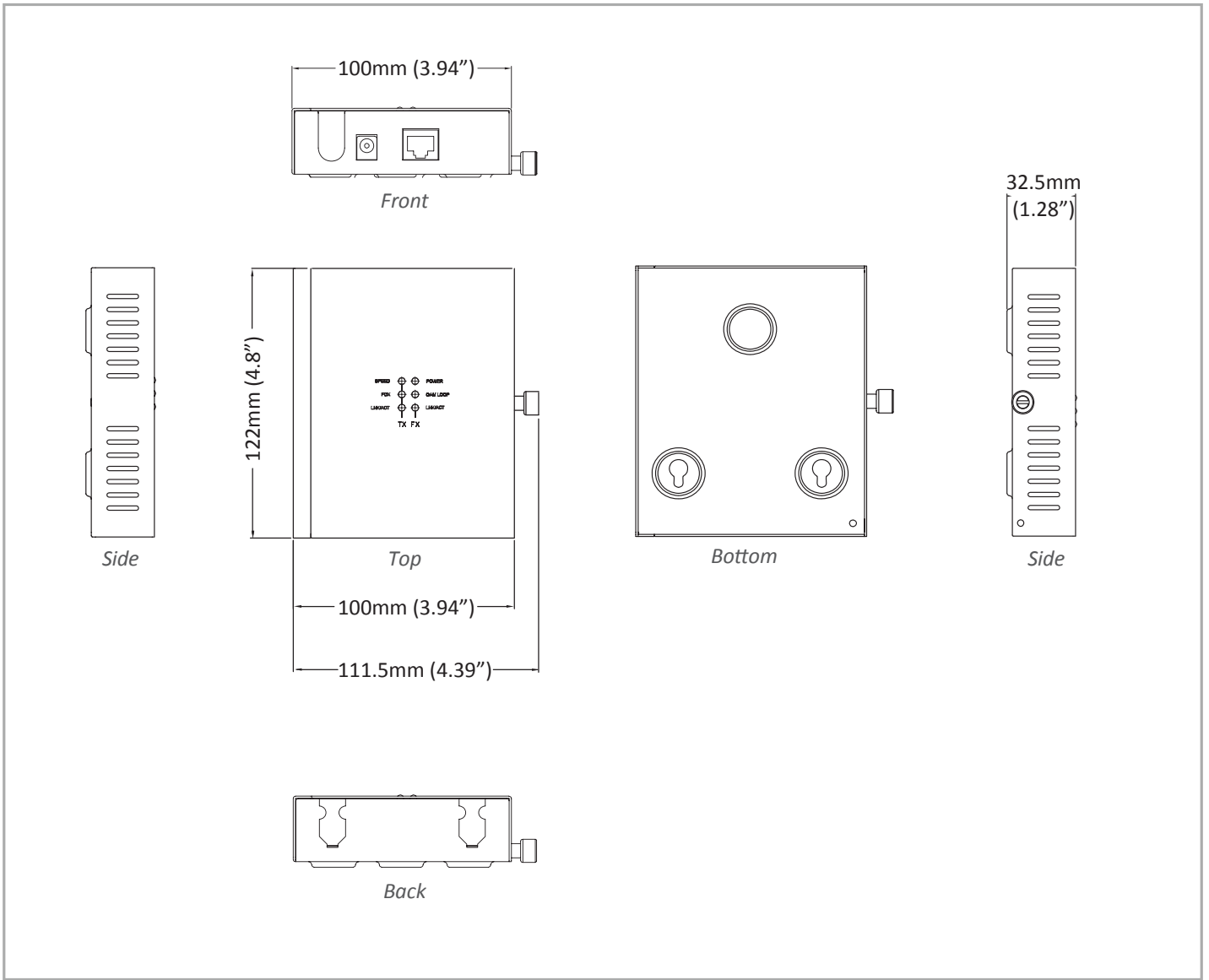## Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliance

CE Mark Class A

FCC Part 15B Class A

VCCI Class A

Dimensions

Front

Side

Top

Bottom

Side

Back

100mm (3.94")

32.5mm (1.28")

122mm (4.8")

100mm (3.94")

111.5mm (4.39")

Ordering Information

Model

EL2326-X1Z	OAM Managed 10/100/1000BASE-TX to 100/1000BASE-X Dual Rate Media Converter

Gigabit Port Options (X)

3	1000BASE-SX(SC) - 550m
4	1000BASE-SX (SC) - 2Km
5	1000BASE-SX (ST) - 550m
A	1000BASE-LX (SC) - 10Km
B	1000BASE-LX (SC) - 20Km
E	1000BASE-LX (SC) - 40Km (1310nm)
R	1000BASE-BX (SC) WDM - TX:1310nm/RX:1550nm - 20Km
S	1000BASE-BX (SC) WDM - TX:1550nm/RX:1310nm - 20Km
V	100/1000BASE-X SFP

Ordering Information - continued

Power Adapter Options (Z)

A	with external power adapter for AU
E	with external power adapter for EU
J	with external power adapter for JP
K	with external power adapter for UK
U	with external power adapter for USA
3C	with external power adapter for China

EL2326L Series
10/100/1000BASE-TX to 1000BASE-SX/LX/BX Media Converter

Overview

The EL2326L Series provides media conversion between 10/100/1000BASE-T(X) and 1000BASE-FX Fiber. Easy plug-and-play design facilitates network infrastructure construction.

The EL2326L series is designed for SC or ST fiber connection applications. The EL2326L's mechanical design prevents physical contact with fiber transceiver while the case is sealed. The compact size of EL2326L is suitable for space limit installation and the EL2326L is the ideal media converter for industrial environments.

EtherWAN – "When Connectivity is Crucial".

Spotlight

- **Plug-and-Play Media Converter**
  ◦ Easy installation, plug-and-play without additional configuration, providing store-and-forward data transmission

- **Hidden Fiber Transceiver**
  ◦ Mechanical design prevents physical contact with fiber transceiver while the case is sealed

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.3x full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto-MDI/MDIX

Power

Input Voltage
- 12VDC

Power Consumption
- 3W Max. 0.25A @ 12VDC

Mechanical

Casing
- Metal case
- IP30

Dimensions
- 100 mm (W) x 122mm (D) x 32.5mm (H) (3.94"(W) x 4.8" (D) x 1.28" (H))

Weight
- 350g (0.77lbs.)

Installation
- Wall mounting

Interface

Ethernet Port
- 10/100/1000BASE-TX: 1 port
- 1000BASE-SX/LX/BX: 1 port

LED Indicators
- Per Unit: Power Status
- Per Port: FX/TX Speed, Link/Activity, Full-duplex

Environment

Operating Temperature
- -5°C to 55°C (-23°F to 131°C)

Storage Temperature
- -20°C to 70°C (-4°F to 158°F)

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

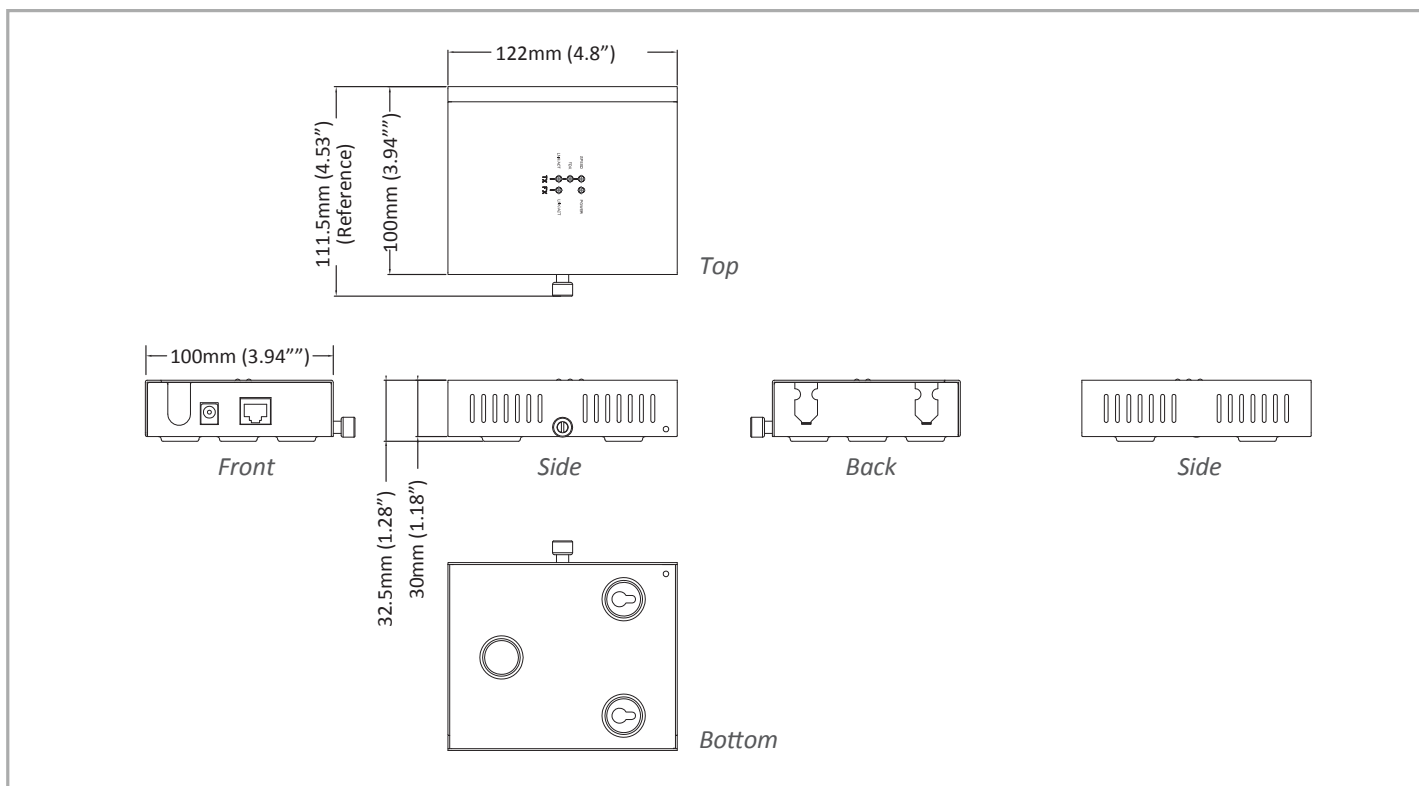## Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliance

CE Mark Class A

FCC Part 15B Class A

VCCI Class A

Dimensions

Top

Front *Side* *Back* *Side*

Bottom

Ordering Information

Model

EL2326L-X1Z	10/100/1000BASE-TX to 1000BASE-SX/LX/BX Media Converter

Gigabit Port Options (X)

3	1000BASE-SX (SC) - 550m (850nm)
4	1000BASE-SX (SC) - 2Km (1310nm)
5	1000BASE-SX (ST) - 550m (850nm)
A	1000BASE-LX (SC) - 10Km (1310nm)
B	1000BASE-LX (SC) - 20Km (1310nm)
E	1000BASE-LX (SC) - 40Km (1310nm)
R	1000BASE-BX (SC) WDM-TX:1310nm/RX:1550nm - 20Km
S	1000BASE-BX (SC) WDM −TX:1550nm/RX:1310nm - 20Km
W	1000BASE-BX (SC) WDM −TX:1310nm/RX:1490nm - 20Km
X	1000BASE-BX (SC) WDM −TX:1490nm/RX:1310nm - 20Km

Power Adapter Options (Z)

A	with external power adapter for AU
E	with external power adapter for EU
J	with external power adapter for JP
K	with external power adapter for UK
U	with external power adapter for USA
3C	with external power adapter for China

EL1216 Series
10/100ASE-TX to 100BASE-FX Media Converter

Overview

The EL1216 Series provides media conversion between 10/100BASE-T(X) and 100BASE-FX Fiber. Easy plug-and-play design facilitates network infrastructure construction. The EL1216 series is designed for SC or ST fiber connection applications. The EL1216's mechanical design prevents physical contact with fiber transceiver while the case is sealed; The EL1216's compact size is suitable for space limit installation and it is the ideal media converter for enterprise environments.

EtherWAN – "When Connectivity is Crucial".

Spotlight

- **Plug-and-Play Media Converter**
  - ◦ Easy installation, plug-and-play without additional configuration, providing store-and-forward data transmission

- **Hidden Fiber Transceiver**
  - ◦ Mechanical design prevents physical contact with fiber transceiver while the case is sealed

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX
- IEEE802.3x full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto-MDI/MDIX

Power

Input Voltage
- 12VDC

Power Consumption
- 3W Max. 0.25A @ 12VDC

Mechanical

Casing
- Metal case
- IP30

Dimensions
- 100 mm (W) x 122mm (D) x 32.5mm (H) (3.94"(W) x 4.8" (D) x 1.28" (H))

Weight
- 350g (0.77lbs.)

Installation
- Wall mounting

Interface

Ethernet Port
- 10/100BASE-TX: 1 port
- 100BASE-FX: 1 port

LED Indicators
- Per Unit: Power Status
- Per Port: TX Speed, Link/Activity, Duplex Mode/Collision

Environment

Operating Temperature
- 0°C to 50°C (32°F to 122°F)

Storage Temperature
- -20°C to 70°C (-4°F to 158°F)

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

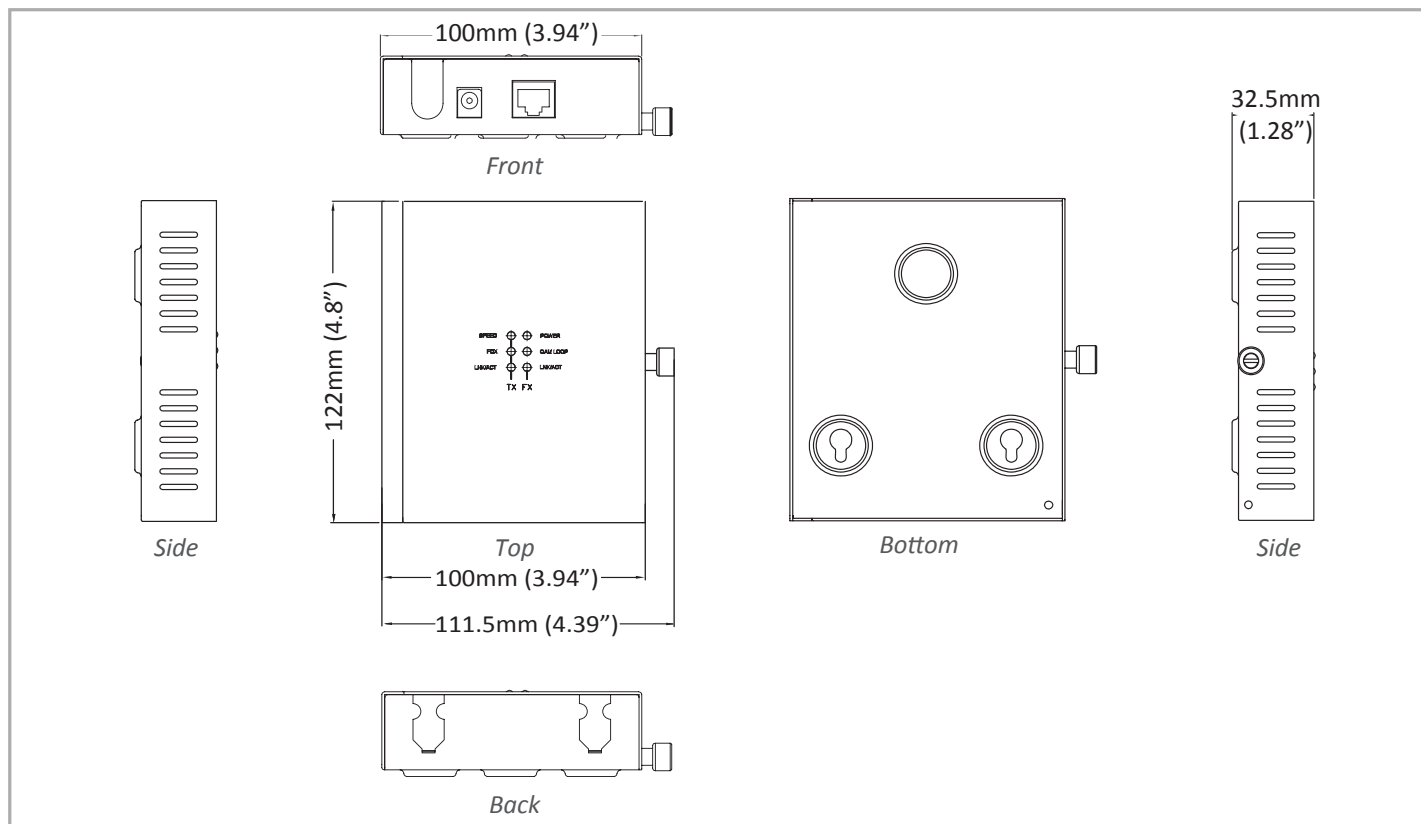## Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliance

CE Mark Class A

FCC Part 15B Class A

VCCI Class A

Dimensions

Front

Side

122mm (4.8")

Top

100mm (3.94")

111.5mm (4.39")

Back

Bottom

Side

100mm (3.94")

32.5mm (1.28")

Ordering Information

Model

EL1216-X1Z	10/100ASE-TX to 100BASE-FX Media Converter

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km (1310nm)
2	Multi Mode (ST) - 2Km (1310nm)
A	Single Mode (SC) - 20Km (1310nm)
B	Single Mode (SC) - 40Km (1310nm)
H	Single Mode (ST) - 20Km (1310nm)
6	Multi Mode (SC) WDM -TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM -TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM -TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM -TX:1550nm/RX:1310nm - 5Km
P	Single Mode (SC) WDM -TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM -TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM -TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM -TX:1550nm/RX:1310nm - 40Km

* More 100FX Fiber options also available upon request

Power Adapter Options (Z)

A	with external power adapter for AU
E	with external power adapter for EU
J	with external power adapter for JP
K	with external power adapter for UK
U	with external power adapter for USA
3C	with external power adapter for China

EL2211 Series

10/100/1000BASE-TX to 1000BASE-SX/LX/BX Media Converter

Overview

The EL2211 Series provides media conversion between 10/100/1000BASE-T(X) and 1000BASE-SX/LX/BX Fiber. Through DIP switch selection, Link-Fault-Pass-Through (LFPT) function can be active or disabled. With Gigabit transmission rate, the EL2211 supports Jumbo Frame up to 9K bytes. The EL2211 is the ideal media converter for enterprise environments.

EtherWAN – "When Connectivity is Crucial".

Spotlight

- **Gigabit Connectivity**
  - Auto 10/100/1000BASE-TX and 1000BASE-SX/LX/BX Ethernet transmission conversion
  - 1000Mbps Full duplex, 10/100MBps Full/Half duplex

- **Link-Fault-Pass-Through (LFPT)**
  - LFPT function let network operators be aware of network connection status
  - When fiber link is down, LFPT function will turn down Ethernet port to inform connected device that the link is down and vice versa

- **Optional Chassis System**
  - Supports wall mounting or EtherWAN's EMC1600 chassis system for easy group installation with power redundancy

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.3x Full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto-MDI/MDIX

Power

Input Voltage
- 12VDC

Power Consumption
- 2.76W Max. 0.23A @ 12VDC

Mechanical

Casing
- Aluminum Case

Dimensions
- 80.3mm (W) x 109.2mm (D) x 23.8mm (H) (3.16" (W) x 4.3" (D) x 0.94" (H))

Weight
- 150g (0.33lbs.)

Installation
- Wall mounting, or in EMC1600 Chassis System

Interface

Ethernet Port
- 10/100/1000BASE-TX: 1 port
- 1000BASE-SX/LX/BX: 1 port

LED Indicators
- Per Unit: Power, LFPT
- Per Port: Link/Act, Speed

Environment

Operating Temperature
- 0°C to 50°C (32°F to 122°F)

Storage Temperature
- -10°C to 70°C (-14°F to 158°F)

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

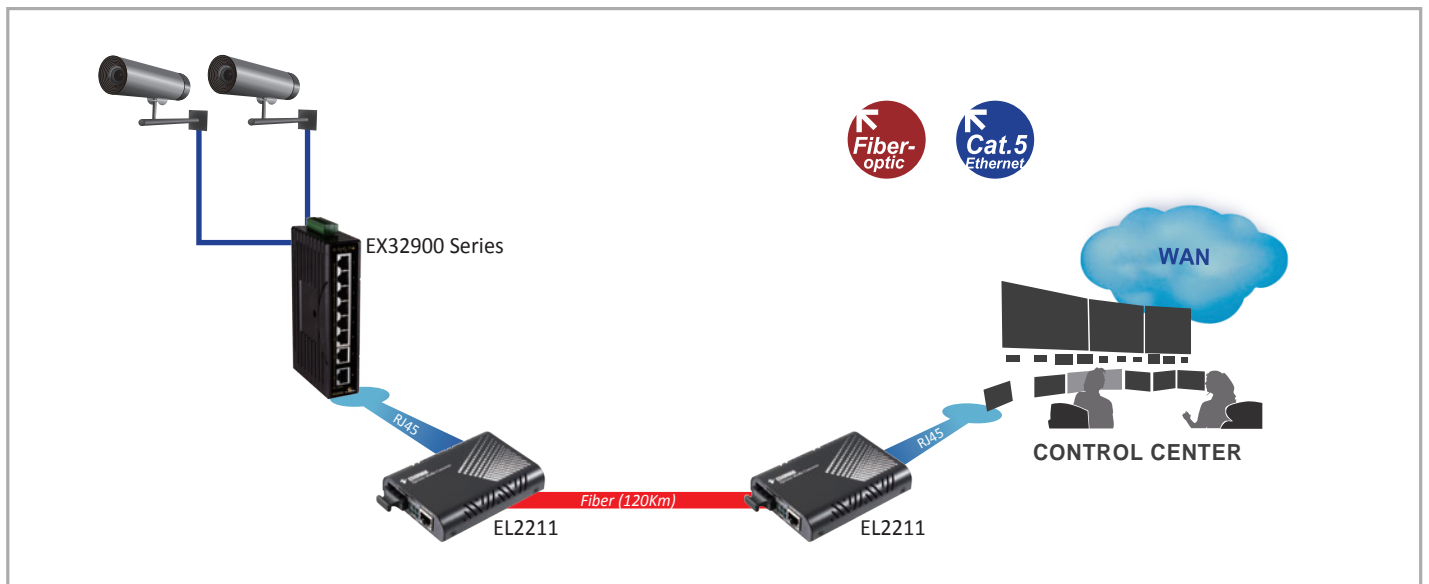## Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility
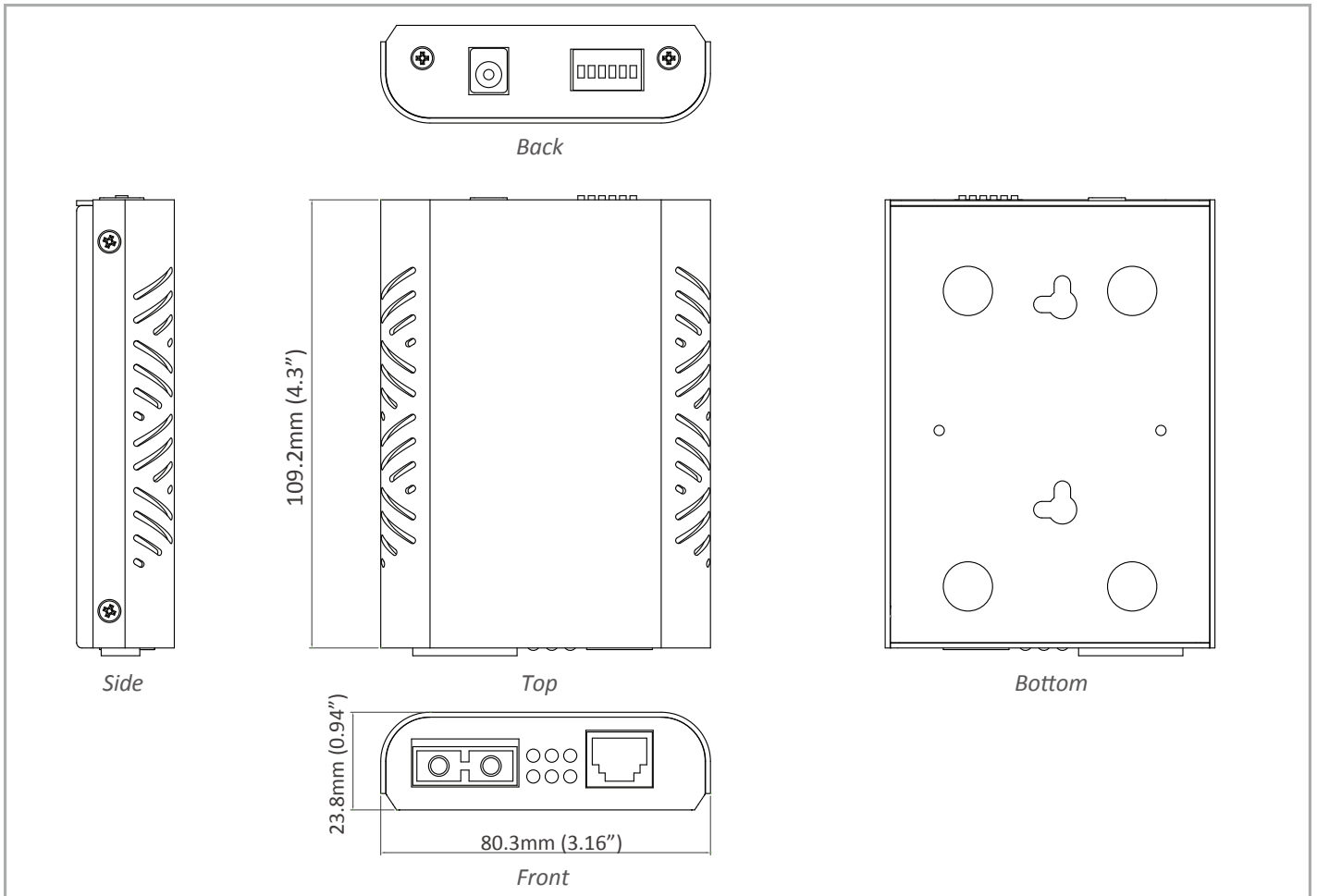
Emission Compliance

CE Mark Class A

FCC Part 15B Class A

VCCI Class A

Application Diagram

Dimensions

Back

Side

Top

Bottom

109.2mm (4.3")

23.8mm (0.94")

80.3mm (3.16")

Front

Ordering Information

Model

EL2211-X1Z	10/100/1000BASE-TX to 1000BASE-SX/LX/BX Media Converter

Gigabit Port Options (X)

3	1000BASE-SX(SC) - 550m (850nm)
4	1000BASE-SX (SC) - 2Km (1310nm)
5	1000BASE-SX (ST) - 550m (850nm)
A	1000BASE-LX (SC) - 10Km
B	1000BASE-LX (SC) - 20Km (1310nm)
E	1000BASE-LX (SC) - 40Km (1310nm)
R	1000BASE-BX (SC) WDM - TX:1310nm/RX:1550nm - 20Km
S	1000BASE-BX (SC) WDM - TX:1550nm/RX:1310nm - 20Km

Ordering Information - continued

Power Adapter Options (Z)

A	with external power adapter for AU
E	with external power adapter for EU
J	with external power adapter for JP
K	with external power adapter for UK
U	with external power adapter for USA
3C	with external power adapter for China

EM1100 / EM2100 Series

10/100/1000BASE-TX to 1000BASE-FX Media Converter

Overview

The EM1100/EM2100 Series provides media conversion between 10/100/1000BASE-T(X) and 1000BASE-FX Fiber. Easy plug-and-play design facilitates network infrastructure construction. Also, this commercial grade Gigabit media converter supports EtherWAN EMC1600 chassis system for easy group installation. The EM1100/EM2100 is the ideal media converter for enterprise environments.

EtherWAN – "When Connectivity is Crucial".

Spotlight

- **Gigabit Connectivity**
  - Auto 10/100/1000BASE-TX and 1000BASE-SX/LX/BX Ethernet transmission conversion
  - 1000Mbps Full duplex, 10/100MBps Full/Half duplex
  - Full wire-speed forwarding rate

- **Optional Chassis System**
  - Supports wall mounting or EtherWAN's EMC1600 chassis system for easy group installation with power redundancy

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-T
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.3x full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps
- 1,488,100pps for 1000Mbps

Packet Buffer Memory
- 256K bits

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto-MDI/MDIX

Power

Input Voltage
- 12VDC

Power Consumption
- 4.25W Max. 0.35A @ 12VDC

Mechanical

Casing
- Aluminum Case

Dimensions
- 80.3mm (W) x 109.2mm (D) x 23.8mm (H)
  (3.16" (W) x 4.3" (D) x 0.94" (H))

Weight
- 150g (0.336lbs.)

Installation
- Wall mounting, or installs with EMC1600 media converter chassis system

Interface

Ethernet Port
- 10/100/1000BASE-T: 1 port
- 1000BASE-SX/LX/BX: 1 port

LED Indicators
- Per Unit: Power Status (Power)
- Per Port: 1000T, 1000SX/LX: Link, Full-duplex/Collision
- Per Port 1000SX/LX: Link/Activity

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (-14°F to 158°F)

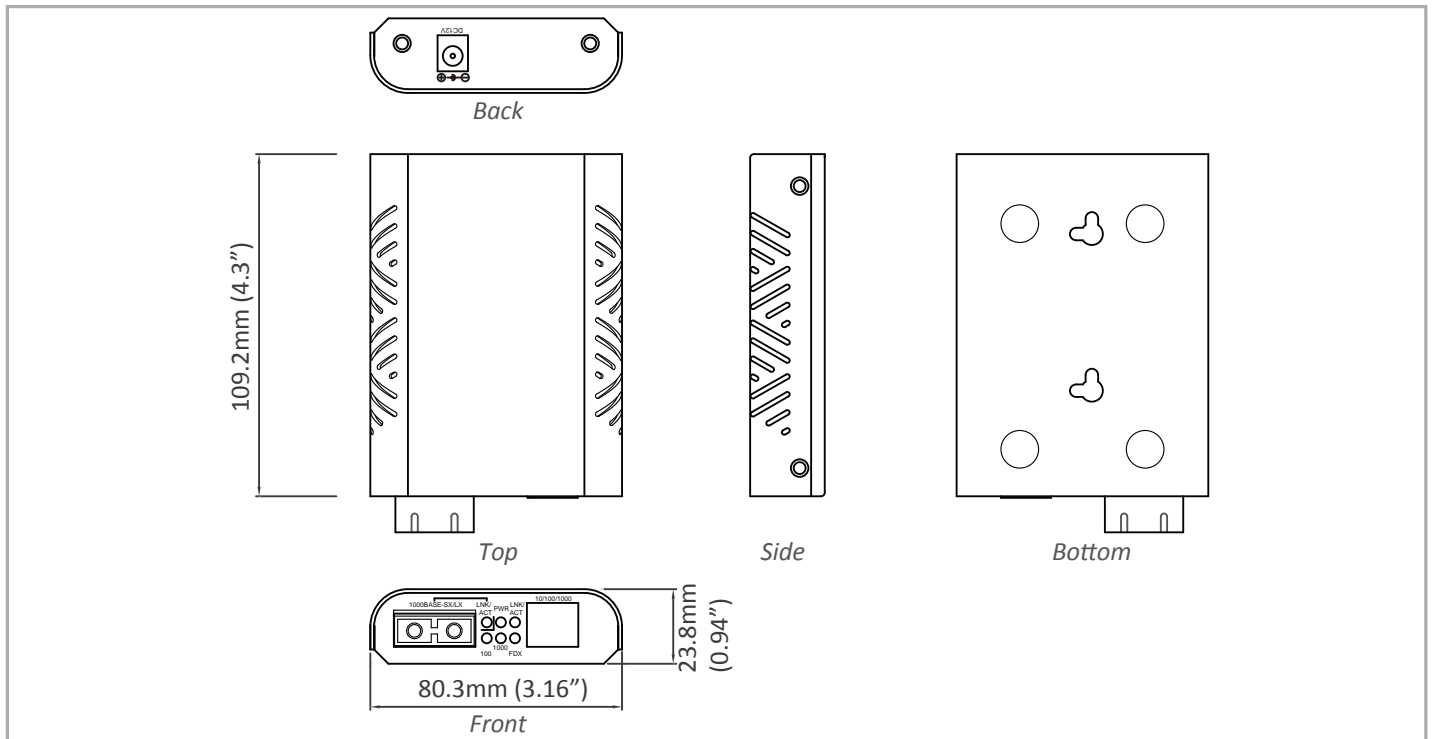### Ambient Relative Humidity
- 5% to 95% (non-condensing)

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliances

CE Mark Class A, FCC Part 15B Class A, and VCCI Class A

Dimensions

Back

Top

109.2mm (4.3")

Side

Bottom

Front

1000BASE-SX/LX   LNK/ PWR LNK/   10/100/1000
                 ACT   ACT
                      100 1000 FDX

80.3mm (3.16")

23.8mm (0.94")

Ordering Information

Model

EM1100TSC	10/100/1000BASE-TX to 1000BASE-SX (SC) - 550m Media Converter (850nm)
EM1100TSC-2	10/100/1000BASE-TX to 1000BASE-SX (SC) - 2Km Media Converter (1310nm)
EM1100TLC-10	10/100/1000BASE-TX to 1000BASE-LX (SC) - 10Km Media Converter (1310nm)
EM1100TLC-20	10/100/1000BASE-TX to 1000BASE-LX (SC) - 20Km Media Converter (1310nm)
EM2100TLCA-20	10/100/1000BASE-TX to 1000BASE-BX (SC) WDM -TX:1310nm/RX:1550nm - 20Km Media Converter
EM2100TLCB-20	10/100/1000BASE-TX to 1000BASE-BX (SC) WDM -TX:1550nm/RX:1310nm - 20Km Media Converter
EM2100TLCA-60	10/100/1000BASE-TX to 1000BASE-BX (SC) WDM -TX:1310nm/RX:1550nm - 60Km Media Converter
EM2100TLCB-60	10/100/1000BASE-TX to 1000BASE-BX (SC) WDM -TX:1550nm/RX:1310nm - 60Km Media Converter

* More Gigabit fiber options are also available upon request.

* EMC1600 (available separately), a proprietary 19" chassis system, can house up to 16 x EM1100 / EM2100 Series media converters.

EM1000 / EM2000 Series
1000BASE-T to 1000BASE-SX/LX/BX Media Converter

Overview

The EM1000/EM2000 Series provides media conversion between 1000BASE-T(X) and 1000BASE-FX Fiber. Easy plug-and-play design facilitates network infrastructure construction. Also, this commercial grade Gigabit media converter supports EtherWAN EMC1600 chassis system for easy group installation. The EM1000/EM2000 is the ideal media converter for enterprise environments.

EtherWAN – "When Connectivity is Crucial".

Spotlight

- **Gigabit Connectivity**
  - Auto 1000BASE-T and 1000BASE-SX/LX/BX Ethernet transmission conversion
  - 1000Mbps Full duplex
  - Full wire-speed forwarding rate

- **Optional Chassis System**
  - Supports wall mounting or EtherWAN's EMC1600 chassis system for easy group installation with power redundancy

Hardware Specifications

Technology

Standards
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/1000BASE-LX
- IEEE802.3x full duplex and flow control

Forward and Filtering Rate
- 1,488,100pps for 1000Mbps

Processing Type
- Auto Negotiation
- Auto MDI/MDIX

Power

Input Voltage
- 12VDC

Power Consumption
- 2.4W Max. 0.2A @ 12VDC

Mechanical

Casing
- Aluminum Case

Dimensions
- 80.3mm (W) x 109.2mm (D) x 23.8mm (H)
  (3.16" (W) x 4.3" (D) x 0.94" (H))

Weight
- 150g (0.336lbs.)

Installation
- Wall mounting or use with EMC1600 media converter chassis system

Interface

Ethernet Port
- 1000BASE-T: 1 port
- 1000BASE-SX/LX/BX: 1 port

LED Indicators
- Per Unit: Power Status (Power)
- Per Port: 1000T, 1000SX/LX: Link, Full-duplex/Collision
- Per Port 1000SX/LX: Link, Transmit, Receive

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (-14°F to 158°F)

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

Regulatory Approvals

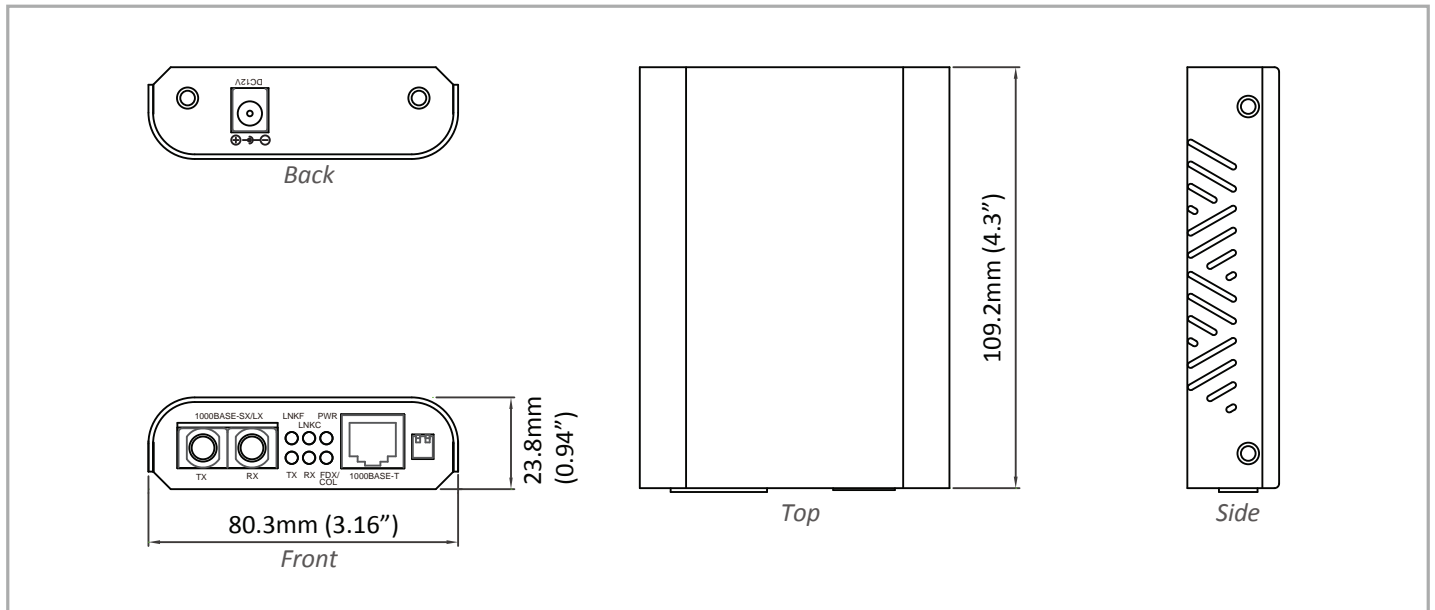**ISO**
- Manufactured in an ISO9001 facility

Emission Compliances

CE Mark Class A

FCC Part 15B Class A

VCCI Class A

Dimensions

Ordering Information

Model

EM1000TSC	1000BASE-T to 1000BASE-SX (SC) - 550m Media Converter (850nm)
EM1000TSC-2	1000BASE-T to 1000BASE-SX (SC) - 2Km Media Converter (1310nm)
EM1000TLC-10	1000BASE-T to 1000BASE-LX (SC) - 10Km Media Converter (1310nm)
EM1000TLC-20	1000BASE-T to 1000BASE-LX (SC) - 20Km Media Converter (1310nm)
EM2000TLCA-20	1000BASE-T to 1000BASE-LX (SC) WDM -TX:1310nm/RX:1550nm - 20Km Media Converter
EM2000TLCB-20	1000BASE-T to 1000BASE-LX (SC) WDM -TX:1550nm/RX:1310nm - 20Km Media Converter
EM2000TLCA-60	1000BASE-T to 1000BASE-LX (SC) WDM -TX:1310nm/RX:1550nm - 60Km Media Converter
EM2000TLCB-60	1000BASE-T to 1000BASE-LX (SC) WDM -TX:1550nm/RX:1310nm - 60Km Media Converter

* EMC1600 (available separately), a proprietary 19" chassis system, can house up to 16 x EM1000S/EM2000 Series media converters.

EM1000S / EM2000S Series
1000BASE-SX/LX to 1000BASE-LX/BX Media Converter

Overview

The EM1000S/EM2000S Series provides media conversion between two 1000BASE-FX Fiber interfaces. Easy plug-and-play design facilitates network infrastructure construction. Also, this commercial grade Gigabit media converter supports EtherWAN EMC1600 chassis system for easy group installation. The EM1000S/EM2000S is the ideal media converter for enterprise environments.

EtherWAN – "When Connectivity is Crucial".

Spotlight

- **Gigabit Connectivity**
  - 1000BASE- SX/LX/BX to 1000BASE-SX/LX/BX fiber transmission conversion
  - 1000Mbps Full duplex
  - Full wire-speed forwarding rate

- **Optional Chassis System**
  - Supports wall mounting or EtherWAN's EMC1600 chassis system for easy group installation with power redundancy

Hardware Specifications

Technology

Standards
- IEEE802.3ab, 1000BASE-T
- IEEE802.3z, 1000BASE-SX/1000BASE-LX
- IEEE802.3x, Full duplex and flow control

Forward and Filtering Rate
- 1,488,100pps for 1000Mbps

Processing Type
- Auto Negotiation
- Auto MDI/MDIX

Power

Input
- Input Voltage: 12VDC

Power Consumption
- 2.4W Max. 0.2A @ 12VDC

Mechanical

Casing
- Aluminum Case

Dimensions
- 80.3mm (W) x 109.2mm (D) x 23.8mm (H)
  (3.16" (W) x 4.3" (D) x 0.94" (H))

Weight
- 150g (0.336lbs.)

Installation
- Wall mounting or use with EMC1600 media converter chassis system

Interface

Ethernet Port
- 1000BASE-SX/LX/BX: 2 ports

LED Indicators
- Per Unit: Power Status (Power)
- Per Port: 1000SX/LX: Link

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

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

Regulatory Approvals
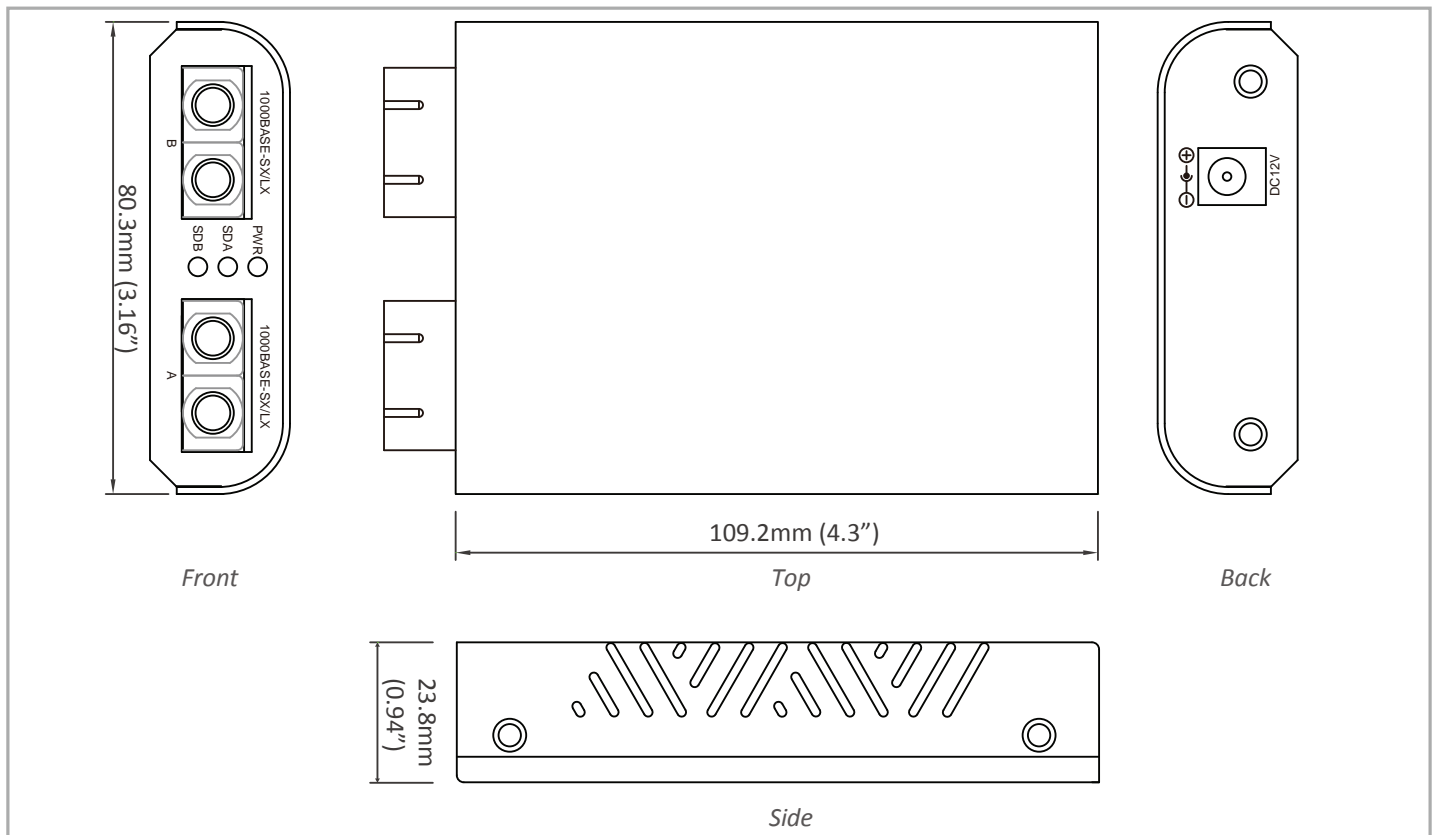
ISO
- Manufactured in an ISO9001 facility

Emission Compliances

CE Mark Class A

FCC Part 15B Class A

VCCI Class A

Dimensions

Front *Top* *Back*

80.3mm (3.16")

109.2mm (4.3")

23.8mm (0.94")

Side

Ordering Information

Model

EM1000SLC-10	1000BASE-SX(SC)-550m to 1000BASE-LX(SC)-10Km Media Converter (1310nm)
EM1000SLC-20	1000BASE-SX(SC)-550m to 1000BASE-LX(SC)-20Km Media Converter (1310nm)
EM2000SLCA-20	1000BASE-SX(SC)-550m to 1000BASE-BX(SC)WDM-TX:1310nm/RX:1550nm-20Km Media Converter
EM2000SLCB-20	1000BASE-SX(SC)-550m to 1000BASE-BX(SC)WDM-TX:1550nm/RX:1310nm-20Km Media Converter
EM2000SLCA-60	1000BASE-SX(SC)-550m to 1000BASE-BX(SC)WDM-TX:1310nm/RX:1550nm-60Km Media Converter
EM2000SLCB-60	1000BASE-SX(SC)-550m to 1000BASE-BX(SC)WDM-TX:1550nm/RX:1310nm-60Km Media Converter

* EMC1600 (available separately), a proprietary 19" chassis system, can house up to 16xEM1000S/EM2000S Series media converters.

* More Gigabit fiber options are available upon request.

* 1000BASE-LX to 1000BASE-LX converters are also available.

EM1020 Series
1000BASE-T to Gigabit SFP Media Converter

Overview

The EM1020 Series provides media conversion between 1000BASE-T(X) and 1000BASE SFP Fiber. The EM1020's fiber design is compatible to 1000BASE SFP fiber transceiver. Also, through DIP switch selection, Link-Fault-Pass-Through (LFPT) function can be active or disabled.

With Gigabit transmission rate, the EM1020 supports Jumbo Frame up to 9K bytes. Also, this commercial grade Gigabit media converter supports EtherWAN's EMC1600 chassis system for easy group installation. the EM1020 is the ideal media converter for enterprise environments.

EtherWAN – "When Connectivity is Crucial".

Spotlight

- **Gigabit Connectivity**
  - 1000BASE-TX and 1000BASE-SX/LX/BX Ethernet SFP transmission conversion
  - 1000Mbps Full duplex SFP

- **Link-Fault-Pass-Through (LFPT)**
  - LFPT function let network operators be aware of network connection status
  - When fiber link is sown, LFPT function will turn down Ethernet port to inform connected device that the link is down and vise versa

- **Optional Chassis System**
  - Supports wall mounting or EtherWAN's EMC1600 chassis system for easy group installation with power redundancy

Hardware Specifications

Technology

Standards
- IEEE802.3ab, 1000BASE-T
- IEEE802.3z, 1000BASE-SX/1000BASE-LX
- IEEE802.3x, Full duplex and flow control

Forward and Filtering Rate
- 1,488,100pps for 1000Mbps

Processing Type
- Auto Negotiation
- Auto MDI/MDIX

Power

Input
- Input Voltage: 12VDC

Power Consumption
- 2.4W Max. 0.2A @ 12VDC

Mechanical

Casing
- Aluminum Case

Dimensions
- 80.3mm (W) x 109.2mm (D) x 23.8mm (H) (3.16" (W) x 4.3" (D) x 0.94" (H))

Weight
- 150g (0.33lb.)

Installation
- Wall mounting or use with EMC1600 media converter chassis system

Interface

Ethernet Port
- 1000BASE-T: 1 port
- Gigabit SFP: 1 port

LED Indicators
- Per Unit: Power Status (Power)
- Per Port: 1000T: Link, Full-duplex/Collision Gigabit SFP: Link, Transmit, Receive

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (-14°F to 158°F)

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

Regulatory Approvals
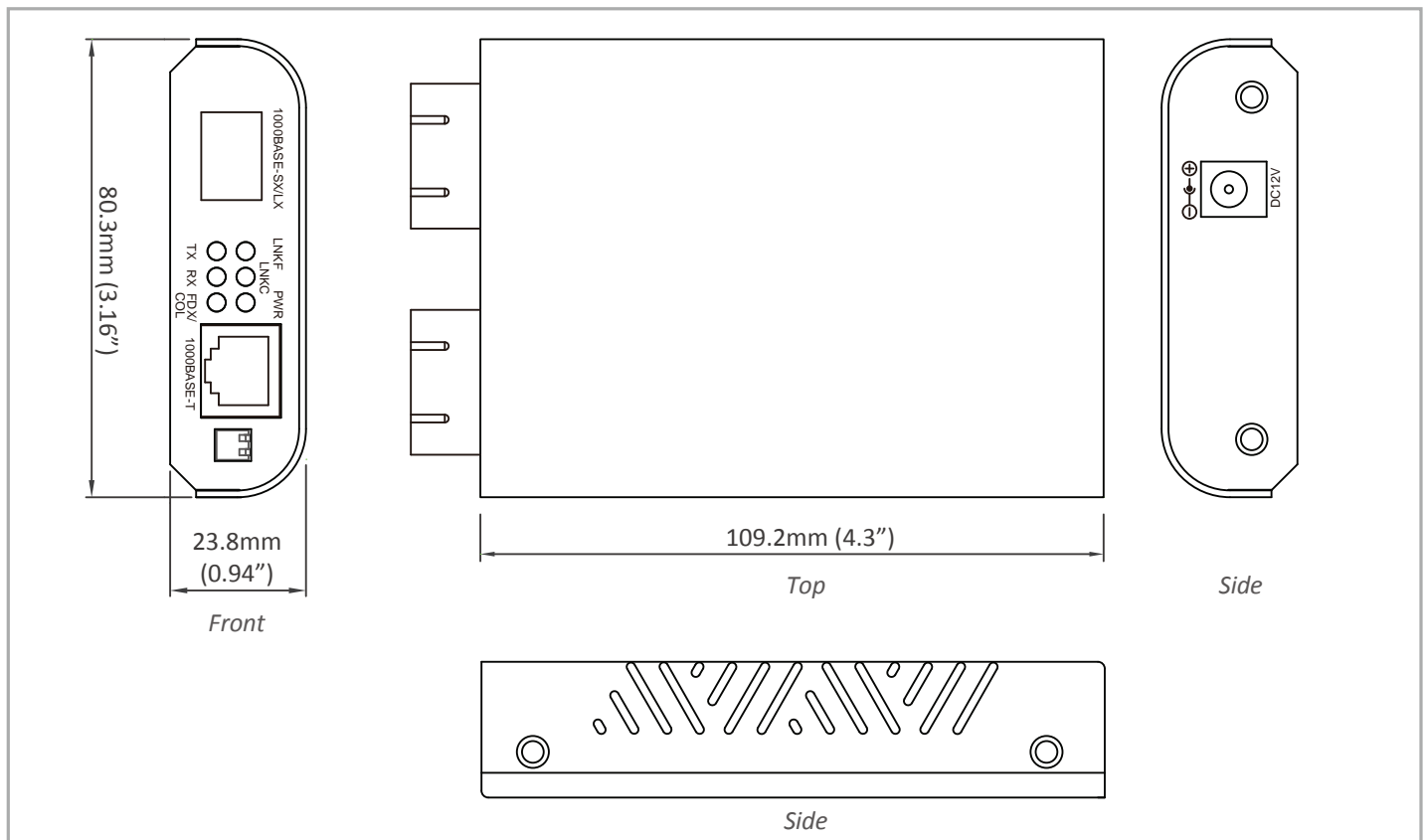
ISO
- Manufactured in an ISO9001 facility

Emission Compliance

CE Mark Class A

FCC Part 15B Class A

VCCI Class A

Dimensions

Front

Top

Side

Side

Ordering Information

Model

EM1020-X	1000BASE-T to Gigabit SFP Media Converter

Power Adaptor Options (X)

A	with external power adapter for AU
E	with external power adapter for EU
J	with external power adapter for JP
K	with external power adapter for UK
U	with external power adapter for USA
3C	with external power adapter for China

Optional Accessories

SFP Non-Hardened Type Gigabit Fiber Transceivers

Part Number	Typical Distance	Wavelength (nm)	Cable Type	Connector
EX-1250NSP-SB1L	275M/500M	850	MM	Duplex LC
EX-1250TSP-MB4L	10KM	1310	SM	Duplex LC
EX-1250TSP-NB6L	40KM	1310	SM	Duplex LC
EX-1250TBP-MB1L	550M	TX:1310 / RX:1550	MM WDM-A	LC
EX-1250TBP-LB1L	550M	TX:1550 / RX:1310	MM WDM-B	LC
EX-1250TBP-MB4L	10KM	TX:1310 / RX:1550	SM WDM-A	LC
EX-1250TBP-KB4L	10KM	TX:1550 / RX:1310	SM WDM-B	LC
EX-1250TBP-MB5L	20KM	TX:1310 / RX:1550	SM WDM-A	LC
EX-1250TBP-KB5L	20KM	TX:1550 / RX:1310	SM WDM-B	LC
EX-1250TBP-NB6L-D	40KM	TX:1310 / RX:1550	SM WDM-A	LC
EX-1250TBP-KB6L-D	40KM	TX:1550 / RX:1310	SM WDM-B	LC

* More SFP options also available upon request.

* EMC1600 (available separately), a proprietary 19" chassis system, can house up to 16 x EM1020 Series media converters.

EL900 Series

Hardened 10/100BASE-TX to 100BASE-FX Media Converter

Overview

The EL900 Series provides media conversion between 10/100BASE-T and 100BASE-SX-LX Fiber. Built specifically for mission-critical applications in harsh environments, the EL900's hardened design features high shock & vibration resistance, electrical noise immunity, wide operating temperature range from -40°C to 75°C, and ruggedized aluminum housing. With triple power inputs, link down alarming, Link-Fault-Pass-Through and a wide range of fiber connectivity options, the EL900 is the ideal media converter for harsh environments.

EtherWAN – "When Connectivity is Crucial".

Spotlight

- **ISA12.12.01 Certification**
  - Highly qualified for explosive environmental applications and certified by UL with ISA12.12.01 Class I, Division 2 classified for use in hazardous locations

- **Wide Operating Temperature**
  - -40°C to 75°C wide operating temperature range design is suitable for installation in outdoor cabinet

- **Link-Fault-Pass-Through (LFPT)**
  - LFPT function let network operators be aware of network connection status
  - When fiber link is down, LFPT function will turn down Ethernet port to inform connected device that the link is down and vise versa

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX and 100BASE-FX
- IEEE802.3x Full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 128K bits

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Power

Input Voltage
- 10 to 48VDC (DC Terminal Block)
- 12VDC (DC Jack) or 24VAC, 0.185A (AC Terminal Block)

Power Consumption
- 4.32W MAX. 0.36A @ 12VDC, 0.09A @ 48VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 50mm (W) x 110mm (D) x 135mm (H)
  (1.97" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.8Kg (1.76lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel, or Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 1 port
- 100BASE-FX: 1 port

LED Indicators
- Per Unit: Power, LFPT
- Per 10/100TX Port: Link/Activity, Full-duplex/Collision, Speed
- Per 100FX port: Link/Activity, Full-duplex/Collision

Relay Contact
- Relay contact rating with current 1A @ 30VDC, 0.5A @ 120VAC

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

ISA12.12.01
- Class 1, Division 2 group A, B, C &D for hazardous locations

UL60950-1

EN60950-1

IEC60950-1

EMI

FCC Part 15B, Class A

EN61000-6-3

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance
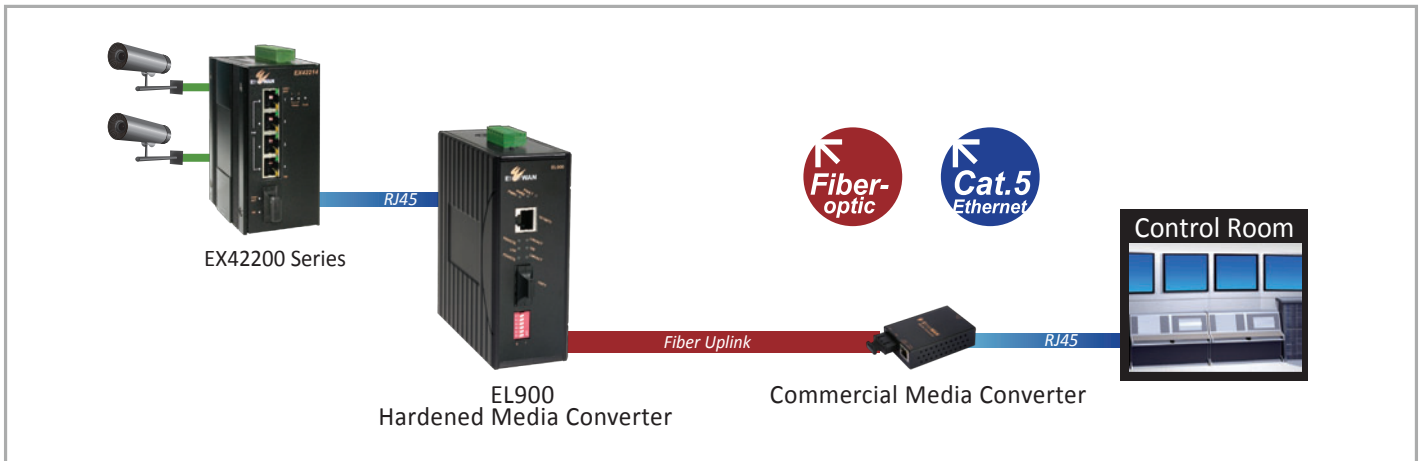
IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

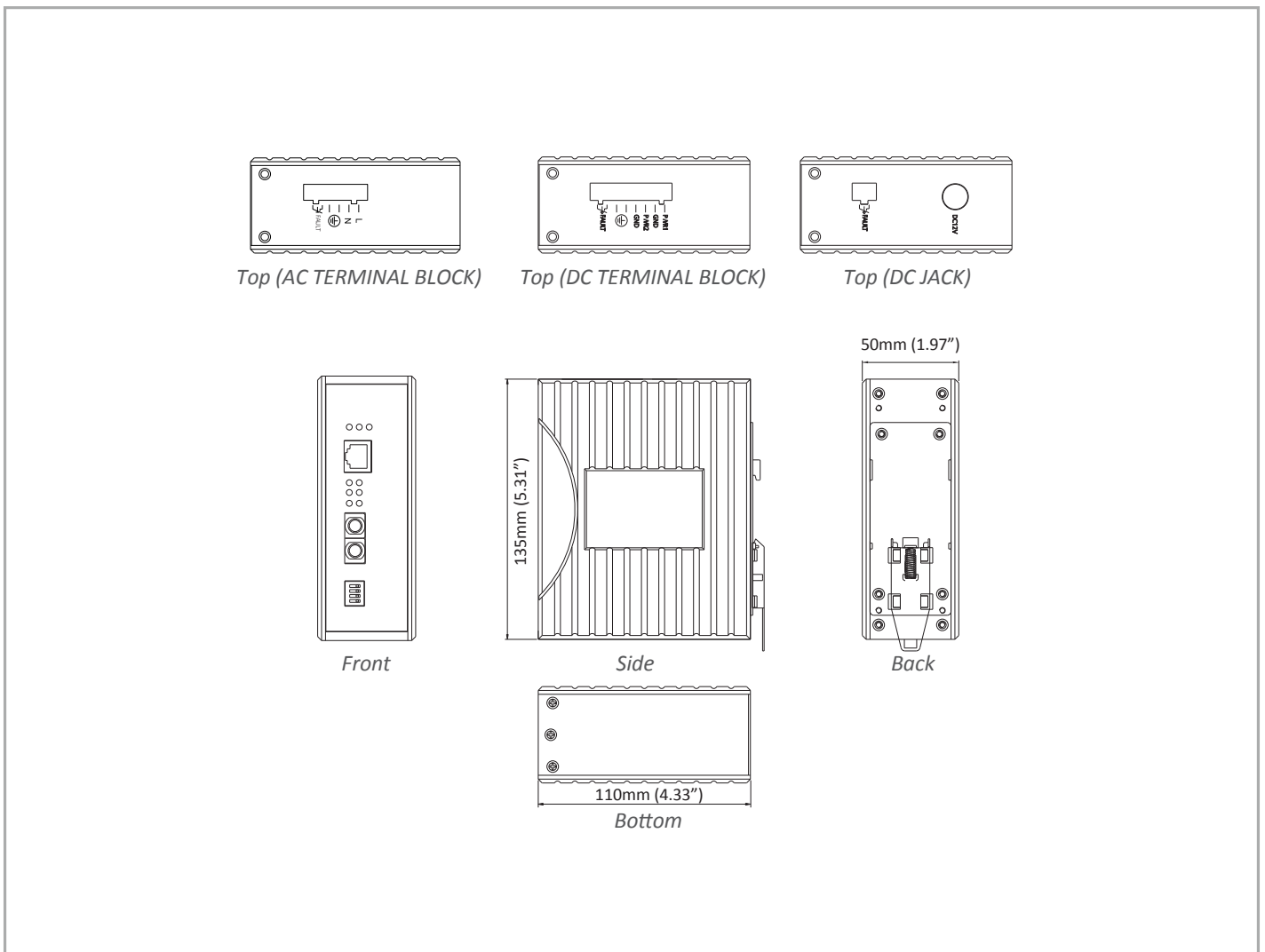#### FED STD 101C Method 5007.1 (Free fall w/ package)

NEMA TS1/2
- Environmental requirements for traffic control   equipment

Application Diagram

EX42200 Series

RJ45

EL900
Hardened Media Converter

Fiber-optic

Cat.5 Ethernet

Fiber Uplink

Commercial Media Converter

RJ45

Control Room

Dimensions

Top (AC TERMINAL BLOCK)

Top (DC TERMINAL BLOCK)

Top (DC JACK)

50mm (1.97")

135mm (5.31")

Front

Side

Back

110mm (4.33")

Bottom

EL900 Series

324

www.EtherWAN.com

rev. A2.2

Ordering Information

Model

EL900-A-Y-1-P	Hardened 10/100BASE-TX to 100BASE-FX Media Converter

* DIN-Rail mounting kit included

100FX Fiber Options (Y)

B	Multi Mode (SC) - 2Km (1310nm)
C	Multi Mode (ST) - 2Km (1310nm)
D	Multi Mode (SC) WDM -TX:1310nm/RX:1550nm - 2Km
E	Multi Mode (SC) WDM -TX:1550nm/RX:1310nm - 2Km
F	Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km
G	Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km
Q	Single Mode (SC) WDM -TX:1310nm/RX:1550nm - 20Km
R	Single Mode (SC) WDM -TX:1550nm/RX:1310nm - 20Km
S	Single Mode (SC) WDM -TX:1310nm/RX:1550nm - 40Km
T	Single Mode (SC) WDM -TX:1550nm/RX:1310nm - 40Km
M	Single Mode (ST) - 20Km (1310nm)
N	Single Mode (SC) - 20Km (1310nm)
O	Single Mode (SC) - 40Km (1310nm)

Power Connector Options (P)

A	DC Terminal Block
B	DC Jack
C	24VAC Terminal Block

Optional Accessories

KP-AA96-480	Panel mounting Kit
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (Optional, For Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (Optional, For Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (Optional, For Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (Optional, For Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (Optional, For Terminal Block); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC jack in aluminum housing (Optional, For DC Jack); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EL910 Series

Hardened 10/100BASE-TX to 100BASE-SX/LX Media Converter

Overview

The EL910 Series provides media conversion between 10/100BASE-T and 100BASE-SX-LX Fiber. Built specifically for mission-critical applications in harsh environments, the EL910's hardened design features high shock and vibration, electrical noise immunity, a wide operating temperature range from -40°C to 75°C, and ruggedized aluminum housing. Compared to legacy EL900 product, EL910 has smaller size to facilitate installation in small cabinet or space. With triple power inputs, link down alarming, Link-Fault-Pass-Through and a wide range of fiber connectivity options the EL910 is the ideal media converter for environments where connectivity is crucial.

Spotlight

- **Wide Operating Temperature**
  - -40°C to 75°C wide operating temperature range design is suitable for installation in outdoor cabinet

- **Link-Fault-Pass-Through (LFPT)**
  - LFPT function let network operators be aware of network connection status
  - When fiber link is down, LFPT function will turn down Ethernet port to inform connected device that the link is down and vise versa

- **UL60950-1 Certification**
  - Certified by UL60950-1 standard, providing protections to installers from risk of injury or damage

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Power

Input
- 12 to 48VDC (DC Terminal Block)
- 12VDC (DC Jack)

Power Consumption
- 3.36W MAX., 0.28A @ 12VDC, 0.07A @ 48VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 42mm (W) x 90mm (D) x 100mm (H)
  (1.65" (W) x 3.54" (D) x 3.94" (H))

Weight
- 0.32Kg (0.7lbs.)

Installation
- DIN-Rail

Interface

Ethernet Port
- 10/100BASE-TX: 1 port
- 100BASE-FX: 1 port

LED Indicators
- Per Unit: Power 1, Power 2, Fault, Link-Fault-Pass-Through (LFPT)
- Per 10/100TX Port: Link/Act, Speed
- Per 100FX Port: Link/Act

Relay Contact
- Relay contact rating with current Max. 1A @ 60VDC

Environment

Operating Temperature
- -40°C to 75°C (-40°F to 167°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL60950-1, IEC60950-1

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)z
- EN61000-4-8 (Magnetic Field Standards)

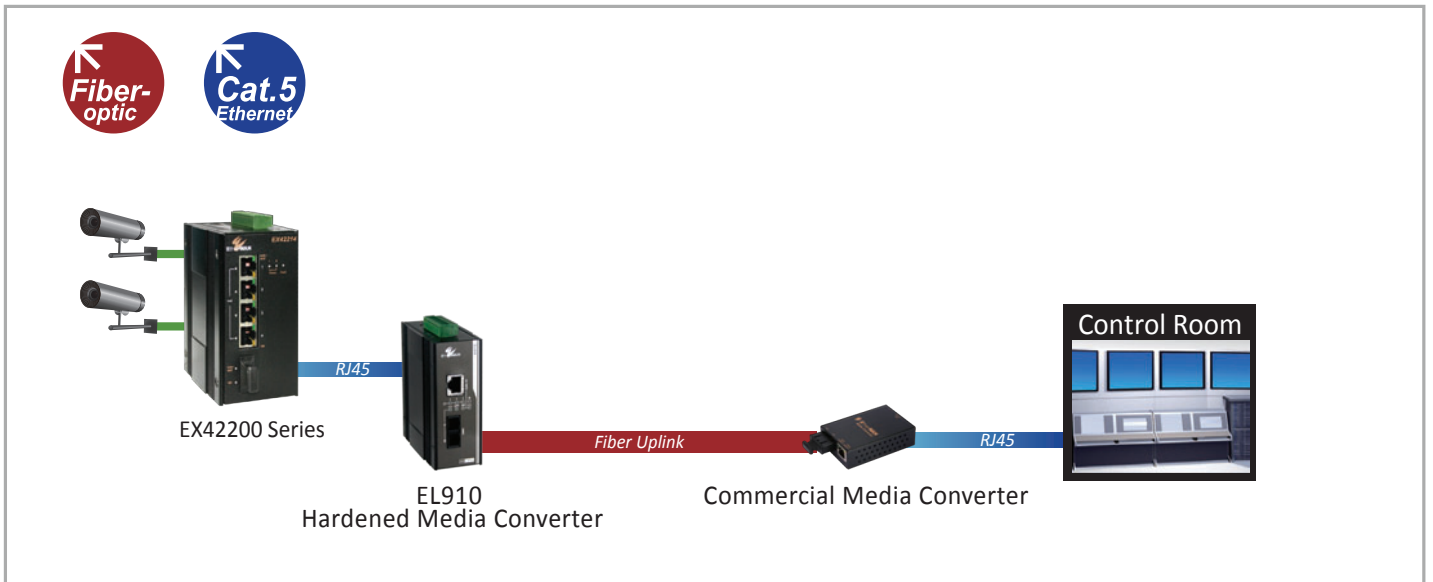### Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)
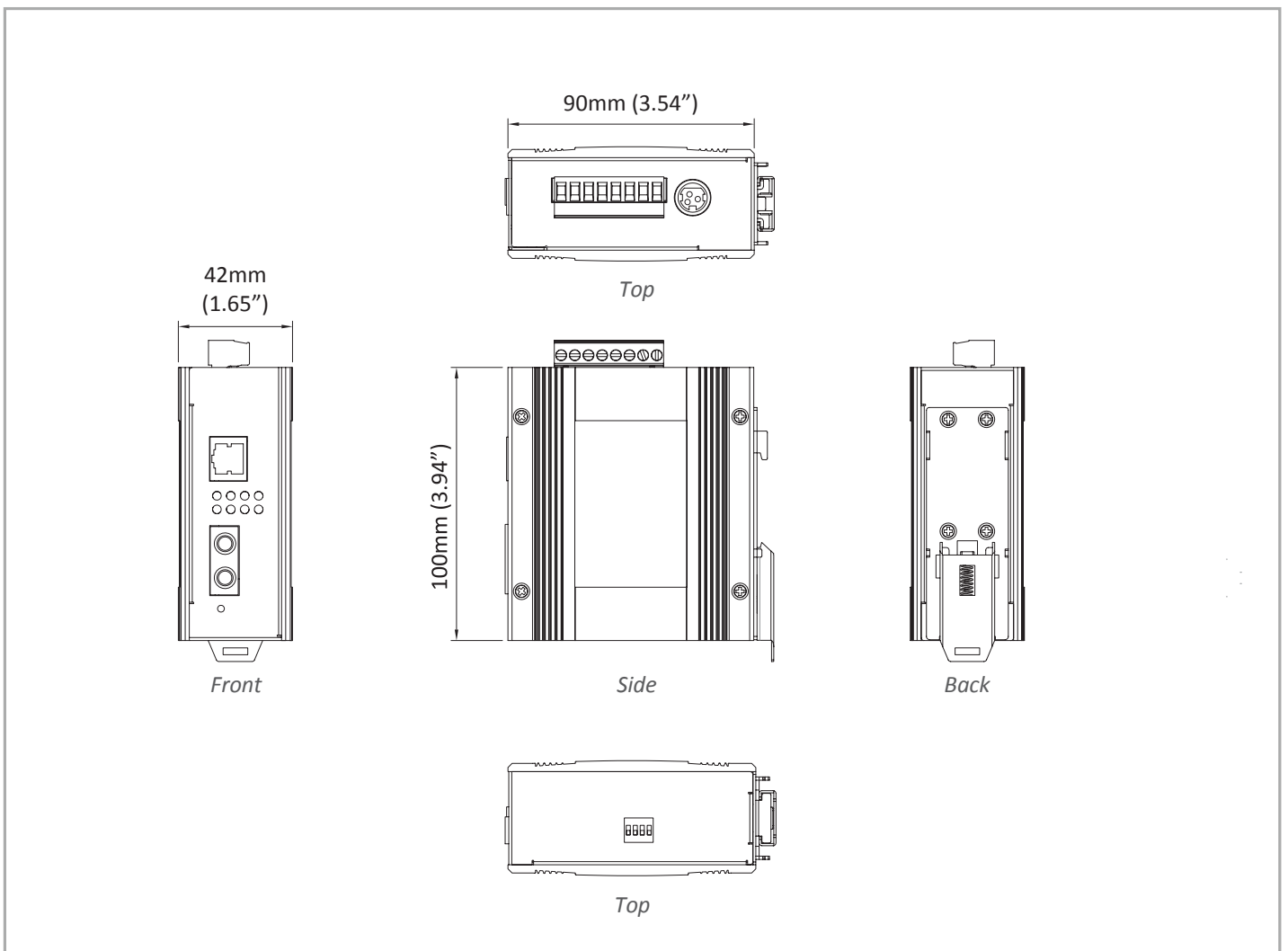
FED STD 101C Method 5007.1 (Free fall w/ package)

NEMA TS1/2
- Environmental requirements for traffic control equipment

Application Diagram

Fiber-optic

Cat.5 Ethernet

EX42200 Series

RJ45

EL910
Hardened Media Converter

Fiber Uplink

Commercial Media Converter

RJ45

Control Room

Dimensions

90mm (3.54")

Top

42mm (1.65")

100mm (3.94")

Front

Side

Back

Top

Ordering Information

Model

EL910-A-**Y**-1-B	10/100BASE-TX to 100BASE-FX Hardened Media Converter

* DIN-Rail mounting kit included

100FX Fiber Options (Y)

B	Multi Mode (SC) - 2Km
C	Multi Mode (ST) - 2Km
D	Multi Mode (SC) WDM - TX: 1310nm / RX: 1550nm - 2Km
E	Multi Mode (SC) WDM - TX: 1550nm / RX: 1310nm - 2Km
F	Multi Mode (SC) WDM - TX: 1310nm / RX: 1550nm - 5Km
G	Multi Mode (SC) WDM - TX: 1550nm / RX: 1310nm - 5Km
M	Single Mode (ST) - 20KM
N	Single Mode (SC) - 20KM
O	Single Mode (SC) - 40KM
Q	Single Mode (SC) WDM - TX: 1310nm / RX: 1550nm - 20Km
R	Single Mode (SC) WDM -TX:1550nm/RX:1310nm - 20Km
S	Single Mode (SC) WDM -TX:1310nm/RX:1550nm - 40Km
T	Single Mode (SC) WDM -TX:1550nm/RX:1310nm - 40Km

* More 100FX Fiber options also available upon request

Optional Accessories

DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (For Terminal Block); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EL950 Series

Hardened Managed 10/100BASE-TX to 100BASE-SX/LX Media Converter

Overview

The EL950 Series provides media conversion between 10/100BASE-T and 100BASE-SX-LX Fiber. Built specifically for mission-critical applications in harsh environments, the EL950's hardened design features high shock and vibration, electrical noise immunity, a wide operating temperature range from -40°C to 75°C, and ruggedized aluminum housing.

The EL950 managed media converter supports Telnet, SNMP v1/v2, and web browser management enabling value-added connectivity and bandwidth control. Key features include; 802.3ah OAM compliance, VLAN tagging, broadcast storm protection, Far-End-Fault, and Link-Fault-Pass-Through resulting in reliable communications between networks. With link down alarming and a wide range of fiber connectivity options the EL950 is the ideal media converter for environments where connectivity is variable.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Managed Functions**
  - Supports IEEE802.3ah OAM standards
  - Supports SNMPv1, SNMPv2
  - Supports bandwidth control and VLAN base priority tag

- **Wide Operating Temperature**
  - 40°C to 75°C wide operating temperature range design is suitable for installation in outdoor cabinet

- **Link-Fault-Pass-Through (LFPT)**
  - LFPT function let network operators be aware of network connection status
  - When fiber link is down, LFPT function will turn down Ethernet port to inform connected device that the link is down and vise versa

Hardware Specifications

Technology

Standards
- IEEE802.3ab, 1000BASE-T
- IEEE802.3z, 1000BASE-SX/1000BASE-LX
- IEEE802.3x, Full duplex and flow control
- IEEE802.1p, QoS/CoS
- IEEE802.3ah, OAM

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Power

Input
- 12 to 48VDC (DC Terminal Block)
- 12VDC (DC Jack)

Power Consumption
- 3.36W MAX., 0.28A @ 12VDC, 0.07A @ 48VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 42mm (W) x 90mm (D) x 100mm (H)
  (1.65" (W) x 3.54" (D) x 3.94" (H))

Weight
- 0.32Kg (0.7lbs.)

Installation
- DIN-Rail

Interface

Ethernet Port
- 10/100BASE-TX: 1 port
- 100BASE-FX: 1 port

LED Indicators
- Per Unit: Power Status (Power 1, Power 2, Fault), Link-Fault-Pass-Through
- Per Port: 10/100TX: LNK/ACT, Speed
- Per Port 100FX: LNK/ACT

Relay Contact
- Relay contact rating with current Max. 1A @ 60VDC

Environment

Operating Temperature
- 40°C to 75°C (-40°F to 167°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety
UL60950-1, IEC60950-1

EMI
FCC Part 15B, Class A

EN61000-6-3

EN55022

EMS
EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance
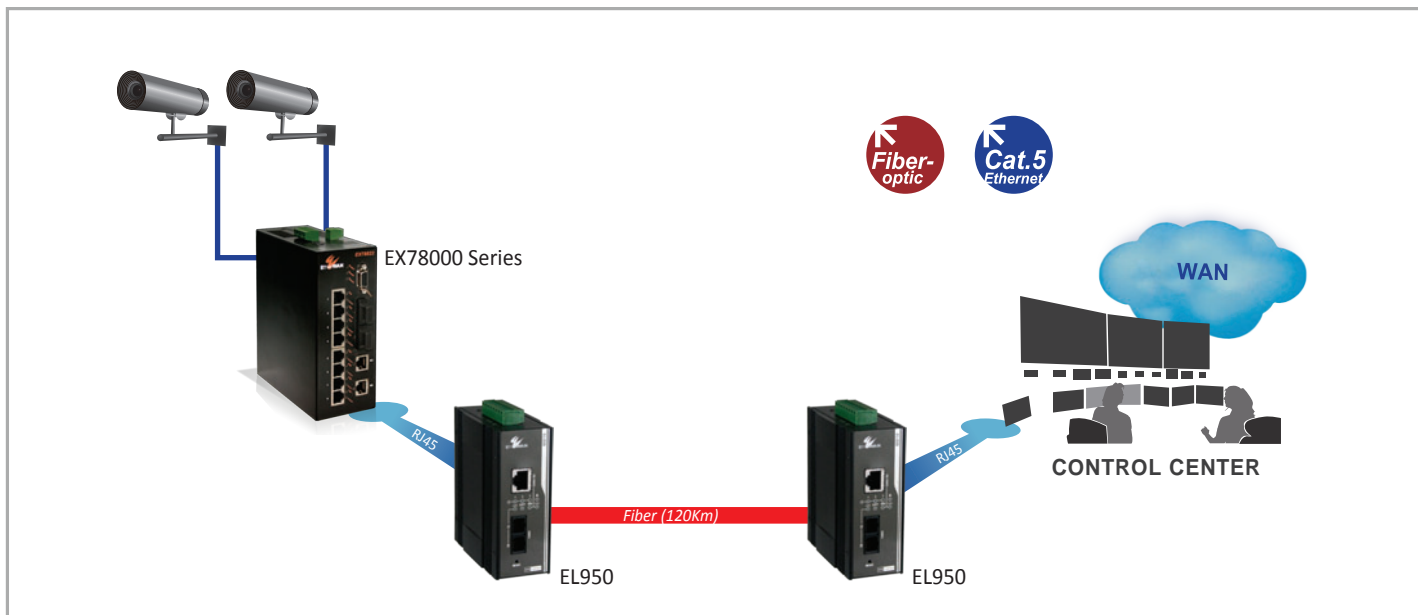IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)
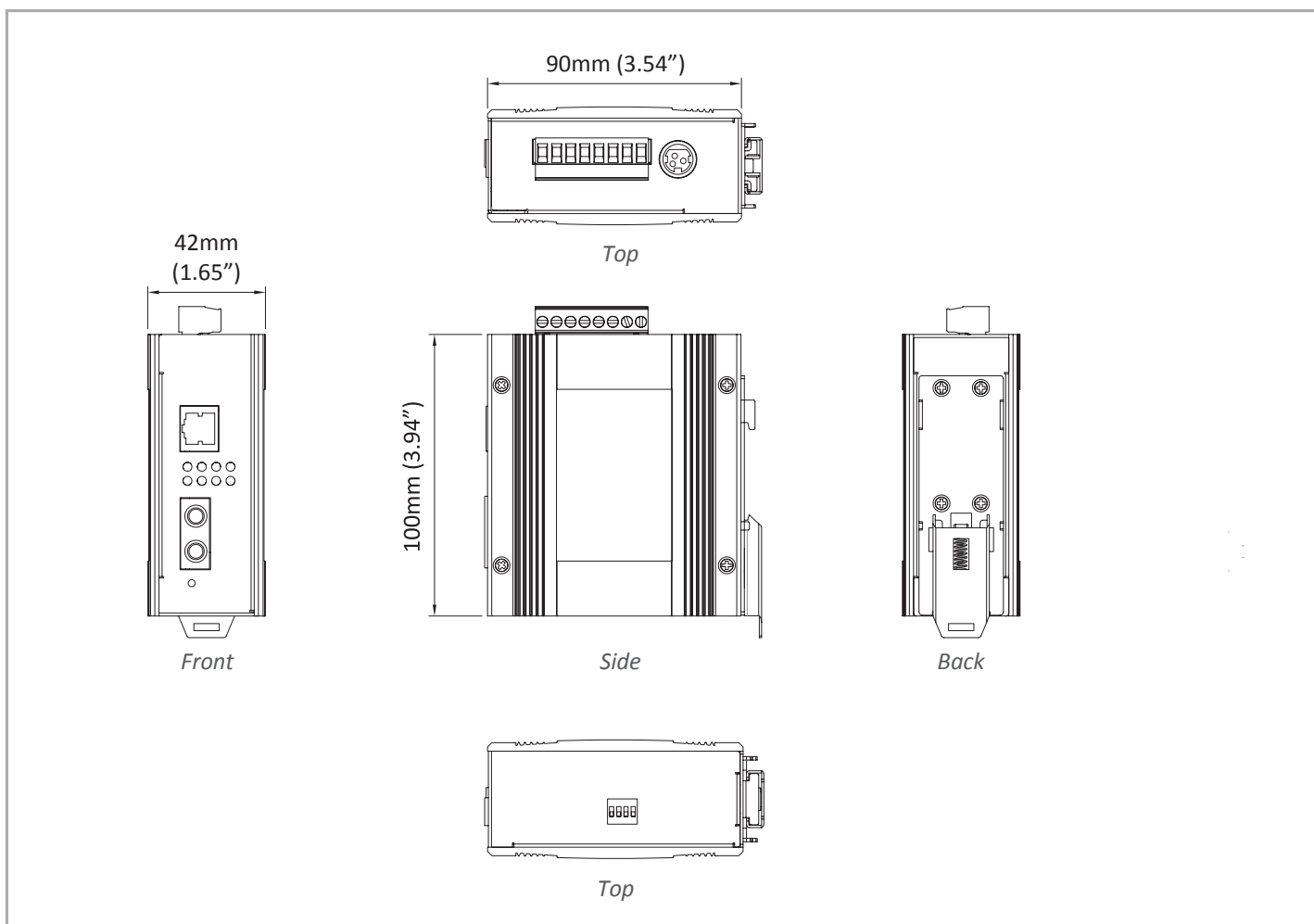
FED STD 101C Method 5007.1 (Free fall w/ package)

NEMA TS1/2
- Environmental requirements for traffic control equipment

Application Diagram

EX78000 Series

Fiber-optic

Cat.5 Ethernet

WAN

RJ45

Fiber (120Km)

EL950

RJ45

EL950

CONTROL CENTER

Dimensions

90mm (3.54")

Top

42mm (1.65")

Front

100mm (3.94")

Side

Back

Top

Ordering Information

Model

EL950-A-Y-1-B	10/100BASE-TX to 100BASE-FX Hardened Media Converter

* DIN-Rail mounting kit included

100FX Fiber Options (Y)

B	Multi Mode (SC) - 2Km
C	Multi Mode (ST) - 2Km
D	Multi Mode (SC) WDM - TX: 1310nm / RX: 1550nm - 2Km
E	Multi Mode (SC) WDM - TX: 1550nm / RX: 1310nm - 2Km
F	Multi Mode (SC) WDM - TX: 1310nm / RX: 1550nm - 5Km
G	Multi Mode (SC) WDM - TX: 1550nm / RX: 1310nm - 5Km
M	Single Mode (ST) - 20KM
N	Single Mode (SC) - 20KM
O	Single Mode (SC) - 40KM
Q	Single Mode (SC) WDM - TX: 1310nm / RX: 1550nm - 20Km
R	Single Mode (SC) WDM -TX:1550nm/RX:1310nm - 20Km
S	Single Mode (SC) WDM -TX:1310nm/RX:1550nm - 40Km
T	Single Mode (SC) WDM -TX:1550nm/RX:1310nm - 40Km

* More 100FX Fiber options also available upon request

Optional Accessories

DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (Optional, For Terminal Block)
DR-60--24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (Optional, For Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (Optional, For Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (Optional, For Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (Optional, For Terminal Block); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EL1032T Series

Industrial 10/100BASE-TX to 100BASE-FX Media Converter with PoE/PSE

Overview

The EL1032T Series provides media conversion between 10/100BASE-T(X) and 100BASE-FX Fiber. Through DIP switch selection, Link-Fault-Pass-Through (LFPT) function can be active or disabled. EL1032T supports IEEE802.3at PoE/PSE standard and can transmit power and data over one RJ45 cable. The EL1032T's industrial design features high shock/vibration resistance, electrical noise immunity and a wide operating temperature range from -10°C to 60°C. EL1032T is the ideal media converter for industrial environments.

EtherWAN – "When Connectivity is Crucial".

Spotlight

- **Power over Ethernet**
    - Supports IEEE802.3at PoE/PSE standard and IEEE802.3af PoE/PSE compatible

- **Dual Power Interfaces**
    - Supports both terminal block and DC jack for power input selections

- **Industrial operating temperature range**
    - From -10°C to 60°C, wide operating temperature is suitable for outdoor cabinet installation

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/FX
- IEEE802.3af/at PoE/PSE

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 228Kb

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Power

Input Voltage
- 48 to 57VDC

Power Consumption
- Device: Max. 3.6W (without PoE)
- PoE power budget: 30W Max. (depends on power input)

PoE Power Output
- IEEE802.3at: up to 30W/port, 50-57VDC, 500mA Max.

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case

Dimensions
- 70mm (W) x 110mm (D) x 30mm (H)
  (2.76" (W) x 4.33" (D) x 1.18" (H))

Weight
- 0.25Kg (0.55lb.)

Installation
- DIN-Rail (top hat type 35mm), Panel, or Wall mounting

Interface

Ethernet Port
- 10/100BASE-TX: 1 port
- 100BASE-FX: 1 port

LED Indicators
- Per Unit: Power
- Per 10/100TX Port : Link/ACT, full-duplex/collision
- Per 100FX Port : Link/ACT
- PoE: PD connect/PD disconnect

Environment

Operating Temperature
- -10°C to 60°C (14°F to 140°F)
  Tested @ -20°C to 70°C (-4°F to 158°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
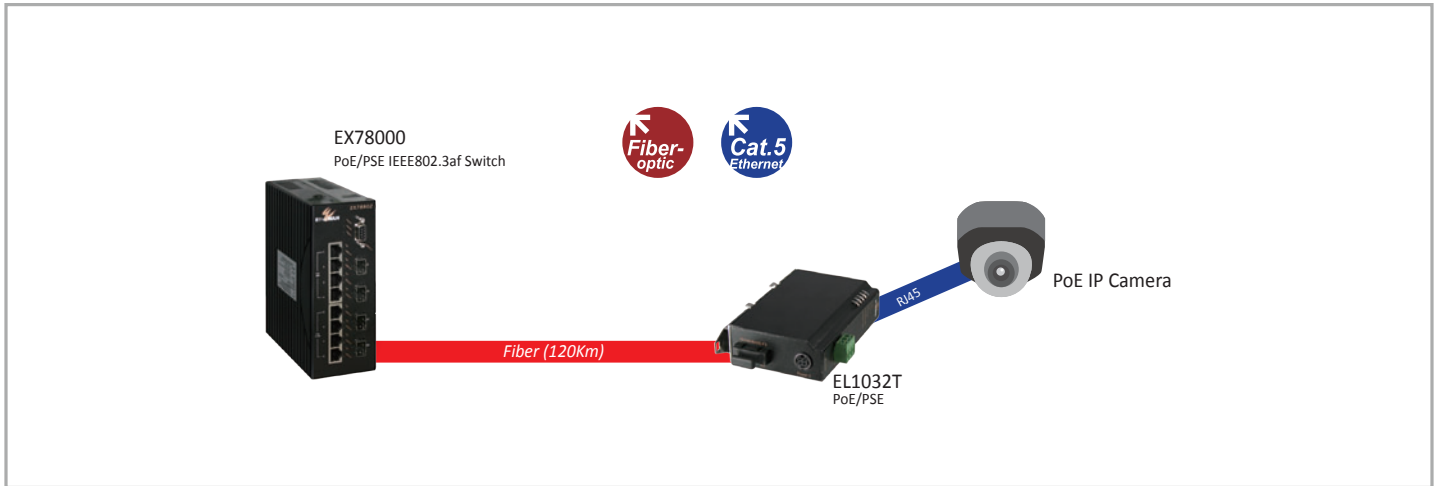- EN61000-4-8 (Magnetic Field Standards)

Envronmental Test Compliance
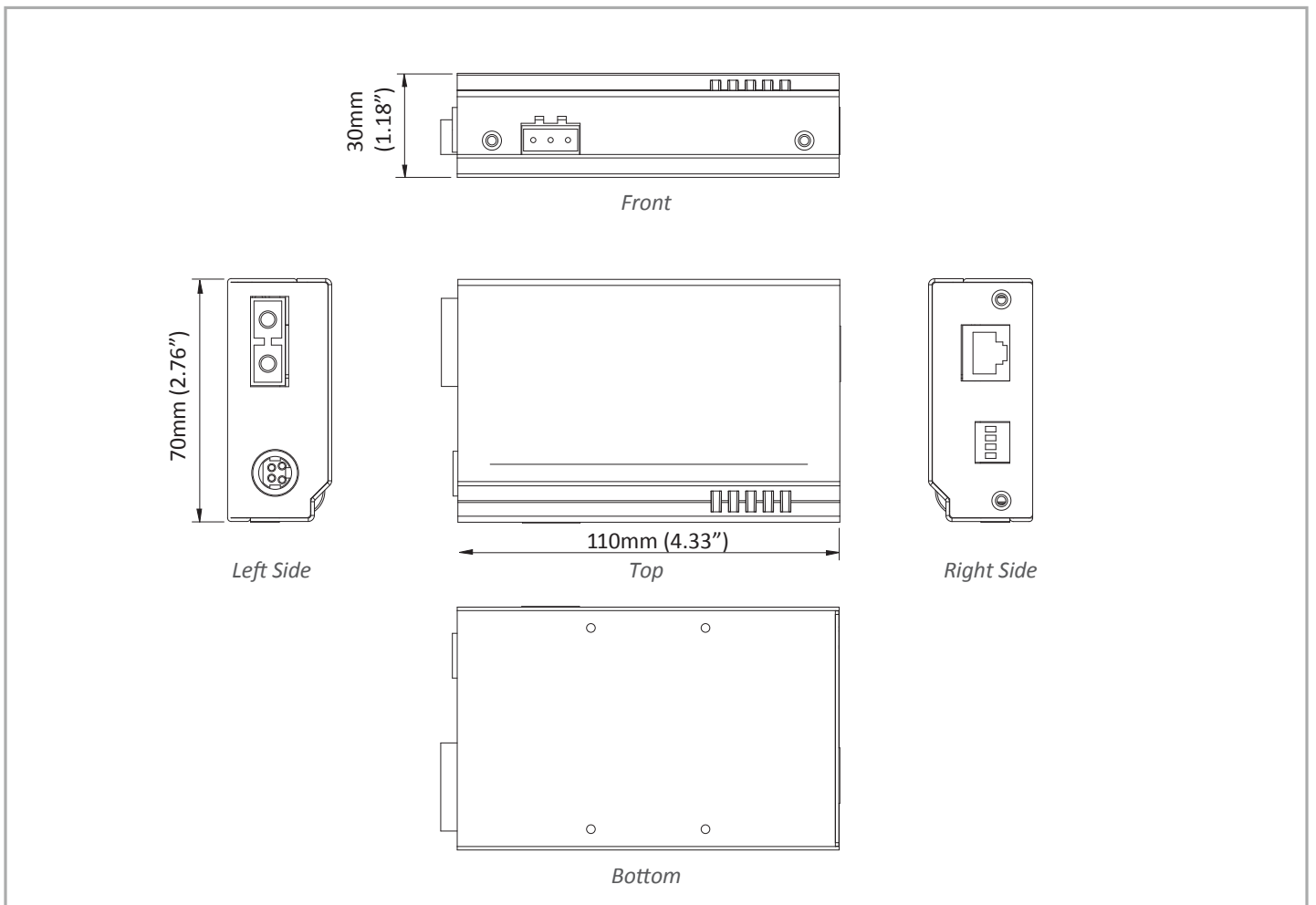
IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

FED STD 101C Method5007.1 (Free fall w/ package)

Application Diagram

EX78000
PoE/PSE IEEE802.3af Switch

Fiber-optic

Cat.5 Ethernet

Fiber (120Km)

RJ45

PoE IP Camera

EL1032T
PoE/PSE

Dimensions

30mm (1.18")

Front

70mm (2.76")

Left Side

110mm (4.33")

Top

Right Side

Bottom

Ordering Information

Model

EL1032T-X0B	Industrial 10/100BASE-TX to 100BASE-FX media converter with IEEE802.3af 15.4W and IEEE802.3at 30W PoE/PSE

* DIN-Rail mounting kit included

100FX Fiber Options (X)

1	Multi Mode (SC)
2	Multi Mode (ST)
A	Single Mode (SC) - 20Km (1310nm)
B	Single Mode (SC) - 40Km (1310nm)
H	Single Mode (ST) - 20Km (1310nm)
6	Multi Mode (SC) WDM -TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM -TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM -TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM -TX:1550nm/RX:1310nm - 5Km
P	Single Mode (SC) WDM -TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM -TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM -TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM -TX:1550nm/RX:1310nm - 40Km

* More 100FX Fiber options also available upon request

Optional Accessories

DR-75-48	75W/1.6A DIN-Rail 48VDC Industrial Power Supply (for terminal block)
MDR-40-48	40W/0.83A 48VDC Industrial Power Supply (for terminal block)
DD-85-48	85W/1.78A 48VDC industrial Power Supply (for terminal block)
DD-85-55	85W/1.78A 55VDC Industrial Power Supply (for terminal block)
GS120A-48	120W/2.5A 48VDC Power Adapter with latched DC jack in plastic housing (for DC jack)

EL1141 Series

IEC61850/IEEE1613 Hardened 10/100BASE-TX to 100BASE-FX Media Converter

EtherWAN

Overview

The EL1141 Series provides media conversion between 10/100BASE-T and 100BASE-SX-LX Fiber. Built specifically for mission-critical applications in harsh environments, the EL1141's hardened design features high shock & vibration resistance, electrical noise immunity, wide operating temperature range from -40°C to 75°C, and ruggedized aluminum housing. The EL1141 passes IEC61850-3/IEEE1613 certifications and is suitable for power substation applications. With triple power inputs, link down alarming, Link-Fault-Pass-Through and a wide range of fiber connectivity options the EL1141 is the ideal media converter for harsh environments.

EtherWAN – "When Connectivity is Crucial".

Spotlight

- **IEC61850-3/IEEE1613 Certification**
  ◦ Specific design for power automation applications

- **EN50121-4 Certification**
  ◦ Specific design for railway environment application

- **Wide Operating Temperature**
  ◦ -40°C to 75°C wide operating temperature range design is suitable for installation in outdoor cabinets

- **Link-Fault-Pass-Through (LFPT)**
  ◦ LFPT function let network operators be aware of network connection status
  ◦ When fiber link is sown, LFPT function will turn down Ethernet port to inform connected device that the link is down and vise versa

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/FX
- IEEE802.3x Full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 128K bits

Processing Type
- Store-and-forward
- Auto Negotiation
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Power

Input Voltage
- 12 to 48VDC (Terminal Block)
- 12VDC (DC Jack)

Power Consumption
- 2.4W MAX. 0.2A @ 12VDC, 0.05A @ 48VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 50mm (W) x 110mm (D) x 135mm (H)
  (1.97" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.8Kg (1.76lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel, or Rack mounting

Interface

Ethernet Port
- 10/100BASE-TX: 1 port
- 100BASE-FX: 1 port

LED Indicators
- Per Unit: Power 1, Power 2, Fault, Link-Fault-Pass-Through
- Per port 10/100TX: Link/Activity, Full-duplex/Collision, Speed
- Per port 100FX: Link/Activity, Full-duplex/Collision

Relay Contact
- Relay contact rating with current 1A @ 30VDC, 0.5A @ 120VAC

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL508

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)
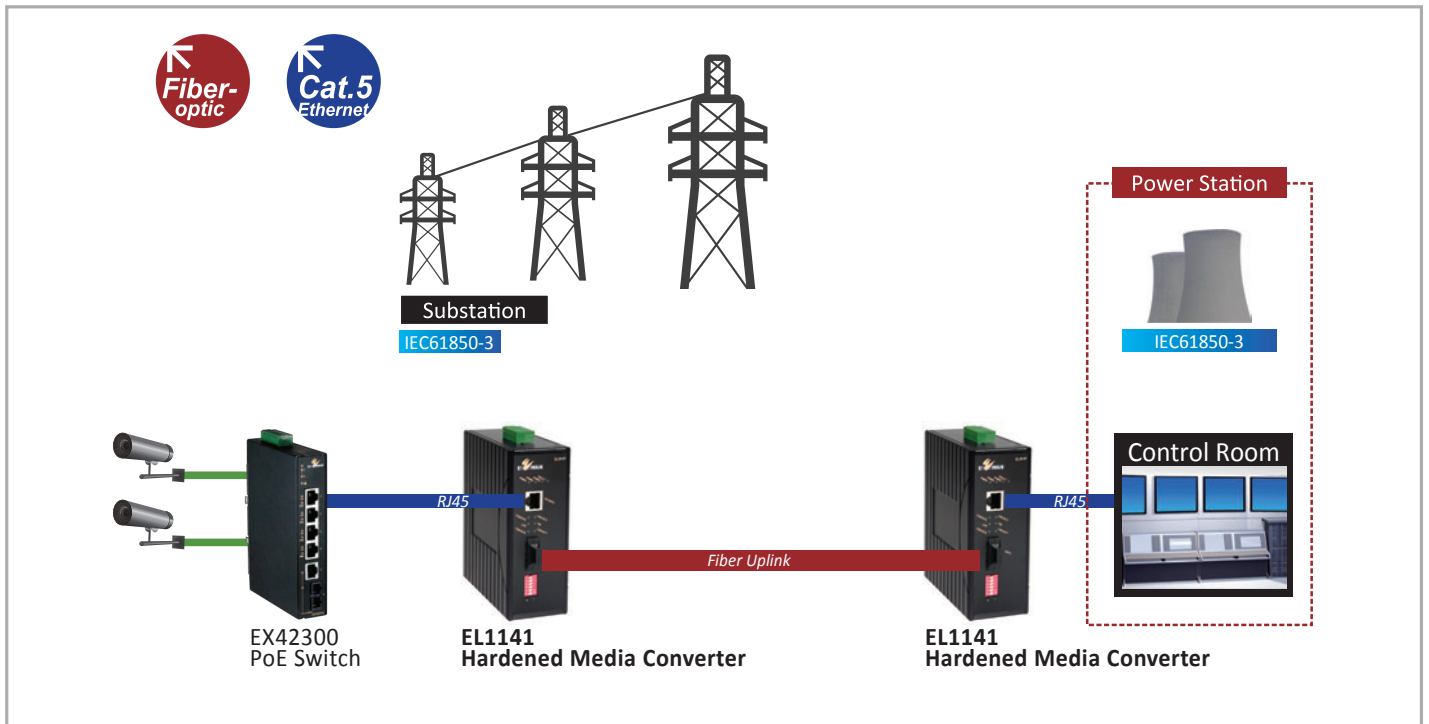
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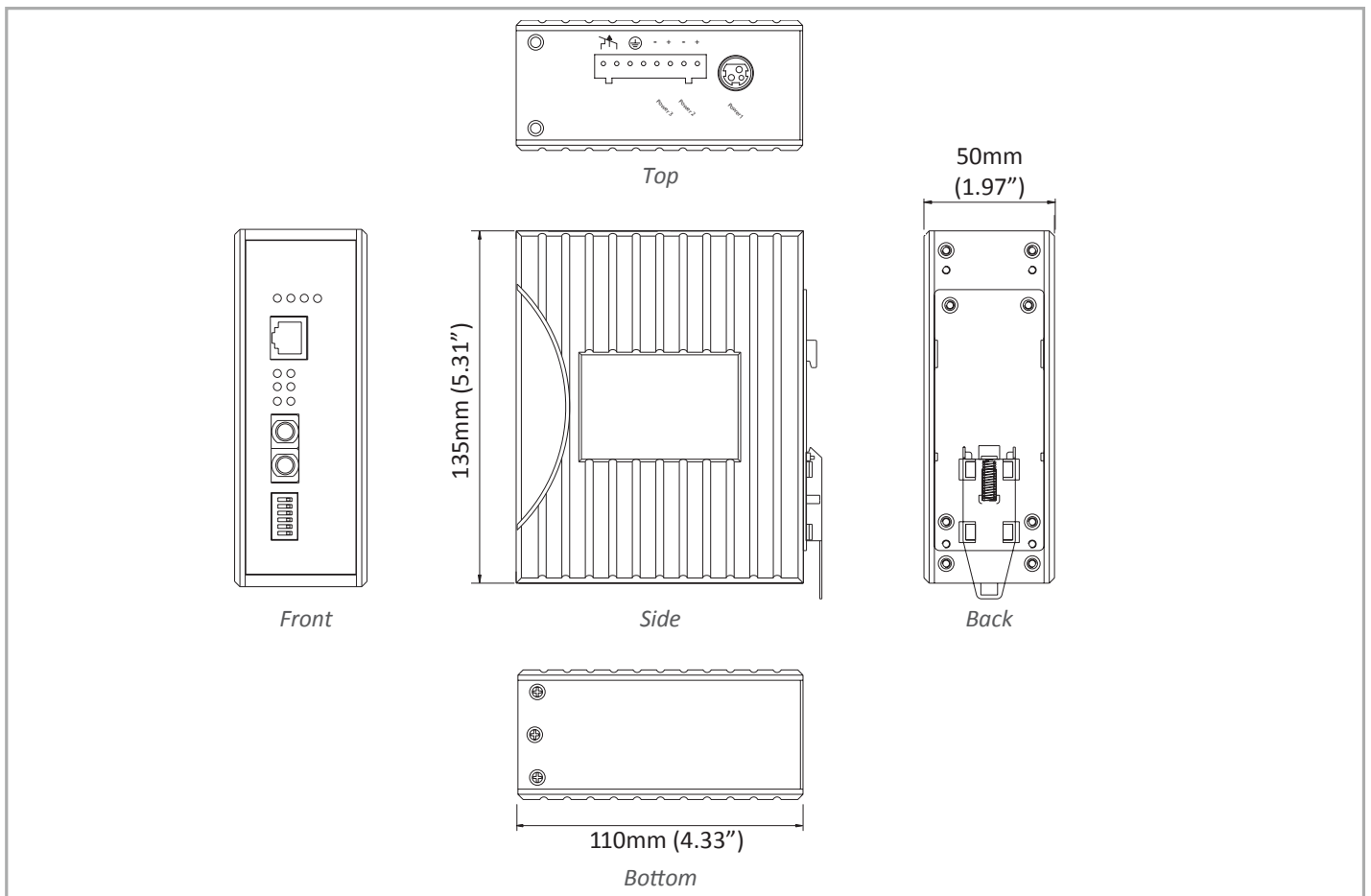
EMS

IEC61850-3 / IEEE1613

EN50121-4

NEMA TS2

Application Diagram

Fiber-optic

Cat.5 Ethernet

Power Station

IEC61850-3

Substation

IEC61850-3

Control Room

RJ45

RJ45

Fiber Uplink

EX42300
PoE Switch

EL1141
Hardened Media Converter

EL1141
Hardened Media Converter

Dimensions

Top

Front

Side

Back

Bottom

50mm (1.97")

135mm (5.31")

110mm (4.33")

Ordering Information

Model

EL1141-X0B	10/100BASE-TX to 100BASE-FX Hardened Media Converter

* DIN-Rail mounting kit included

100FX Fiber Options (X)

1	Multi Mode (SC) - 2Km (1310nm
2	Multi Mode (ST) - 2Km (1310nm)
A	Single Mode (SC) - 20Km (1310nm)
B	Single Mode (SC) - 40Km (1310nm)
H	Single Mode (ST) - 20Km (1310nm)
6	Multi Mode (SC) WDM -TX:1310nm/RX:1550nm - 2Km
7	Multi Mode (SC) WDM -TX:1550nm/RX:1310nm - 2Km
8	Multi Mode (SC) WDM -TX:1310nm/RX:1550nm - 5Km
9	Multi Mode (SC) WDM -TX:1550nm/RX:1310nm - 5Km
P	Single Mode (SC) WDM -TX:1310nm/RX:1550nm - 20Km
Q	Single Mode (SC) WDM -TX:1550nm/RX:1310nm - 20Km
R	Single Mode (SC) WDM -TX:1310nm/RX:1550nm - 40Km
S	Single Mode (SC) WDM -TX:1550nm/RX:1310nm - 40Km

* More 100FX Fiber options also available upon request

Optional Accessories

KP-AA96-480	Panel mounting kit
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (For Terminal Block); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EX42011 Series

Industrial 10/100BASE-TX to 100BASE-FX Media Converter

Overview

The EX42011 Series provides media conversion between 10/100BASE-T and 100BASE-FX Fiber. Built specifically for mission-critical applications in harsh environments, the EX42011's industrial design features high shock/vibration resistance, electrical noise immunity, a wide operating temperature range from -10°C to 60°C. With link down alarming and a wide range of fiber connectivity options, the EX42011 is the ideal media converter for industrial environments.

EtherWAN – "When Connectivity is Crucial".

Spotlight

- **Plug-and-Play Media Converter**
  - Easy installation, plug-and-play without additional configuration, providing store-and-forward data transmission

- **Wide Power Input Range**
  - From 12VDC to 48VDC voltage input range

- **Industrial operating temperature range**
  - From -10°C to 60°C, wide operating temperature is suitable for outdoor cabinet installation

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/FX
- IEEE802.3x Full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 384K bits

Processing Type
- Store-and-forward
- Auto Negotiation
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Power

Input Voltage
- 12 to 48VDC (Terminal Block)

Power Consumption
- 4.3W MAX. 0.3A @ 12VDC, 0.15A @ 24VDC

Protection
- Overload current protection
- Reverse polarity protection

Mechanical

Casing
- Plastic case
- IP30

Dimensions
- 26mm (W) x 70mm (D) x 110mm (H)
  (1.02" (W) x 2.76" (D) x 4.33" (H))

Weight
- 0.2Kg (0.44bs.)

Installation
- DIN-Rail (Top hat type 35mm) mounting

Interface

Ethernet Port
- 10/100BASE-TX: 1 port
- 100BASE-FX: 1 port

LED Indicators
- Per Unit: Power 1
- Per port: Link/Activity (Green)
  Speed (Yellow)

Environment

Operating Temperature
- -10°C to 60°C (-40°F to 167°F)
  Tested @ -20°C to 70°C (-4°F to 158°F)

Storage Temperature
- -25°C to 85°C (-133°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL60950-1

EN60950-1

IEC60950-1

EMI

FCC Part 15B, Class A

EN61000-6-4

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
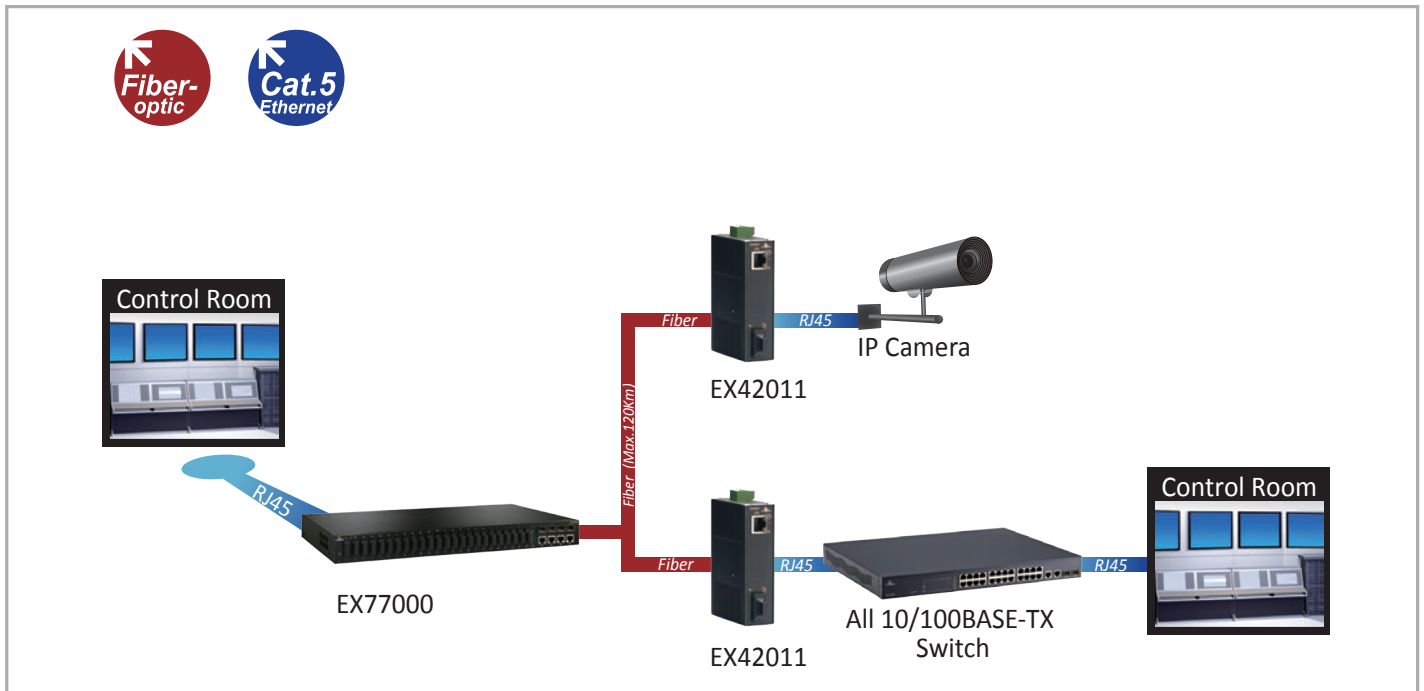- EN61000-4-8 (Magnetic Field Standards)

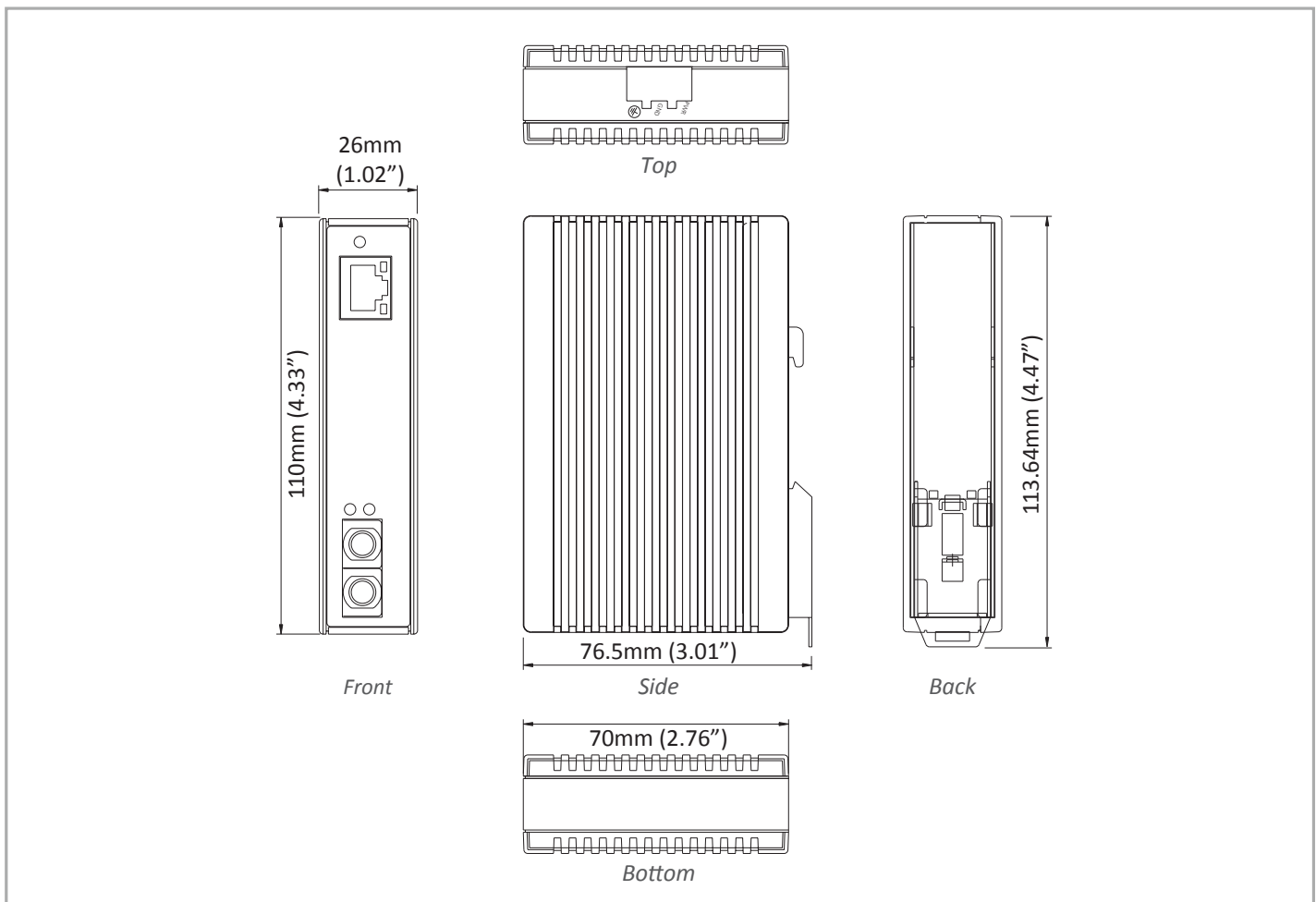### Envronmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Application Diagram

Fiber-optic

Cat.5 Ethernet

Control Room

RJ45

EX77000

Fiber (Max.120Km)

Fiber

EX42011

RJ45

IP Camera

Fiber

EX42011

RJ45

All 10/100BASE-TX Switch

RJ45

Control Room

Dimensions

Top

26mm (1.02")

110mm (4.33")

Front

76.5mm (3.01")

Side

113.64mm (4.47")

Back

70mm (2.76")

Bottom

Ordering Information

Model

EX42011-XY-1-A	Industrial 10/100BASE-TX to 100BASE-FX Media Converter

* DIN-Rail mounting kit included

100FX Fiber Options (XY)

1A	Multi Mode (SC) -2Km (1310nm)
1B	Multi Mode (ST) -2Km (1310nm)
2A	Single Mode (SC) -20Km (1310nm)
2B	Single Mode (SC) -40Km (1310nm)
2D	Single Mode (ST) -20Km (1310nm)
1H	Multi Mode (SC) WDM-TX: 1310nm/RX:1550nm -2Km
1J	Multi Mode (SC) WDM-TX: 1310nm/RX:1550nm -5Km
2E	Single Mode (SC) WDM-TX:1310nm/RX:1550nm -20Km
2F	Single Mode (SC) WDM-TX:1310nm/RX:1550nm -40Km
1I	Multi Mode (SC) WDM-TX: 1550nm/RX:1310nm -2Km
1K	Multi Mode (SC) WDM-TX: 1550nm/RX:1310nm -5Km
2G	Single Mode (SC) WDM-TX:1550nm/RX:1310nm -20Km
2H	Single Mode (SC) WDM-TX:1550nm/RX:1310nm -40Km

* More 100FX Fiber options also available upon request

Optional Accessories

DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (For Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (For Terminal Block); (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

EL200 / EL210 Series
10/100BASE-TX to 100BASE-BX WDM Media Converter

Overview

The EL200 / EL210 Series provide media conversion between 10/100BASE-T(X) and 100BASE-FX Fiber. Easy plug-and-play design facilitates network infrastructure construction. Through DIP switch selection, Link-Fault-Pass-Through (LFPT) function can be active or disabled.

The EL200 / EL210 series is designed for WDM fiber connection applications. This commercial grade media converter supports EtherWAN EMC1600 chassis system for easy group installation. The EL200 / EL210 are the ideal media converter for enterprise environments.

EtherWAN – "When Connectivity is Crucial".

Spotlight

- **WDM Media Converter**
  - Supports multi-mode and single mode fiber line with WDM fiber port

- **DIP Switch Configurable**
  - Link-fault-pass-through enable or disable
  - Full-duplex or half-duplex of Ethernet port enable or disable
  - Full-duplex or half-duplex of fiber port enable or disable

- **Link-Fault-Pass-Through (LFPT)**
  - LFPT function let network operators be aware of network connection status
  - When fiber link is down, LFPT function will turn down Ethernet port to inform connected device that the link is down and vice versa

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/FX
- IEEE802.3x Full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 128K bits

Processing Type
- Store-and-forward
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control

Power

Input Voltage
- 12VDC

Power Consumption
- 1.92W Max. 0.16A @ 12VDC

Mechanical

Casing
- Aluminum Case

Dimensions
- 80.3mm (W) x 109.2mm (D) x 23.8mm (H) (3.16" (W) x 4.30" (D) x 0.94" (H))

Weight
- 150g (0.33lb.)

Installation
- Wall mounting or use with EMC1600 media converter chassis system

Interface

Ethernet Port
- 10/100BASE-TX: 1 port
- 100BASE-FX: 1 port

LED Indicators
- Per Unit: Power Status (Power)
- Per Port: 10/100TX: Link/Activity, Full-duplex/Collision, Speed
- Per port 100FX: Link/Activity, Full-duplex/Collision

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

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

Regulatory Approvals

ISO
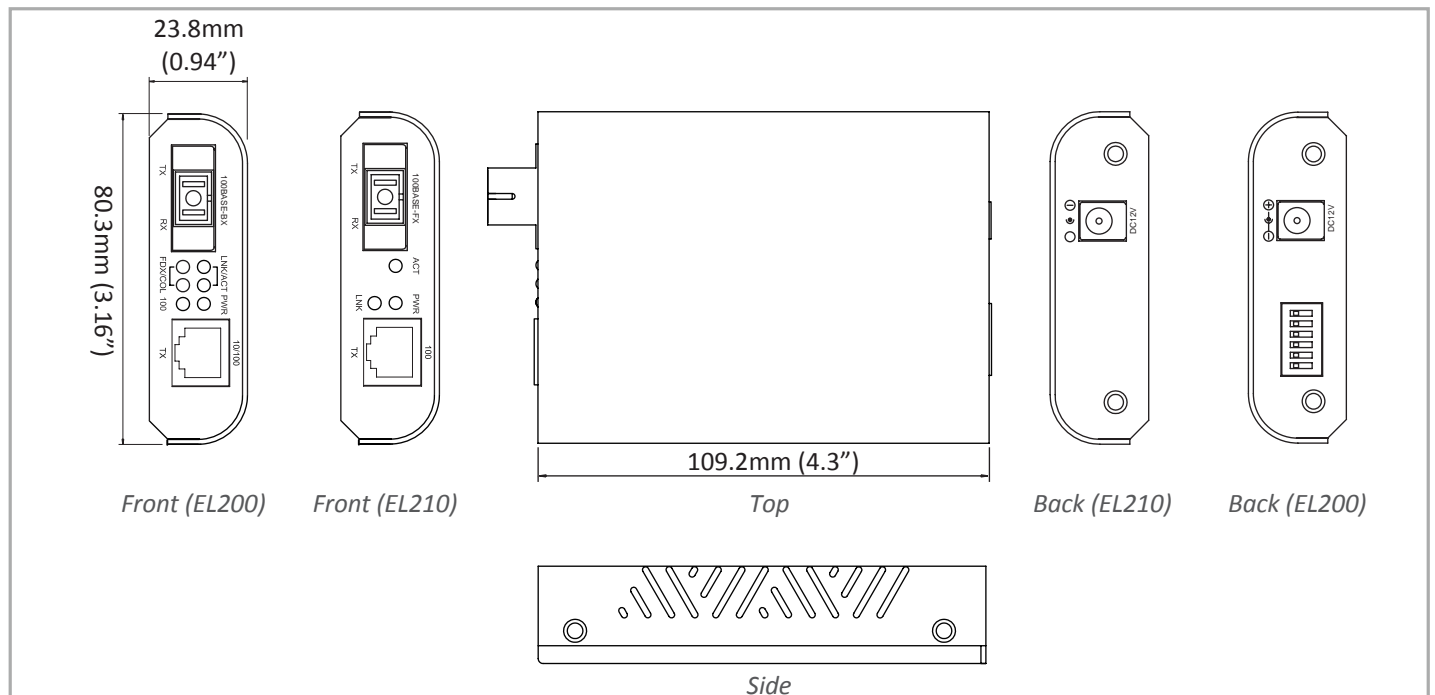- Manufactured in an ISO9001 facility
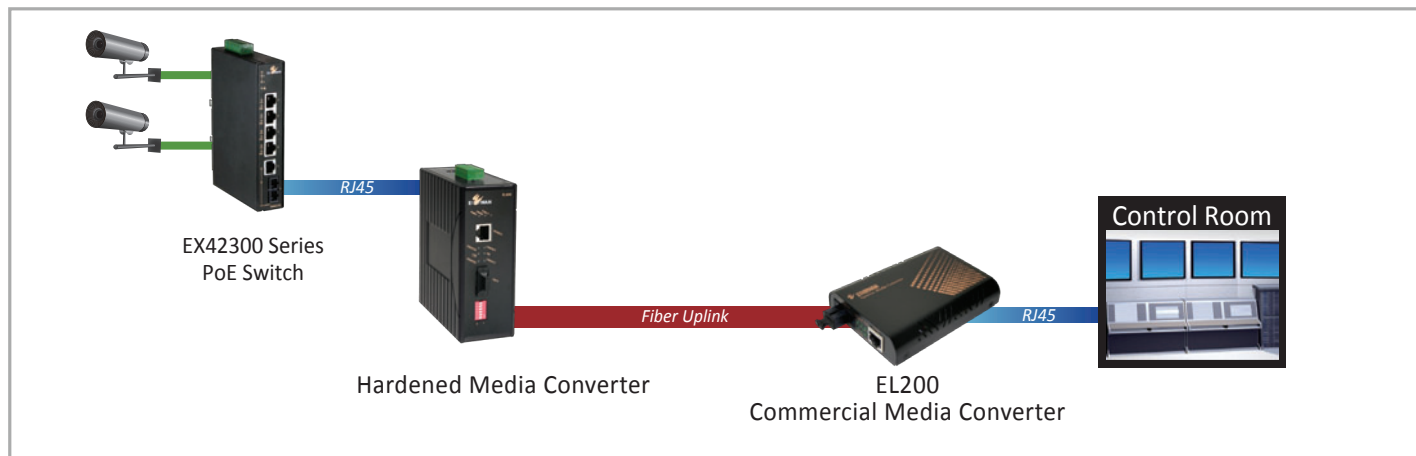
Safety
UL60950-1

Emission Compliances
CE Mark Class A

FCC Part 15 Class A

VCCI Class A

Dimensions

Front (EL200)   Front (EL210)   Top   Back (EL210)   Back (EL200)

Side

Application Diagram

EX42300 Series PoE Switch

Hardened Media Converter

EL200 Commercial Media Converter

Control Room

RJ45

Fiber Uplink

RJ45

Ordering Information

EL200 Model

EL200CA-2	10/100BASE-TX to 100BASE-BX Multi Mode (SC) WDM -TX:1310nm/RX:1550nm -2Km Media Converter
EL200CB-2	10/100BASE-TX to 100BASE-BX Multi Mode (SC) WDM -TX:1550nm/RX:1310nm -2Km Media Converter
EL200CA-5	10/100BASE-TX to 100BASE-BX Multi Mode (SC) WDM -TX:1310nm/RX:1550nm -5Km Media Converter
EL200CB-5	10/100BASE-TX to 100BASE-BX Multi Mode (SC) WDM -TX:1550nm/RX:1310nm -5Km Media Converter
EL200CA-20	10/100BASE-TX to 100BASE-BX Single Mode (SC) WDM -TX:1310nm/RX:1550nm -20Km Media Converter
EL200CB-20	10/100BASE-TX to 100BASE-BX Single Mode (SC) WDM -TX:1550nm/RX:1310nm -20Km Media Converter
EL200CA-40	10/100BASE-TX to 100BASE-BX Single Mode (SC) WDM -TX:1310nm/RX:1550nm -40Km Media Converter
EL200CB-40	10/100BASE-TX to 100BASE-BX Single Mode (SC) WDM -TX:1550nm/RX:1310nm -40Km Media Converter

EL210 Model

EL210CA-2	100BASE-TX to 100BASE-BX Multi Mode (SC) WDM -TX:1310nm/RX:1550nm -2Km Media Converter
EL210CB-2	100BASE-TX to 100BASE-BX Multi Mode (SC) WDM -TX:1550nm/RX:1310nm -2Km Media Converter
EL210CA-5	100BASE-TX to 100BASE-BX Multi Mode (SC) WDM -TX:1310nm/RX:1550nm -5Km Media Converter
EL210CB-5	100BASE-TX to 100BASE-BX Multi Mode (SC) WDM -TX:1550nm/RX:1310nm -5Km Media Converter
EL210CA-20	100BASE-TX to 100BASE-BX Single Mode (SC) WDM -TX:1310nm/RX:1550nm -20Km Media Converter
EL210CB-20	100BASE-TX to 100BASE-BX Single Mode (SC) WDM -TX:1550nm/RX:1310nm -20Km Media Converter
EL210CA-40	100BASE-TX to 100BASE-BX Single Mode (SC) WDM -TX:1310nm/RX:1550nm -40Km Media Converter
EL210CB-40	100BASE-TX to 100BASE-BX Single Mode (SC) WDM -TX:1550nm/RX:1310nm -40Km Media Converter

NOTES :

*EMC1600, proprietary 19" chassis system, can house up to 16 x EL200/EL210 Series Converters
*EMC1600 Chassis System is available separately
*More 100FX fiber options are also available upon request

EL100 / EL110 Series

10/100BASE-TX to 100BASE-FX Media Converter

EtherWAN

UL 60950

Overview

The EL100 / EL110 Series provide media conversion between 10/100BASE-T(X) and 100BASE-FX Fiber. Easy plug-and-play design facilitates network infrastructure construction. Through DIP switch selection, Link-Fault-Pass-Through (LFPT) function can be active or disabled. The EL100 / EL110 series is designed for SC or ST fiber connection applications. The commercial grade media converter supports EtherWAN EMC1600 chassis system for easy group installation. The EL100 / EL110 is the ideal media converter for enterprise environments.

EtherWAN – "When Connectivity is Crucial".

Spotlight

- **SC and ST Media Converter**
  - ◦ Supports multi-mode and single mode fiber line with SC and ST fiber port

- **DIP Switch Configurable**
  - ◦ Link-fault-pass-through enable or disable
  - ◦ Full-duplex or half-duplex of Ethernet port enable or disable
  - ◦ Full-duplex or half-duplex of fiber port enable or disable

- **Link-Fault-Pass-Through (LFPT)**
  - ◦ LFPT function let network operators be aware of network connection status
  - ◦ When fiber link is down, LFPT function will turn down Ethernet port to inform connected device that the link is down and vice versa

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/FX
- IEEE802.3x full duplex and flow control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 128K bits

Processing Type
- Store-and-forward
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control

Power

Input Voltage
- Input: 12VDC

Power Consumption
- 1.92W Max. 0.16A @ 12VDC

Mechanical

Casing
- Aluminum Case

Dimensions
- 80.3mm (W) x 109.2mm (D) x 23.8mm (H) (3.16" (W) x 4.30" (D) x 0.94" (H))

Weight
- 150g (0.33lb.)

Installation
- Wall mounting or use with EMC1600 media converter chassis system

Interface

Ethernet Port
- 10/100BASE-TX: 1 port
- 100BASE-FX: 1 port

LED Indicators
- Per Unit: Power Status (Power)
- Per Port: 10/100TX: Link/Activity, Full-duplex/Collision, Speed
- Per port 100FX: Link/Activity, Full-duplex/Collision

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

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

Regulatory Approvals

ISO
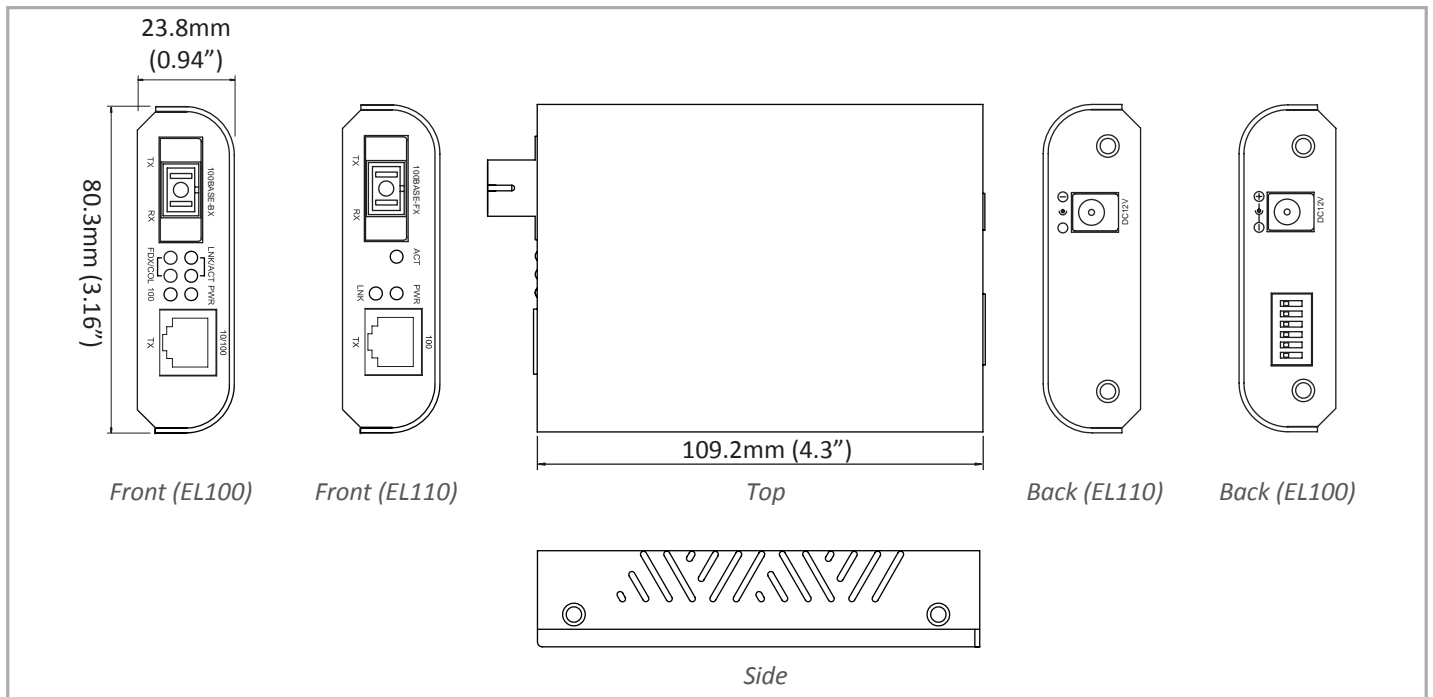- Manufactured in an ISO9001 facility
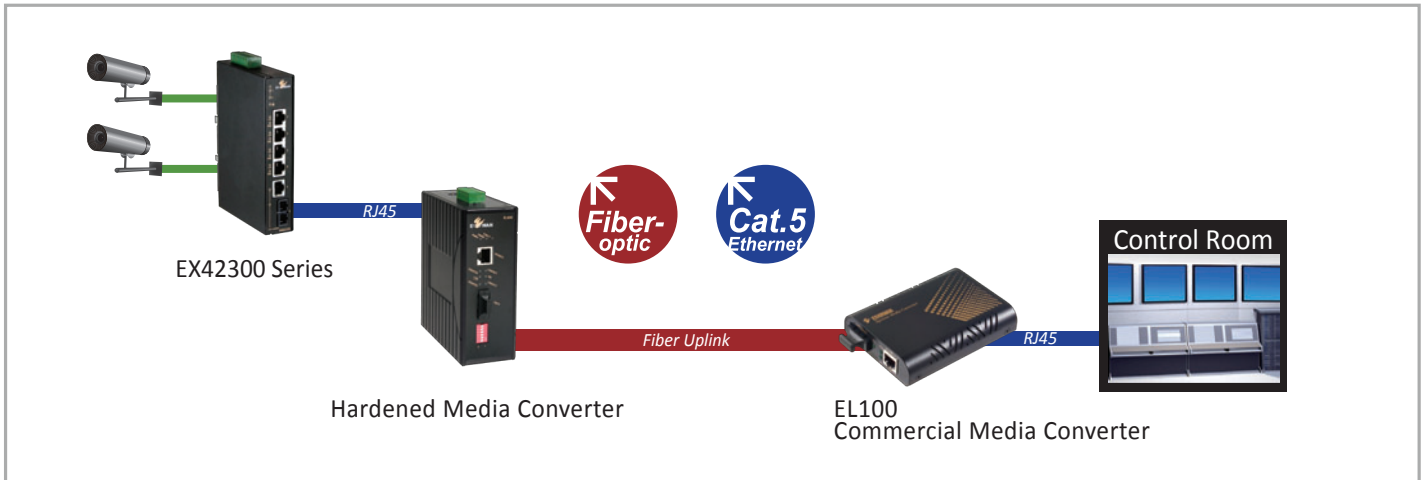
Safety

UL60950-1

Emission Compliance

CE Mark Class A

FCC Part 15B Class A

VCCI Class A

Dimensions

Front (EL100) Front (EL110) Top Back (EL110) Back (EL100)

Side

Application Diagram

EX42300 Series	
Hardened Media Converter	EL100 Commercial Media Converter

Ordering Information

EL100 Series

EL100C	10/100BASE-TX to 100BASE-FX Multi Mode (SC) 2Km Media Converter (1310nm)
EL100T	10/100BASE-TX to 100BASE-FX Multi Mode (ST) 2Km Media Converter (1310nm)
EL100C-20	10/100BASE-TX to 100BASE-FX Single Mode (SC) -20Km Media Converter (1310nm)
EL100T-20	10/100BASE-TX to 100BASE-FX Single Mode (ST) -20Km Media Converter (1310nm)
EL100L-20	10/100BASE-TX to 100BASE-FX Single Mode (SFF Dual LC) -20Km Media Converter (1310nm)
EL100C-40	10/100BASE-TX to 100BASE-FX Single Mode (SC) -40Km Media Converter (1310nm)

EL110 Series

EL110C	100BASE-TX to 100BASE-FX Multi Mode (SC) Media Converter
EL110T	100BASE-TX to 100BASE-FX Multi Mode (ST) Media Converter
EL110C-20	100BASE-TX to 100BASE-FX Single Mode (SC) -20Km Media Converter (1310nm)
EL110T-20	100BASE-TX to 100BASE-FX Single Mode (ST) -20Km Media Converter (1310nm)
EL110C-40	100BASE-TX to 100BASE-FX Single Mode (SC) -40Km Media Converter (1310nm)

NOTES :

*EMC1600, proprietary 19" chassis system, can house up to 16 x EL100/EL110 Series Converters
*EMC1600 Chassis System is available separately
*More 100FX fiber options are also available upon request

EM120 Series

100BASE-FX Multi-Mode/Single-Mode to 100BASE-FX Single-Mode Media Converter

Overview

The EM120 Series provides media conversion between 100BASE-FX Fiber and 100BASE-FX Fiber. Easy plug-and-play design facilitates network infrastructure construction. The EM120 series is designed for SC, ST and WDM fiber connection selections. The commercial grade media converter supports EtherWAN EMC1600 chassis system for easy group installation. The EM120 is the ideal media converter for enterprise environments.

EtherWAN – "When Connectivity is Crucial".

Spotlight

- **Plug-and-Play Media Converter**
  - Easy installation, plug-and-play without additional configuration, providing store-and-forward data transmission

- **Fiber to Fiber Conversion**
  - Supports single mode or multi-mode fiber connector
  - Supports SC/ST/WDM fiber connector

- **Optional Chassis System**
  - Supports wall mounting or EtherWAN's EMC1600 chassis system for easy group installation with power redundancy

Hardware Specifications

Technology

Standards
• IEEE802.3u 100BASE-TX/FX

Forward and Filtering Rate
• 148,810pps for 100Mbps

Power

Input Voltage
• 12VDC

Power Consumption
• 2.76W Max. 0.23A @ 12VDC

Mechanical

Casing
• Aluminum Case

Dimensions
• 80.3mm (W) x 109.2mm (D) x 23.8mm (H)
  (3.16" (W) x 4.30" (D) x 0.94" (H))

Weight
• 150g (0.33lb.)

Installation
• Wall mounting or use with EMC1600 media converter chassis system

Interface

Ethernet Port
• 100BASE-FX: 2 ports

LED Indicators
• Per Unit: Power Status (Power), Link

Environment

Operating Temperature
• 0°C to 45°C (32°F to 113°F)

Storage Temperature
• -10°C to 70°C (14°F to 158°F)

Ambient Relative Humidity
• 5% to 95% (non-condensing)

Regulatory Approvals

ISO
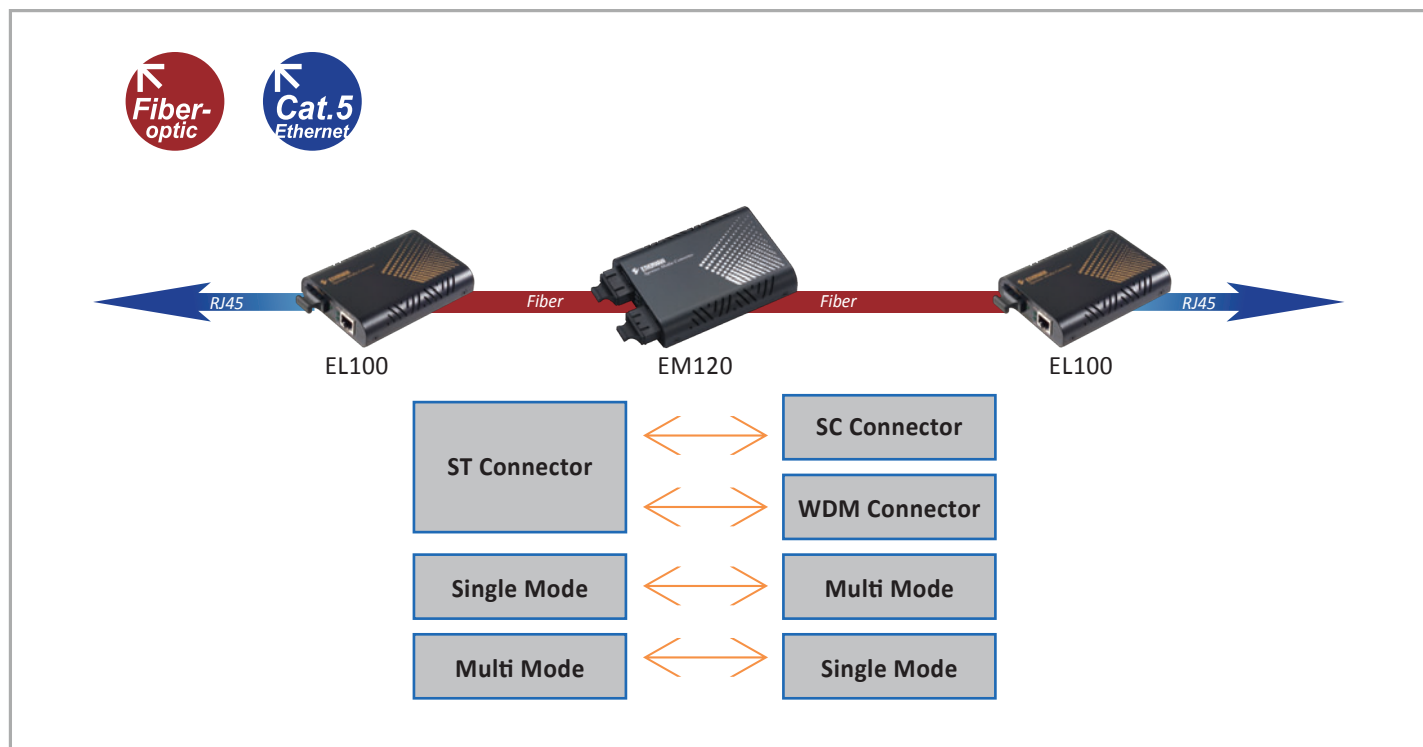• Manufactured in an ISO9001 facility

Emission Compliances

CE Mark Class A

FCC Part 15B Class A

Dimensions

Front *Top* *Back*

109.2mm (4.3")

80.3mm (3.16")

23.8mm (0.94")

Side
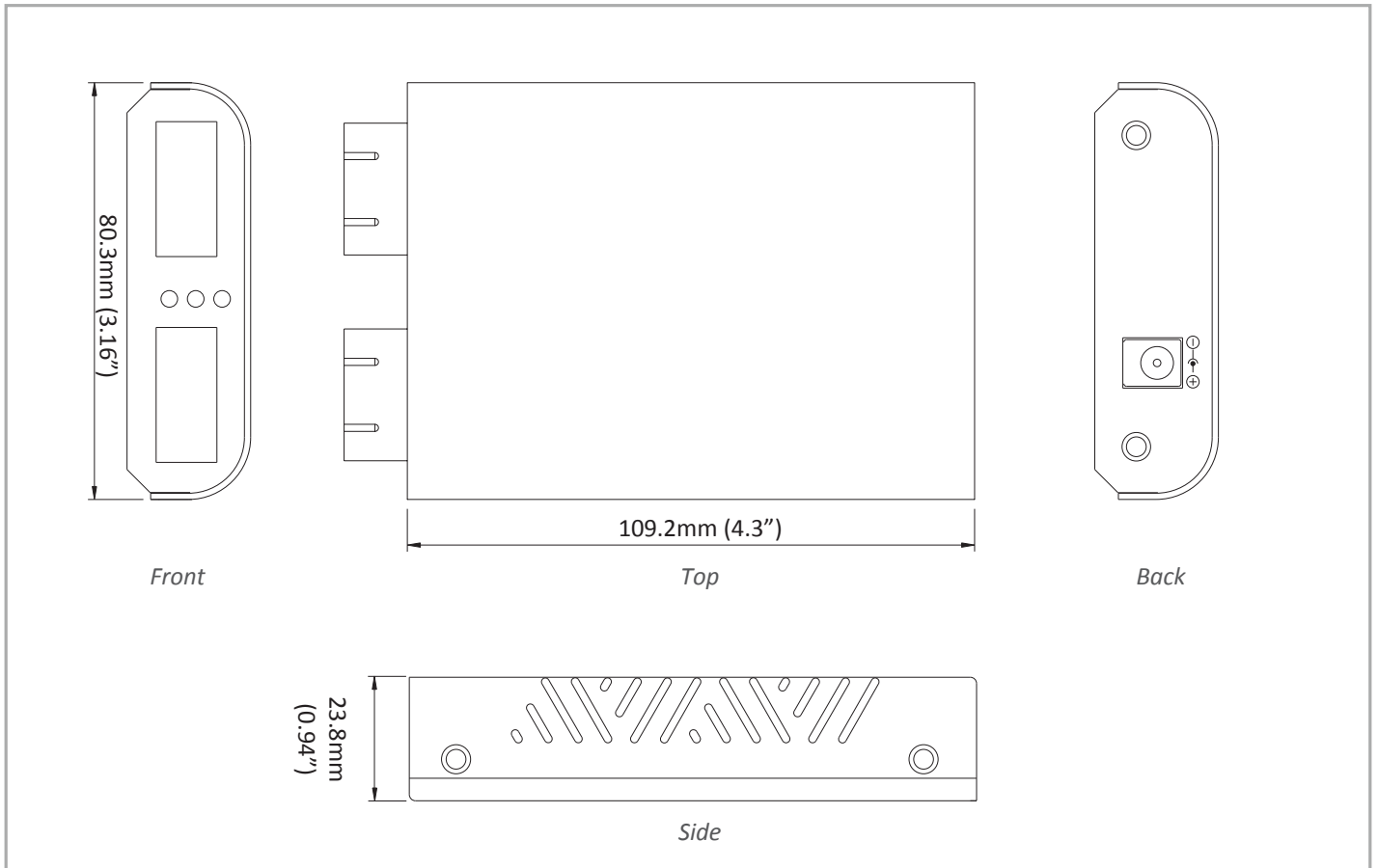
Application Diagram

Ordering Information

Model

Model	Description
EM120MCC-40	100BASE-FX MultiMode(SC) to 100BASE-FX Single Mode(SC)-40Km Media Converter(1310nm)
EM120MTC-40	100BASE-FX MultiMode(ST) to 100BASE-FX Single Mode(SC)-40Km Media Converter(1310nm)
EM120MCT-20	100BASE-FXMultiMode(SC) to 100BASE-FX Single Mode(ST)-20Km Media Converter(1310nm)
EM120MTT-20	100BASE-FXMultiMode(ST) to 100BASE-FX Single Mode(ST)-20Km Media Converter(1310nm)
EM120MCCA-20	100BASE-BXMultiMode(SC) to 100BASE-FX Single Mode(SC)WDM-TX:1310nm/RX:1550nm-20Km Media Converter
EM120MCCB-20	100BASE-BXMultiMode(SC)to 100BASE-FX Single Mode(SC)WDM-TX:1550nm/RX:1310nm-20Km Media Converter
EM120MTCA-20	100BASE-BXMultiMode(ST)to100BASE-FX Single Mode(SC)WDM-TX:1310nm/RX:1550nm-20Km Media Converter
EM120MTCB-20	100BASE-BXMultiMode(ST)to100BASE-FX Single Mode(SC)WDM-TX:1550nm/RX:1310nm-20Km Media Converter

NOTES :

* Single Mode to Single Mode version converters are also available
* EMC1600, proprietary 19" chassis system, can house up to 16 x EM120 Series Converters
* EMC1600 Chassis System is available separately
* More 100FX fiber options are also available upon request

EL50 Series

Mini-Sized 10/100BASE-TX to 100BASE-FX Media Converter

Overview

The EL50 Series provides media conversion between 10/100BASE-T(X) and 100BASE-FX Fiber. Easy plug-and-play design facilitates network infrastructure construction. The EL50 series is designed for SC or ST fiber connection applications. The compact size of EL50 is suitable for space limit installation and EL50 is the ideal media converter for enterprise environments.

EtherWAN – "When Connectivity is Crucial".

Spotlight

- **Mini-Sized Media Converter**
  - Supports SC/ST/WDM and both single mode and multi-mode fiber connectors

- **Plug-and-Play Media Converter**
  - Easy installation, plug-and-play without additional configuration, providing store-and-forward data transmission

- **UL60950-1 Certification**
  - Certified by UL60950-1 standard and providing protections to installers from risk of injury or damage

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX/100BASE-FX

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 128K bits

Processing Type
- Store-and-Forward

Power

Input
- DC Jack : 12VDC, 1.92W MAX. 0.08A
- Terminal Block : 24VAC, 0.17A

Power Consumption
- 1.92W Max. 0.16A @ 12VDC

Mechanical

Casing
- Metal case

Dimensions
- 54.2mm (W) x 80.3mm (D) x 21.9mm (H)
  (2.13" (W) x 3.16" (D) x 0.86" (H))

Weight
- 140g (0.31lb.)

Installation
- Desktop

Interface

Ethernet Port
- 10/100BASE-TX: 1 port
- 100BASE-FX: 1 port

LED Indicators
- Per Port 10/100TX: Link/Activity
- Per port 100FX: Link/Activity

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

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

Regulatory Approvals

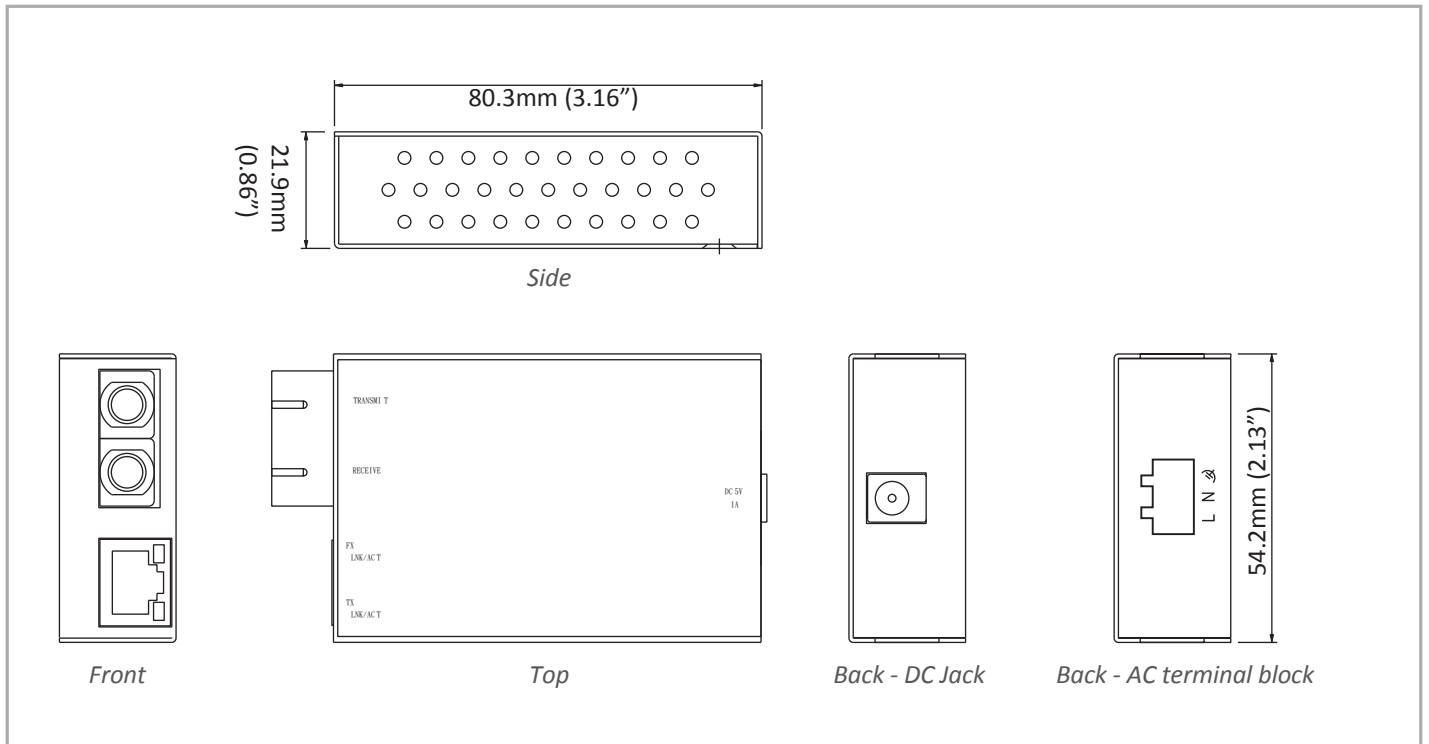**ISO**
- Manufactured in an ISO9001 facility

Safety

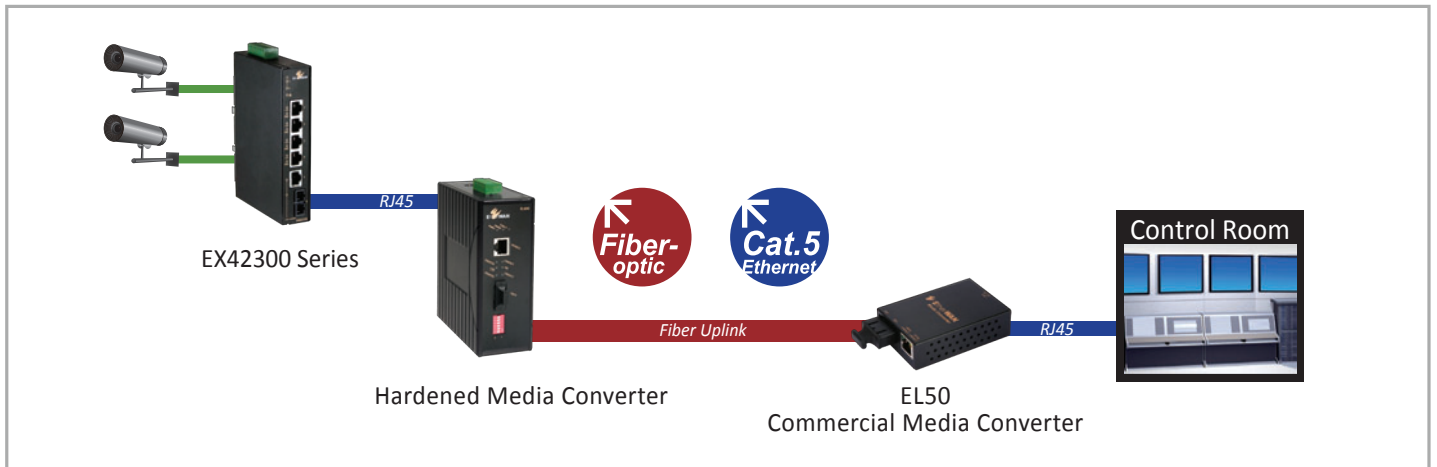UL60950-1

Emission Compliances

CE Mark Class A

FCC Part 15B Class A

VCCI Class A

Dimensions

Side

Front *Top* *Back - DC Jack* *Back - AC terminal block*

Application Diagram

Ordering Information

Model

EL50XX-YY-ZZ	10/100BASE-TX to 100BASE-FX Media Converter

100FX Fiber Type-Distance Options (XX-YY)

T	Multi Mode (ST) -2Km (1310nm)
C	Multi Mode (SC) -2Km (1310nm)
T-20	Single Mode (ST) - 20Km (1310nm)
C-20	Single Mode (SC) - 20Km (1310nm)
C-40	Single Mode (SC) - 40Km (1310nm)
CA-2	Multi Mode (SC) WDM -TX:1310nm/RX:1550nm - 2Km
CB-2	Multi Mode (SC) WDM -TX:1550nm/RX:1310nm - 2Km
CA-5	Multi Mode (SC) WDM -TX:1310nm/RX:1550nm - 5Km
CB-5	Multi Mode (SC) WDM -TX:1550nm/RX:1310nm - 5Km
CA-20	Single Mode (SC) WDM -TX:1310nm/RX:1550nm - 20Km
CB-20	Single Mode (SC) WDM -TX:1550nm/RX:1310nm - 20Km
CA-40	Single Mode (SC) WDM -TX:1310nm/RX:1550nm - 40Km
CB-40	Single Mode (SC) WDM -TX:1550nm/RX:1310nm - 40Km

Power Adapter Options (ZZ)

A	with external power adapter for AU
E	with external power adapter for EU
J	with external power adapter for JP
K	with external power adapter for UK
U	with external power adapter for USA
AC	with 24VAC Terminal Block Power Interface

More 100FX fiber options are also available upon request

EMC1600 Series

16-Bay Media Converter and Ethernet Extender Chassis

Overview

The EMC1600 is a 16-Bay chassis specifically designed to house and power selected EtherWAN Media Converters and Ethernet Extenders in a 19" rack enclosure.

The hot swappable design enables easy installation, product additions, and deletions of EtherWAN Media Converters and Ethernet Extenders without interrupting existing communications within the chassis. Each bay is electrically isolated from each other with fused over-current protection resulting is unprecedented reliability. The redundant internal power supplies provide both power redundancy and load sharing. Support for both AC & DC power input options allows the EMC1600 to be used worldwide. With its solid metal enclosure, standard 19" rack-mount and two-unit height design, the EMC1600 is ideal for interconnecting disparate network media and extending Ethernet beyond its boundaries.

EtherWAN — "When Connectivity is Crucial."

Spotlight

- **Hot-Swappable**
  - The chassis system is capable of hot-swap installations of selected EtherWAN's media converter and Ethernet extender Model

- **16-Bay Rackmount Chassis**
  - Powers up 16 media converters with redundant power supply modules

- **Supports EtherWAN's Ethernet Extenders and Media Converters**
  - Supported media converter models include EL2321, EL2211, EL2315, EM1100/EM2100, EM1000/EM2000, EM1000S/EM2000S, EM1020, EM120, EL100/EL200 and EL110/EL210 series
  - Supported Ethernet extender models include ED3101 and ED3331 Series, but the operating temperature is limited from 0°C to 45°C

Hardware Specifications

Power

Input
- 100 - 240VAC, 50 - 60Hz Internal Universal PSU
- ± 48VDC

Power Consumption
- System: 5.4W Max

Protection
- Over current protection

Mechanical

Casing
- Metal case

Dimensions
- 440mm (W) x 276mm (D) x 90mm (H)
  (17.32" (W) x 10.87" (D) x 3.54" (H))
- Standard 19" rack-mount size, two-unit-height

Weight
- 6.8Kg (14.96lbs.)

Installation
- Rack mounting

Interface

LED Indicators
- Per Unit: Power Status (Power)

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

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

Regulatory Approvals
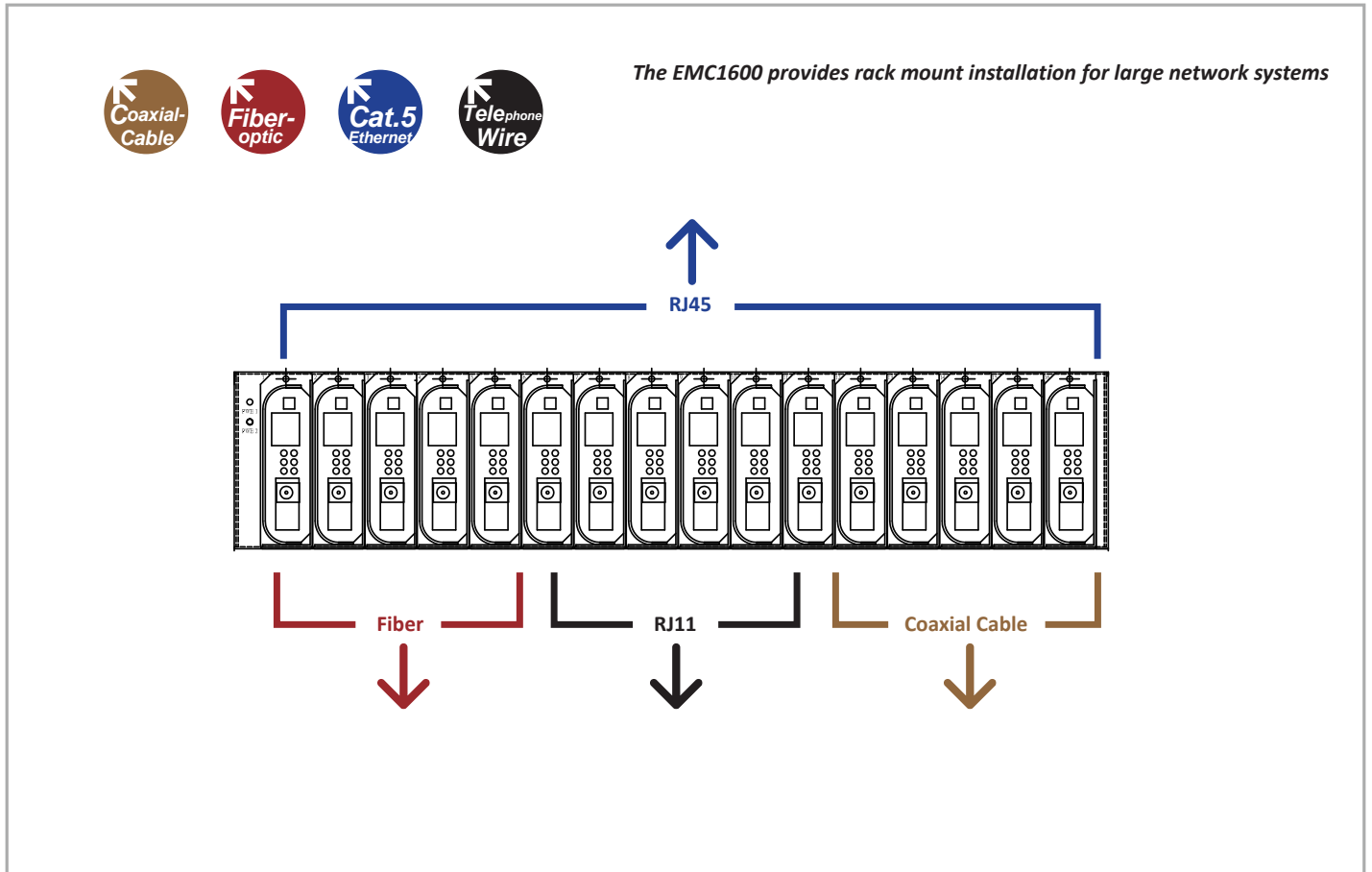
ISO
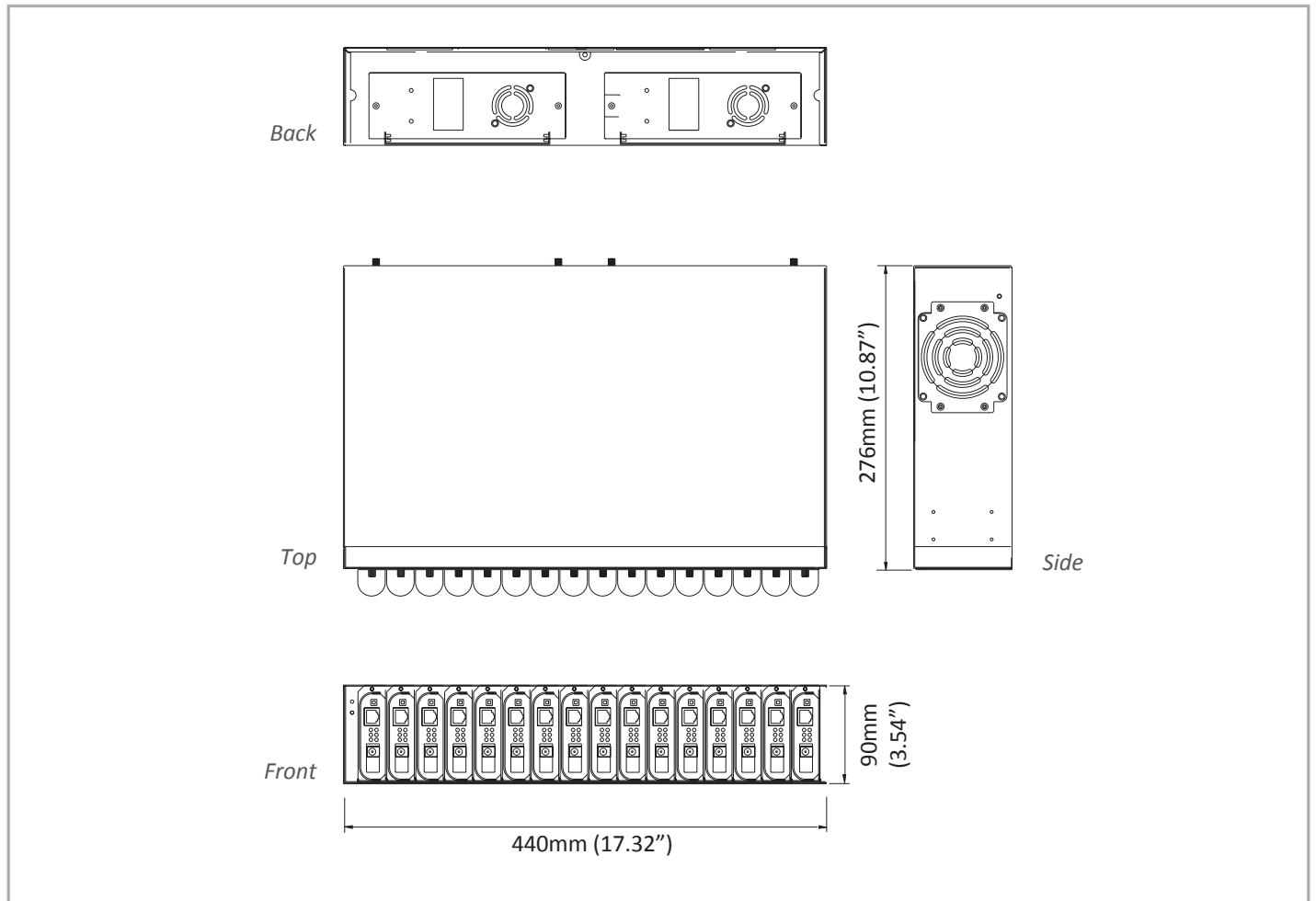- Manufactured in an ISO9001 facility

Safety
UL60950-1

Emission Compliances
CE Mark Class A
FCC Part 15B Class A

Application Diagram

The EMC1600 provides rack mount installation for large network systems

Dimensions

Back

Top

276mm (10.87")

Side

90mm (3.54")

Front

440mm (17.32")

Ordering Information

Model

EMC1600	16-Bay Media Converter and Ethernet Extender Chassis, including 2 AC Power Supplies (EMC1600-RPSA)
EMC1600-RPSA	Redundant AC Power Supply (84W) for EMC1600
EMC1600-RPSA2	Redundant AC Power Supply (108W) for EMC1600
EMC1600-RPSD	Redundant DC 48V Power Supply (65W) for EMC1600

EMC400

4-Bay Commercial Media Converter Chassis

Overview

The EMC400, 4-slot Din-Rail mount chassis brings Flexibility, Reliability and Redundancy to mission critical network infrastructures. Its flexible design allows for a variety of EtherWAN Media Converters and Ethernet Extenders to be combined into one chassis giving users a solution that fits the needs of each individual network installation. Designed with dual power inputs, the EMC400 allows for two separate power sources to increase reliability and dependability eliminating the single point of failure of a single power source. With its hot swappable design, the EMC400 allows existing communications to remain uninterrupted during the simple installation of EtherWAN Media Converters and Ethernet Extenders. In addition, the EMC400 incorporates Electrical Isolation with fused overcurrent protection between devices within its chassis. With its solid metal enclosure, DIN-Rail mount design, and hot swappable technology, the EMC400 is the ideal solution for reliably interconnecting separated network media and pushing Ethernet beyond its boundaries.

EtherWAN – "When Connectivity is Crucial."

Spotlight

- **Hot-Swap Installation**
  - Hot-swappable installation of Media Converters and Ethernet Extenders.

- **4-Slot DIN-Rail Chassis**
  - Supports redundant terminal block power inputs.

- **Supports EtherWAN's Ethernet Extenders and Media Converters**
  - Supported models include EL2321, EL2211, EL2315, EM1100/EM2100, EM1000/EM2000, EM1000S/EM2000S, EM1020, EM120, EL100/EL200, EL110/EL210, ED3331 and ED3501 series.

Hardware Specifications

Power

Input
- Power supply input: 90 - 264VAC
- EMC400 chassis input: 12VDC

Wiring
- Minimum cable AWG: 16 AWG

Power Consumption
- Max. 19W@ Full installation, depending on installed devices

Protection
- Over current protection

Mechanical

Casing
- Steel Electrogalvanized ColdRolled Coil (SECC)

Dimensions
- 130mm(W) x 164mm(D) x 92.1mm(H)
  (5.12"(W) x 6.46"(D) x 3.63"(H))

Weight
- 1.37kg (3.02lb)

Installation
- DIN-Rail

Interface

LED Indicators
- ⏻ 1: On, power input 1 is connected
     Off, power input 1 is disconnected

- ⏻ 2: On, power input 2 is connected
     Off, power input 2 is disconnected

Environment

Operating Temperature
- -20°C to 60°C (-4°F to 140°F)

Storage Temperature
- -20°C to 70°C (-4°F to 158°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4
- EN55022

EMS

EN61000-6-2

EN61000-4-2 (ESD Standards)

EN61000-4-3 (Radiated RFI Standards)

EN61000-4-4 (Burst Standards)

EN61000-4-5 (Surge Standards)

EN61000-4-6 (Induced RFI Standards)
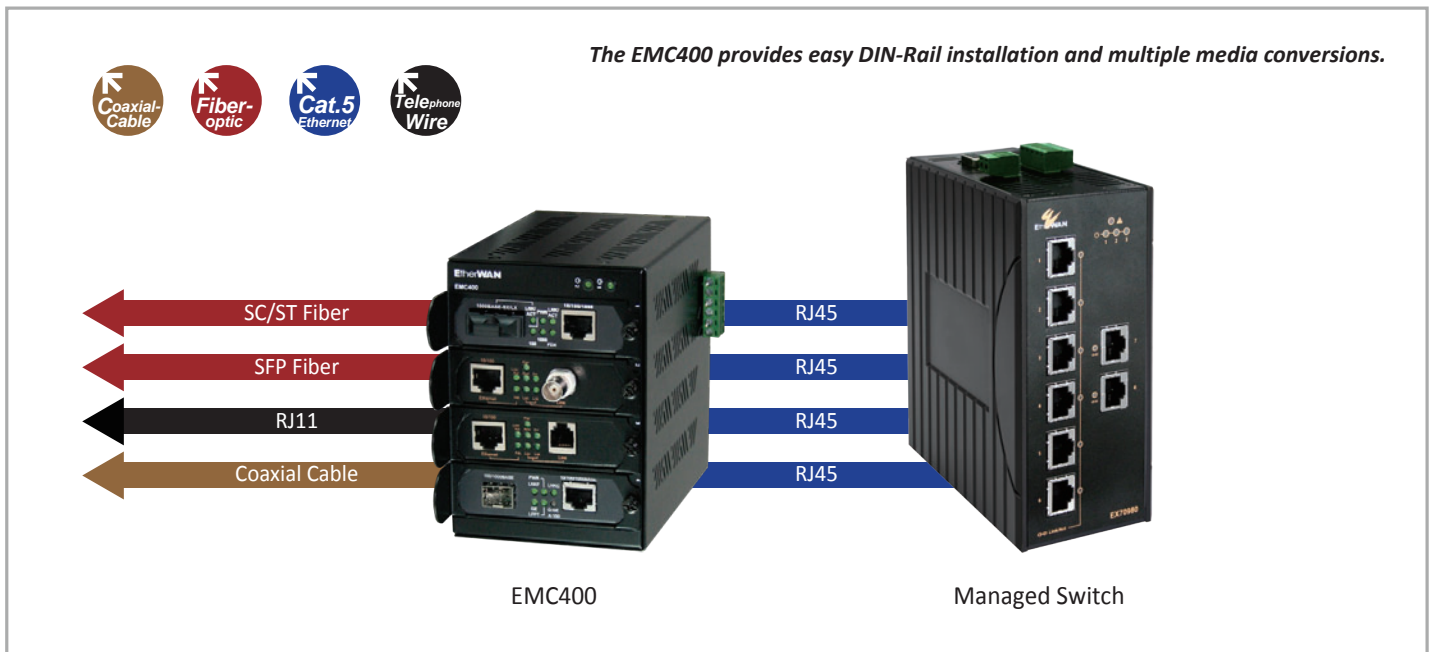
EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration)

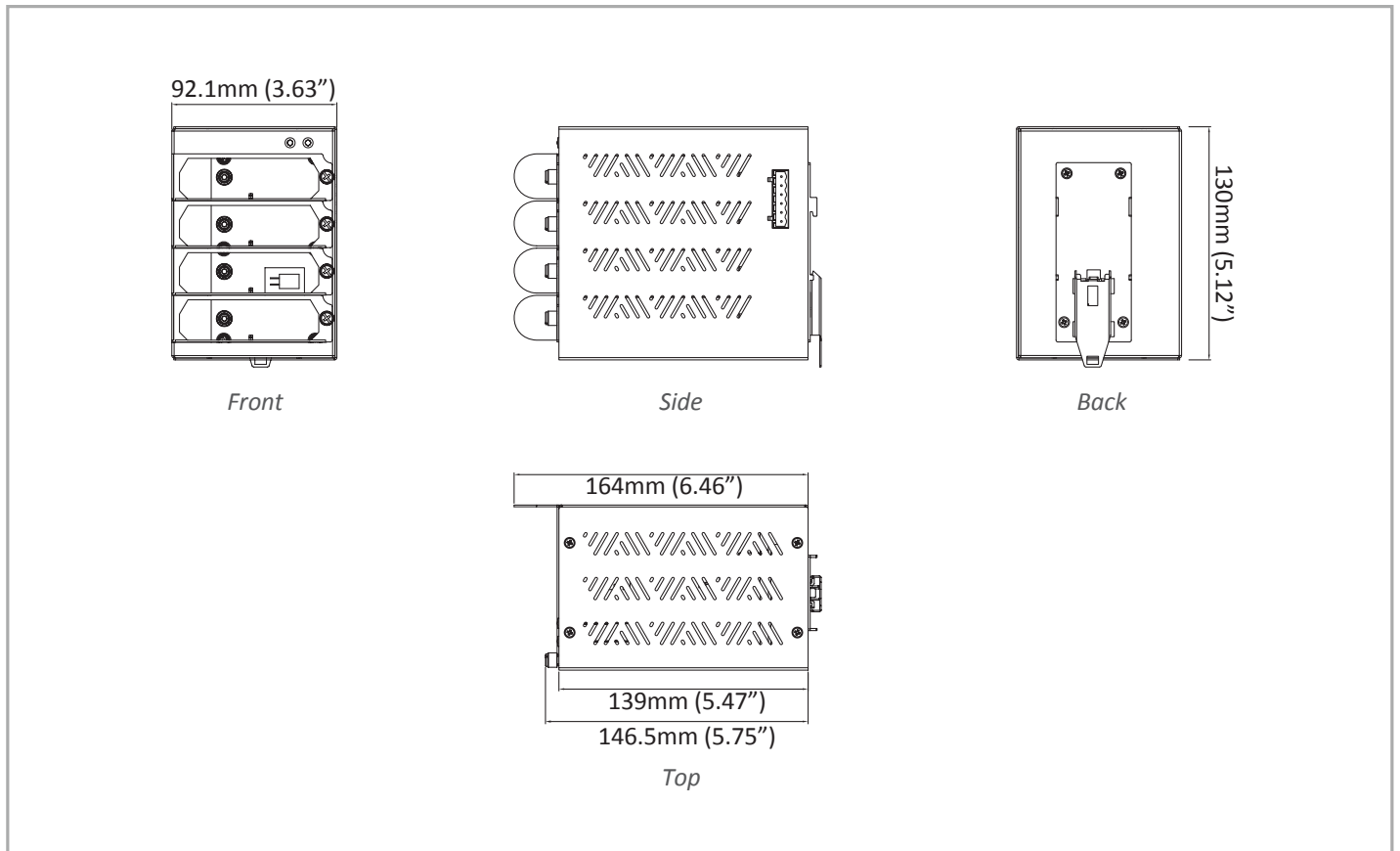**IEC60068-2-27 Ea (Shock)**

IEC60068-2-32 Ed (Free fall)

Application Diagram

The EMC400 provides easy DIN-Rail installation and multiple media conversions.

SC/ST Fiber — RJ45
SFP Fiber — RJ45
RJ11 — RJ45
Coaxial Cable — RJ45

EMC400   Managed Switch

Dimensions

92.1mm (3.63")

Front

Side

130mm (5.12")

Back

164mm (6.46")

139mm (5.47")

146.5mm (5.75")

Top

Ordering Information

Model

EMC400-EPWS	4-Slot DIN-Rail Media Converter Chassis with two DR-30-12 Power Supplies in the Package
EMC400	4-Slot DIN-Rail Media Converter Chassis

* DIN-Rail mounting kit is included

EMC1200R Series

12-Bay Media Converter System

Overview

The EMC1200R is a 12-Bay chassis system specifically designed to house and power selected EtherWAN Media Converters and Ethernet Extenders in a 19" rack enclosure.

The dynamic selections of EtherWAN's media converter and Ethernet extender family provide flexible system combinations. Each bay is electrically isolated from each other with fused over-current protection resulting is unprecedented reliability. The redundant internal power supplies provide both power redundancy and load sharing. Support for both AC & DC power input options allows the EMC1200R to be used worldwide. With its solid metal enclosure, standard 19" rack-mount and one-unit height design, the EMC1200R is ideal for interconnecting disparate network media and extending Ethernet beyond its boundaries.

EtherWAN – "When Connectivity is Crucial".

Spotlight

- **12-Bay Rackmount Chassis**
  ◦ Powers up 12 media converters with redundant terminal block power inputs

- **Supports EtherWAN's Ethernet extenders and media converters**
  ◦ Supported media converter Model include, EL2321, EL2211, EL2315, EM1100/EM2100, EM1000/EM2000, EM1000S/EM2000S, EM1020, EM120, EL100/EL200, and EL110/EL210 Series

Hardware Specifications

Power

Input
- 100 - 240VAC, 50 - 60Hz Internal Universal PSU

Power Consumption
- 9.4Watts, system w/o media converters, but with redundant PSUs.
- For total EMC1200R power consumption, please calculate with the selected media converters' datasheets.

Mechanical

Casing
- Metal case

Dimensions
- 440mm (W) x 243mm (D) x 45mm (H) (17.32" (W) x 9.57" (D) x 1.77" (H))

Weight
- 3.1Kg (6.82lbs.)

Installation
- Rack mounting

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -20°C to 70°C (-4°F to 158°F)

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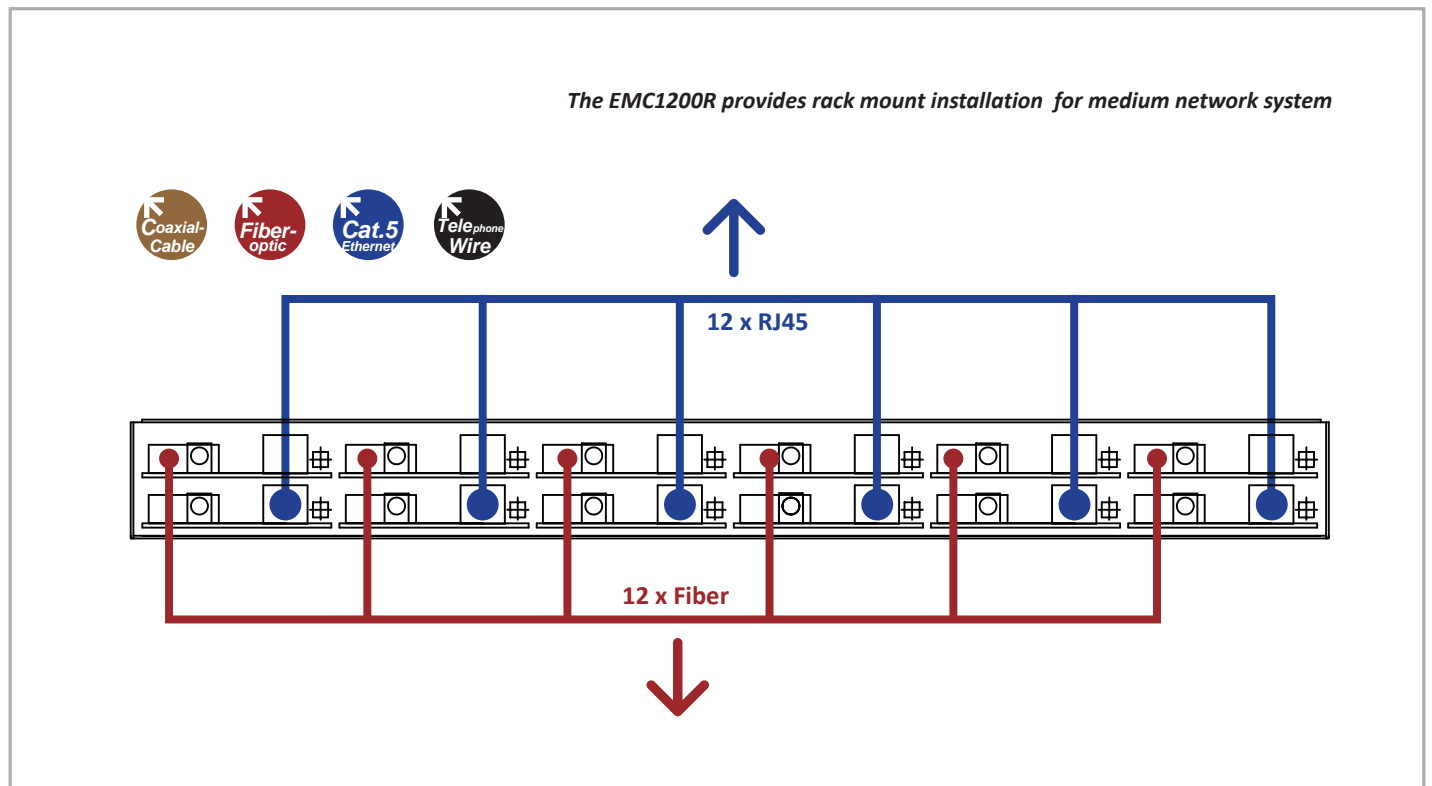- 5% to 95% (non-condensing)

Regulatory Approvals

ISO
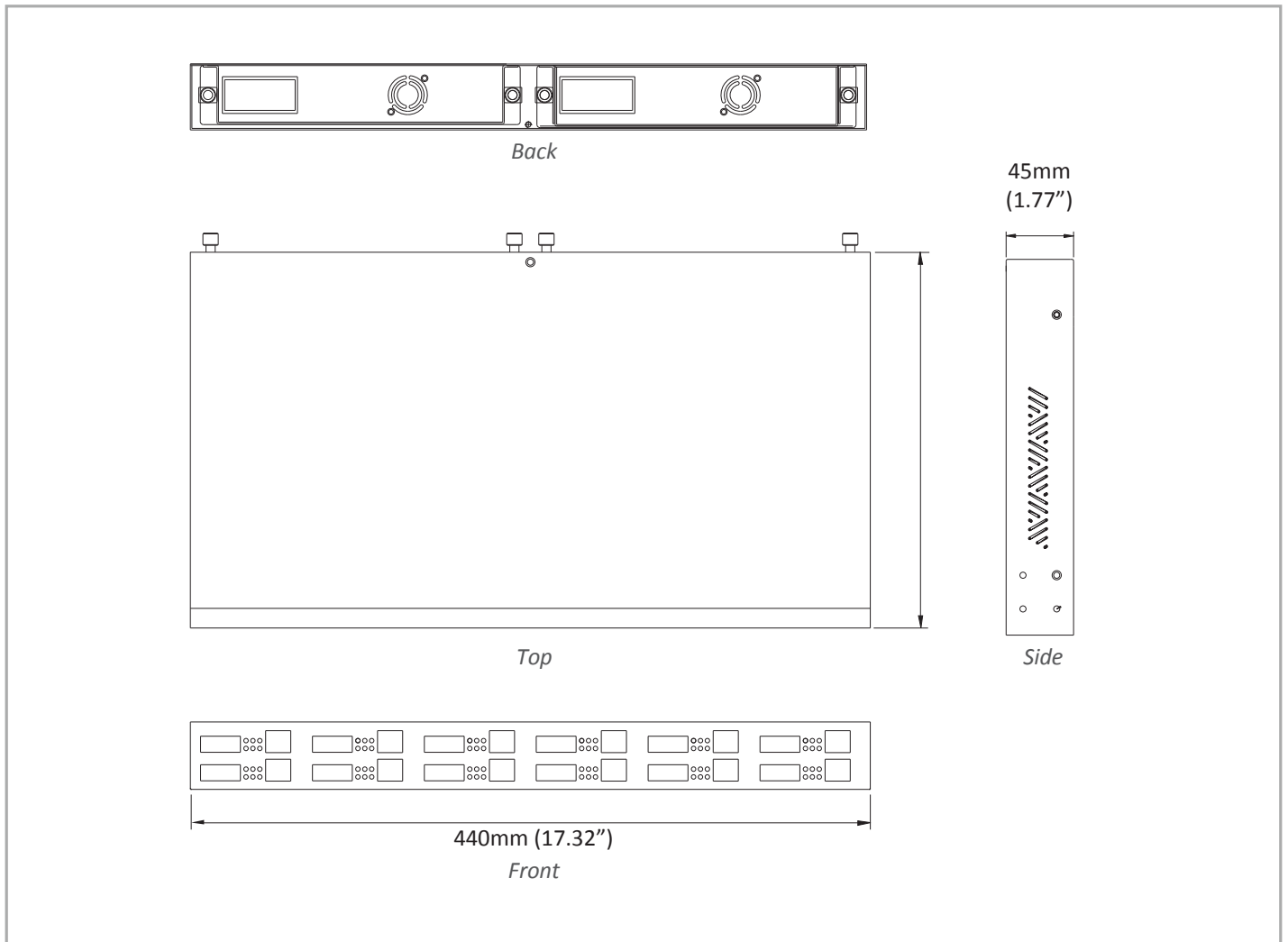- Manufactured in an ISO9001 facility

Emission Compliance

FCC Part 15B, Class A

CE Mark Class A

Application Diagram

The EMC1200R provides rack mount installation for medium network system

12 x RJ45

12 x Fiber

Dimensions

Back

45mm
(1.77")

Top

Side

440mm (17.32")

Front

Ordering Information

Model

EMC1200RC	12-Bay EL100C Media Converter System
EMC1200RT	12-Bay EL100T Media Converter System
EMC1200RL	12-Bay EL100L Media Converter System
EMC1210RC	12-Bay EL110C Media Converter System
EMC1210RT	12-Bay EL110T Media Converter System
EMC1210RL	12-Bay EL110L Media Converter System
EMC1220RCC-15	12-Bay EM120MCC-15 Media Converter System
EMC1220RTC-15	12-Bay EM120MTC-15 Media Converter System
EMC1220RLC-15	12-Bay EM120MLC-15 Media Converter System

Notes:
* ST fiber also available in Single Mode, 20Km
* SC fiber also available in Single Mode, 20/40/60/100/120Km
* SC fiber also available in WDM Type A and Type B, Single Mode 20/40Km, and Multi Mode 2/5Km
* More SFP options are available upon request. Please visit Etherwan.com for the latest SFP module datasheet.

Ordering Information - continued

Model

|	
EMC1200RGS	12-Bay Gigabit SFP Media Converter System
EMC1230RTSC	12-Bay EL2211-31 Media Converter System
EMC1230RTLC-10	12-Bay EL2211-A1 Media Converter System
EMC1230RTLC-20	12-Bay EL2211-B1 Media Converter System
EMC1200RTSC	12-Bay EM1000TSC Media Converter System
EMC1200RTLC-10	12-Bay EM1000TLC-10 Media Converter System
EMC1200RTLC-20	12-Bay EM1000TLC-20 Media Converter System
EMC1210RTSC	12-Bay EM1100TSC Media Converter System
EMC1210RTLC-10	12-Bay EM1100TLC-10 Media Converter System
EMC1210RTLC-20	12-Bay EM1100TLC-20 Media Converter System
EMC1200RSLC-10	12-Bay EM1000SLC-10 Media Converter System
EMC1200RSLC-20	12-Bay EM1000SLC-20 Media Converter System
EMC1200RLLC-10	12-Bay EM1000LLC-10 Media Converter System
EMC1200RLLC-20	12-Bay EM1000LLC-20 Media Converter System

Note:
* SC fiber also available in WDM Type A and Type B, Single Mode 10/20Km, and Multi Mode 2/5Km
* More SFP options are available upon request. Please visit Etherwan.com for the lastest SFP modules datasheet.

Ethernet Extenders

» **Power over Link™ Ethernet Extenders**
» **Ethernet Extenders over Copper Wire**
» **Ethernet Extenders over Coaxial Cable**
» **Ethernet Extenders with Management Features**
» **Ethernet Extenders with PoE**

— *Break the 100-meter Ethernet barrier.*
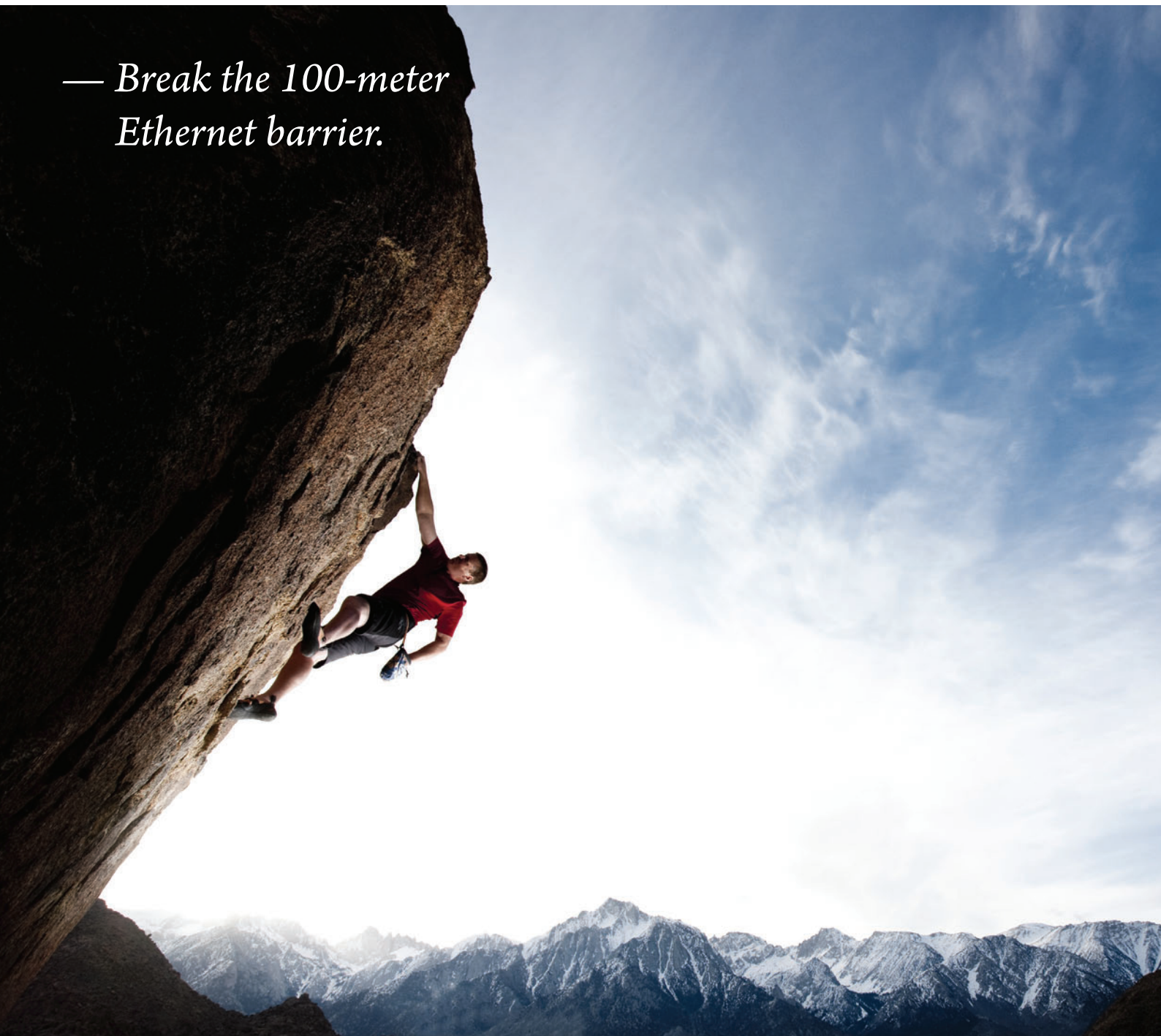
Ethernet Extender Glossary

Ethernet Extender

EtherWAN's Ethernet Extenders allow the extension of IP services beyond normal Ethernet distance limitations without changing cables, breaking the 100-meter Ethernet barrier.

Upgrading an access control and/or surveillance system with new systems that communicate using IP technology can be a monumental task, especially when changing the wiring infrastructure, which can be more costly and time consuming than upgrading the entire system. EtherWAN offers a solution to this dilemma. EtherWAN has developed a line of Ethernet Extenders that provide Ethernet connectivity over existing coaxial cables or regular telephone/communications cables. Ethernet Extenders are significantly more cost-effective compared to the cost of replacing cables, and they extend the life of existing installed infrastructure.
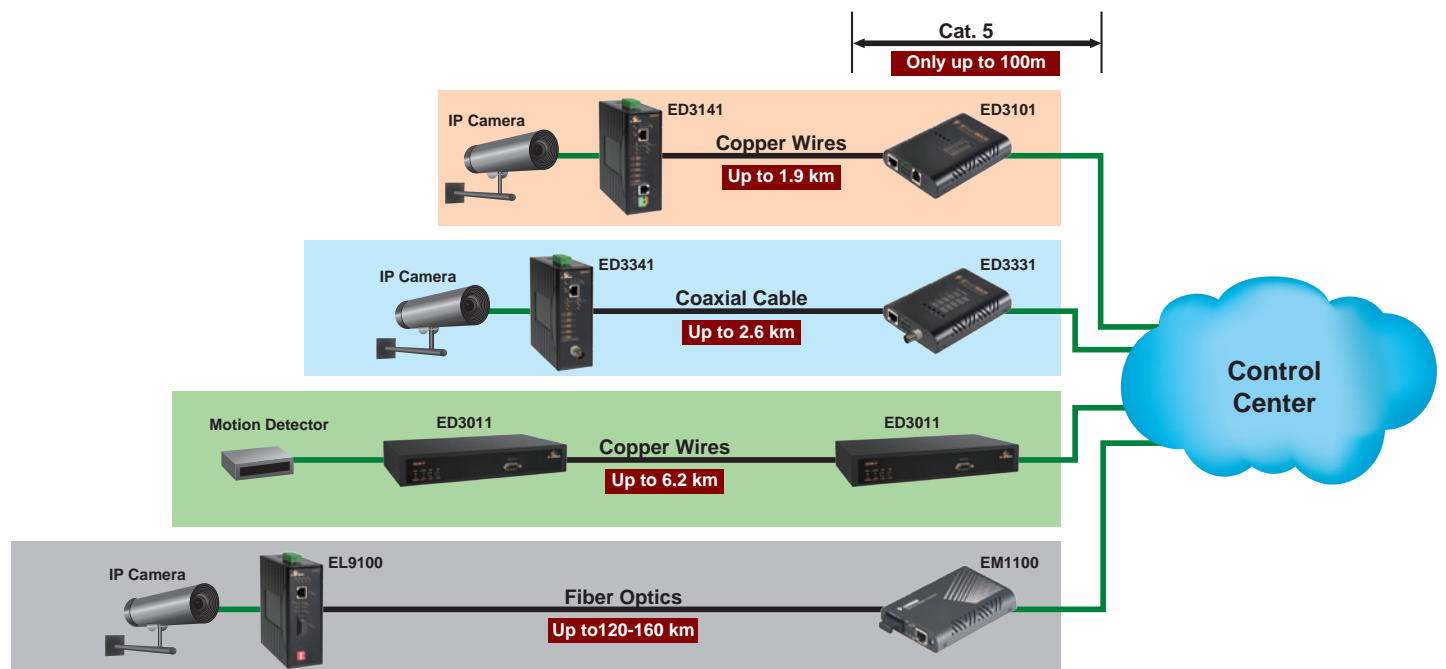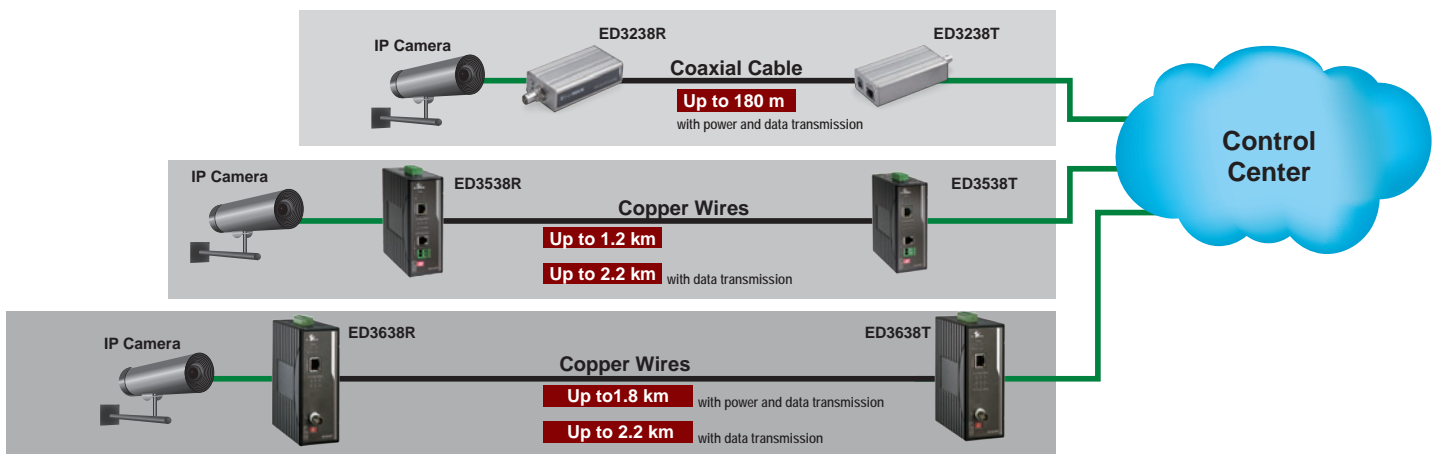
Power over Link™

Power over Link (PoL) technology allows data and power transmission over existing RJ11 telephone wires or coaxial cables. Like Power over Ethernet (PoE) technology, remote devices can be powered up by electricity in the transmission line without additional power adaptor. The remote device can also provides IEEE802.3af/at PoE/PSE power up the end device. PoL technology facilitates IP camera installation. In the PoE/PD IP camera application, over all distance can reach 1000 meters and power plug position will not limit IP camera installation position.

The benefits of using EtherWAN's Ethernet Extenders allow the addition of long-distance Ethernet connectivity to existing infrastructures without needing to install new cables;

a. They minimize effort and cost, as there is no need to replace any existing cables.

b. They work over longer distances - up to 1.9km (6,232ft) over copper wire or 2.6km (8,530ft) over coaxial cable.

c. They have a hardened design for critical environments – models are rated for either -20°C to 60°C or -40°C to 75°C.

d. They have Plug & Play capabilities. Simply connect a unit to one end of the wire and set the DIP switch to "local", then connect another unit to the other end of the wire and set it to "remote". When power is applied, all devices will be synchronized in just a few seconds to create an Ethernet link.

e. PoL technology provides data and power transmission over one existing cable to reduce infrastructure construction cost.

Ethernet Extender Connection Guide

Power over Link >>			
Model Name	ED3638	ED3538	ED3238 NEW
Interface			
10/100 BASE-TX	1	1	1
Max. PoE Ports	1 (30W)	1 (30W)	1 (15.4W)
Extension Interface			
RJ-11	-	1	-
RJ-48	-	-	-
Terminal Block	-	1	-
BNC	1	-	1
Mode of Operations			
Auto-negotiation, Auto-MDI/MDI-X	√	√	√
Store & Forward	√	√	√
Mechanical			
Casing	aluminum	aluminum	aluminum
Installation*	D, P, R	D, P, R	C
Dimensions (WxDxH)	50x110x135	50x110x135	46x98x25
Power Input			
No. of Power Inputs	3	3	1
Terminal Block	46 - 57VDC	46 - 57VDC	-
DC Jack	48VDC	48VDC	57VDC
AC to DC Adapter	-	-	√
Operating Temperature			
-20˚C to 45˚C	-	-	√
-40˚C to 75˚C	√	√	-
Management Function			
RS-232 console Port	-	-	-
Web Management	-	-	-
α-Ring / α-Chain	-	-	-
Layer 2 Features**	-	-	-
Regulatory Approvals			
CE / FCC	√	√	√
VCCI	√	√	√
UL508	-	-	-
ISA12.12.01 / UL1604	-	-	-
IEC61850-3 / IEEE1613	-	-	-
UL/cUL 60950-1	√	√	√
EN50121-4	-	-	-
EN50155	-	-	-

* C: Chassis, D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

** Layer 2 Features include STP/RSTP/MSTP, VLAN, QoS, IGMP, GMRP, Bandwidth Rate Control, LACP, Port Trunking, Port Mirroring, Packet Filtering, IEEE802.1xSecurity, RMON

Copper >>						
Model Name	ED3175	ED3146	ED3145	ED3171	ED3142	ED3141
Interface						
10/100 BASE-TX	8	2/4	4	1	1	1
Max. PoE Ports	-	2 (30W)	-	-	1 (30W)	-
Extension Interface						
RJ-11	2	1	1	1	1	1
RJ-48	-	-	-	-	-	-
Terminal Block	2	1	1	1	1	1
BNC	-	-	-	-	-	-
Mode of Operations						
Auto-negotiation, Auto-MDI/MDI-X	√	√	√	√	√	√
Store & Forward	√	√	√	√	√	√
Mechanical						
Casing	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum
Installation*	D, P, R	D, P, R	D, P, R	D, P, R	D, P, R	D, P, R
Dimensions (WxDxH)	60x125x145	50x110x135	50x110x135	50x110x135	50x110x135	50x110x135
Power Input						
No. of Power Inputs	3	3	3	3	3	3
Terminal Block	12 - 48VDC	24 - 48VDC	24 - 48VDC	12 - 32VDC	24 - 48VDC	12 - 32VDC
DC Jack	12VDC	48VDC	48VDC	12VDC	48VDC	12VDC
AC to DC Adapter	-	-	-	-	-	-
Operating Temperature						
-10˚C to 60˚C	-	-	-	-	-	-
-40˚C to 70˚C	-	-	-	-	-	-
-40˚C to 75˚C	√	√	√	√	√	√
Management Function						
RS-232 console Port	√	-	-	√	-	-
Web Management	√	-	-	√	-	-
α-Ring / α-Chain	√	-	-	-	-	-
Layer 2 Features**	√	-	-	-	-	-
Regulatory Approvals						
CE / FCC	√	√	√	√	√	√
VCCI	√	√	√	√	√	√
UL508	√	√	√	√	√	√
ISA12.12.01 / UL1604	-	-	-	-	-	√
IEC61850-3 / IEEE1613	-	-	-	-	-	-
UL/cUL 60950-1	-	-	-	-	-	-
EN50121-4	-	-	-	-	-	-
EN50155	-	-	-	-	-	-

* C: Chassis, D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

** Layer 2 Features include STP/RSTP/MSTP, VLAN, QoS, IGMP, GMRP, Bandwidth Rate Control, LACP, Port Trunking, Port Mirroring, Packet Filtering, IEEE802.1xSecurity, RMON

Copper >>		Coaxial >>			
Model Name	ED3101	ED3371	ED3341	ED3344	ED3331
Interface					
10/100 BASE-TX	1	1	1	1 (M12)	1
Max. PoE Ports	-	-	-	-	-
Extension Interface					
RJ-11	1	-	-	-	-
RJ-48	-	-	-	-	-
Terminal Block	-	-	-	-	-
BNC	-	1	1	1	1
Mode of Operations					
Auto-negotiation, Auto-MDI/MDI-X	√	√	√	√	√
Store & Forward	√	√	√	√	√
Mechanical					
Casing	aluminum	aluminum	aluminum	aluminum	aluminum
Installation*	C, D, W	D, P, R	D, P, R	D, P, R	C, D, W
Dimensions (WxDxH)	80.3x109.2x23.8	50x110x135	50x110x135	50x110x135	80.3x109.2x23.8
Power Input					
No. of Power Inputs	1	3	3	3	1
Terminal Block	-	12 - 48VDC	12 - 48VDC	12 - 48VDC	-
DC Jack	12VDC	12VDC	12VDC	12 - 48VDC	12VDC
AC to DC Adapter	√	-	-	-	√
Operating Temperature					
-10˚C to 60˚C	-	-	-	-	√
-40˚C to 70˚C	-20˚C to 60˚C	√	√	-	-
-40˚C to 75˚C	-	-	-	√	-
Management Function					
RS-232 console Port	-	√	-	-	-
Web Management	-	√	-	-	-
α-Ring / α-Chain	-	-	-	-	-
Layer 2 Features**	-	-	-	-	-
Regulatory Approvals					
CE / FCC	√	√	√	√	√
VCCI	√	√	√	√	√
UL508	-	√	√	√	√
ISA12.12.01 / UL1604	-	-	-	-	-
IEC61850-3 / IEEE1613	-	-	-	-	-
UL/cUL 60950-1	√	-	-	-	-
EN50121-4	-	-	√	√	-
EN50155	-	-	√	√	-

* C: Chassis, D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

** Layer 2 Features include STP/RSTP/MSTP, VLAN, QoS, IGMP, GMRP, Bandwidth Rate Control, LACP, Port Trunking, Port Mirroring, Packet Filtering, IEEE802.1xSecurity, RMON

ED3638

Hardened 10/100BASE-TX PoL™/PoE Ethernet Extender over Coaxial Cable

Overview

The ED3638 Hardened Ethernet Extender utilizes EtherWAN's exclusive Power over Link™ (PoL™) technology to deliver both PoE power and Ethernet communications over a single legacy coaxial cable. The ED3638 PoL™ solution is comprised of an ED3638 Transmitter and Receiver working together to provide reliable communications and power to remote PoE Powered Devices (PD).

When remote connectivity and power is required on legacy cable, the ED3638 transceiver connected with an AC/DC power provides 30 watts of power and a bandwidth of 100Mbps to be delivered to the ED3638 receiver. The ED3638 receiver in turn powers up a remote PoE device such as an IP camera, a wireless access point, an emergency intercom, or a VoIP phone.

When the application demands long-distance and more power delivery, the ED3638 can also be connected with power at both ends, to maximize the transmission distance to 2400 meters.

The ED3638 is compliant with UL60950-1 / IEC60950-1 / EN61000-6-4 / EN61000-6-2 standards with high electromagnetic sustainability and IEC60068 standards against shock and vibration, ensuring a reliable connection under harsh environments.

Spotlight

- **Power over Link™ up to 1.8 km (5905 ft.)**
  - Over an 1800 meters long coaxial cable, a guaranteed 4 watts power with 15Mbps bandwidth is delivered to the receiving side

- **Ethernet extension solution with high transmission data rate up to 100Mbps**
  - Up to 400 meters transmission distance with 100Mbps data rate

- **Transmission rate and PSE output power indicator LEDs**
  - Six transmission rate LEDs and three PoE/PSE output power LEDs on the front panel

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX,
- IEEE802.3x, full duplex and flow control
- IEEE802.3af/at PoE/PSE

Protocols
- Transparent to higher layer protocols

Processing Type
- IEEE802.3x Full-duplex flow control

Power

Input
- Terminal Block: 46 - 57VDC
- DC JACK: 48VDC
- 2.5A @ 48VDC (Peak current 3.26A)

Power Consumption
- Max. 65W with Power over Link (PoL) function enabled
- ED3638T: Max. 5W (without PoL / PoE)
- ED3638R: Max. 5W (without PoL / PoE)
  Max. 35W (with PoE only)

Protection
- Over current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum case
- IP30

Dimensions
- 50mm (W) x 110mm (D) x 135mm (H)
  (1.97" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.8Kg (1.76lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel, or Rack mounting

Interface

Ethernet Port
- ED3638T/R: 1x RJ-45 port,10/100BASE-TX Full-duplex
- ED3638R: 1x PoE/PSE port
- Auto-Negotiation, Auto-MDI/MDIX
- Speed: 10/100Mbps
- Distance: 100meters (328ft.)
- Cable: 100BASE-TX: UTP CAT. 5 (4-pair wire)

Ethernet Extender Port
- Port: One 75Ω BNC Port (with F-type connector)
- Cable: Coaxial Cable (5C2V / RG6)
- Coaxial Cable (5C2V / RG6)

DIP Switch
- ED3638T: PoL: ON/OFF, Type: Perf/Std
- ED3638R: Mode: Loc/Rmt, Type: Perf/Std

LED Indicators
- Per Unit: Power Status (Power)
- Per Port 10/100TX: Link/Activity, Full-duplex
- Line Speed: Six indicators for 100/80/60/40/20Mbps and Link below 20Mbps
- PoE: Power over Ethernet function availability

Speed / Distance / PoE Output Reference

PoL™ Enabled		
Distance	Data Rate	ED3638R PoE Output
400m	100Mbps	30.0W
800m	60Mbps	15.4W
1000m	50Mbps	12.0W
1200m	45Mbps	8.0W
1600m	20Mbps	6.0W
1800m	15Mbps	4.0W

PoL™ Disabled (Power Supply Applies on ED3638R)		
Distance	Data Rate	ED3638R PoE Output
2000m	9Mbps	30.0W
2200m	6Mbps	30.0W
Up to 2400m	4Mbps	30.0W

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL60950-1 and IEC60950-1

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
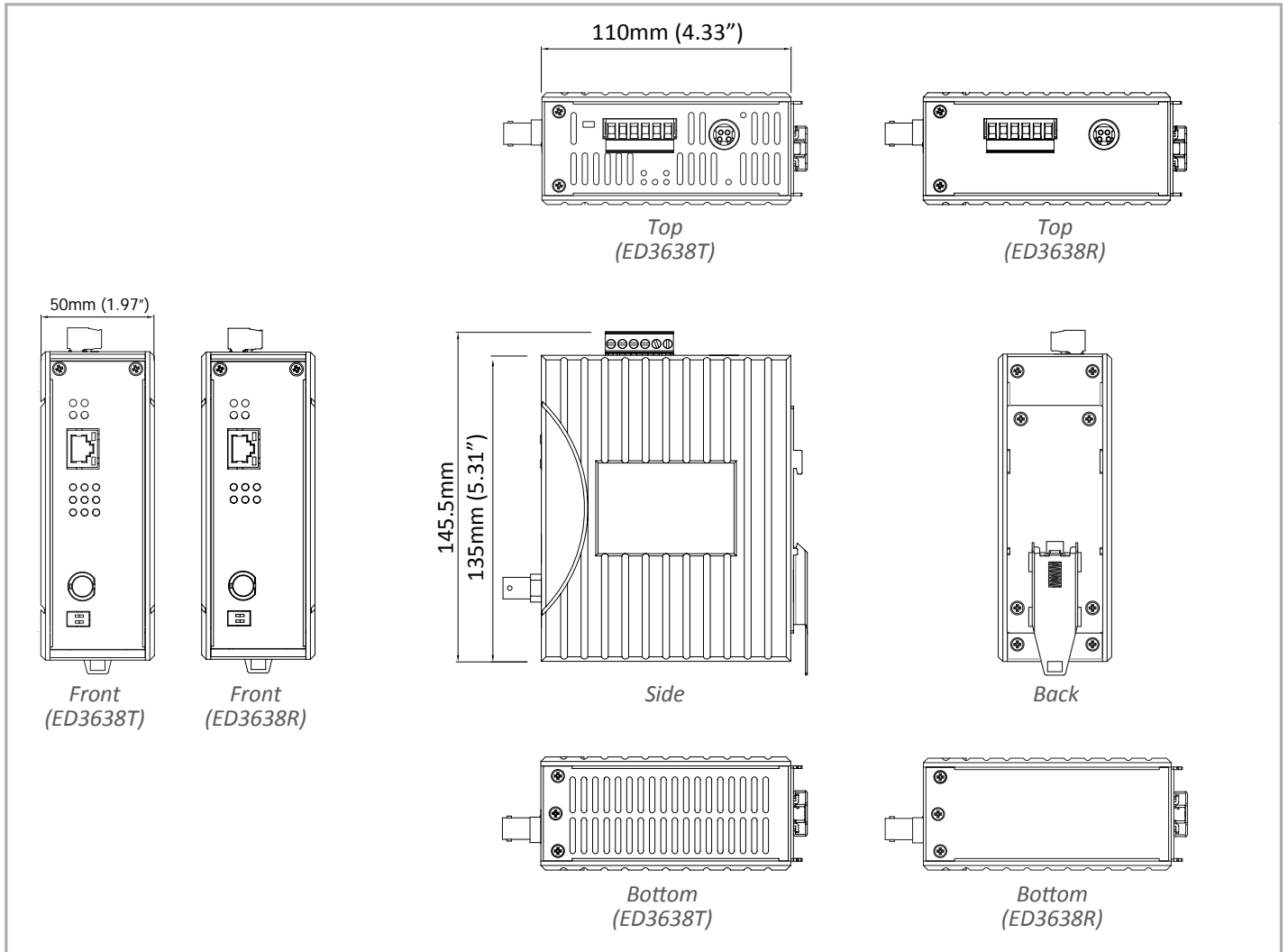- EN61000-4-8 (Magnetic Field Standards)

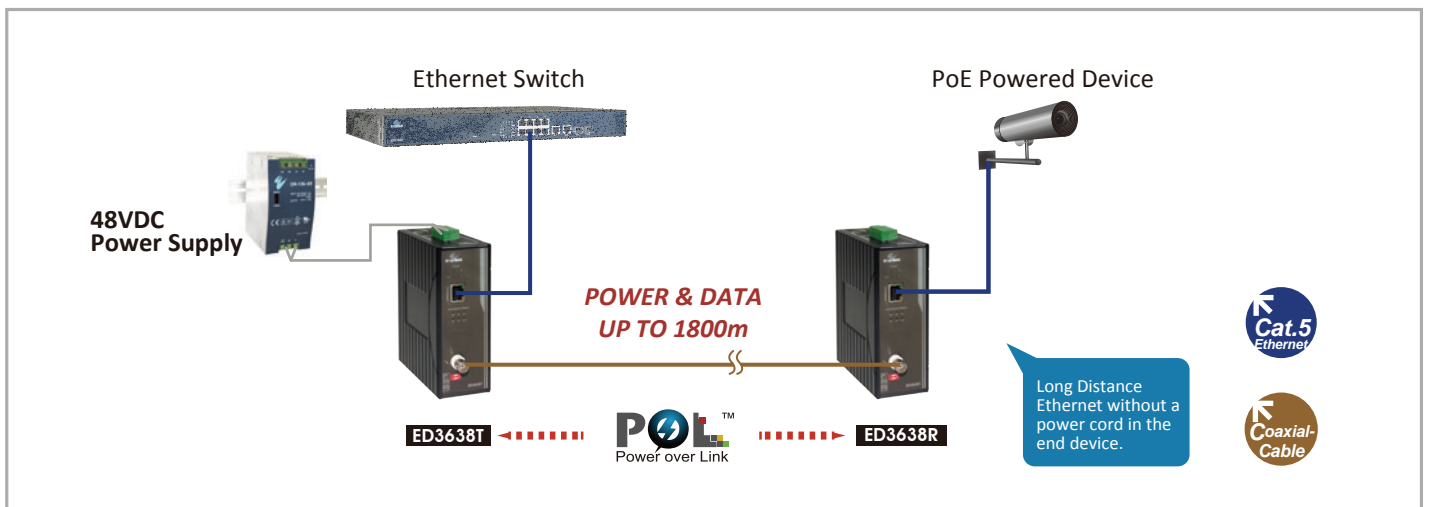### Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

IEC60068-2-32 Ed (Free Fall)

Dimensions

110mm (4.33")

Top
(ED3638T)

Top
(ED3638R)

50mm (1.97")

145.5mm
135mm (5.31")

Front
(ED3638T)

Front
(ED3638R)

Side

Back

Bottom
(ED3638T)

Bottom
(ED3638R)

Application Diagram

Ethernet Switch

PoE Powered Device

48VDC
Power Supply

POWER & DATA
UP TO 1800m

ED3638T

POL™
Power over Link

ED3638R

Long Distance
Ethernet without a
power cord in the
end device.

Cat.5
Ethernet

Coaxial-
Cable

Ordering Information

Model

ED3638	Hardened PoL/PoE Ethernet Extender over Coaxial Cable (including one ED3638T and one ED3638R)

Note:
* ED3638T is the power Transmitter of PoL and ED3638R is the power Receiver of PoL
* DIN-Rail mounting kit included

Optional Power Supplies

Power supply suggestion	30-watt PoE application
SDR-120-48 / DR-120-48 (120W 48VDC)	For one pair
SDR-240-48 (240W 48VDC)	For three pairs
SDR-480-48 (480W 48VDC)	For seven pairs

ED3538

Hardened 10/100BASE-TX PoL/PoE Ethernet Extender over Copper Wires

Overview

The ED3538 Hardened Ethernet Extender utilizes EtherWAN's exclusive Power over Link™ (PoL™) technology to deliver both PoE power and Ethernet communications over a single legacy twisted pair cable. The ED3538 PoL solution is comprised of an ED3538 Transmitter and Receiver working together to provide reliable communications and power to remote PoE Powered Devices (PD).

When remote connectivity and power is required on legacy cable, the ED3538 transceiver connected with an AC/DC power provides 30 watts of power and a bandwidth of 100Mbps to be delivered to the ED3538 receiver. The ED3538 receiver in turn powers up a remote PoE device such as an IP camera, a wireless access point, an emergency intercom, or a VoIP phone.

When the application demands long-distance and more power delivery, the ED3538 can also be connected with power at both ends, to maximize the transmission distance to 2200 meters.

The ED3538 is compliant with UL60950-1 / IEC60950-1 / EN61000-6-4 / EN61000-6-2 standards with high electromagnetic sustainability and IEC60068 standards against shock and vibration, ensuring a reliable connection under harsh environments.

Spotlight

- **Power over Link™ up to 1.2 km (3936 ft.)**
  - ◦ Over an 1200 meters long RJ11 cable, a guaranteed 5 watts power with 20Mbps bandwidth is delivered to the receiving side

- **Ethernet extension solution with high transmission data rate up to 100Mbps**
  - ◦ Up to 300 meters transmission distance with 100Mbps data rate

- **Transmission rate and PSE output power indicator LEDs**
  - ◦ Six transmission rate LEDs and three PoE/PSE output power LEDs on the front panel

Hardware Specifications

Technology

Standards
• IEEE802.3 10BASE-T
• IEEE802.3u 100BASE-TX,
• IEEE802.3x full duplex and flow control
• IEEE802.3af/at PoE/PSE

Protocols
• Transparent to higher layer protocols

Processing Type
• IEEE802.3x Full-duplex flow control
• Auto-Negotiation
• Auto MDI/MDIX

Power

Input
• Terminal Block: 46 - 57VDC
• DC JACK: 48VDC
• 2.5A @ 48VDC (Peak current 3.26A)

Power Consumption
• Max. 65W with Power over Link™ (PoL) function enabled
• ED3538T: Max. 5W (without PoL / PoE)
• ED3538R: Max. 5W (without PoL / PoE)
     Max. 35W (with PoE only)

Protection
• Overload current protection
• Reverse polarity protection

Mechanical

Casing
• Aluminum case
• IP30

Dimensions
• 50mm (W) x 110mm (D) x 135mm (H)
  (1.97" (W) x 4.33" (D) x 5.31" (H))

Weight
• 0.8Kg (1.76lbs.)

Installation
• DIN-Rail (Top hat type 35mm), Panel or Rack mounting

Interface

Ethernet Port
• ED3538T/R: 1 x 10/100BASE-TX Full-duplex RJ-45 port
• ED3538R: 1 x PoE/PSE port
• Speed: 10/100Mbps
• Cable: 100BASE-TX, UTP CAT. 5 (4-pair wire)
• Distance: 100 meters (328ft.)

Ethernet Extender Port
• 1 x RJ11 port
• 1 x 2-pin Terminal Block (Wire range: 12 - 30 AWG)

DIP Switch
• ED3538T: PoL: ON/OFF, Type: Perf/Std
• ED3538R: Mode: Loc/Rmt, Type: Perf/Std

LED Indicators
• Per Unit: Power
• Per 10/100TX Port: Link/Activity, Full-duplex
• Line Speed: Six indicators for 100/80/60/40/20Mbps and
         Link below 20Mbps
• PoE: Power over Ethernet function availability

Distance / Speed / PoE Output Reference

PoL™ Enabled

Distance	Data Rate	ED3538R PoE Output
300m	100Mbps	30.0W
400m	90Mbps	15.4W
600m	60Mbps	14.0W
800m	45Mbps	9.5W
1000m	35Mbps	7.0W
1200m	20Mbps	5.0W

PoL™ Disabled (Power supply on 3538R)

Distance	Data Rate	ED3538R PoE Output
1400m	15Mbps	30.0W
1600m	10Mbps	30.0W
1800m	3Mbps	30.0W
Up to 2200m	1Mbps	30.0W

NOTE: Reference Performance on 24 AWG copper wire
(0.5mm diameter, 1-pair wire, Cable impendence: 100ohm)

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
• -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity
• 5% to 95% (non-condensing)

Regulatory Approvals

ISO
• Manufactured in an ISO9001 facility

Safety

UL60950-1, IEC60950-1

EMI

FCC Part 15B, Class A

EN61000-6-4, EN55022, EN61000-3-2 and EN61000-3-3
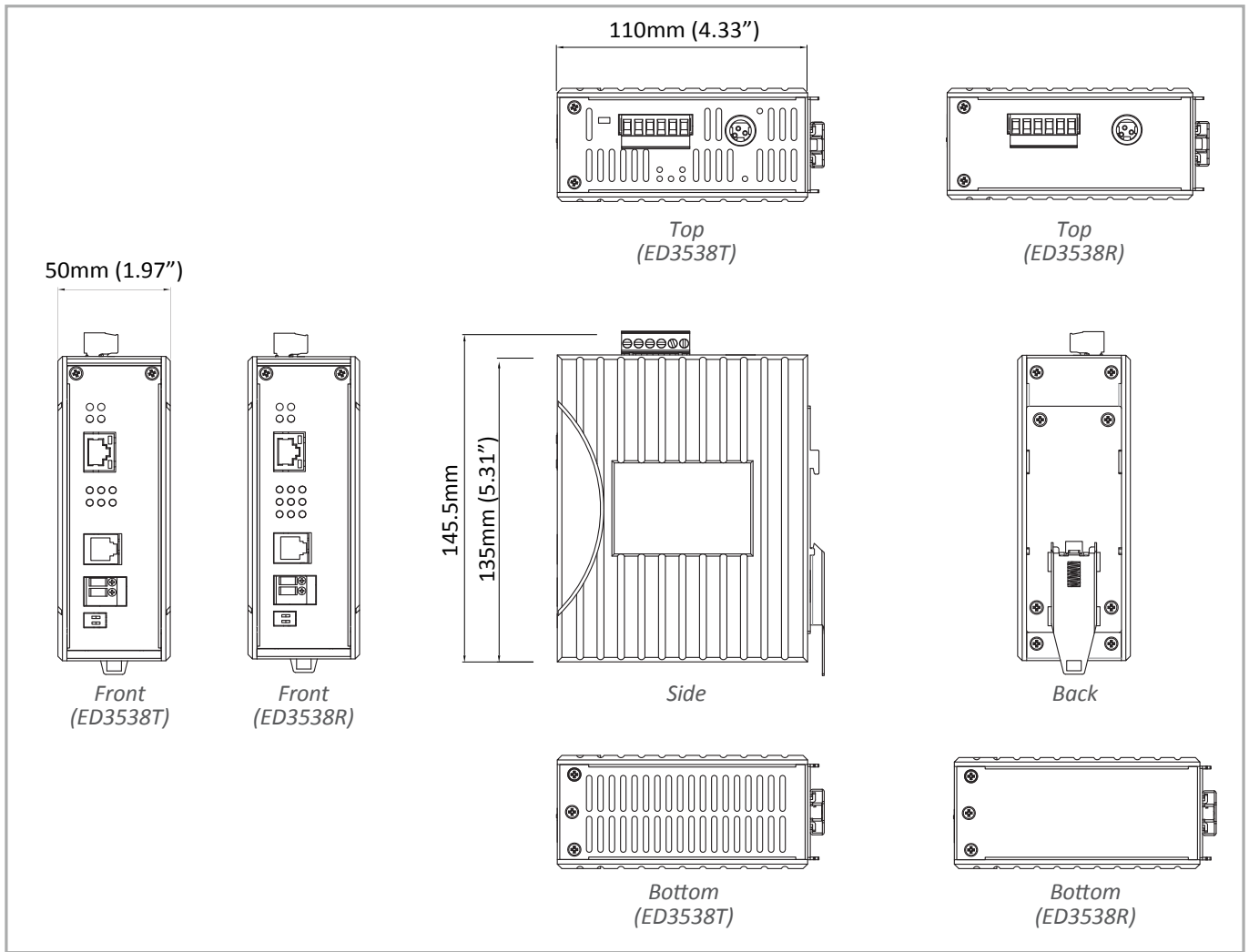
EMS

EN61000-6-2
• EN61000-4-2 (ESD Standards)
• EN61000-4-3 (Radiated RFI Standards)
• EN61000-4-4 (Burst Standards)
• EN61000-4-5 (Surge Standards)
• EN61000-4-6 (Induced RFI Standards)
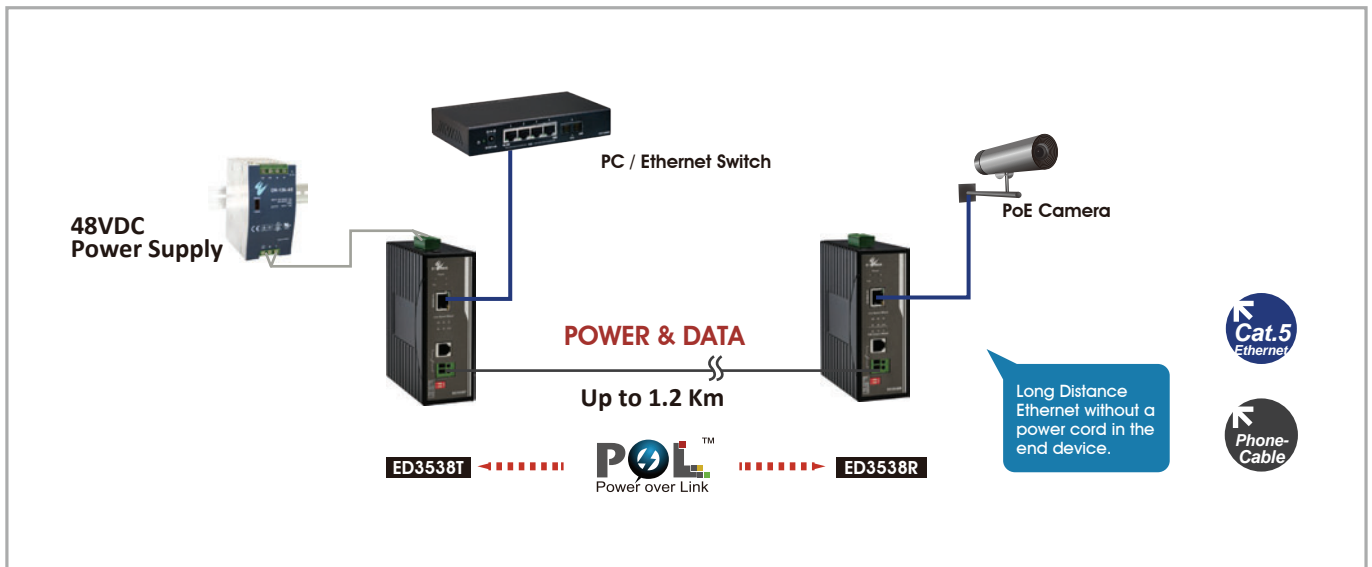• EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration), **IEC60068-2-27 Ea (Shock),**
IEC60068-2-32 Ed (Free fall w/ package)

Dimensions

110mm (4.33")

Top
(ED3538T)

Top
(ED3538R)

50mm (1.97")

145.5mm

135mm (5.31")

Front
(ED3538T)

Front
(ED3538R)

Side

Back

Bottom
(ED3538T)

Bottom
(ED3538R)

Application Diagram

PC / Ethernet Switch

PoE Camera

48VDC
Power Supply

POWER & DATA

Up to 1.2 Km

Long Distance
Ethernet without a
power cord in the
end device.

Cat.5
Ethernet

Phone-
Cable

ED3538T ◀ ∙∙∙∙∙∙∙∙

P⚡L™
Power over Link

∙∙∙∙∙∙∙ ▶ ED3538R

Ordering Information

Model

ED3538	Hardened PoL/PoE Ethernet Extender over Copper Wires (including one ED3538T and one ED3538R)

Note:
* ED3538T is the power transmitter of PoL and ED3538R is the power receiver of PoL
* DIN-Rail mounting kit included

Optional Power Supplies

Power supply suggestion	30 watts PoE application
SDR-120-48 / DR-120-48 (120W 48VDC)	For 1 pair
SDR-240-48 (240W 48VDC)	For 3 pairs
SDR-480-48 (480W 48VDC)	For 7 pairs

ED3238

10/100BASE-TX IEEE802.3af PoE Ethernet Extender over Coaxial Cable

Overview

The ED3238 Ethernet Extender utilizes EtherWAN's exclusive Power over Link™ (PoL™) technology to deliver both PoE power and Ethernet communications over a single legacy coaxial cable. The ED3238 PoL solution is comprised of an ED3238 Transmitter and Receiver working together to provide reliable communications and power to remote PoE Powered Devices (PD).

When remote connectivity and power is required on legacy cable, the ED3238 transceiver connected with an AC/DC power adaptor which provides 15.4 watts of power and a bandwidth of 100Mbps to be delivered to the ED3238 receiver. The ED3238 receiver in turn powers up a remote PoE device such as an IP camera, a wireless access point, an emergency intercom, or a VoIP phone.

The ED3238 is compliant with UL60950-1 / IEC60950-1 standards with high electromagnetic sustainability and IEC60068 standards against shock and vibration, ensuring a reliable connection under harsh environments.

Spotlight

- **Power over Link™ up to 180 m (590 ft.)**
    - Over an 180 meters* long coaxial cable, a guaranteed 15.4 watts power with 100Mbps bandwidth is delivered to the receiving side

- **Ethernet extension solution with high transmission data rate up to 100Mbps**
    - Up to 180 meters* transmission distance with 100Mbps data rate

- **Powered by IEEE802.3at Devices**
    - ED3238 transmitter side can be powered either by an IEEE802.3at PoE/PSE device or a 57VDC adaptor

* Operating distance: 30 to 180m

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3af PoE/PSE

Forward and Filtering Rate
- 1,488,100pps for 1000Mbps

Processing Type
- IEEE802.3x Full-duplex flow control
- Auto Negotiation
- Auto MDI/MDIX

Power

Input
- DC Jack: 57VDC
- ED3238T PoE/PD port: 50VDC to 57VDC

Power Consumption
- Device: Max. 6W
- PoE power budget: 15.4W max.
  (depending on power input)

Input Voltage v.s. Output Power

DC Jack Input Voltage	RG6 18AWG CCS	ED3238R PoE/PSE Output Power	RG11 14AWG CCS	ED3238R PoE/PSE Output Power
50VDC	180m	5.5W	250m	11W
51VDC	180m	7.0W	250m	13W
52VDC	180m	9.0W	250m	15W
52VDC	180m	10.5W	250m	16W
54VDC	180m	12.0W	250m	17W
55VDC	180m	14.0W	250m	17W
56VDC	180m	15.4W	250m	18W
57VDC	180m	15.4W	250m	18W

Mechanical

Casing
- Aluminum Case
- IP30

Dimensions
- 46mm (W) x 98mm (D) x 25mm (H)
  (1.81" (W) x 3.86" (D) x 0.98" (H))

Weight
- 0.1Kg (0.221 lbs.)

Installation
- Panel or Rack mounting

Interface

Ethernet Port
- ED3238T/R: 1 x RJ-45 port
- ED3238T/R: 1 x PoE/PD port
- Speed: 10/100Mbps
- Distance: 100 meters (328ft.)
- Cable: 100BASE-TX: UTP CAT. 5 (4-pair wire)

Ethernet Extender Port
- Port: One 75Ω BNC Port (with F-type connector)
- Cable: Coaxial Cable (5C2V / RG6AU)
- Distance: 250m (820ft) RG11 AWG 14 CCS coaxial cable
  180m (590ft) RG6 AWG18 CCS coaxial cable
  120m (394ft) RG59 coaxial cable

LED Indicators
- Power: Power status
- LINK/ACT: Data transmission and power delivery
- PoE: PD status

Environment

Operating Temperature
- -10°C to 50°C (14°F to 113°F)

Storage Temperature
- -20°C to 70°C (-4°F to 158°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL60950-1 and IEC60950-1

EMI

CE

EN55022

EN55024

EN61000-3-2

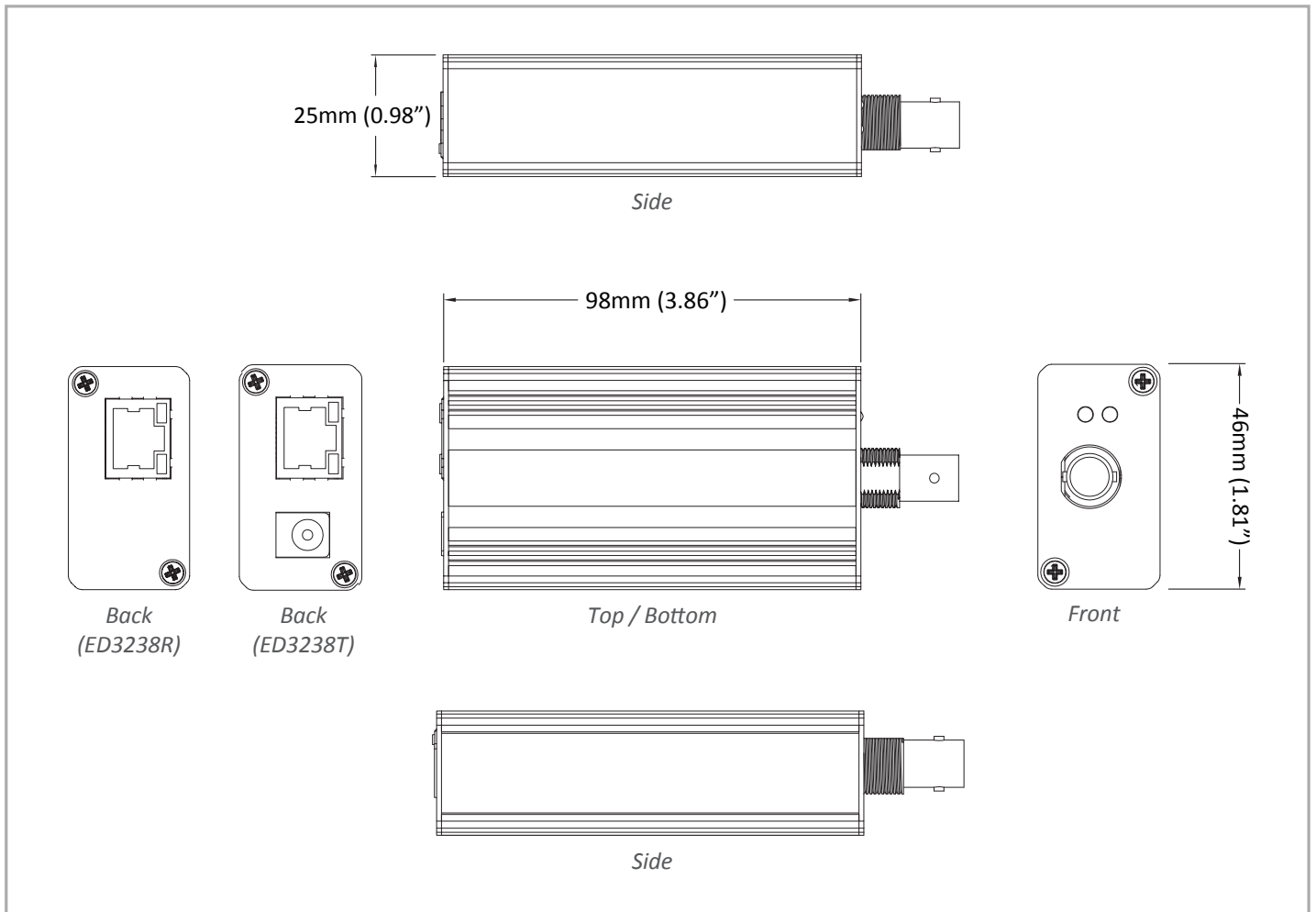**EN61000-3-3**

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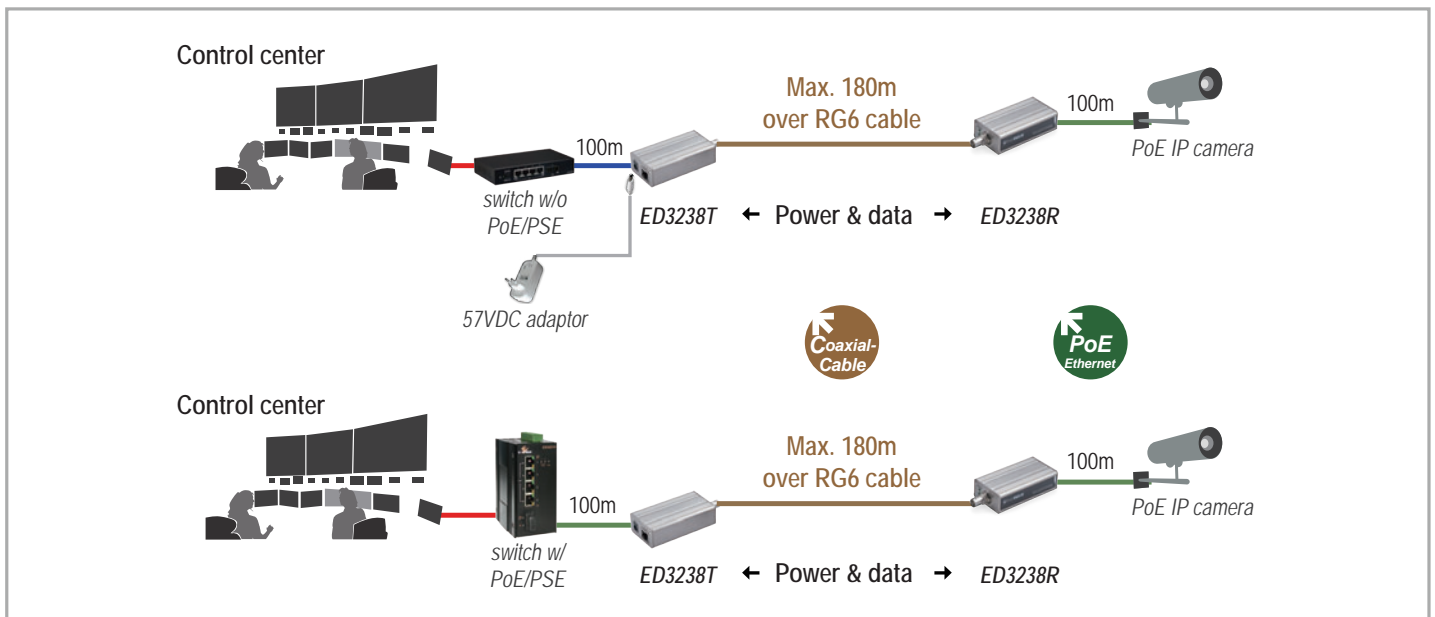
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EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Dimensions

25mm (0.98")

Side

98mm (3.86")

46mm (1.81")

*Back
(ED3238R)*

*Back
(ED3238T)*

Top / Bottom

Front

Side

Application Diagram

Control center

switch w/o
PoE/PSE

100m

Max. 180m
over RG6 cable

100m

PoE IP camera

ED3238T ← Power & data → ED3238R

57VDC adaptor

Coaxial-
Cable

PoE
Ethernet

Control center

switch w/
PoE/PSE

100m

Max. 180m
over RG6 cable

100m

PoE IP camera

ED3238T ← Power & data → ED3238R

Ordering Information

Model

ED3238-TRU	PoL/PoE Ethernet extender over coaxial cable (including one ED3238T, one ED3238R and one 57VDC adaptor, USA type)
ED3238-TRE	PoL/PoE Ethernet extender over coaxial cable (including one ED3238T, one ED3238R and one 57VDC adaptor, Europe type)
ED3238-TRX	PoL/PoE Ethernet extender over coaxial cable (including one ED3238T and one ED3238R)

ED3541 Series

Hardened 10/100BASE-TX Ethernet Extender

Overview

The ED3541 Ethernet extender allows the extension of IP services beyond normal Ethernet distance limitations without changing cables, breaking the 100-meter Ethernet barrier.

The ED3541's hardened design features high shock and vibration, electrical noise immunity, a wide operating temperature range from -40°C to 75°C, and ruggedized aluminum housing. The ED3541 is the ideal Ethernet extender for environments where connectivity is crucial.

Spotlight

- **UL60950 Certification**
  - Certified by UL60950-1 standard, providing protections to installers from risk of injury or damage

- **High Speed Performance**
  - Up to 100Mbps at 300 meters distance
  - Up to 1Mbps at 2600 meters distance

- **Wide Operating Temperature**
  - -40°C to 75°C wide operating temperature range design is suitable for installation in outdoor cabinets

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3x full duplex and flow control

Processing Type
- Half-duplex back-pressure and IEEE802.3x Full-duplex flow control
- Auto Negotiation
- Auto MDI/MDIX

Power

Input Voltage
- 12 to 48VDC (Terminal Block)

Power Consumption
- 4.56W max. 0.38A @ 12VDC
  0.07A @ 48VDC

Protection
- Over current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum case
- IP30

Dimensions
- 42mm (W) x 90mm (D) x 100mm (H)
  (1.65" (W) x 3.54" (D) x 3.94" (H))

Weight
- 0.41 Kg (0.9 lbs.)

Installation
- DIN-Rail (Top hat type 35mm) mounting

Interface

Ethernet Port
- Port: One RJ-45 port
- Speed: 10/100Mbps
- Distance: 100 meters (328ft.)
- Cable: 10BASE-T: UTP CAT. 3, 4, 5 (2-pair wire)
  100BASE-TX: UTP CAT. 5 (4-pair wire)

Ethernet Extender Port
- Port: One RJ-11/Terminal Block port
- Speed: Up to 100Mbps
- Distance: 2600 meters (8,530 ft.)
- Cable: Telephone wire 24 AWG
  (0.5mm diameter, 1-pair wire) or larger

DIP-Switch
- DIP 1 Site: Auto/Loc
- DIP 2 LDR: ON/OFF

LED Indicators
- Per Unit: Power 1, 2
- Per 10/100TX Port: Link/Activity, Full-duplex
- Line Speed: 100/80/60/40/20Mbps and Link below 20Mbps

Speed / Distance Reference

Distance (m)	Data rate (Mbps)
300	100
400	80
600	60
800	40
...	...
2600	1

Note:
- All speed selections are Symmetrical on the DSL and Full-duplex on the Ethernet
- The data rate will vary according to line quality

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety
UL60950-1, EN60950-1, IEC60950-1

EMI
FCC Part 15B, Class A

VCCI, Class A

EN61000-6-4

EMS
EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
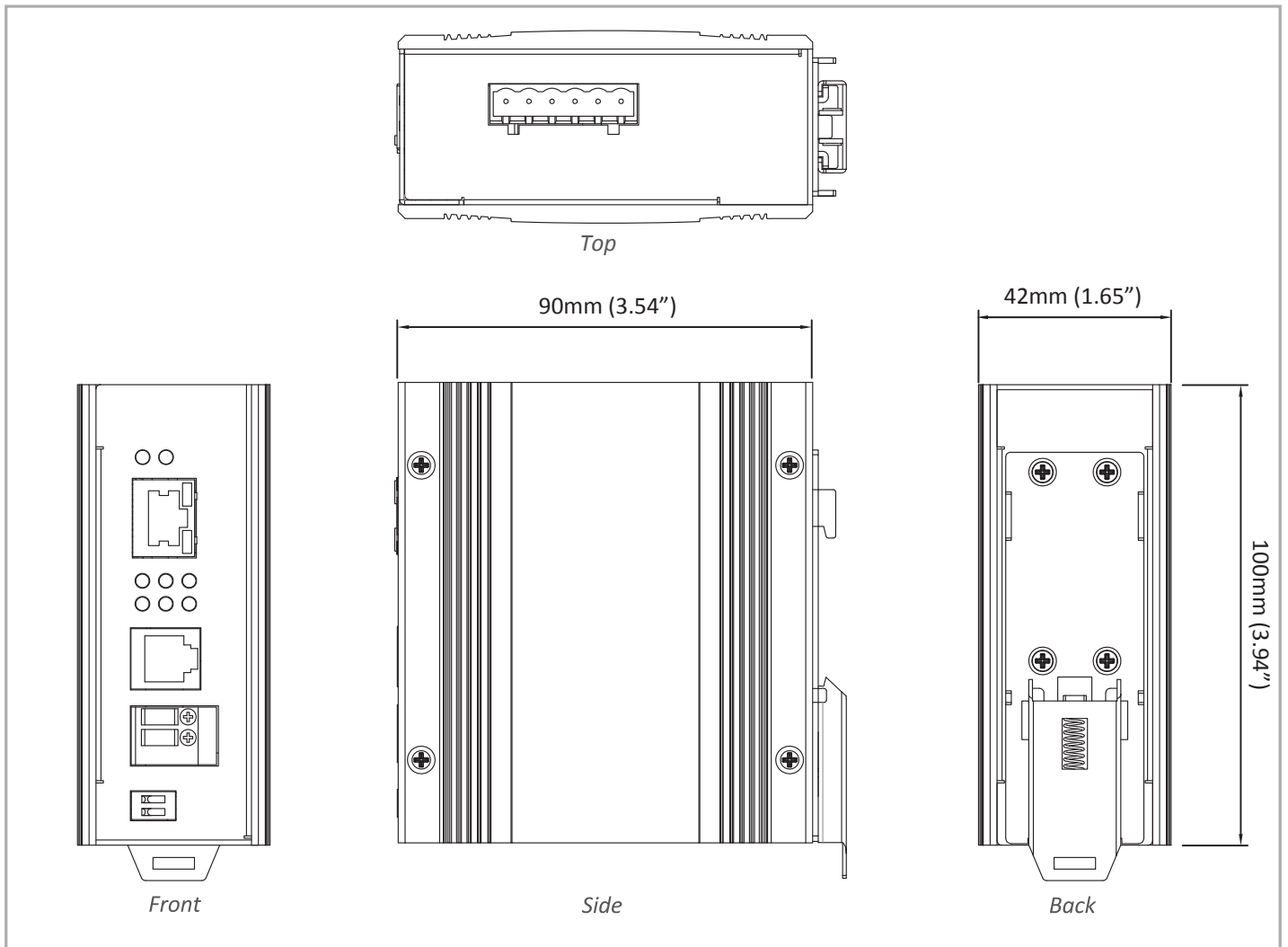- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance
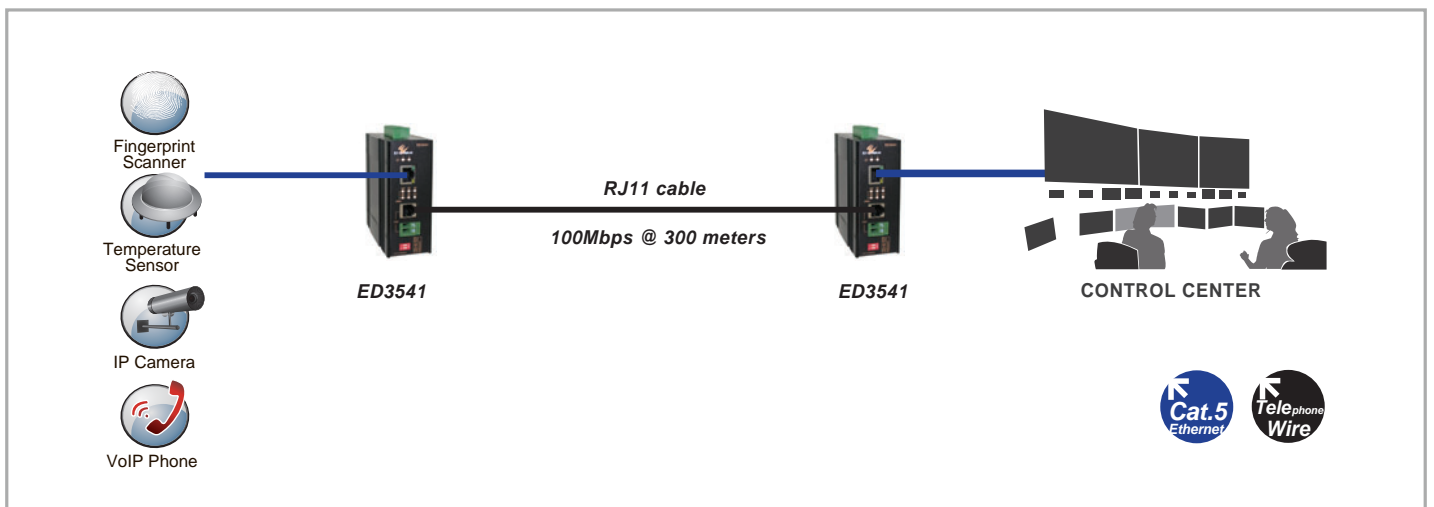IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Dimensions

Top

90mm (3.54")

42mm (1.65")

100mm (3.94")

Front

Side

Back

Application Diagram

Fingerprint
Scanner

Temperature
Sensor

IP Camera

VoIP Phone

RJ11 cable

100Mbps @ 300 meters

ED3541

ED3541

CONTROL CENTER

Cat.5
Ethernet

Telephone
Wire

Ordering Information

Model

ED3541-00B	Hardened 10/100BASE-TX Ethernet Extender

* DIN-Rail mounting kit included

Optional Accessories

DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
MDR-40-48	40W/0.83A 48VDC Industrial Power Supply (for Terminal Block)

ED3501 Series

Industrial 10/100BASE-TX Ethernet Extender

Overview

The ED3501 Ethernet extender allows the extension of IP services beyond normal Ethernet distance limitations without changing cables, breaking the 100-meter Ethernet barrier.

The ED3501's design features high shock, vibration, and electrical noise immunity, a wide operating temperature range from -10°C to 60°C, and ruggedized aluminum housing. The ED3501 is the ideal Ethernet extender for environments where connectivity is crucial.

Spotlight

- **UL60950 Certification**
  - Certified by UL60950-1 standard, providing protections to installers from risk of injury or damage

- **High Speed Performance**
  - Up to 100Mbps at 300 meters distance
  - Up to 1Mbps at 2600 meters distance

- **Wide Operating Temperature**
  - -10°C to 60°C wide operating temperature range design is suitable for installation in outdoor cabinets

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3x full duplex and flow control

Processing Type
- Half-duplex back-pressure and IEEE802.3x Full-duplex flow control
- Auto Negotiation
- Auto MDI/MDIX

Power

Input Voltage
- 12VDC (DC Jack)

Power Consumption
- 4.56W max.
  0.38A@12VDC

Protection
- Over current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum case
- IP30

Dimensions
- 80.3mm (W) x 109.2mm (D) x 23.8mm (H)
  (3.16" (W) x 4.30" (D) x 0.94" (H))

Weight
- 150g (0.33 lbs.)

Installation
- DIN-Rail (Top hat type 35mm) or wall mounting

Interface

Ethernet Port
- Port: One RJ-45 port
- Speed: 10/100Mbps
- Distance: 100 meters (328ft.)
- Cable: 10BASE-T: UTP CAT. 3, 4, 5 (2-pair wire)
  100BASE-TX: UTP CAT. 5 (4-pair wire)

Ethernet Extender Port
- Port: One RJ-11/Terminal Block port
- Speed: Up to 100Mbps
- Distance: 2600 meters (8,530 ft.)
- Cable: Telephone wire 24 AWG
  (0.5mm diameter, 1-pair wire) or larger

DIP-Switch
- DIP 1: AUTO/LOC
- DIP 2: SYM/ASM
- DIP 3: Perf./Std.

LED Indicators
- Per Unit: Power 1
- Per 10/100TX Port: Link/Activity, full-duplex
- Line Speed: 100/80/60/40/20Mbps and link below
- SYM: Symmetric mode (distance ≤ 1000m)
- ASM: Asymmetric mode
- RMT: Remote mode
- LOC: Local mode
- Per: On/Performance mode; Off/Standard mode

Distance (m)	Data rate (Mbps)
300	100
400	80
600	60
800	40
...	...
2600	1

Note:
- All speed selections are Symmetrical on the DSL and Full-duplex on the Ethernet
- The data rate will vary according to the line quality

Environment

Operating Temperature
- -10°C to 60°C (14°F to 140°F)

Storage Temperature
- -20°C to 70°C (-4°F to 158°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL60950-1

EN60950-1

IEC60950-1

EMI

FCC Part 15B, Class A

VCCI, Class A

EN61000-6-4

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
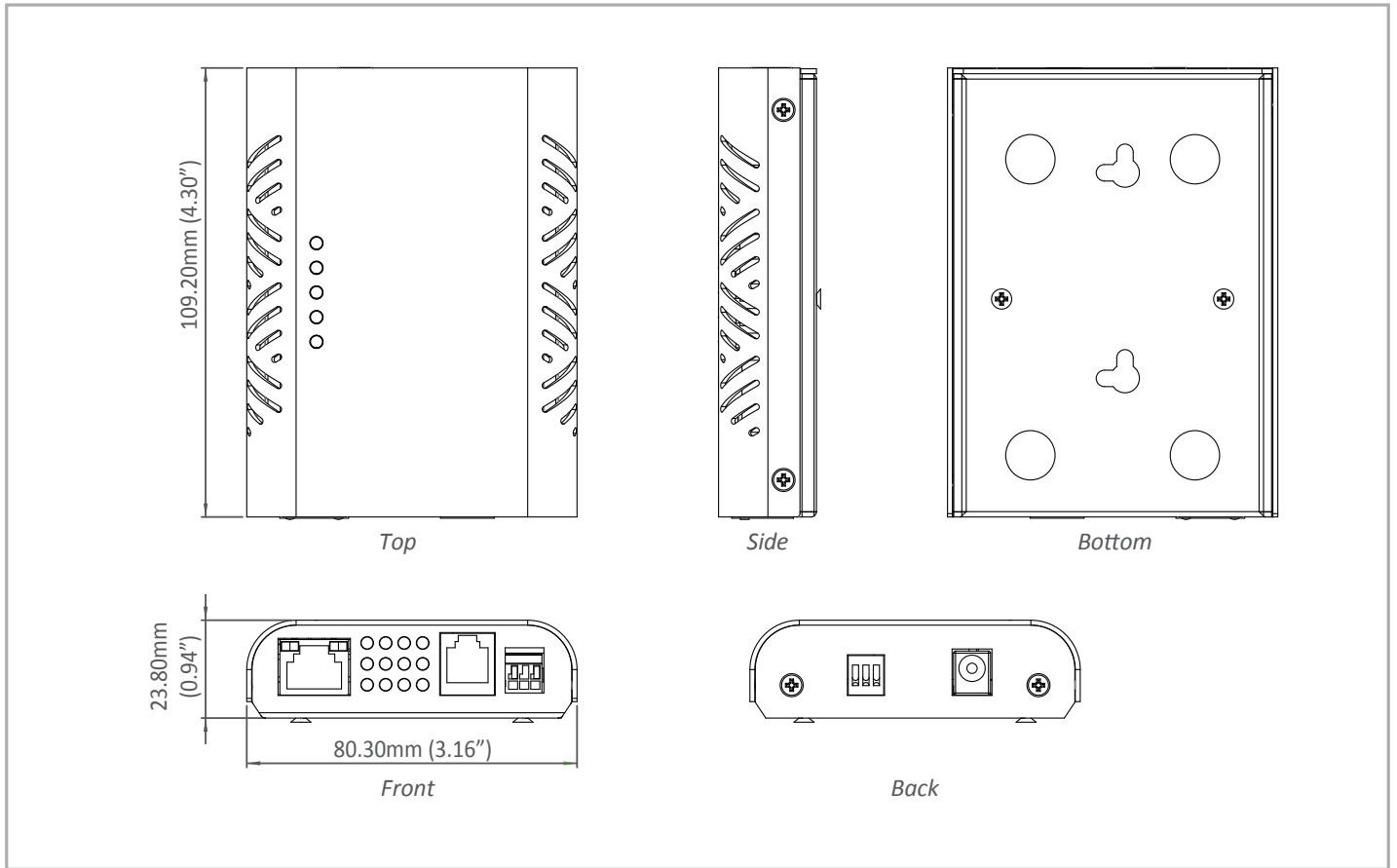- EN61000-4-8 (Magnetic Field Standards)

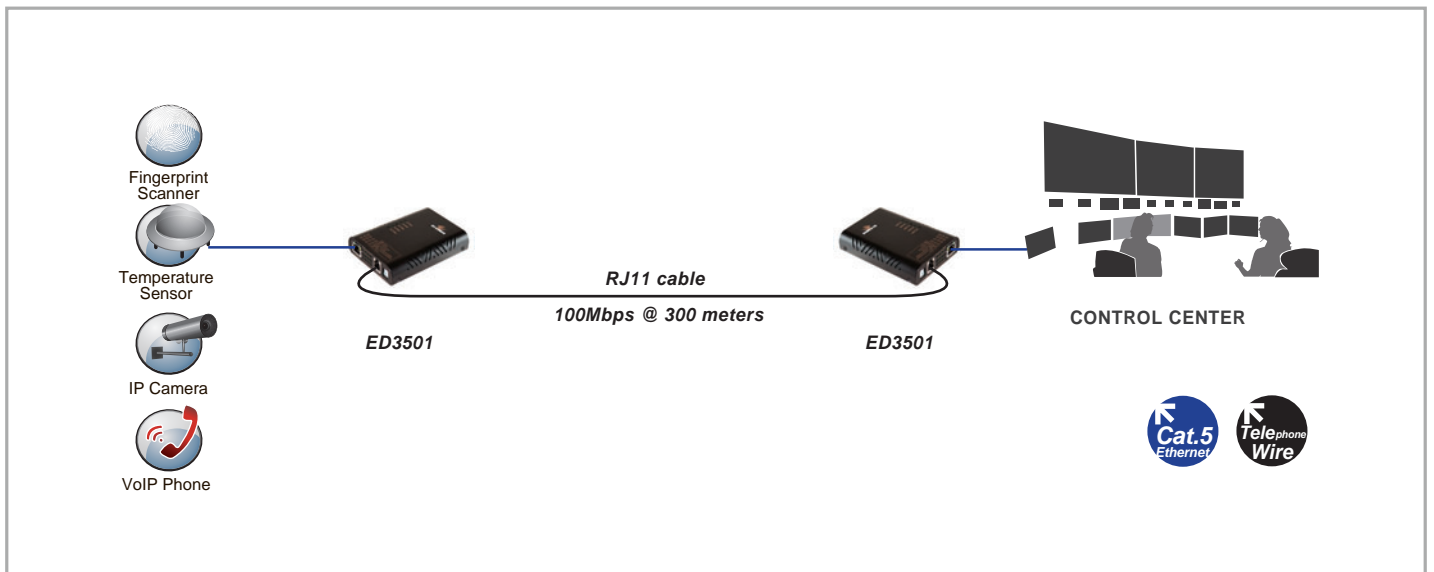### Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Dimensions

Top

Side

Bottom

109.20mm (4.30")

23.80mm (0.94")

80.30mm (3.16")

Front

Back

Application Diagram

Fingerprint Scanner

Temperature Sensor

IP Camera

VoIP Phone

ED3501

RJ11 cable

100Mbps @ 300 meters

ED3501

CONTROL CENTER

Cat.5 Ethernet

Telephone Wire

Ordering Information

Model

ED3501-X	Industrial 10/100BASE-TX Ethernet Extender
ED3501-D-X	Industrial 10/100BASE-TX Ethernet Extender with DIN-Rail Mounting Kit

External Power Adaptor Options (X)

A	with external power adapter for AU
E	with external power adapter for EU
J	with external power adapter for JP
K	with external power adapter for UK
U	with external power adapter for USA (China CCC certified)

ED3175 Series

Hardened Managed 8-port 10/100BASE-TX Switch with 2-port Copper Pair Extender
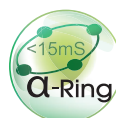
Overview

The ED3175 Series Managed Ethernet Extender enables the extension of Ethernet connectivity over existing copper pair allowing legacy infrastructure to be leveraged for IP networks and extending the Ethernet distance limitations of 100 meters. With eight Ethernet LAN ports and two copper VDSL uplink ports, the ED3175 provides excellent network extension flexibility.

Upgrading an existing legacy control or surveillance system to a new IP-based system is a complicated task, especially when existing cable infrastructure is old copper or twisted pair cable. EtherWAN's ED3175 Series provides Ethernet connection and extension over these existing copper wire cables, minimizing the expense of pulling new cable infrastructure.

The ED3175 Series is built with hardened specifications, providing wide temperature operation range from -40°C to 75°C to overcome severe outdoor environments. The ED3175's management provides remote login feature to execute configuration changing, link status check and device maintenance. Cooperating with managed switches, the ED3175 performs seamless OAM (Operation, Administration and Maintenance) functions. Incorporating VDSL technology, the ED3175's RJ11 and terminal block extender ports provide long distance transmission with 50Mbps rate at 300 meters, or 1Mbps at 1900 meters.

Spotlight

- **Supports Alpha-ring at Extender Ports**
  - Alpha-ring provides network connection redundancy
  - Provides 50Mbps transmission rate with 300 meters distances

- **Managed Functions**
  - Supports IEEE802.3ah OAM standards
  - Supports SNMPv1, SNMPv2
  - Supports bandwidth control and VLAN base priority tag

- **Wide Operating Temperature**
  - -40°C to 75°C wide operating temperature range design is suitable for installation in outdoor cabinet

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

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

Quality of Service (QoS)

- Priority Queues: 4 queues per port
- Traffic classification based on IEEE802.1p CoS, DSCP, WRR (Weighted round robin)
- 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 Protocol
  - IEEE802.1D Spanning Tree Protocol (STP)
  - IEEE802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE802.1s Multiple Spanning Tree Protocol (MSTP)
  - EtherWAN's Alpha-Ring network fault recovery (<15ms) and Alpha-Chain
- VLANs
  - Port-based VLANs
  - IEEE802.1Q Tag VLANs (4096 VID)
  - GVRP (GARP VLAN Registration Protocol)
  - GMRP (GARP Multicast Registration Protocol)
- Link Aggregation
  - Static Trunk (2 groups, support MAC base)
- IGMP Snooping
  - IGMP snooping v1/v2/v3

Performance

- Switching Capability: 900Mbps
- Packet Buffer Size: 256KB
- MAC Address Table: 8K

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3x Full duplex and flow control
- IEEE802.1p QoS
- IEEE802.1Q Tag VLANs
- IEEE802.1w RSTP
- IEEE802.1x Port-based Network Access Control

Forward and Filtering Rate
- 14,880pps for 10Mbps
- 148,810pps for 100Mbps

Packet Buffer Memory
- 2M bits

Processing Type
- Store-and-Forward
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control

Address Table Size
- 8192 MAC addresses

Power

Input Voltage
- 12 to 48VDC (Terminal Block)
- 12VDC (DC Jack)

Power Consumption
- 11W Max. 0.92A @ 12VDC, 0.46A @ 24VDC

Protection
- Over current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum case, IP30

Dimensions
- 60mm (W) x 125mm (D) x 145mm (H)
  (2.36" (W) x 4.92" (D) x 5.7" (H))

Weight
- 1.1Kg (2.42lbs.)

Installation
- DIN-Rail (Top hat type 35mm)

Interface

Ethernet Ports
- 10/100BASE-TX: 8 ports

Ethernet Extender Ports
- RJ-11 and Terminal Block port : 2 ports
- Speed: 1/3/5/10/15/20/25/30/40/50Mbps
- Cable: Telephone wire 24 AWG (Minimum 0.5mm diameter, 1-pair wire) at 1900meters max.

LED Indicators
- Per Unit: Power Status (Power 1, Power 2, Power 3)
- Per Port RJ45: 10/100TX: Link/Activity, Speed
- Per Extender Port: Link

Speed / Distance Reference

	Speed	Distance
1	1Mbps	1,900m (6,232 ft.)
2	3Mbps	1,800m (5,904 ft.)
3	5Mbps	1,600m (5,249 ft.)
4	10Mbps	1,400m (4,593 ft.)
5	15Mbps	1,200m (3,936 ft.)
6	20Mbps	1,000m (3,280 ft.)
7	25Mbps	800m (2,624 ft.)
8	30Mbps	700m (2,296 ft.)
9	40Mbps	600m (1,968 ft.)
10	50Mbps	300m (984 ft.)

Console Port
- Port: One DB9 RS-232 port

DIP-Switch
- One DIP Switch: Local (CO) or Remote (CPE)

Alarm Contact
- One relay output with current 1A @ 24VDC

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
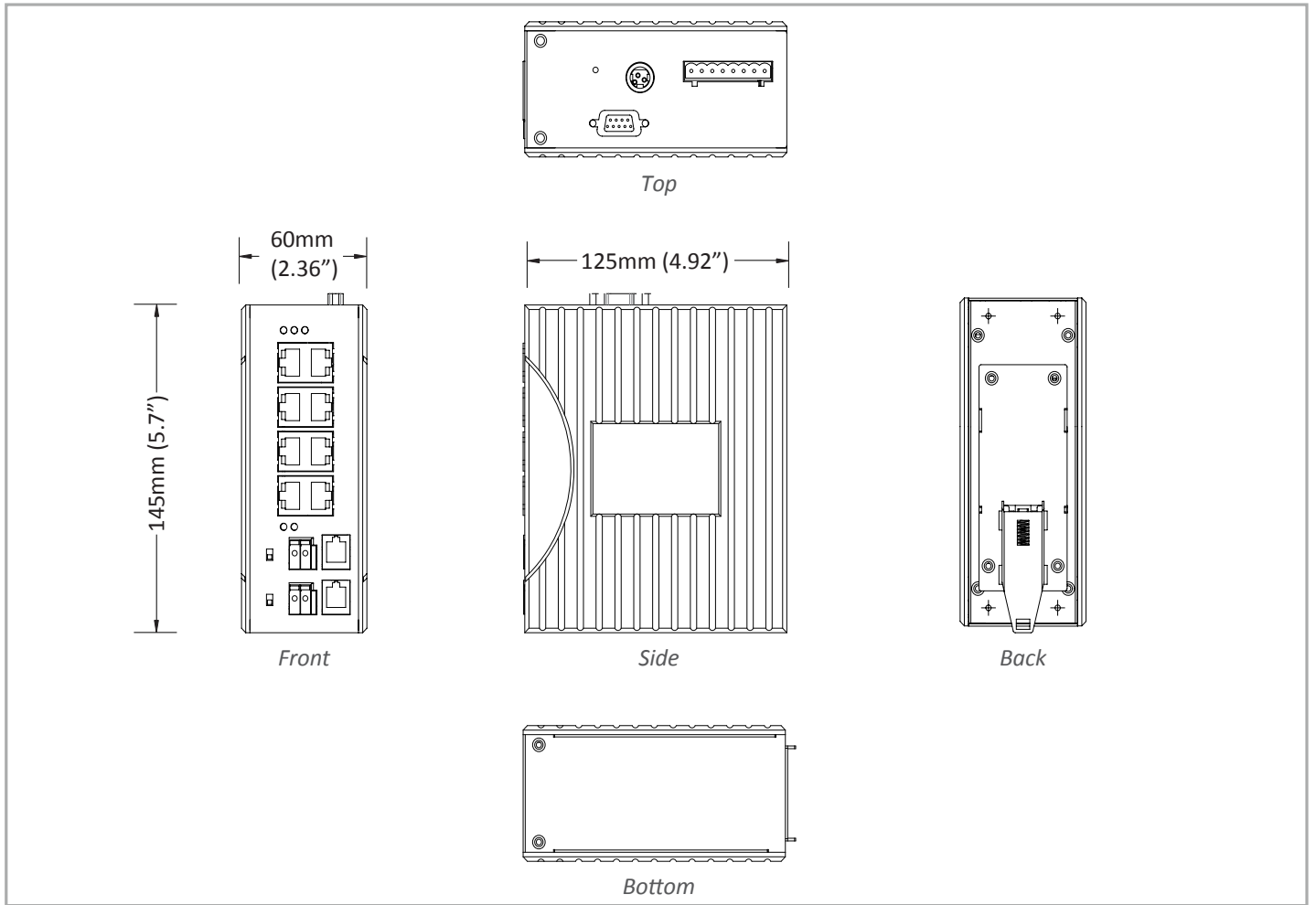- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance
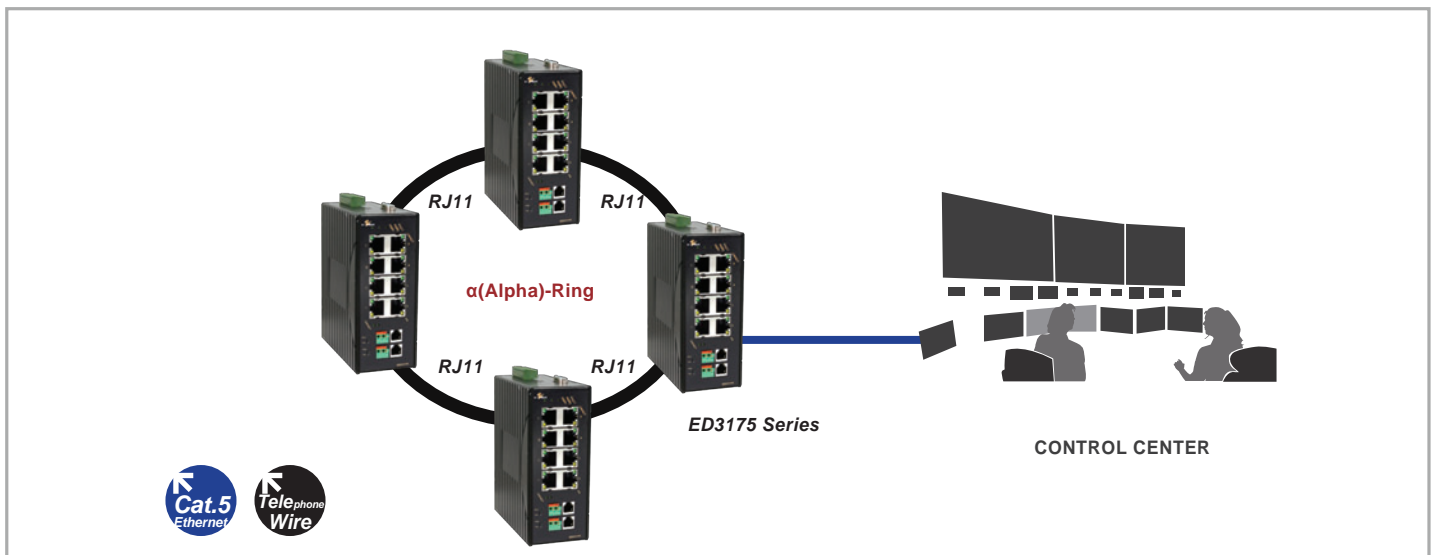
IEC60068-2-6 Fc (Vibration)

IEC60068-2-27 Ea (Shock)

FED STD 101C Method5007.1 (Free fall w/ package)

Dimensions

Top

60mm
(2.36")

125mm (4.92")

145mm (5.7")

Front

Side

Back

Bottom

Application Diagram

RJ11

RJ11

α(Alpha)-Ring

RJ11

RJ11

ED3175 Series

CONTROL CENTER

Cat.5
Ethernet

Tele*phone*
Wire

Ordering Information

Model

ED3175-82B	Hardened Managed 8-port 10/100BASE-TX Switch with 2-port Copper Pair Extender

* DIN-Rail mounting kit included

Optional Accessories

KP-AA96-480	Panel mounting kit
KR-BK71000	Rack mounting Kit
MDR-40-48	40W/0.83A DIN-Rail 48VDC Industrial Power Supply (for Terminal Block)
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for Terminal Block) (X)=1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC jack in aluminum housing (for DC Jack) (X)=1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

ED3146 Series

Hardened 4-Port 10/100BASE-TX IEEE802.3at PoE Ethernet Extender

Overview

The ED3146 Series Ethernet Extender enables the extension of Ethernet connectivity over existing copper pair allowing legacy infrastructure to be leveraged for IP networks and extending the Ethernet distance limitations of 100-meters. With four Ethernet LAN ports and one copper VDSL uplink ports, the ED3146 provides excellent network extension flexibility. Among four Ethernet LAN ports, two Ethernet ports provide IEEE802.3at PoE/PSE support.

Upgrading an existing legacy control or surveillance system to a new IP-based system is a complicated task, especially when existing cable infrastructure is an old copper or twisted pair cable. EtherWAN's ED3146 Series provides Ethernet connection and extension over these existing copper wire cables minimizing the expense of pulling new cable infrastructure.

The ED3146 Series is built with hardened specifications, providing wide temperature operation range from -40°C to 75°C to overcome severe outdoor environments. Incorporating VDSL technology, the ED3146's RJ11 and terminal block extender ports provide long distance transmission with 50Mbps rate at 300 meters, or 1Mbps at 1900 meters; 10 speed LED indicators in the front panel provide easy lookup for the connection speed.

Spotlight

- **Supports 4 Ports Switch**
  - Supports four 10/100BASE-TX Ethernet ports

- **Supports IEEE802.3at PoE/PSE**
  - Supports two Ethernet ports with IEEE802.3at PoE/PSE 30W power output
  - IEEE802.3af PoE/PD compatible

- **Wide Operating Temperature**
  - -40°C to 75°C wide operating temperature range design is suitable for installation in outdoor cabinets

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3x full duplex and flow control
- IEEE802.1af/at Power over Ethernet

Protocols
- Transparent to higher layer protocols

Processing Type
- Store-and-Forward
- Auto Negotiation
- Half-duplex back-pressure and IEEE802.3x full-duplex flow control
- Auto MDI/MDIX

Power

Input Voltage
- 24 to 48VDC (Terminal Block)
- 48VDC (DC Jack)

Power Consumption
- 69.12W Max. 1.44A @ 48VDC, when 2 PoE link with PD Class 0 device. Each PSE Port required Max. 30W power consumption.

Protection
- Over current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum case
- IP30

Dimensions
- 50mm (W) x 110mm (D) x 135mm (H) (1.97" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.8Kg (1.76lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel, or Rack mounting

Interface

Ethernet Ports
- Port: 4 RJ-45 ports
- PoE Port: complies with IEEE802.3af and IEEE802.3at standard
- Speed: 10/100Mbps
- Distance: 100meters (328ft.)
- Cable: UTP CAT. 3, 4, 5 (2-pair wire)
- 100BASE-TX: UTP CAT. 5 (4-pair wire)

Ethernet Extender Ports
- Port: One RJ-11 and Terminal Block port
- Speed: 1/3/5/10/15/20/25/30/40/50Mbps
- Distance: 1900 meters (6,232ft.)
- Cable: Telephone wire 24 AWG (0.5mm diameter, 1-pair wire) or larger

LED Indicators
- Per Unit: Power
- Per 10/100TX Port: Link/Activity, Full-duplex
- Line: Error, Link, Local, Remote

Speed / Distance Reference

LED	Color	Speed	Distance
1	Green	1Mbps	1,900m (6,232 ft.)
	Amber	3Mbps	1,800m (5,904 ft.)
2	Green	5Mbps	1,600m (5,249 ft.)
	Amber	10Mbps	1,400m (4,593 ft.)
3	Green	15Mbps	1,200m (3,936 ft.)
	Amber	20Mbps	1,000m (3,280 ft.)
4	Green	25Mbps	800m (2,624 ft.)
	Amber	30Mbps	700m (2,296 ft.)
5	Green	40Mbps	600m (1,968 ft.)
	Amber	50Mbps	300m (984 ft.)

- Note: All speed selections are Symmetrical on the DSL and Full-duplex on the Ethernet

DIP-Switch
- One DIP Switch: Local (CO) or Remote (CPE)

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL508

EMI

FCC Part 15B, Class A

EN61000-6-4, EN55022, EN61000-3-2 and EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
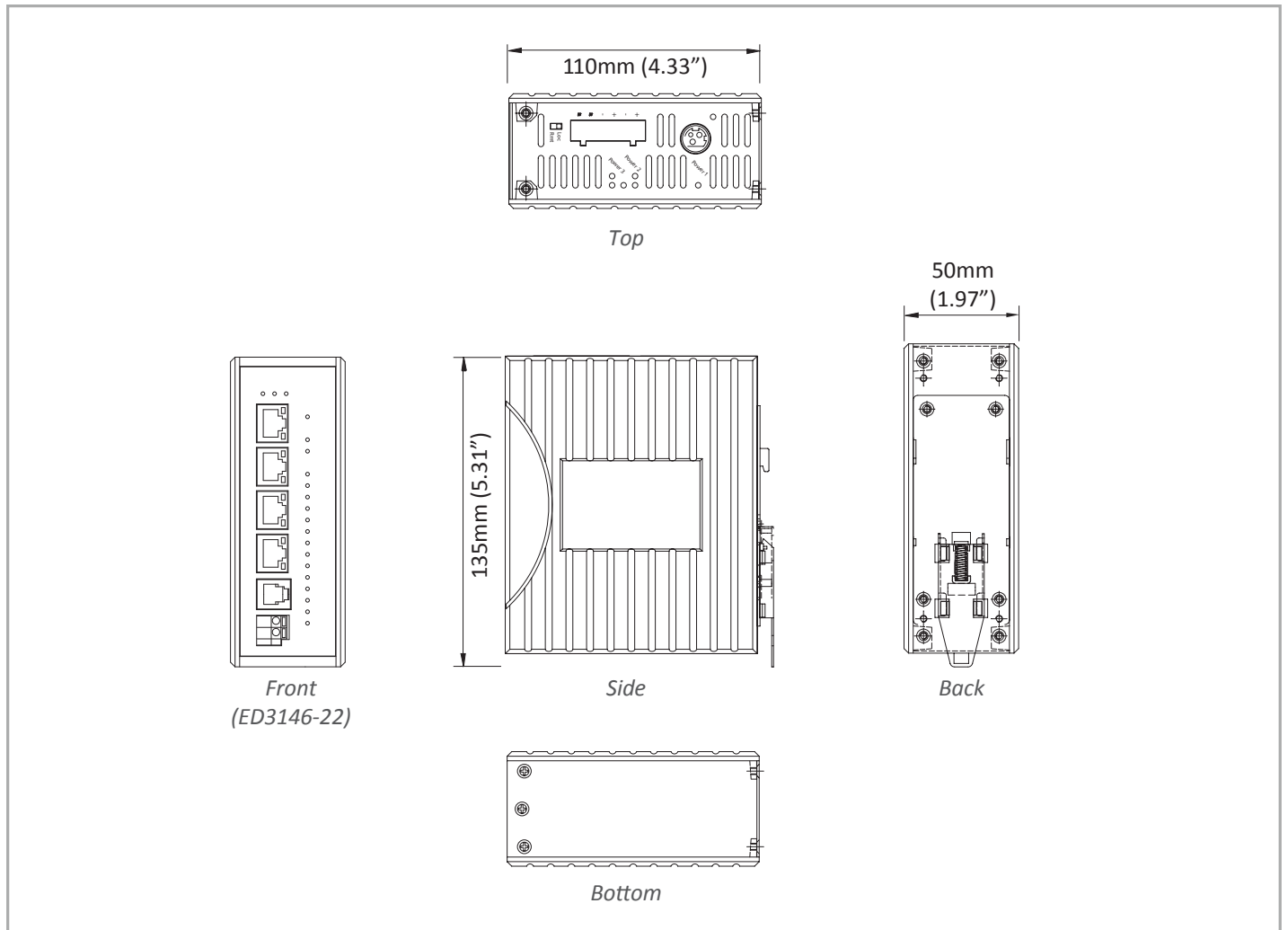- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance
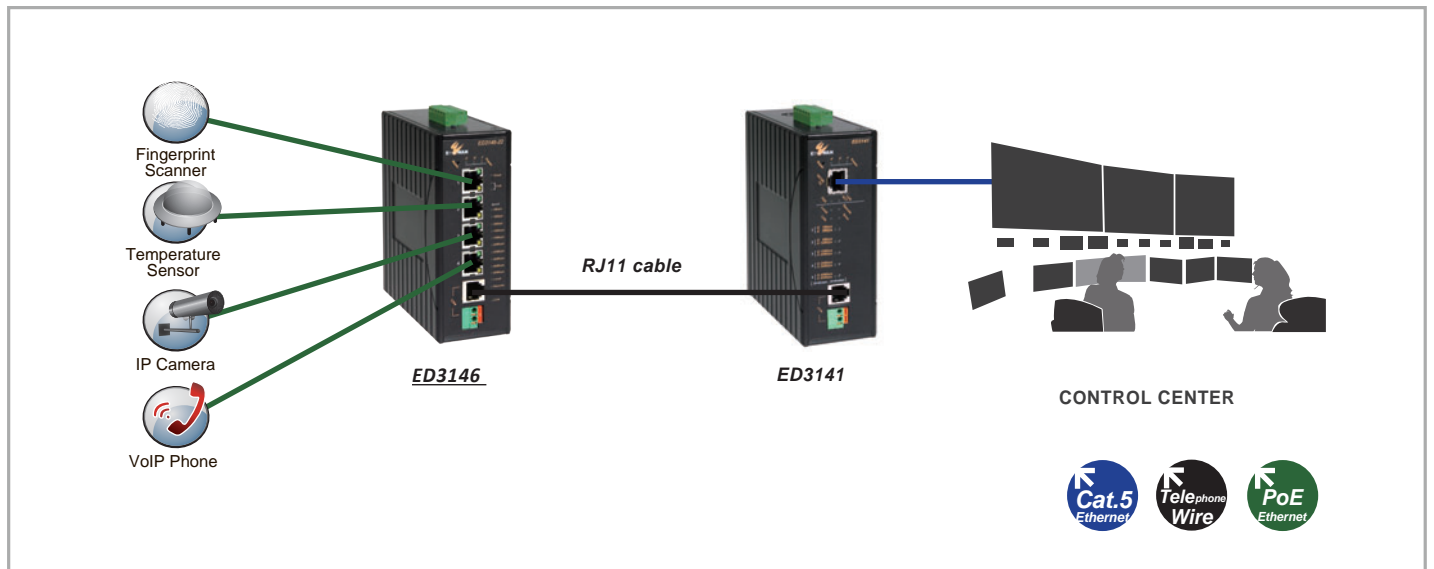
IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Dimensions

110mm (4.33")

Top

50mm (1.97")

135mm (5.31")

Front (ED3146-22)

Side

Back

Bottom

Application Diagram

Fingerprint Scanner

Temperature Sensor

IP Camera

VoIP Phone

ED3146

RJ11 cable

ED3141

CONTROL CENTER

Cat.5 Ethernet

Tele*phone* Wire

PoE Ethernet

Ordering Information

Model

ED3146-22B	Hardened 4-port 10/100BASE-TX with 2-port IEEE802.3at PoE/PSE Ethernet Extender

* DIN-Rail mounting kit included

Optional Accessories

KP-AA96-480	Panel mounting kit
DR-60--24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply

ED3145 Series

Hardened 4-port 10/100BASE-TX Ethernet Extender

Overview

The ED3145 Series Ethernet Extender enables the extension of Ethernet connectivity over existing copper pair allowing legacy infrastructure to be leveraged for IP networks and extending the Ethernet distance limitations of 100 meters. With four Ethernet LAN ports and one copper VDSL uplink ports, the ED3145 provides excellent network extension flexibility.

Upgrading an existing legacy control or surveillance system to a new IP-based system is a complicated task, especially when existing cable infrastructure is old copper or twisted pair cable. EtherWAN's ED3145 Series provides Ethernet connection and extension over these existing copper wire cables, minimizing the expense of pulling new cable infrastructure.

The ED3145 Series is built with hardened specifications, providing wide temperature operation range from -40°C to 75°C to overcome severe outdoor environments. Incorporating VDSL technology, the ED3145's RJ11 and terminal block extender ports provide long distance transmission with 50Mbps rate at 300 meters, or 1Mbps at 1900 meters; 10 speed LED indicators in the front panel provide easy lookup for the connection speed.

Spotlight

- **4-Port Switch**
  - ◦ Supports four 10/100BASE-TX Ethernet ports

- **Transmission Speed LED Indication**
  - ◦ Supports ten speed LED indicators

- **Wide Operating Temperature**
  - ◦ -40°C to 75°C wide operating temperature range design is suitable for installation in outdoor cabinets

Hardware Specifications

Technology

Standards
• IEEE802.3 10BASE-T
• IEEE802.3u 100BASE-TX
• IEEE802.3x Full duplex and flow control

Protocols
• Transparent to higher layer protocols

Processing Type
• Store-and-Forward
• Auto Negotiation
• Half-duplex back-pressure and IEEE802.3x full-duplex flow control
• Auto MDI/MDIX

Power

Input Voltage
• 24 to 48VDC (Terminal Block)
• 48VDC (DC Jack)

Power Consumption
• 8.64W Max.0.18A @ 48VDC

Protection
• Over current protection
• Reverse polarity protection

Mechanical

Casing
• Aluminum case
• IP30

Dimensions
• 50mm (W) x 110mm (D) x 135mm (H);
  1.97" (W) x 4.33" (D) x 5.31" (H)

Weight
• 0.8Kg (1.76lbs.)

Installation
• DIN-Rail (Top hat type 35mm) or Panel mounting

Interface

Ethernet Ports
• Port: 4 RJ-45 ports
• Speed: 10/100Mbps
• Distance: 100 meters (328ft.)
• Cable: 10BASE-T: UTP CAT. 3, 4, 5 (2-pair wire),
          100BASE TX: UTP CAT. 5 (4-pair wire)

Ethernet Extender Ports
• Port: One RJ-11 and Terminal Block port
• Speed: 1/3/5/10/15/20/25/30/40/50Mbps
• Distance: 1900meters (6,232ft.)
• Cable: Telephone wire 24 AWG
  (0.5mm diameter, 1-pair wire) or larger

LED Indicators
• Per Unit: Power
• Per 10/100TX Port: Link/Activity, Full-duplex
• Line: Error, Link, Local, Remote

Speed / Distance Reference

LED	Color	Speed	Distance
1	Green	1Mbps	1,900m (6,232 ft.)
	Amber	3Mbps	1,800m (5,904 ft.)
2	Green	5Mbps	1,600m (5,249 ft.)
	Amber	10Mbps	1,400m (4,593 ft.)
3	Green	15Mbps	1,200m (3,936 ft.)
	Amber	20Mbps	1,000m (3,280 ft.)
4	Green	25Mbps	800m (2,624 ft.)
	Amber	30Mbps	700m (2,296 ft.)
5	Green	40Mbps	600m (1,968 ft.)
	Amber	50Mbps	300m (984 ft.)

• Note: All speed selections are symmetrical on the DSL, and Full-duplex on the Ethernet

DIP-Switch
• One DIP Switch: Local (CO) or Remote (CPE)

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
• -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity
• 5% to 95% (non-condensing)

Regulatory Approvals

ISO
• Manufactured in an ISO9001 facility

Safety

UL508

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EMS

EN61000-6-2
• EN61000-4-2 (ESD Standards)
• EN61000-4-3 (Radiated RFI Standards)
• EN61000-4-4 (Burst Standards)
• EN61000-4-5 (Surge Standards)
• EN61000-4-6 (Induced RFI Standards)
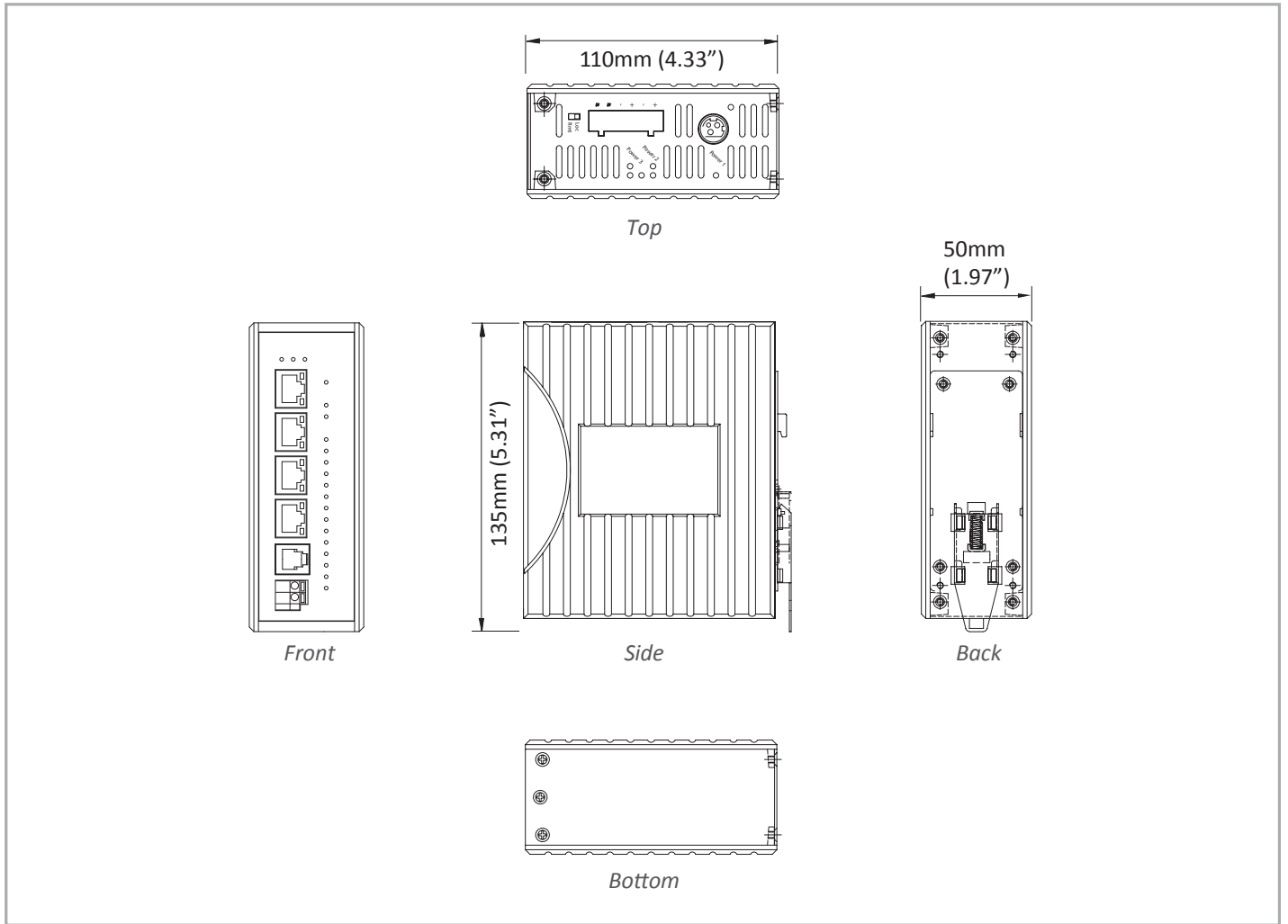• EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance
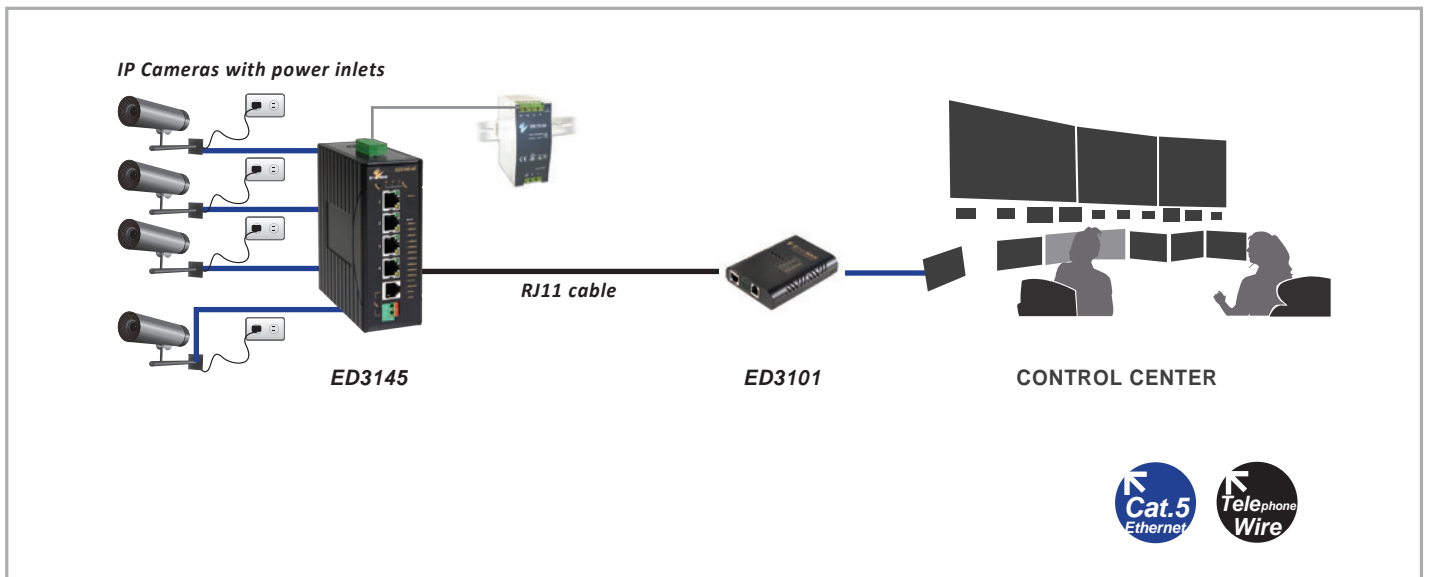
IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Dimensions

110mm (4.33")

Top

Front

135mm (5.31")

Side

50mm (1.97")

Back

Bottom

Application Diagram

IP Cameras with power inlets

ED3145

RJ11 cable

ED3101

CONTROL CENTER

Cat.5 Ethernet

Telephone Wire

Ordering Information

Model

ED3145-40B	Hardened 4-port 10/100BASE-TX Ethernet Extender

* DIN-Rail mounting kit included

Optional Accessories

KP-AA96-480	Panel mounting kit
MDR-40-48	40W/0.83A DIN-Rail 48VDC Industrial Power Supply
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply

ED3171 Series

Managed Hardened 10/100BASE-TX Ethernet Extender

EtherWAN

Overview

The ED3171 Series Managed Ethernet Extender enables the extension of Ethernet connectivity over existing copper pair allowing legacy infrastructure to be leveraged for IP networks and extending the Ethernet distance limitations of 100 meters.

Upgrading an existing legacy control or surveillance system to a new IP-based system is a complicated task, especially when existing cable infrastructure is old copper or twisted pair cable. EtherWAN's ED3171 Series provides Ethernet connection and extension over these existing copper wire cables minimizing the expense of pulling new cable infrastructure.

The ED3171 Series is built with hardened specifications, providing wide temperature operation range from -40°C to 75°C to overcome severe outdoor environments. The ED3171's management provides remote login feature to execute configuration changing, link status check and device maintenance. Cooperating with managed switches, the ED3171 performs seamless OAM (Operation, Administration and Maintenance) functions. Incorporating VDSL technology, the ED3171's RJ11 and terminal block extender ports provide long distance transmission with 50Mbps rate at 300 meters, or 1Mbps at 1900 meters; 10 speed LED indicators in the front panel provide easy lookup for the connection speed.

Spotlight

- **UL508 Certification**
  - Specific design for industrial communication applications with UL508 safety certification

- **Managed Functions**
  - Supports IEEE802.3ah OAM standards
  - Supports SNMPv1, SNMPv2

- **Supports bandwidth control and VLAN base priority tag**
  - Wide Operating Temperature
  - -40°C to 75°C wide operating temperature range design is suitable for installation in outdoor cabinet

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3x full duplex and flow control

Protocols
- Transparent to higher layer protocols

Processing Type
- IEEE802.3x Full-duplex flow control
- Auto Negotiation
- Auto MDI/MDIX

Power

Input Voltage
- 12 to 32VDC (Terminal Block)
- 12VDC (DC Jack)

Power Consumption
- 5.76W Max. 0.48A @ 12VDC, 0.24A @ 24VDC

Protection
- Over current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum case
- IP30

Dimensions
- 50mm (W) x 110mm (D) x 135mm (H)
  (1.97" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.8Kg (1.76lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel, or Rack mounting

Interface

Ethernet Ports
- Port: One RJ-45 port
- Speed: 10/100Mbps
- Distance: 100 meters (328ft.)
- Cable: 10BASE-T: UTP CAT. 3, 4, 5 (2-pair wire)
          100BASE-TX: UTP CAT. 5 (4-pair wire)

Ethernet Extender Ports
- Port: One RJ-11 and Terminal Block port
- Speed: 1/3/5/10/15/20/25/30/40/50Mbps
- Distance: 1900 meters (6,232ft.)
- Cable: Telephone wire 24 AWG
          (0.5mm diameter, 1-pair wire) or larger

DIP-Switch
- One DIP Switch: Local (CO) or Remote (CPE)

LED Indicators
- Per Unit: Power
- Per 10/100TX Port : Link/Activity
- Full-duplex Line: Error, Link, Local, Remote

Speed / Distance Reference

LED	Color	Speed	Distance
1	Green	1Mbps	1,900m (6,232 ft.)
1	Amber	3Mbps	1,800m (5,904 ft.)
2	Green	5Mbps	1,600m (5,249 ft.)
2	Amber	10Mbps	1,400m (4,593 ft.)
3	Green	15Mbps	1,200m (3,936 ft.)
3	Amber	20Mbps	1,000m (3,280 ft.)
4	Green	25Mbps	800m (2,624 ft.)
4	Amber	30Mbps	700m (2,296 ft.)
5	Green	40Mbps	600m (1,968 ft.)
5	Amber	50Mbps	300m (984 ft.)

- Note: All speed selections are Symmetrical on the DSL and Full-duplex on the Ethernet

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL508

EMI

FCC Part 15B, Class A

EN61000-6-4, EN55022, EN61000-3-2 and EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

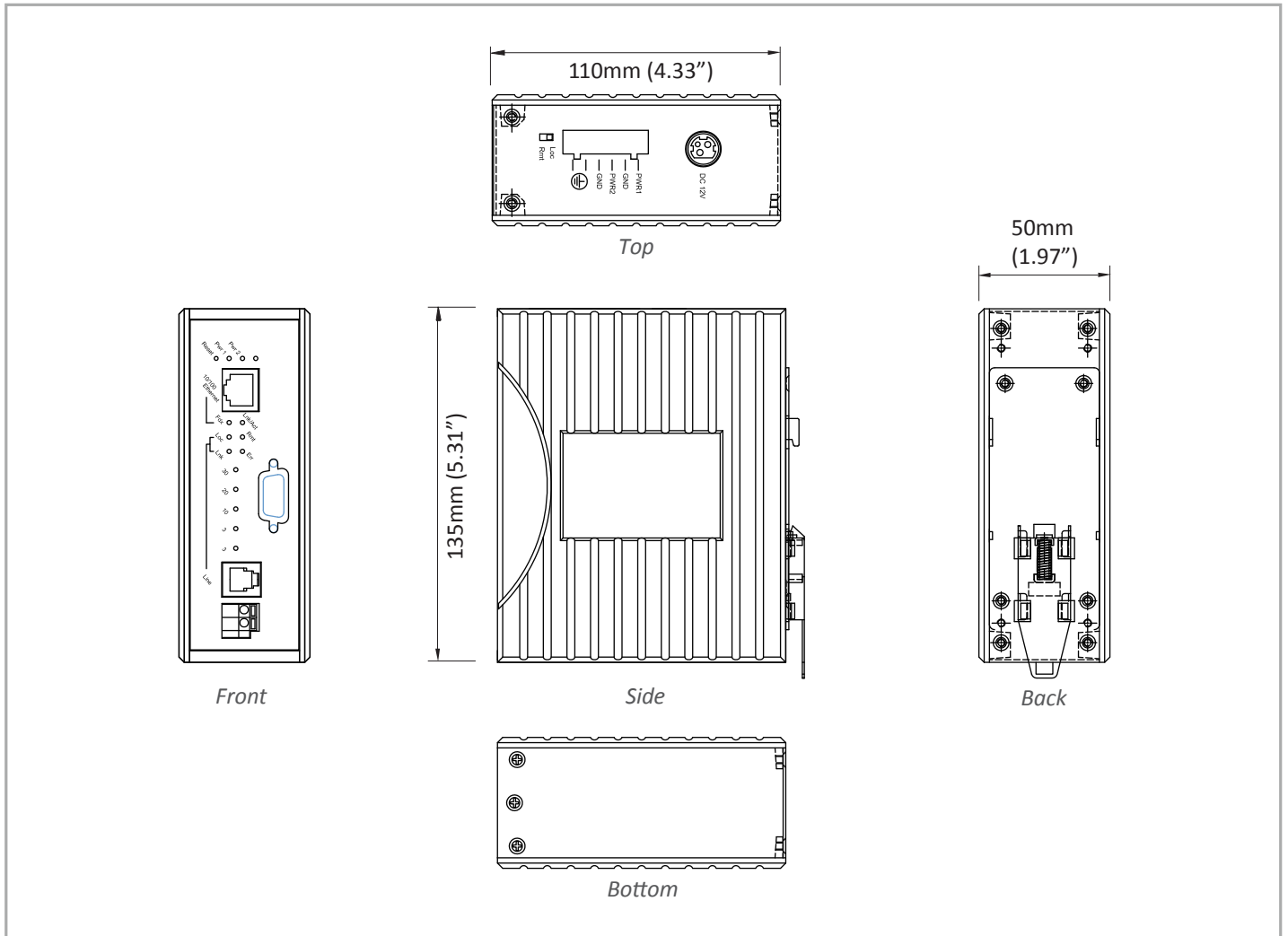### Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)
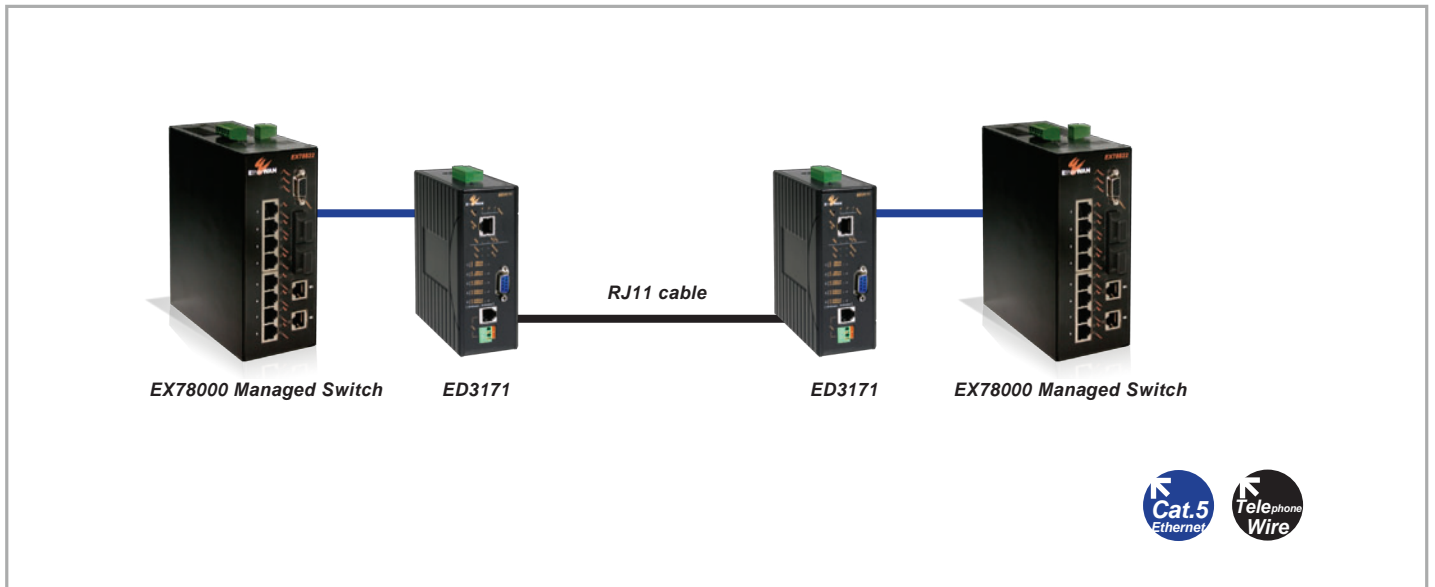
FED STD 101C Method 5007.1 (Free fall w/ package)

Industrial Compliance

NEMA TS2

Dimensions

110mm (4.33")

Loc
Rmt

GND
GND PWR2
PWR1

DC 12V

Top

50mm
(1.97")

Port 2
Port 1
Power

10/100
Ethernet

135mm (5.31")

Front

Side

Back

Bottom

Application Diagram

RJ11 cable

EX78000 Managed Switch   **ED3171**   **ED3171**   **EX78000 Managed Switch**

Cat.5
Ethernet

Telephone
Wire

Ordering Information

Model

ED3171-00B	Managed Hardened 10/100BASE-TX Ethernet Extender

* DIN-Rail mounting kit included

Optional Accessories

KP-AA96-480	Panel mounting kit
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for terminal block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for terminal block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for terminal block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for terminal block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for terminal block) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC jack in aluminum housing (for DC jack) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

ED3141 Series

Hardened 10/100BASE-TX Ethernet Extender

Overview

The ED3141 Series Ethernet Extender enables the extension of Ethernet connectivity over existing copper pair allowing legacy infrastructure to be leveraged for IP networks and extending the Ethernet distance limitations of 100 meters.

Upgrading an existing legacy control or surveillance system to a new IP-based system is a complicated task, especially when existing cable infrastructure is old copper or twisted pair cable. EtherWAN's ED3141 Series provides Ethernet connection and extension over these existing copper wire cables minimizing the expense of pulling new cable infrastructure.

The ED3141 Series is built with hardened specifications, providing wide temperature operation range from -40°C to 75°C to overcome severe outdoor environments. Incorporating VDSL technology, the ED3141's RJ11 and terminal block extender ports provide long distance transmission with 50Mbps rate at 300 meters, or 1Mbps at 1900 meters; 10 speed LED indicators in the front panel provide easy lookup for the connection speed.

Spotlight

- **UL508 Certification**
  - Specific design for industrial communication applications with UL508 safety certification

- **ISA12.12.01 Certification**
  - Highly qualified for explosive environmental applications and certified by UL with ISA12.12.01 Class I, Division 2 classified for use in hazardous locations

- **Wide Operating Temperature**
  - -40°C to 75°C wide operating temperature range design is suitable for installation in outdoor cabinets

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3x full duplex and flow control

Processing Type
- Half-duplex back-pressure and IEEE802.3x Full-duplex flow control
- Auto Negotiation
- Auto MDI/MDIX

Power

Input Voltage
- 12 to 30VDC (Terminal Block)
- 12VDC (DC Jack)

Power Consumption
- 4.2WMax. 0.35A @ 12VDC, 0.175A @ 24VDC

Protection
- Over current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum case
- IP30

Dimensions
- 50mm (W) x 110mm (D) x 135mm (H)
  (1.97" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.8Kg (1.76lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel, or Rack mounting

Interface

Ethernet Port
- Port: One RJ-45 port
- Speed: 10/100Mbps
- Distance: 100 meters (328ft.)
- Cable: 10BASE-T: UTP CAT. 3, 4, 5 (2-pair wire)
          100BASE-TX: UTP CAT. 5 (4-pair wire)

Ethernet Extender Ports
- Port: One RJ-11 and Terminal Block port
- Speed: 1/3/5/10/15/20/25/30/40/50Mbps
- Distance: 1900 meters (6,232ft.)
- Cable: Telephone wire 24 AWG
  (0.5mm diameter, 1-pair wire) or larger

DIP-Switch
- One DIP Switch: Local (CO) or Remote (CPE)

LED Indicators
- Per Unit: Power
- Per 10/100TX Port: Link/Activity, Full-duplex
- Line: Error, Link, Local, Remote

Speed / Distance Reference

LED	Color	Speed	Distance
1	Green	1Mbps	1,900m (6,232 ft.)
	Amber	3Mbps	1,800m (5,904 ft.)
2	Green	5Mbps	1,600m (5,249 ft.)
	Amber	10Mbps	1,400m (4,593 ft.)
3	Green	15Mbps	1,200m (3,936 ft.)
	Amber	20Mbps	1,000m (3,280 ft.)
4	Green	25Mbps	800m (2,624 ft.)
	Amber	30Mbps	700m (2,296 ft.)
5	Green	40Mbps	600m (1,968 ft.)
	Amber	50Mbps	300m (984 ft.)

- Note: All speed selections are Symmetrical on the DSL and Full-duplex on the Ethernet

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL508

ISA12.12.01
- Class I, Division 2 Classified for use in hazardous locations

EMI

FCC Part 15B, Class A

EN61000-6-4, EN55022, EN61000-3-2 and EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

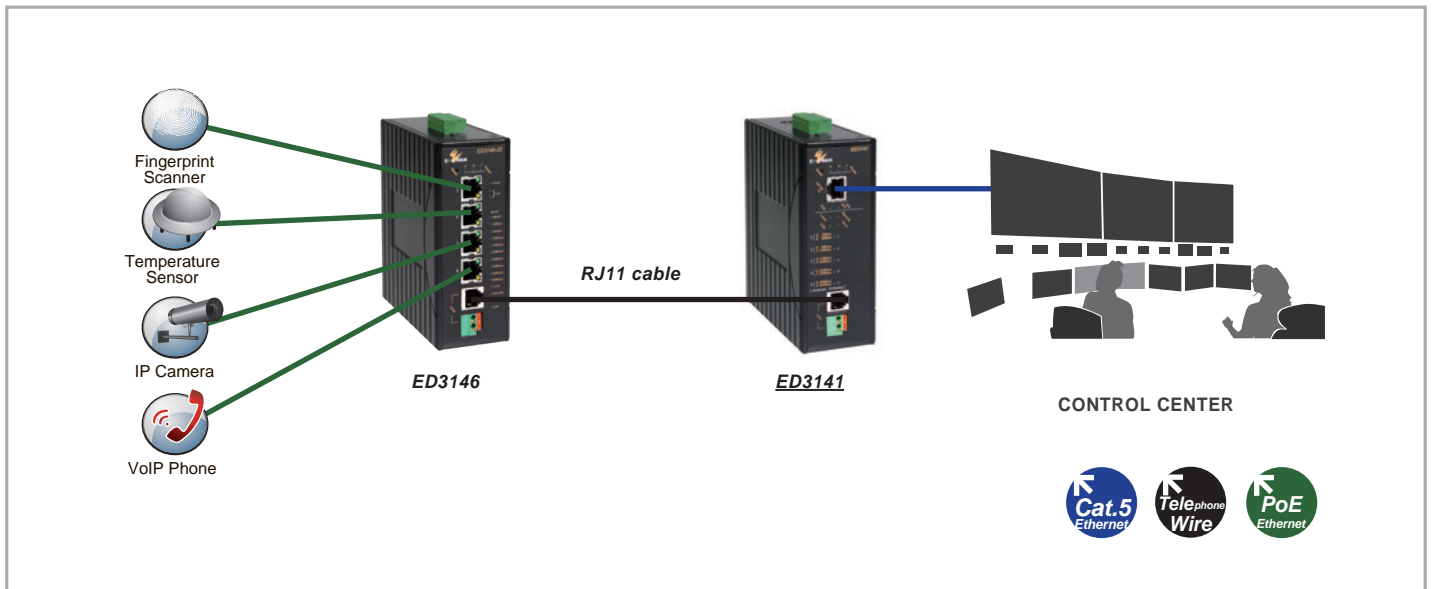**FED STD 101C Method 5007.1 (Free fall w/ package)**

Industrial Compliance

NEMA TS2

Dimensions

110mm (4.33")

Top

50mm
(1.97")

135mm (5.31")

Front

Side

Back

Bottom

Application Diagram

Fingerprint
Scanner

Temperature
Sensor

IP Camera

VoIP Phone

RJ11 cable

ED3146

ED3141

CONTROL CENTER

Cat.5 *Ethernet*

Tele*phone* **Wire**
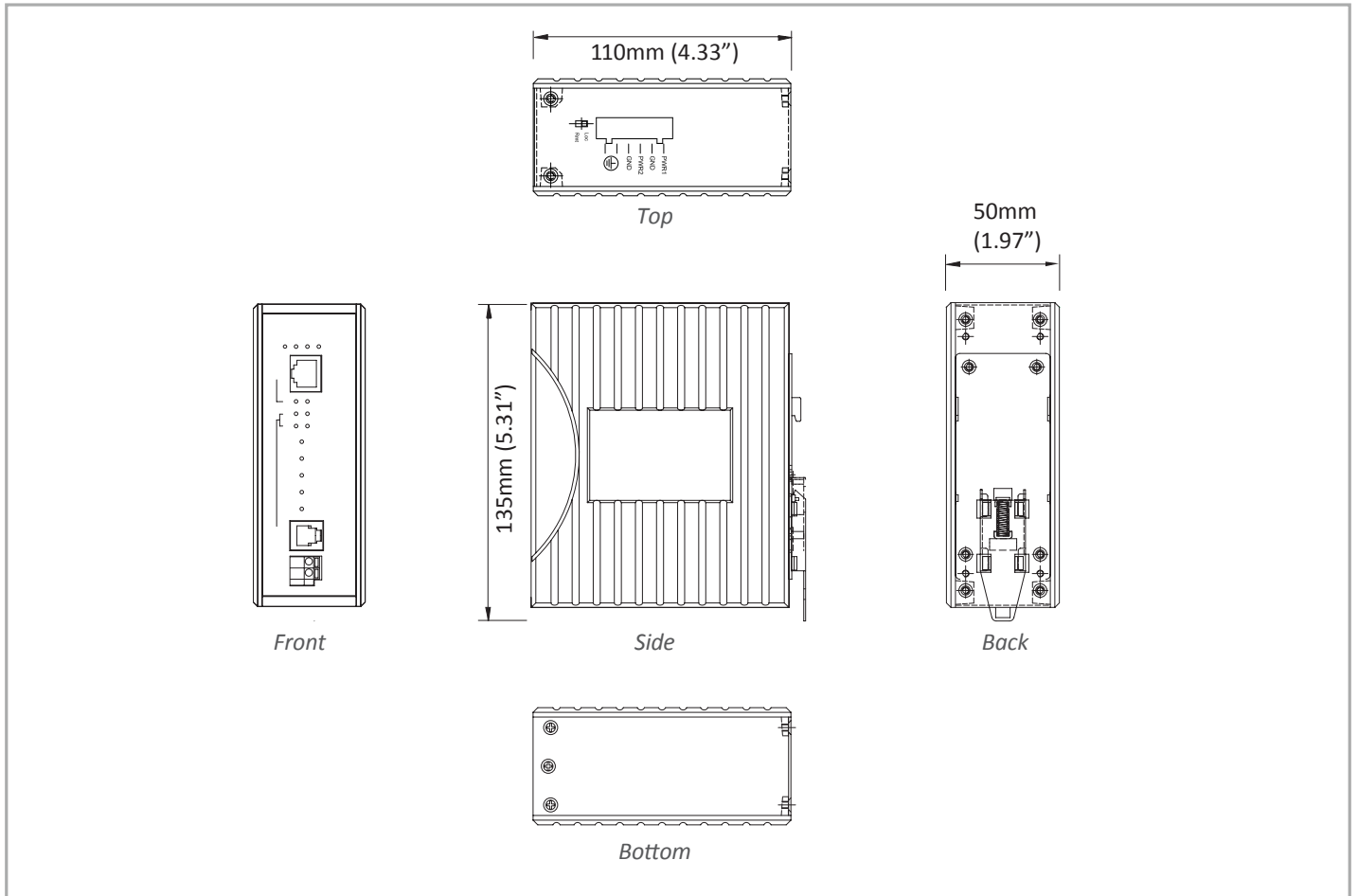
PoE *Ethernet*

Ordering Information

Model

ED3141-00B	Hardened 10/100BASE-TX Ethernet Extender

* DIN-Rail mounting kit included

Optional Accessories

KP-AA96-480	Panel mounting kit
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for terminal block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for terminal block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for terminal block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for terminal block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for terminal block) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC jack in aluminum housing (for DC jack) (X) = 1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

ED3101 Series

Industrial 10/100BASE-TX Ethernet Extender

Overview

The ED3101 Series Ethernet Extender enables the extension of Ethernet connectivity over existing copper pair allowing legacy infrastructure to be leveraged for IP networks and extending the Ethernet distance limitations of 100 meters.

Upgrading an existing legacy control or surveillance system to a new IP-based system is a complicated task, especially when existing cable infrastructure is old copper or twisted pair cable. EtherWAN's ED3101 Series provides Ethernet connection and extension over these existing copper wire cables minimizing the expense of pulling new cable infrastructure.

The ED3101 Series is built with industrial grade specifications, providing wide temperature operation range from -20°C to 60°C to overcome industrial environments. Incorporating VDSL technology, the ED3101's RJ11 and terminal block extender ports provide long distance transmission with 50Mbps rate at 300 meters, or 1Mbps at 1900 meters; 10 speed LED indicators in the front panel provide easy lookup for the connection speed.

Spotlight

- **Transmission Speed LED Indication**
  - Supports ten speed LED indicators

- **Industrial Operating Temperature Range**
  - From -10°C to 60°C, wide operating temperature is suitable for outdoor cabinet installation

- **Optional Chassis System**
  - Supports wall mounting or EtherWAN's EMC1600 chassis system for easy group installation with power redundancy

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3x full duplex and flow control

Processing Type
- Half-duplex back-pressure and IEEE802.3x Full-duplex flow control
- Auto Negotiation
- Auto MDI/MDIX

Power

Input Voltage
- 12VDC (DC Jack)

Power Consumption
- 2.4W Max. 0.2A @ 12VDC

Protection
- Over current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum case

Dimensions
- 80.3mm (W) x 109.2mm (D) x 23.8mm (H)
  (3.16" (W) x 4.30" (D) x 0.94" (H))

Weight
- 150g (0.331lb)

Installation
- DIN-Rail (Top hat type 35mm), Panel or Wall mounting
- Installs with EMC1600 Chassis

Interface

Ethernet Port
- Port: One RJ-45 port
- Speed: 10/100Mbps
- Distance: 100 meters (328ft.)
- Cable: 10BASE-T: UTP CAT. 3, 4, 5 (2-pair wire)
        100BASE-TX: UTP CAT. 5 (4-pair wire)

Ethernet Extender Port
- Port: One RJ-11 port
- Speed: 1/3/5/10/15/20/25/30/40/50Mbps
- Distance: 1900 meters (6,232ft.)
- Cable: Telephone wire 24 AWG
  (0.5mm diameter, 1-pair wire) or larger

DIP-Switch
- One DIP Switch: Local (CO) or Remote (CPE)

LED Indicators
- Per Unit: Power
- Per 10/100TX Port: Link/Activity, Full-duplex
- Line: Error, Link, Local, Remote

Speed / Distance Reference

LED	Color	Speed	Distance
1	Green	1Mbps	1,900m (6,232 ft.)
	Amber	3Mbps	1,800m (5,904 ft.)
2	Green	5Mbps	1,600m (5,249 ft.)
	Amber	10Mbps	1,400m (4,593 ft.)
3	Green	15Mbps	1,200m (3,936 ft.)
	Amber	20Mbps	1,000m (3,280 ft.)
4&2	Green	25Mbps	800m (2,624 ft.)
	Amber	30Mbps	700m (2,296 ft.)
5&3	Green	40Mbps	600m (1,968 ft.)
	Amber	50Mbps	300m (984 ft.)

- Note: All speed selections are Symmetrical on the DSL and Full-duplex on the Ethernet

Environment

Operating Temperature
- -20°C to 60°C (-4°F to 140°F)
  Tested @ -20°C to 70°C (-4°F to 158°F)

Storage Temperature
- -20°C to 70°C (-4°F to 158°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL60950-1

EMI

FCC Part 15B, Class A

EN61000-6-4

EN55022

EN61000-3-2

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Dimensions

Bottom

109.2mm (4.3")

Top

Side

23.8mm (0.94")

80.3mm (3.16")

Front

Application Diagram

ED3101

RJ-11

RJ-45

EX1605PE

RJ-11

RJ-45

EX1605PE

Telephone Line
CAT 5 Cable (100m)(328ft.)
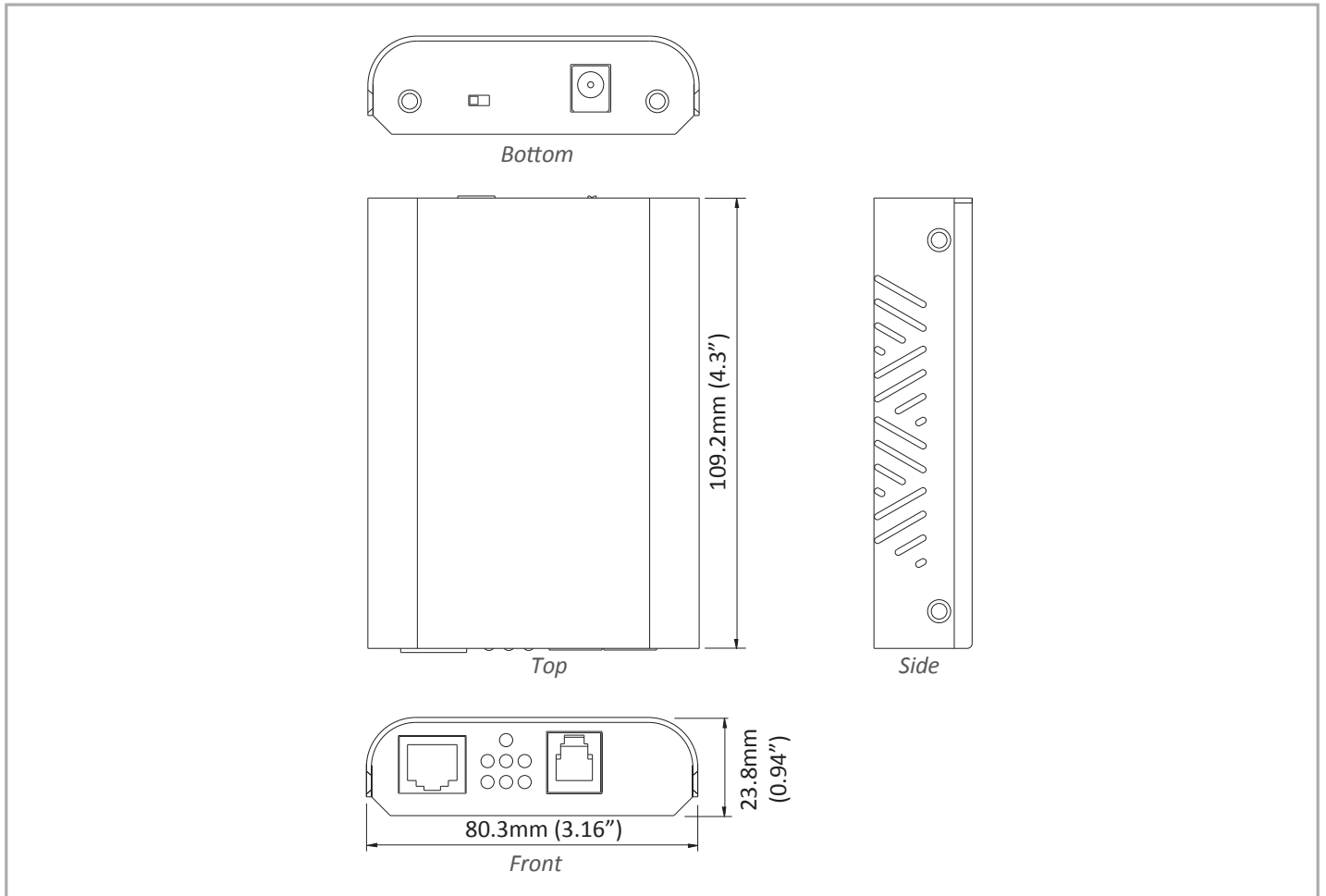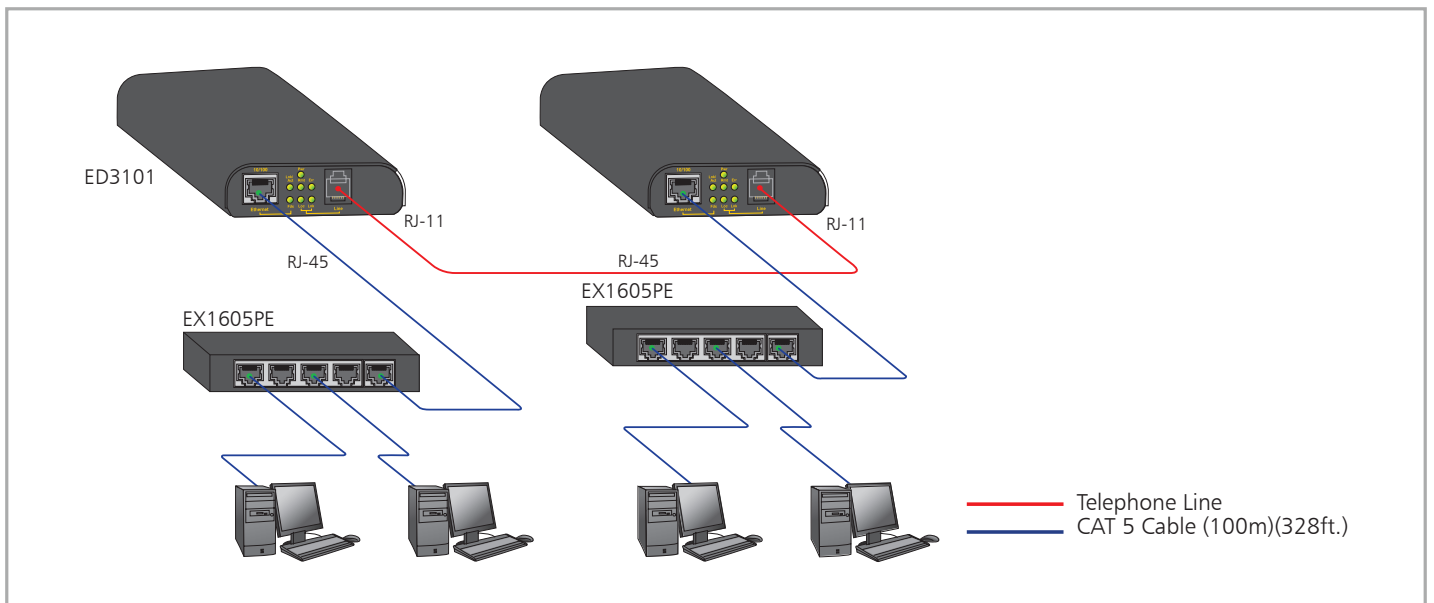
Ordering Information

Model

ED3101-X	Industrial 10/100BASE-TX Ethernet Extender
ED3101-D-X	Industrial 10/100BASE-TX Ethernet Extender with DIN-Rail mounting kits

External Power Adaptor Options (X)

A	with external power adapter for AU
E	with external power adapter for EU
J	with external power adapter for JP
K	with external power adapter for UK
U	with external power adapter for USA
3C	with external power adapter for China

ED3341 Series

Hardened 10/100BASE-TX Ethernet Extender over Coaxial Cable

Overview

The ED3341 Series Ethernet Extender enables the extension of Ethernet connectivity over existing coaxial cable allowing legacy infrastructure to be leveraged for IP networks and extending the Ethernet distance limitations of 100 meters.

Upgrading an existing legacy control or surveillance system to a new IP-based system is a complicated task, especially when existing cable infrastructure is an old coaxial cable. EtherWAN's ED3341 Series provides Ethernet connection and extension over these existing coaxial cables, minimizing the expense of pulling new cable infrastructure.

The ED3341 Series is built with hardened specifications, providing wide temperature operation range from -40°C to 75°C to overcome severe outdoor environments. Incorporating VDSL technology, the ED3341's BNC extender ports provide long distance transmission with 75Mbps rate at 200 meters, or 1Mbps at 2600 meters; 10 speed LED indicators in the front panel provide easy lookup for the connection speed.

Spotlight

- **UL508 Certification**
  - Specific design for industrial communication applications with UL508 safety certification

- **EN50121-4 and EN50155 Certification**
  - Specific design for railway environment application

- **Wide Operating Temperature**
  - -40°C to 75°C wide operating temperature range design is suitable for installation in outdoor cabinet

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3x full duplex and flow control

Processing Type
- Half-duplex back-pressure and IEEE802.3x Full-duplex flow control
- Auto Negotiation
- Auto MDI/MDIX

Power

Input Voltage
- 12VDC (DC Jack)
- 12 to 48VDC (Terminal Block)

Power Consumption
- 7.2W Max. 0.6A @ 12VDC, 0.15A @ 48VDC

Protection
- Over current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum case
- IP30

Dimensions
- 50mm (W) x 110mm (D) x 135mm (H)
  (1.97" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.8Kg (1.76lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel or Rack mounting

Interface

Ethernet Port
- Port: One RJ-45 port
- Speed: 10/100Mbps
- Distance: 100meters (328ft.)
- Cable: 10BASE-T: UTP CAT. 3, 4, 5 (2-pair wire)
  100BASE-TX: UTP CAT. 5 (4-pair wire)

Ethernet Extender Port
- Port: One 75Ω BNC Port (with F-type connector)
- Speed: 1/5/10/20/30/40/50/60/70/75Mbps
- Distance: 2600 meters (8,530ft.)
- Cable: Coaxial Cable (5C2V/ RG6(=RG6/U))

DIP-Switch
- One DIP Switch: Local (CO) or Remote (CPE)

LED Indicators
- Per Unit: Power Status (Power)
- Per Port 10/100TX: Link/Activity, Full-duplex
- Line: Error, Link, Local, Remote

Speed / Distance Reference

Speed	Distance
1-5Mbps	2,600M(8,530ft.)
6-10Mbps	2,400M(7,874ft.)
11-16Mbps	2,000M(6,561ft.)
17-20Mbps	1,800M(5,905ft.)
21-29Mbps	1,600M(5,249ft.)
30-43Mbps	1,400M(4,593ft.)
44-54Mbps	1,200M(3,937ft.)
55-63Mbps	1,000M(3,280ft.)
64-74Mbps	600M(1,968ft.)
75-85Mbps	200M(656ft.)

- Note: All speed selections are Symmetrical on the DSL and Full-duplex on the Ethernet

Environment

Operating Temperature
- -40°C to 70°C (-40°F to 158°F)
  Tested @ -40°C to 85°C (-40°F to 185°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL508

EMI

FCC Part 15B, Class A

EN61000-6-4, EN55022, EN61000-3-2 and EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

EN50121-4

EN50155

Dimensions

Top

110mm (4.33")

Front

Side

135mm (5.31")

50mm (1.97")

Back

Bottom

Application Diagram

Ordering Information

Model

ED3341-00B	Hardened 10/100BASE-TX Ethernet Extender Over Coaxial Cable

Optional Accessories

KP-AA96-480	Panel Mounting Kit
MDR-40-48	40W/0.83A DIN-Rail 48VDC Industrial Power Supply (for Terminal Block)
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC Hardened Power Adapter with Open Wire in Aluminum Housing (for Terminal Block) (X)=1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC Hardened Power Adapter with Latched DC Jack in Aluminum Housing (for DC Jack) (X)=1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

ED3344 Series

Hardened 10/100/BASE-TX M12 Ethernet Extender over Coaxial Cable

Overview

The ED3344 Series Ethernet Extender enables the extension of Ethernet connectivity over existing coaxial cable allowing legacy infrastructure to be leveraged for IP networks and extending the Ethernet distance limitations of 100 meters.

Upgrading an existing legacy control or surveillance system to a new IP-based system is a complicated task, especially when existing cable infrastructure is old coaxial cable. EtherWAN's ED3344 Series provides Ethernet connection and extension over these existing coaxial cables minimizing the expense of pulling new cable infrastructure.

The ED3344 Series is built with hardened specifications, providing wide temperature operation range from -40°C to 75°C to overcome severe outdoor environments. Featured with a M12 Ethernet connector, The ED3344 provides high mechanical strength and suitable for railway applications. Incorporating VDSL technology, the ED3344's BNC extender ports provide long distance transmission with 75Mbps rate at 200 meters, or 1Mbps at 2600 meters; 10 speed LED indicators in the front panel provide easy lookup for the connection speed

Spotlight

- **UL508 Certification**
  ◦ Specific design for industrial communication applications with UL508 safety certification

- **EN50121-4 and EN50155 Certification**
  ◦ Specific design for railway environment application

- **Wide Operating Temperature**
  ◦ -40°C to 75°C wide operating temperature range design is suitable for installation in outdoor cabinet

- **M12 Ethernet Connector**
  ◦ M12 Ethernet port provides strong mechanical strength

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3x full duplex and flow control

Processing Type
- Half-duplex back-pressure and IEEE802.3x Full-duplex flow control
- Auto Negotiation
- Auto-MDI/MDIX

Power

Input Voltage
- 12 to 48VDC (Terminal Block and Latched DC Jack)

Power Consumption
- 7.2W Max. 0.6A @ 12VDC, 0.15A @ 48VDC

Protection
- Over current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum case
- IP30

Dimensions
- 50mm (W) x 110mm (D) x 135mm (H)
  (1.97" (W) x 4.33" (D) x 5.31" (H))

Weight
- 0.8Kg (1.76lbs.)

Installation
- DIN-Rail (Top hat type 35mm), Panel, or Rack mounting

Interface

Ethernet Port
- Port: One M12, 4Pin, D-type port
- Speed: 10/100Mbps
- Distance: 100meters (328ft.)
- Cable: 10BASE-T: UTP CAT. 3, 4, 5 (2-pair wire)
          100BASE-TX: UTP CAT. 5 (4-pair wire)

Ethernet Extender Port
- One 50Ω BNC Port (with F-type connector)
- Speed: 1/5/10/20/30/40/50/60/70/75Mbps
- Distance: 2600 meters (8,530ft.)
- Cable: Coaxial Cable (5C2V/ RG6(=RG6/U))

DIP-Switch
- One DIP Switch: Local (CO) or Remote (CPE)

Console Port
- Port: One DB9 RS-232 port

LED Indicators
- Per Unit: Power
- Per 10/100TX Port: Link/Activity, Full-duplex
- Line: Error, Link, Local, Remote

Speed / Distance Reference

Speed	Distance
1-5Mbps	2,600M(8,530ft.)
6-10Mbps	2,400M(7,874ft.)
11-16Mbps	2,000M(6,561ft.)
17-20Mbps	1,800M(5,905ft.)
21-29Mbps	1,600M(5,249ft.)
30-43Mbps	1,400M(4,593ft.)
44-54Mbps	1,200M(3,937ft.)
55-63Mbps	1,000M(3,280ft.)
64-74Mbps	600M(1,968ft.)
75-85Mbps	200M(656ft.)

- Note: All speed selections are Symmetrical on the DSL and Full-duplex on the Ethernet

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
- -40°C to 85°C (-40°F to 185°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL508

EMI

FCC Part 15B, Class A

VCCI, Class A

EN61000-6-4, EN55022, EN61000-3-2 and EN61000-3-3

EMS

EM50121-3-2
- EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

EN61373 (Vibration and Shock)

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Industrial Compliance

EN50155 and EN50121-4

Dimensions

110mm (4.33")

Top

135mm (5.31")

Front

Side

50mm (1.97")

Back

Bottom
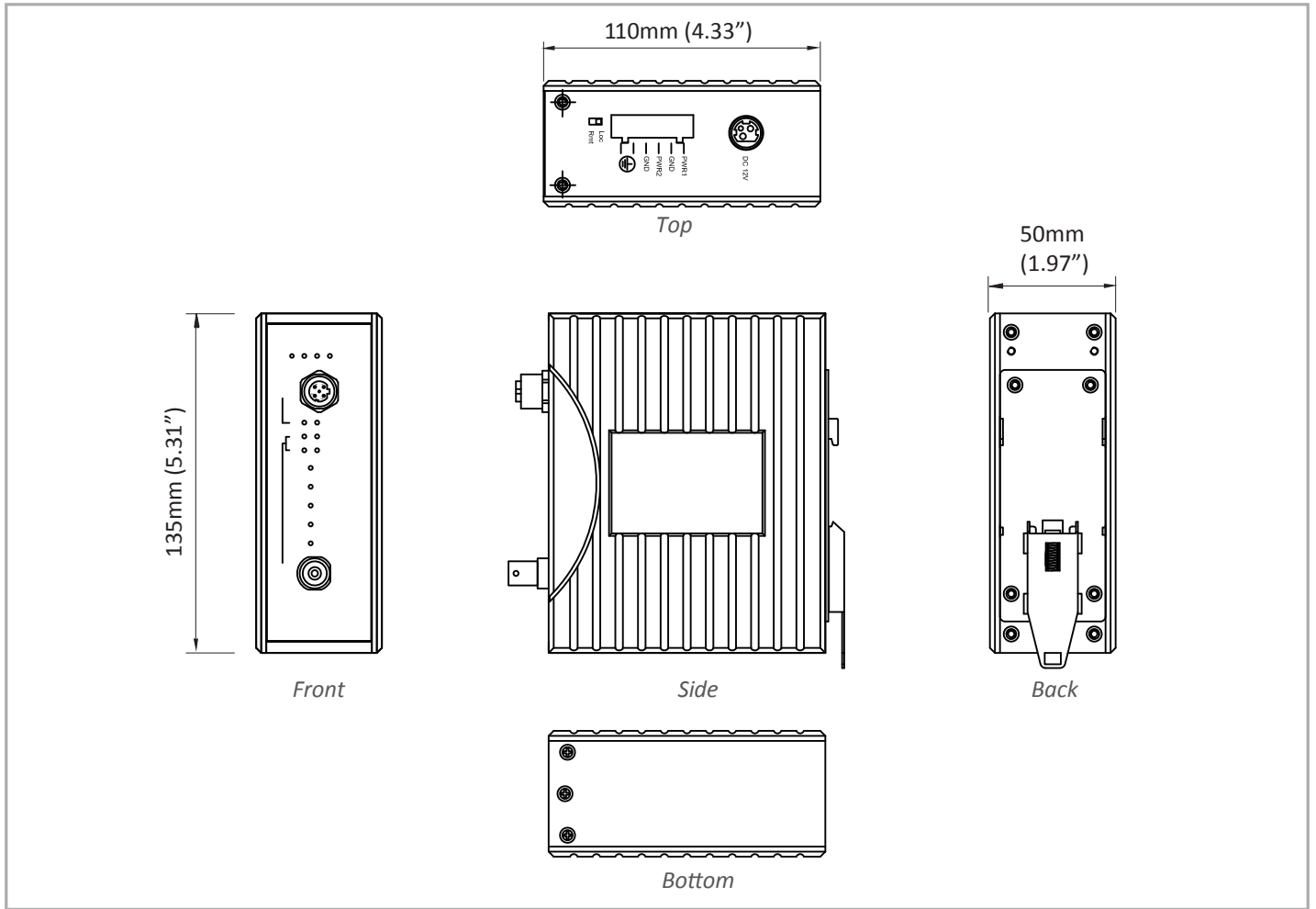
Application Diagram
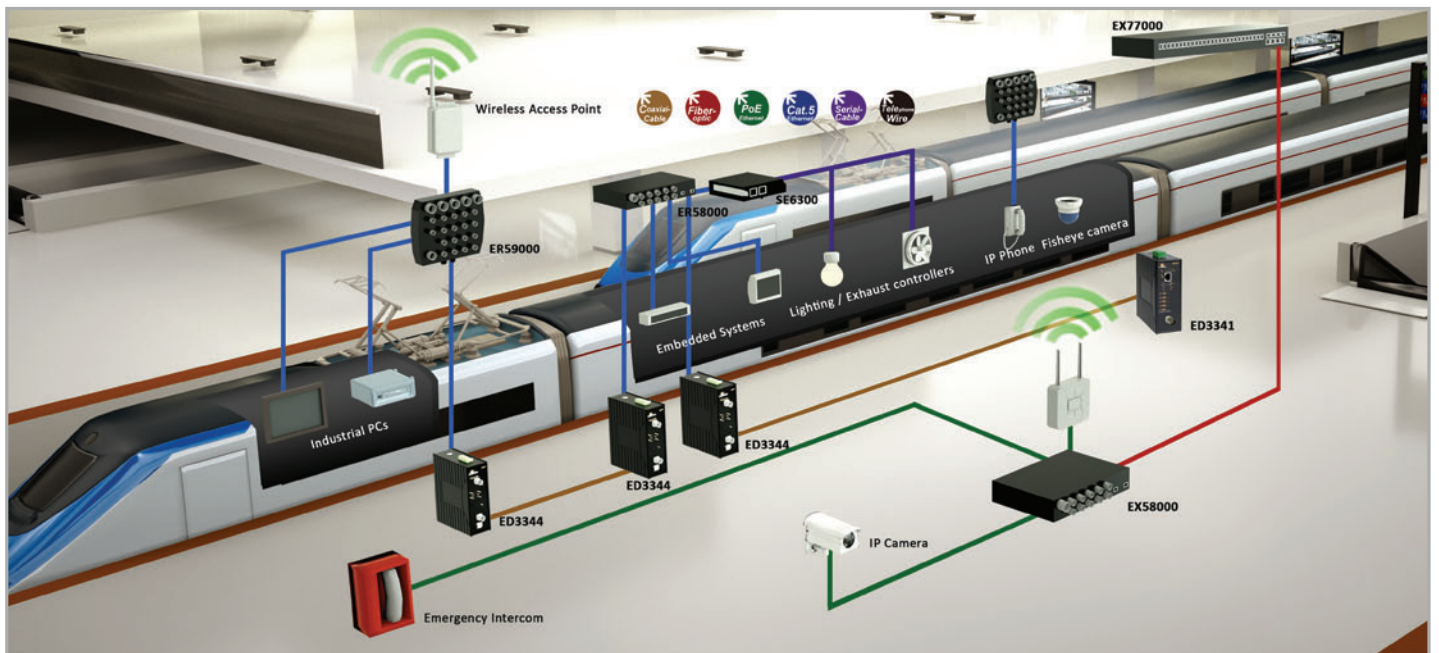
Ordering Information

Model

ED3344-00B	Hardened 10/100Base-TX M12 Ethernet Extender over Coaxial Cable

Optional Accessories

KP-AA96-480	Panel mounting kit
MDR-40-48	40W/0.83A DIN-Rail 48VDC Industrial Power Supply (for Terminal Block)
DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply (for Terminal Block)
41-136046-X	36W/3A 12VDC hardened power adapter with open wire in aluminum housing (for Terminal Block) (X)=1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA
41-136044-X	36W/3A 12VDC hardened power adapter with latched DC jack in aluminum housing (for DC Jack) (X)=1: US, 2: EU, 3: UK, 4: AU, 5: JP, 6: SA

ED3331 Series

Industrial 10/100BASE-TX Ethernet Extender over Coaxial Cable

Overview

The ED3331 Series Ethernet Extender enables the extension of Ethernet connectivity over existing coaxial cable allowing legacy infrastructure to be leveraged for IP networks and extending the Ethernet distance limitations of 100-meters.

Upgrading an existing legacy control or surveillance system to a new IP-based system is a complicated task, especially when existing cable infrastructure is old coaxial cable. EtherWAN's ED3331 Series provides Ethernet connection and extension over these existing copper wire cables minimizing the expense of pulling new cable infrastructure.

The ED3331 Series is built with industrial grade specifications, providing wide temperature operation range from -10°C to 60°C to overcome industrial environments. Incorporating VDSL technology, the ED3331's BNC extender ports provide long distance transmission with 75Mbps rate at 200 meters, or 1Mbps at 2600 meters; 5 speed LED Indicators in the front panel provide easy lookup for the connection speed.

Spotlight

- **UL508 Certification**
  - ◦ Specific design for industrial communication applications with UL508 safety certification

- **Transmission Speed LED Indication**
  - ◦ Supports ten speed LED Indicators

- **Industrial Operating Temperature Range**
  - ◦ From -10°C to 60°C, wide operating temperature is suitable for outdoor cabinet installation

- **Optional Chassis System**
  - ◦ Supports wall mounting or EtherWAN's EMC1600 chassis system for easy group installation with power redundancy

Hardware Specifications

Technology

Standards
- IEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3x full duplex and flow control

Processing Type
- Half-duplex back-pressure and IEEE802.3x Full-duplex flow control
- Auto Negotiation
- Auto-MDI/MDIX

Power

Input Voltage
- 12VDC

Power Consumption
- 5.76W Max. 0.48A @ 12VDC

Protection
- Over current protection
- Reverse polarity protection

Mechanical

Casing
- Aluminum case

Dimensions
- 80.3mm (W) x 109.2mm (D) x 23.8mm (H)
  (3.16" (W) x 4.30" (D) x 0.94" (H)

Weight
- 150g (0.33lb.)

Installation
- DIN-Rail (Top hat type 35mm) mounting
- Wall mounting
- Install with EMC1600 Chassis

Interface

Ethernet Port
- Port: One RJ-45 port
- Speed: 10/100Mbps
- Distance: 100meters (328ft.)
- Cable: 10BASE-T: UTP CAT. 3, 4, 5 (2-pair wire)
  100BASE-TX: UTP CAT. 5 (4-pair wire)

Ethernet Extender Port
- One 75Ω BNC Port (with F-type connector)
- Speed: 1/5/10/20/30/40/50/60/70/75Mbps
- Distance: 2600 meters (8,530ft.)
- Cable: Coaxial Cable (5C2V/ RG6(=RG6/U))

DIP-Switch
- One DIP Switch: Local (CO) or Remote (CPE)

LED Indicators
- Per Unit: Power
- Per 10/100TX Port: Link/Activity, Full-duplex
- Line: Error, Link, Local, Remote

Speed / Distance Reference

Speed	Distance
1-5Mbps	2,600M(8,530ft.)
6-10Mbps	2,400M(7,874ft.)
11-16Mbps	2,000M(6,561ft.)
17-20Mbps	1,800M(5,905ft.)
21-29Mbps	1,600M(5,249ft.)
30-43Mbps	1,400M(4,593ft.)
44-54Mbps	1,200M(3,937ft.)
55-63Mbps	1,000M(3,280ft.)
64-74Mbps	600M(1,968ft.)
75-85Mbps	200M(656ft.)

- Note: All speed selections are Symmetrical on the DSL and Full-duplex on the Ethernet

Environment

Operating Temperature
- -10°C to 60°C (14°F to 140°F)

Storage Temperature
- -20°C to 70°C (-4°F to 158°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Safety

UL508

EMI

FCC Part 15B, Class A

VCCI, Class A

EN61000-6-3

EN55022

EN61000-3-3

EMS

EN61000-6-2
- EN61000-4-2 (ESD Standards)
- EN61000-4-3 (Radiated RFI Standards)
- EN61000-4-4 (Burst Standards)
- EN61000-4-5 (Surge Standards)
- EN61000-4-6 (Induced RFI Standards)
- EN61000-4-8 (Magnetic Field Standards)

Environmental Test Compliance

IEC60068-2-6 Fc (Vibration Resistance)

IEC60068-2-27 Ea (Shock)

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

Dimensions

Bottom

109.2mm (4.3")

Top

Side

23.8

80.3mm (3.16")

Front

Application Diagram

ED3331

BNC

BNC

RJ-45

RJ-45

EX1605PE

EX1605PE

Coaxial Cable

CAT 5 Cable (100m)(328ft.)
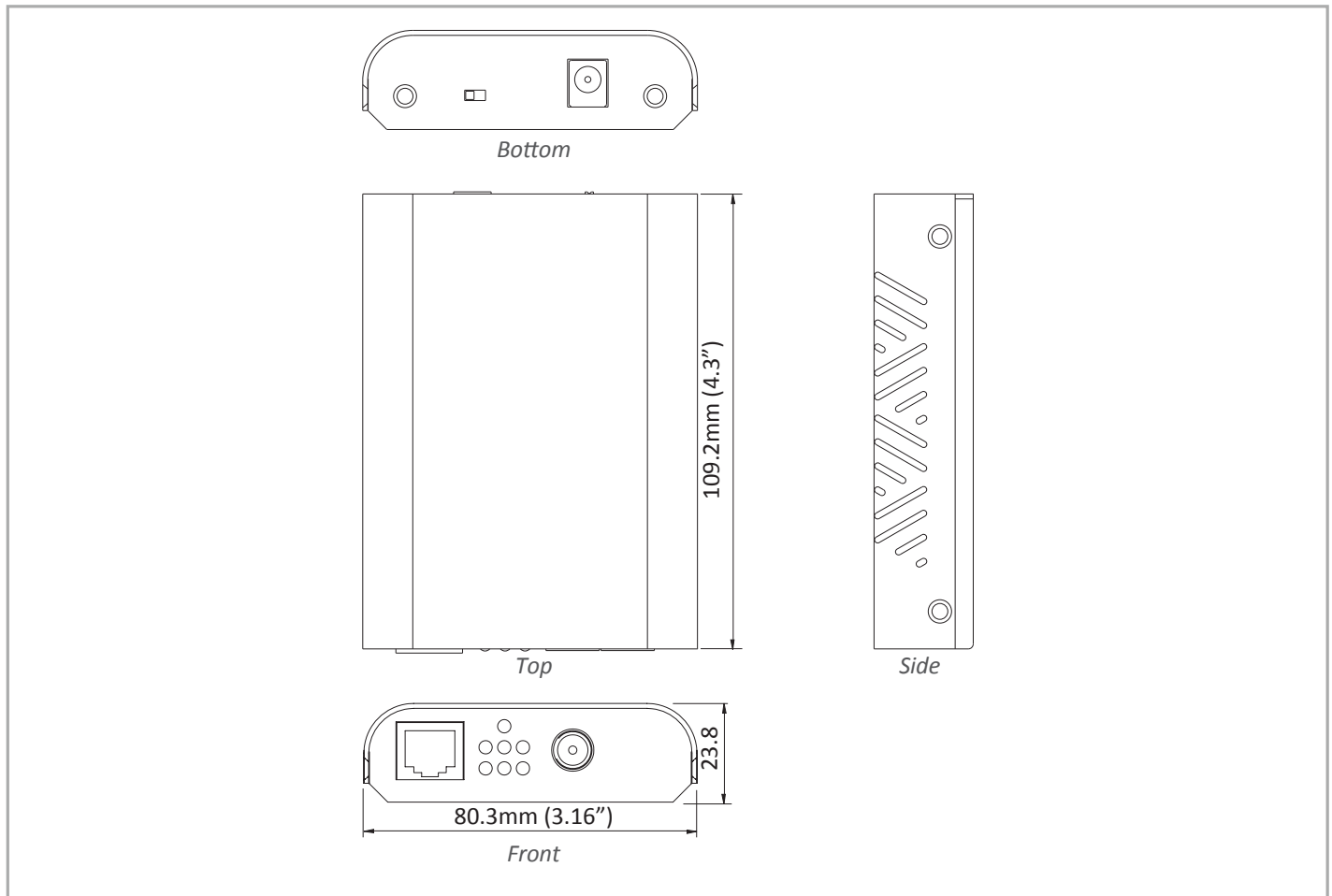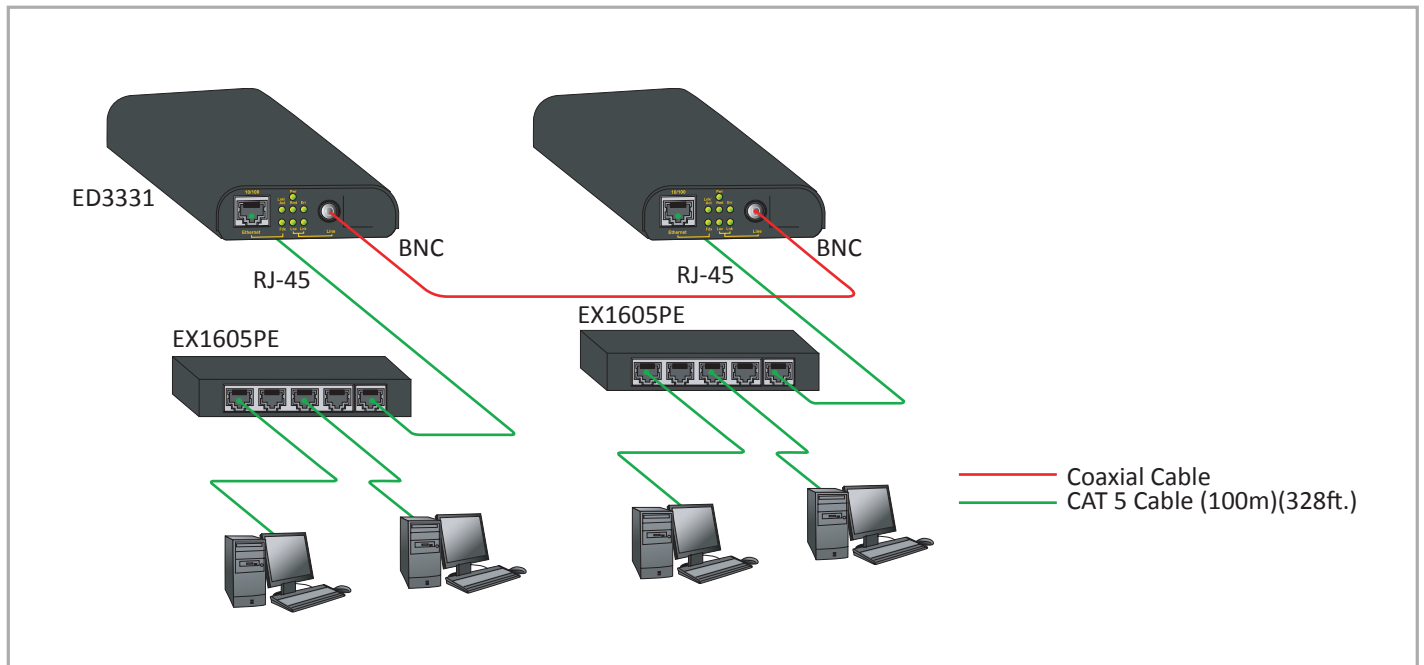
Ordering Information

Model

ED3331-00Z	Industrial 10/100BASE-TX Ethernet Extender over Coaxial Cable

External Power Adaptor Options (Z)

A	with external power adapter for AU
E	with external power adapter for EU
J	with external power adapter for JP
K	with external power adapter for UK
U	with external power adapter for USA
3C	with external power adapter for China

Accessories

» **Ethernet Adaptor Cards**
» **Surge Protectors**
» **Industrial Power Supplies**
» **Power Adaptors**
» **Hardened SFP Fiber Tranceivers**
» **TransRack**

— Choose the Right Partner who Delivers.

Network Interface Card Glossary

ACPI (Advanced Configuration and Power Interface)

ACPI establishes industry-standard interfaces that enable the OS-directed configuration, power management, and thermal management of mobile, desktop, and server platforms.

Fiber Optics

Fiber optic cables are used in high noise environments because their transmissions are unaffected by electromagnetic and radio frequency interference. With their flexibility for various types of fiber optic interfaces, EtherWAN's Fiber Ethernet adapter series utilizes fiber optic signals to extend transmission distances and greatly improve the communication quality of the signals, as part of a secure fiber optic infrastructure that resists electromagnetic and radio frequency interference.

IEEE 802.1Q VLAN Tagging & IEEE 802.1p Layer 2 Priority

EtherWAN's Fiber PCI Express Gigabit Ethernet adapter GE3000 and Fiber PCI Fast Ethernet adapter EN301 can support IEEE 802.1Q VLAN tagging to segment the network and improve performance and security. EtherWAN's Fiber PCI Express Gigabit Ethernet adapter GE3000 and Fiber PCI Fast Ethernet adapter EN301 can also support IEEE802.1p Layer 2 priority to prioritize traffic, which enables packet streams to be prioritized to the adapters.

PCI Fast Ethernet

EtherWAN's Fiber PCI Fast Ethernet adapter EN301 series complies with PCI specifications v2.1 and v2.2 and provides a direct connection to the 32-bit parallel PCI bus. The PCI bus provides superior performance and can transfer information in burst mode, since multiple sets of data can be transmitted in a row. It also supports bus mastering of multiple devices on the bus simultaneously, and it can be setup either synchronously or asynchronously. The PCI bus runs at half of the memory bus speed in a synchronized setup, but the speed of the PCI bus can be set independently of the memory bus speed in an asynchronous setup. In addition, multiple devices can share one communication channel managed by the PCI bus.

PCI Express Gigabit Ethernet

EtherWAN's Fiber PCI Express Gigabit Ethernet adapter GE3000 series supports the PCI Express 1.0a bus interface and provides high-bandwidth performance that is significantly better than existing conventional PCI architectures. PCI Express utilizes high-bandwidth serial interconnect technology. The bidirectional PCI Express link is composed of pairs of lanes, which are serial unidirectional point-to-point connections. Thus, the bandwidth of the PCI Express link can be scaled by adding signal pairs to form multiple lanes between two devices.

Preboot Execution Environment (PXE)

The Preboot Execution Environment (PXE) is an industry standard client/server interface that allows networked computers without an operating system to be configured and booted remotely by an administrator. The PXE code is typically delivered with a new computer on a read-only memory chip or boot disk that allows the computer (the client) to communicate with the network server and be remotely configured or have its operating system remotely booted.

Wake-on-LAN (WOL)

Wake-on-LAN (WOL) is an Ethernet computer networking standard that allows a computer to be turned on or woken up by a network message.

Accessories Connection Guide
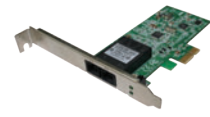
Nic Cards >>			
Model Name	GE3100 NEW	EN301	EN400
Ethernet Interface			
Max. 10/100 BASE-TX	-	-	-
Max. 100 BASE-FX	-	1	1
Max. 1000 BASE-T	1	-	-
Max. 1000 BASE-SX/LX	1 (SFP)	-	-
Bus Interface			
PCI Express	√	-	√
PCI	-	√	-
Mode of Operations			
Auto-negotiation, Auto-MDI/MDI-X	√	-	-
Flow Control	√	√	√
Store & Forward	-	-	-
Mechanical			
Dimensions (LxW)	125x121	133x117.5 / 133x80	80x119.2 / 117.5x119.2
Management Function			
ACPI*	√	√	√
Wake-on -LAN remote wake-up	√	-	√
IEEE802.1Q VLAN	√	√	√
IEEE802.1P Layer 2 Priority Tagging	√	√	√
NDIS5 Checksum Offload	√	√	√
RFC1157 SNMP v1	√	-	-
Preboot Execution Environment	√	-	-
Cable Diagnostic Utility	√ (Only TX model)	-	-
Jumbo Frame	√ (Only TX model)	-	-
Operating Temperature			
0˚C to 45˚C	√	√	√
Driver Supports			
Windows	Windows Vista, Windows 2003, Windows XP, Windows 2000, Windows 7/8	Windows XP, Windows 2000, Windows ME, Windows 98, Windows 95, Windows NT 3.51/4.0, Work Group 3.11	
Novell	-	Netware 3.11, 3.12, 4.x, 5.x, 6.0 Clinet 32, Netware Client	
Unix	Linux 2.4/2.6/3.x	RedHat Linux 6.2, 7.0, 7.1 UnixWare 8.0, SCO UNIX 5.0	
Others	Mac OS, 10.4, 10.5, 10.6 and 10.7 (Intel-based)	LAN Manager, LANtastic, PC-NFC, NCSA Telnet, FreeBSD 3.2, 4.0, 4.11, 4.2	
Regulatory Approvals			
CE / FCC	Class B	Class B	Class B

* Advanced Configuration & Power Interface

Surge Protector >>	
Model Name	PD1041 **NEW**
Interface	
Max. Continuous Operating Voltage Uc	$\leq$ 3.3VDC
Max. Continuous Operating Voltage Uc, PoE	$\pm$ 60VDC
Nominal Discharge Surge Current I_n (8/20)μs (Core-Core)	100A
Nominal Discharge Surge Current I_n (8/20)μs (Core-Earth)	2KA (per signal pair)
Total Surge Current (8/20)μs	10KA
Nominal Pulse Current I_{an} (10/700)μs (Core-Core)	$\leq$ 40A
Nominal Pulse Current I_{an} (10/700)μs (Core-Earth)	$\leq$ 160A
Connector input/output	RJ45/RJ45
Mechanical	
Casing	aluminum
Installation*	D
Dimensions (WxDxH)	30x63x100
Operating Temperature	
-40°C to 75°C	√
Regulatory Approvals	
CE / FCC / VCCI	√
UL497B	√

* D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

Industrial Power Supplies >>

Model Name	DD-85-48	DD-85-55	DR-30-24	DR-30-12	DR-60-24	DR-75-24	DR-120-24
Output							
DC Voltage	48VDC	55VDC	24VDC	12VDC	24VDC	24VDC	24VDC
Current Range	0 - 1.78A	0 - 1.55A	0 - 1.5A	0 - 2A	0 - 2.5A	3.2A	0 - 5A
Rated Power	85W	85W	36W	24W	60W	76.8W	120W
Input							
12 - 36VDC	√	√	-	-	-	-	-
85 - 264VAC / 120 - 370VDC	-	-	√	√	√	√	-
88 - 132VAC / 176 - 264VDC	-	-	-	-	-	-	√
90 - 264VAC	-	-	-	-	-	-	-
Protection							
Over Voltage Protection	58V	60V	27.6 - 32.4V	13.8 - 16.2V	27.6 - 32.4V	29 - 34V	29 - 33V
Overload Protection	110 - 160%	110 - 180%	105 - 160%	105 - 160%	105 - 160%	105 - 150%	105 - 150%
Constant Current Limiting	-	-	√	√	√	-	√
Mechanical							
Casing	aluminum	aluminum	plastic	plastic	plastic	aluminum	aluminum
Installation*	D, P	D, P	D	D	D	D	D
Dimensions (WxHxD)	50x148x165	50x148x165	78x56x93	78x56x93	78x56x93	55.5x100x125.2	65.5x100x125.2
Operating Temperature							
-10˚C to 60˚C	√	√	-	-	-	√	√
-20˚C to 60˚C	-	-	√	√	√	-	-
-20˚C to 75˚C	-	-	-	-	-	-	-
-40˚C to 75˚C	-	-	-	-	-	-	-
Regulatory Approvals							
CE / FCC	√	√	√	√	√	√	√
UL60950-1	√	√	√	√	√	-	-
UL508	-	-	-	-	-	√	√
E Mark	√	-	-	-	-	-	-

* D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

Model Name	DR-75-48	DR-120-48	SDR-120-48	SDR-240-48	SDR-480-48	MDR-40-48
Output						
DC Voltage	48 - 53VDC	48 - 53VDC	48 - 55VDC	48 - 55VDC	48 - 55VDC	48 - 56VDC
Current Range	0 - 1.6A	0 - 2.5A	2.5A	5A	10A	0 - 0.83A
Rated Power	76.8W	120W	120W	240W	480W	39.8W
Input						
12 - 36VDC	-	-	-	-	-	-
85 - 264VAC / 120 - 370VDC	√	-	-	-	-	√
88 - 264VAC / 120 - 370VDC	-	-	√	√	√	-
88 - 132VAC / 176 - 264VDC	-	√	-	-	-	-
Protection						
Over Voltage Protection	58 - 65V	58 - 65V	56 - 65V	56 - 65V	56 - 65V	57.6 - 64.8V
Overload Protection	105 - 150%	105 - 150%	110 - 150%	110 - 150%	110 - 150%	105-150%
Constant Current Limiting	√	√	√	√	√	√
Mechanical						
Casing	aluminum	aluminum	aluminum	aluminum	aluminum	plastic
Installation*	D	D	D	D	D	D
Dimensions (WxDxH)	55.5x125.2x100	65.5x125.2x100	40x125.2x113.5	63x125.2x113.5	85x125.2x128.5	40x100x90
Operating Temperature						
-10˚C to 60˚C	√	√	-	-	-	-
-20˚C to 70˚C	-	-	-	-	-	√
-25˚C to 70˚C	-	-	√	√	√	-
-40˚C to 75˚C	-	-	-	-	-	-
Regulatory Approvals						
CE / FCC	√	√	√	√	√	√
UL60950-1	-	√	-	√	√	√
UL508	√	√	√	√	√	√
E Mark	-	-	-	-	-	-

* D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

Power Adapters >>

Model Name	GS120A-48	41-136042
Output		
DC Voltage	48VDC	12VDC
Current Range	0 - 2.5A	0 - 3A
Rated Power	120W	36W
Input		
90 - 264VDC	√	√
Mechanical		
Casing	plasitc	plastic
Installation*	-	-
Operating Temperature		
0˚C to 55˚C	√	-
-40˚C to 75˚C	-	√
Output Connector		
DC Jack with Latch	√	-
Open Wire for Terminal Block	-	√
DC Plug	-	-

Power Adapters >>

Model Name	41-136043	41-136044	41-136046
Output			
DC Voltage	12VDC	12VDC	12VDC
Current Range	0 - 3A	0 - 3A	0 - 3A
Rated Power	36W	36W	36W
Input			
90 - 264VDC	√	√	√
Mechanical			
Casing	aluminum	aluminum	aluminum
Installation*	W	W	W
Operating Temperature			
0˚C to 55˚C	-	-	-
-40˚C to 75˚C	√	√	√
Output Connector			
DC Jack with Latch	-	√	-
Open Wire for Terminal Block	-	-	√
DC Plug	√	-	-

* D: DIN-Rail Mounting, P: Panel Mounting, R: Rack Mounting, W: Wall Mounting

GE3000 Series

PCI Express Gigabit Ethernet Adapter

Features

- **Compliant to IEEE802.3 10BASE-T, 802.3u 100BASE-TX, 802.3ab, 1000BASE-T and 802.3z 1000BASE-SX/ LX/SFP**

- **Jumbo Frame up to 7K (Vista) and 4K (XP and other OS)**

- **PCI Express 1.0a compliant**

- **Microsoft NDIS5 (IP, TCP, UDP) checksum offload and large send offload**

- **Preboot Execution Environment (PXE) 2.1**

- **Advanced Configuration Power Management Interface (ACPI) 2.0**

- **Supports Wake-on-LAN remote wake-up (GE3000TX only)**

- **IEEE802.1Q VLAN Tagging**

- **IEEE802.1p Layer 2 Priority Tagging**

- **RFC 1157 SNMP v1 compliant**

- **Cable diagnostic utility**

- **0°C to 45°C (32°F to 113°F) operating temperature range**

Hardware Specifications

Technology

Standards
- IIEEE802.3 10BASE-T
- IEEE802.3u 100BASE-TX
- IEEE802.3ab 1000BASE-T
- IEEE802.3z 1000BASE-SX/LX/SFP
- IEEE802.3x Full duplex flow control
- IEEE802.1Q VLAN tagging
- IEEE802.1p Priority Encoding

Protocols
- SNMP V1

Processing Type
- IEEE802.3x full-duplex flow control

Driver
- Microsoft Windows 2000 / XP / 2003 / Vista (32bit/64bit), Windows 7 (32bit/64bit)
- Linux 2.4/2.6
- Novell Netware 5.x/6.x

Power

Power Consumption
- 2.3W Max.

Mechanical

Dimensions
- 125mm (L) x 121mm (W) (4.92" (L) x 4.76" (W))

Weight
- 80Kg (0.18lb.)

Interface

Ethernet Port
- Gigabit: 1 port

LED Indicators
- Per Unit: Link, Activity

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliance
- CE Mark Class B
- FCC Part 15 Class B

Dimensions

GE3000 SFP GE3000TX GE3000SX

125mm (4.92")

121mm (4.76")

65mm (2.56")

TX RX ACT LNK
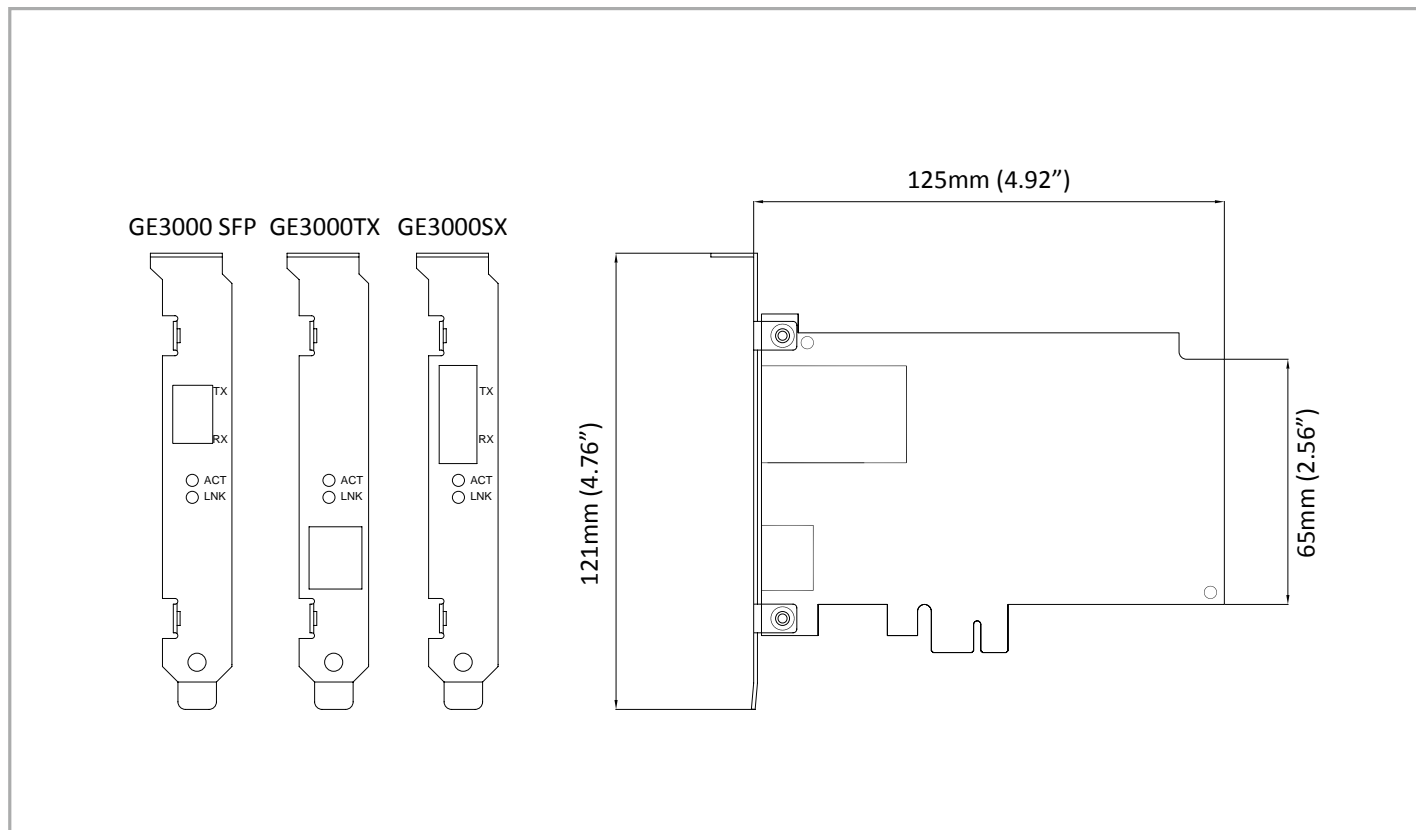
Ordering Information

Model

GE3000TX	10/100/1000BASE-TX Gigabit Ethernet Adapter
GE3000SX	1000BASE-SX Multi Mode (SC) Fiber Gigabit Ethernet Adapter
GE3000LX-10	1000BASE-LX Single Mode (SC) - 10Km Fiber Gigabit Ethernet Adapter
GE3000LX-20	1000BASE-LX Single Mode (SC) - 20Km Fiber Gigabit Ethernet Adapter
GE3000SFP	1000BASE SFP Gigabit Ethernet Adapter

GE3100 Series

PCI Express Gigabit Ethernet Adapter
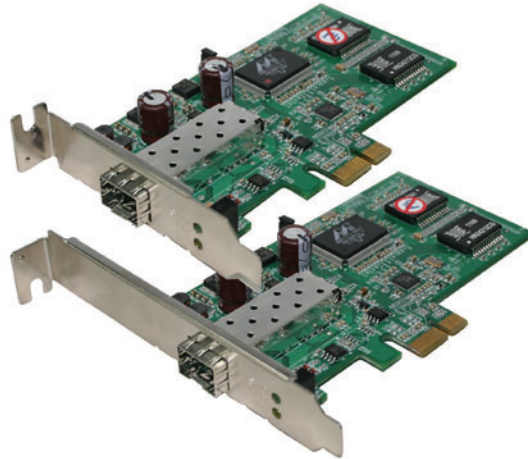
Features

- **Compliant to IEEE802.3z 1000BASE-SX/LX/SFP**

- **Supports PCI Express 1.1**

- **Supports low profile**

- **0°C to 45°C operating temperature range**

- **Supports power down/link down power saving**

- **Plug-and-Play Support**

- **Jumbo Frame up to 9K Bytes**

- **RFC 1157 SNMP v1 compliant**

- **Preboot Execution Environment (PXE) 2.1**

- **Supports PCI Message Signaled Interrupt (MSI)**

- **IEEE 802.1P Layer 2 Priority Encoding**

- **IEEE 802.1Q VLAN tagging**

- **Supports ASF (Alert Standard Format) 2.0**

Hardware Specifications

Technology

Standards
- IEEE802.3, 10BASE-T
- IEEE802.3u, 100BASE-TX
- IEEE802.3ab, 1000BASE-T
- IEEE802.3z, 1000BASE-SX/LX/SFP
- IEEE802.3Q, VLAN tagging
- IEEE802.3p, Priority Encoding
- IEEE802.3x, Full duplex flow control

Jumbo Frame
- 9K bytes

Driver
- Windows Vista, Windows 2003, Windows XP, Windows 2000, Windows 7/8
- Linux 2.4/2.6/3.x
- MacOS 10.4, 10.5, 10.6, and 10.7 (Intel-based)

Power

Power Consumption
- 3.2W Max.

Mechanical

Dimensions
- Low Profile:
  80mm (W) x 117.6mm (D)
  (3.2"(W) x 4.7"(D))
- 117.5 mm (W) x 117.6 mm (D)
  (4.7"(W) x 4.7"(D))

Weight
- 52g (1.8 oz.)

Interface

Ethernet Port
- Gigabit: 1 port

LED Indicators
- LED Connector: Per Unit: Link/Activity, SPD

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -20°C to 70°C (-4°F to 158°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliance
- FCC Part 15, Class B
- CE, VCCI Class B

Dimensions

80mm (3.05")
Low Profile Version

117.50mm (4.63")
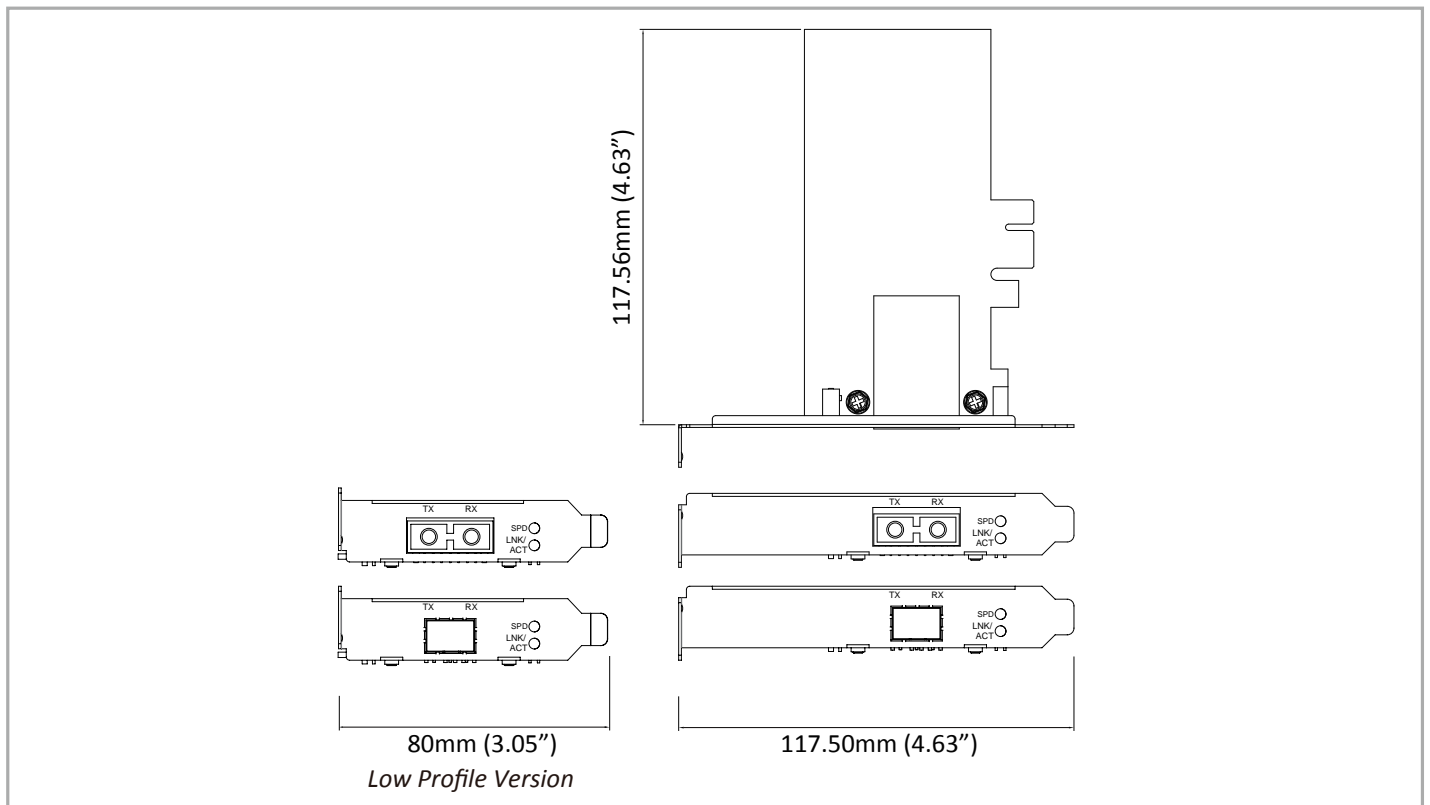
Ordering Information

Model

GE3100PSC	1000BASE-SX (SC) Multi-Mode Fiber Gigabit Ethernet Adapter (Low Profile)
GE3100PSFP	1000BASE SFP Gigabit Ethernet Adapter(Low Profile)
GE3100SC	1000BASE-SX (SC) Multi-Mode Fiber Gigabit Ethernet Adapter
GE3100SFP	1000BASE SFP Gigabit Ethernet Adapter
GE3100TX	10/100/1000BASE-T Gigabit Ethernet Adaptor
GE3100PTX	10/100/1000BASE-T Gigabit Ethernet Adaptor (Low profile)

* More Gigabit options also available upon request.

EN301 Series

32bit PCI-Bus 100BASE-FX Ethernet Adapter
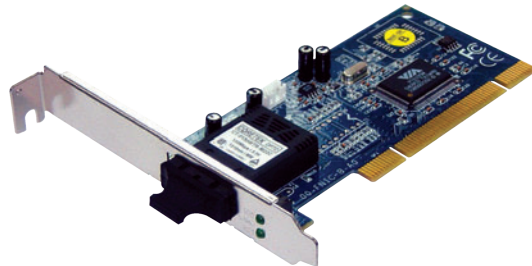
Features

- **PCI 2.2 Specification compliant**

- **Separate 2K Bytes FIFO for receive and transmit controllers**

- **Advanced Configuration Power Interface (ACPI):**
  - ◦ Supports PC99, PC2001 and Net PC requirements
  - ◦ Supports PCI Bus Power Management Interface Specification Version 1.0/1.1
  - ◦ Supports ACPI Specification 1.0
  - ◦ Support Network Device Class Power Management Specification Version 1.0a
  - ◦ Wake-up supports magic packet

- **MAC Enhancement Function**
  - ◦ UDP, TCP/IP checksum for IPv4 frames
  - ◦ Statistics of 12 sets of hardware Management Information BASE counters

- **Utilities**
  - ◦ Windows auto installation
  - ◦ MS-DOS diagnostics
  - ◦ Desktop Management Interface (DMI) 2.0 (Vista is not support)

- **0°C to 45°C (32°F to 113°F) operating temperature range**

Hardware Specifications

Technology

Standards
- IEEE802.3u 100BASE-FX
- IEEE802.3x
- IEEE802.1Q

Protocols
- IEEE802.3x full-duplex flow control; Multiple pause frame XON/XOFF

Driver
- Microsoft Windows 95 (including OSR2), Windows 98 (including SE), Windows ME, Windows 2000, Windows XP, Windows Vista (32bit/64bit), Windows NT 4.0, Windows 7 (32bit/64bit)
- LAN Manager, LANtastic, PC-NFS
- Novell Netware 3.11, 3.12, 4.x, 5.x, 6.0, Client 32
- Linux Kernel 2.2.x/2.4.x/2.6.x
- FreeBSD 3.2, 4.0, 4.11, 4.2, 5.x
- SCO UnixWare 7.x/Open Unix 8, SCO UNIX 5.0

Power

Power Consumption
- 1W Max.

Mechanical

Dimensions
- EN301: 133mm (L) x 117.5mm (W) ; 5.23" (L) x 4.62" (W)
- EN301L: 133mm (L) x 80mm (W) ; 5.23" (L) x 3.14" (W)

Weight
- 80g (0.18lb.)

Interface

Ethernet Port
- 100BASE-FX: 1 port

LED Indicators
- Per Unit: Link/Activity, Speed

Environment

Operating Temperature
- 0°C to 45°C (32°F to 113°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliance
- FCC Part 15, Class B
- CE Mark Class B

Dimensions

EN301L

EN301

80mm (3.15")

117.5mm (4.63")

133mm (5.24")
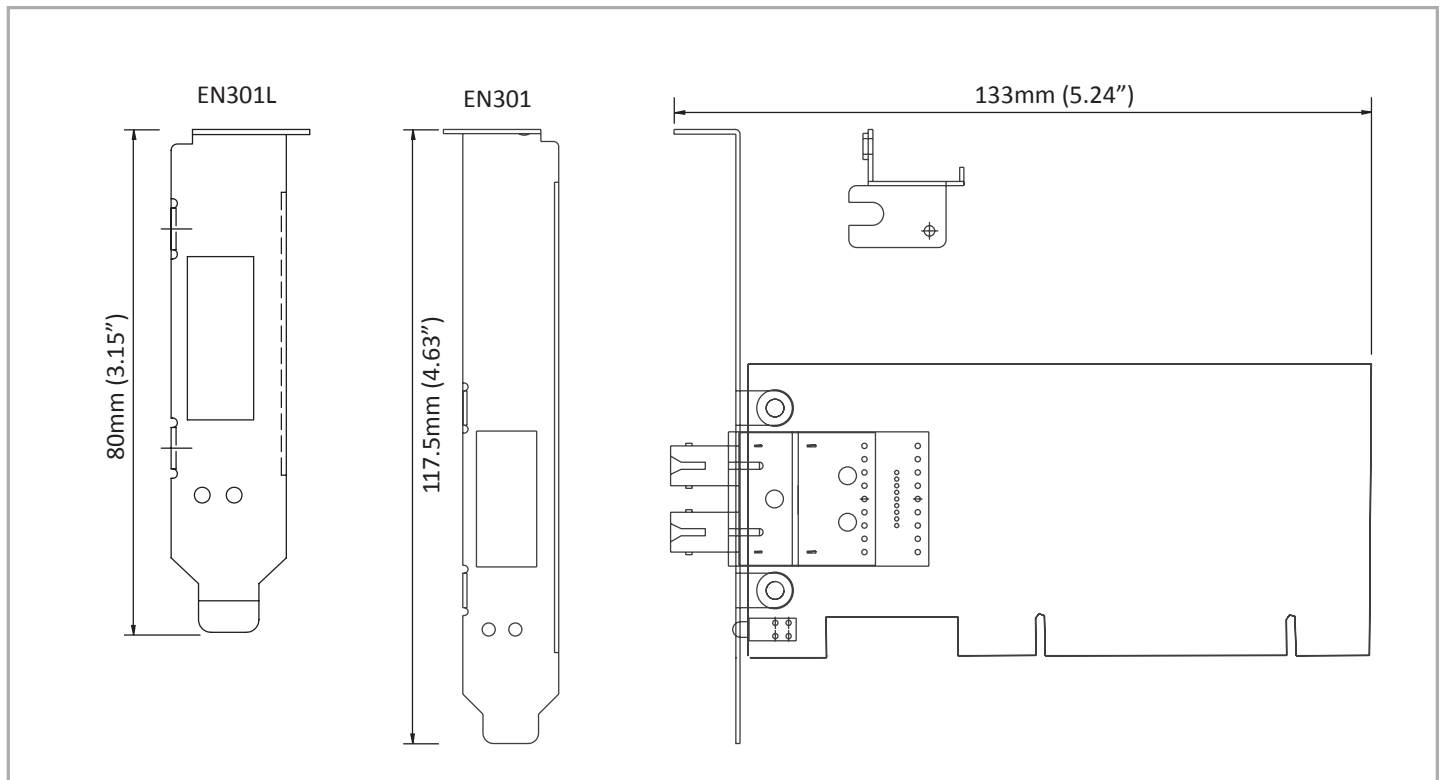
Ordering Information

Model

EN301C	100BASE-FXMultiMode(SC) Ethernet Adapter
EN301T	100BASE-FXMultiMode(ST) Ethernet Adapter
EN301C-20	100BASE-FXSingleMode(SC)-20Km Ethernet Adapter
EN301C-40	100BASE-FXSingleMode(SC)-40Km Ethernet Adapter
EN301T-20	100BASE-FXSingleMode(ST)-20Km EthernetAdapter
EN301CA-20	100BASE-FXSingleMode(SC) WDM-TX:1310nm/RX:1550nm-20Km Ethernet Adapter
EN301CB-20	100BASE-FXSingleMode(SC) WDM-TX:1550nm/RX:1310nm-20Km Ethernet Adapter
EN301CA-40	100BASE-FXSingleMode(SC) WDM-TX:1310nm/RX:1550nm-40Km Ethernet Adapter
EN301CB-40	100BASE-FXSingleMode(SC) WDM-TX:1550nm/RX:1310nm-40Km Ethernet Adapter
EN301LC	100BASE-FXMultiMode(SC) Ethernet Adapter with low-profile bracket
EN301LT	100BASE-FXMultiMode(ST) Ethernet Adapter with low-profile bracket
EN301LC-20	100BASE-FXSingleMode(SC)-20Km Ethernet Adapter with low-profile bracket
EN301LC-40	100BASE-FXSingleMode(SC)-40Km Ethernet Adapter with low-profile bracket
EN301LT-20	100BASE-FXSingleMode(ST)-20Km Ethernet Adapter with low-profile bracket
EN301LCA-20	100BASE-FXSingleMode(SC)WDM-TX:1310nm/RX:1550nm-20Km Ethernet Adapter with low-profile bracket
EN301LCB-20	100BASE-FXSingleMode(SC)WDM-TX:1550nm/RX:1310nm-20Km Ethernet Adapter with low-profile bracket
EN301LCA-40	100BASE-FXSingleMode(SC)WDM-TX:1310nm/RX:1550nm-40Km Ethernet Adapter with low-profile bracket
EN301LCB-40	100BASE-FXSingleMode(SC)WDM-TX:1550nm/RX:1310nm-40Km Ethernet Adapter with low-profile bracket

EN400 Series

PCI-Express 100BASE-FX/SFP Ethernet Adapter
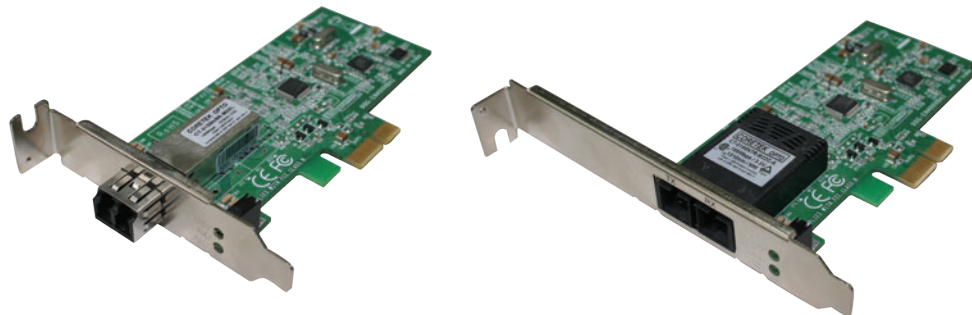
Spotlight

- **SFP slot and low-profile version availability**

- **Supports PCI Express 1.1**

- **Wake-on-LAN and remote wake-up support**

- **Supports 1-Lane 2.5Gbps PCI Express Bus**

- **0 to 50°C operating temperature range**

Features

- Compliant IEEE802.3 10BASE-T, 802.3u 100BASE-TX/FX/SFP
- Supports PCI Express 1.1
- Various Type of Cable Support - Twisted Pair Cable or Fiber Optic Cable
- Plug-and-Play Support
- Wake-on-LAN and remote wake-up support
- Full Duplex flow control (IEEE 802.3x)
- IEEE 802.1P Layer 2 Priority Encoding
- IEEE 802.1Q VLAN tagging
- Supports power down/link down power saving (for EN400TX)
- Supports 1-Lane 2.5Gbps PCI Express Bus
- 0 to 50°C operating temperature range

Hardware Specifications

Technology

Standards
- IEEE802.3
- IEEE802.3u

Protocols
- IEEE802.3x Full-duplex flow control

Driver
- Microsoft Windows 98, Windows ME, Windows XP, Windows 2000, Windows 2003, Windows 2008, Windows Vista, and Windows 7
- SCO Unix 5.0.6 and 5.0.7
- SCO OpenServer 6 and UnixWare 7.1.x.
- FreeBSD 7.x and 8.0
- Linux kernel 2.6.x and 2.4.x (Support x86 and x64)
- Novell server driver (Support OS 6.x, 5.x), client for DOS (ODI driver)
- MacOS 10.4 and 10.5 on Intel-based Mac computer, 10.6 on Intel-based Mac computer.

Power

Power Consumption
- 2W Max.

Mechanical

Dimensions
Low Profile:
- 80mm (W) x 119.2mm (D)
- 3.2"(W) x 4.76"(D))
Regular
- 117.5 mm (W) x 119.2 mm (D)
- (4.7"(W) x 4.76"(D))

Weight
- 80g (0.18lb.)

Interface

Ethernet Port
- 100BASE-FX: 1 port

LED Indicators
- Per Unit: Link/Activity, SPD

Environment

Operating Temperature
- 0°C to 50°C (32°F to 122°F)

Storage Temperature
- -10°C to 70°C (14°F to 158°F)

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

Regulatory Approvals

ISO
- Manufactured in an ISO9001 facility

Emission Compliance
- CE Mark Class B
- FCC Part 15 Class B

Dimensions

EN400 Low Profile   EN400

119.21

80

117.5
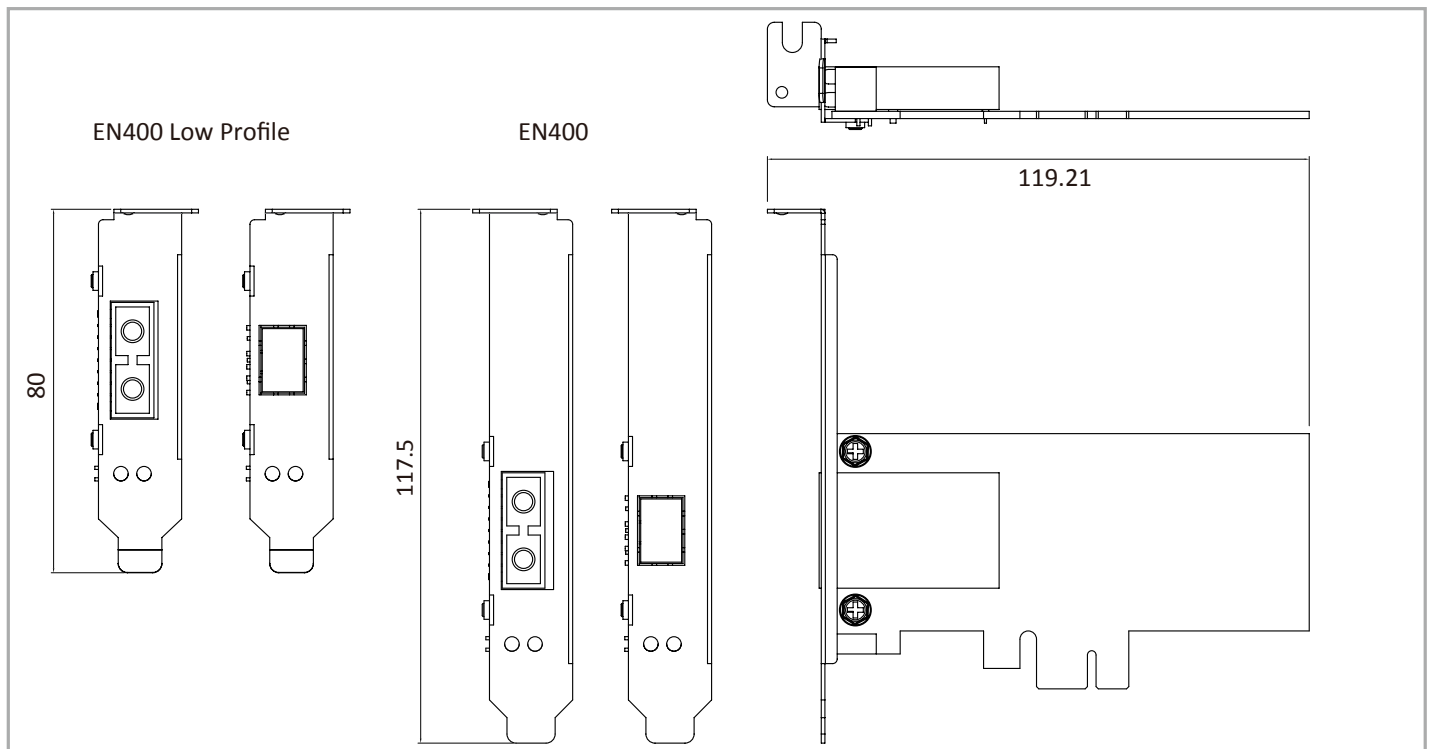
Ordering Information

Model

EN400C	100BASE-FX Multi Mode (SC) Ethernet Adapter
EN400T	100BASE-FX Multi Mode (ST) Ethernet Adapter
EN400C-20	100BASE-FX Single Mode (SC) -20Km Ethernet Adapter
EN400C-40	100BASE-FX Single Mode (SC) -40Km Ethernet Adapter
EN400T-20	100BASE-FX Single Mode (ST) -20Km Ethernet Adapter
EN400CA-20	100BASE-FX Single Mode (SC) WDM-TX :1310nm/RX :1550nm -20Km Ethernet Adapter
EN400CB-20	100BASE-FX Single Mode (SC) WDM-TX :1550nm/RX :1310nm -20Km Ethernet Adapter
EN400CA-40	100BASE-FX Single Mode (SC) WDM-TX :1310nm/RX :1550nm -40Km Ethernet Adapter
EN400CB-40	100BASE-FX Single Mode (SC) WDM-TX :1550nm/RX :1310nm -40Km Ethernet Adapter
EN400LC	100BASE-FX Multi Mode (LC) -2Km Ethernet Adapter
EN400SFP	100BASE SFP Ethernet Adapter
EN400PC	100BASE-FX Multi Mode (SC) Ethernet Adapter (Low profile)
EN400PT	100BASE-FX Multi Mode (ST) Ethernet Adapter (Low profile)
EN400PC-20	100BASE-FX Single Mode (SC) -20Km Ethernet Adapter (Low profile)
EN400PC-40	100BASE-FX Single Mode (SC) -40Km Ethernet Adapter (Low profile)
EN400PT-20	100BASE-FX Single Mode (ST) -20Km Ethernet Adapter (Low profile)
EN400PCA-20	100BASE-FX Single Mode (SC) WDM-TX :1310nm/RX :1550nm -20Km Ethernet Adapter (Low profile)
EN400PCB-20	100BASE-FX Single Mode (SC) WDM-TX :1550nm/RX :1310nm -20Km Ethernet Adapter (Low profile)
EN400PCA-40	100BASE-FX Single Mode (SC) WDM-TX :1310nm/RX :1550nm -40Km Ethernet Adapter (Low profile)
EN400PCB-40	100BASE-FX Single Mode (SC) WDM-TX :1550nm/RX :1310nm -40Km Ethernet Adapter (Low profile)
EN400PLC	100BASE-FX Multi Mode (LC) -2Km Ethernet Adapter (Low profile)
EN400PSFP	100BASE SFP Ethernet Adapter (Low profile)

PD1041

Hardened Surge Protection Device – RJ45

Overiview

EtherWAN's PD1041 Hardened Surge Protection Device is designed to protect your EtherWAN Switch investment; however any Ethernet network device can be protected from dangerous electrical surges. Designed for harsh environments, the PD1041 can be placed where you need it to protect your valuable network equipment.

Spotlight

- **Protection Solution Against Voltage Surge**
  - Provides pair-to-pair protection through RJ45 connector

- **Flexible Installation**
  - Supports DIN-rail or desktop installation

- **Wide Temperature Range**
  - Provides -40°C to 75°C operating temperature range for extreme environments

- **Compatible with 10/100BASE-T, Gigabit and PoE products**
  - Pass-through Data and PoE Power

Hardware Specifications

Electrical

Maximum continuous operating voltage U$_C$
• ≤ 3.3V DC

Maximum continuous voltage U$_C$ (wire-wire)
• ≤ 3.3 V DC (± 60 V DC/PoE+)

Maximum continuous voltage U$_C$ (wire-ground)
• ≤ 180 V DC

Nominal current I$_N$
• ≤ 1.5 A (25 °C)

Operating effective current IC at U$_C$
• ≤ 1 µA

Residual current I$_{PE}$
• ≤ 8 µA

Nominal discharge surge current I$_n$ (8/20) µs (Core-Core)
• 100 A

Nominal discharge surge current I$_n$ (8/20) µs (Core-Earth)
• 2 kA (per signal pair)

Total surge current (8/20) µs
• 10 kA

Nominal pulse current I$_{an}$ (10/700) µs (Core-Core)
• ≤ 40 A

Nominal pulse current I$_{an}$ (10/700) µs (Core-Earth)
• ≤ 160 A

Output voltage limitation at 1 kV/µs (Core-Core) spike
• ≤ 85 V (PoE)

Output voltage limitation at 1 kV/µs (Core-Earth) spike
• ≤ 700 V

Output voltage limitation at 1 kV/µs (Core-Core) static
• ≤ 9 V

Output voltage limitation at 1 kV/µs (Core-Earth) static
• ≤ 700 V

Output voltage limitation at 100V/s (Core-Core)
• ≤ 9 V

Output voltage limitation at 100V/s (Core-Earth)
• ≤ 300 V

Output voltage limitation at 100V/µs (Core-Core)
• ≤ 9 V

Output voltage limitation at 100V/µs (Core-Earth)
• ≤ 600 V

Residual voltage at I$_N$, (conductor-conductor)
• ≤ 15 V
• ≤ 100 V (PoE)

Voltage protection level Up (Core-Core)
• ≤ 9 V (B2 - 1 kV/25 A
• ≤ 100 V (B2 - 1 kV/25 A - PoE)
• ≤ 15 V (500 V/100 A)

Voltage protection level Up (Core-Earth)
• ≤ 600 V
• ≤ 700 V (C2 - 4 kV/2 kA)

Response time tA (Core-Core)
• ≤ 1 ns

Response time tA (Core-Earth)
• ≤ 100 ns

Input attenuation aE, sym.
• 1 dB (≤ 250 MHz)

Near-end crosstalk attenuation
• ≤ 35 dB (At 250 MHz / 100 Ω)

Cut-off frequency fg (3 dB), sym. in 100 Ohm system
• > 500 MHz

Capacity (Core-Core)
• typ. 5 pF (f= 1 MHz / VR= 0 V)

Capacity (Core-Earth)
• typ. 2 pF (f= 1 MHz / VR= 0 V)

Surge carrying capacity in acc. with IEC 61643-21 (Core-Core)
• B2 (1 kV/25 A)

Surge carrying capacity in acc. with IEC 61643-21 (Core-Earth)
• B2 (4 kV / 100 A)
• C2 (4 kV / 2 kA)
• D1 (1 kA)

Mechanical

Casing
• Aluminum case
• IP30

Dimensions
• 62.5mm (W) x 100mm (H) x 30mm (D) (2.5"(W) x 3.8"(H) x 1.18"(D))

Weight
• 184g ± 5%

Installation
• DIN-Rail

Connection
• RJ45 connector

Environment

Operating Temperature
• -40°C to 75°C (-40°F to 167°F)

Storage Temperature
• -40°C to 85°C (-40°F to 185°F)

Ambient Relative Humidity
• 5% to 95%, non-condensation

Regulatory Approvals

ISO
• Manufactured in an ISO9001 facility

UL
• UL497B

Dimensions

30mm (1.18")

Top

62.5mm (2.5")

100mm (3.8")

Front

Side

Back

Bottom
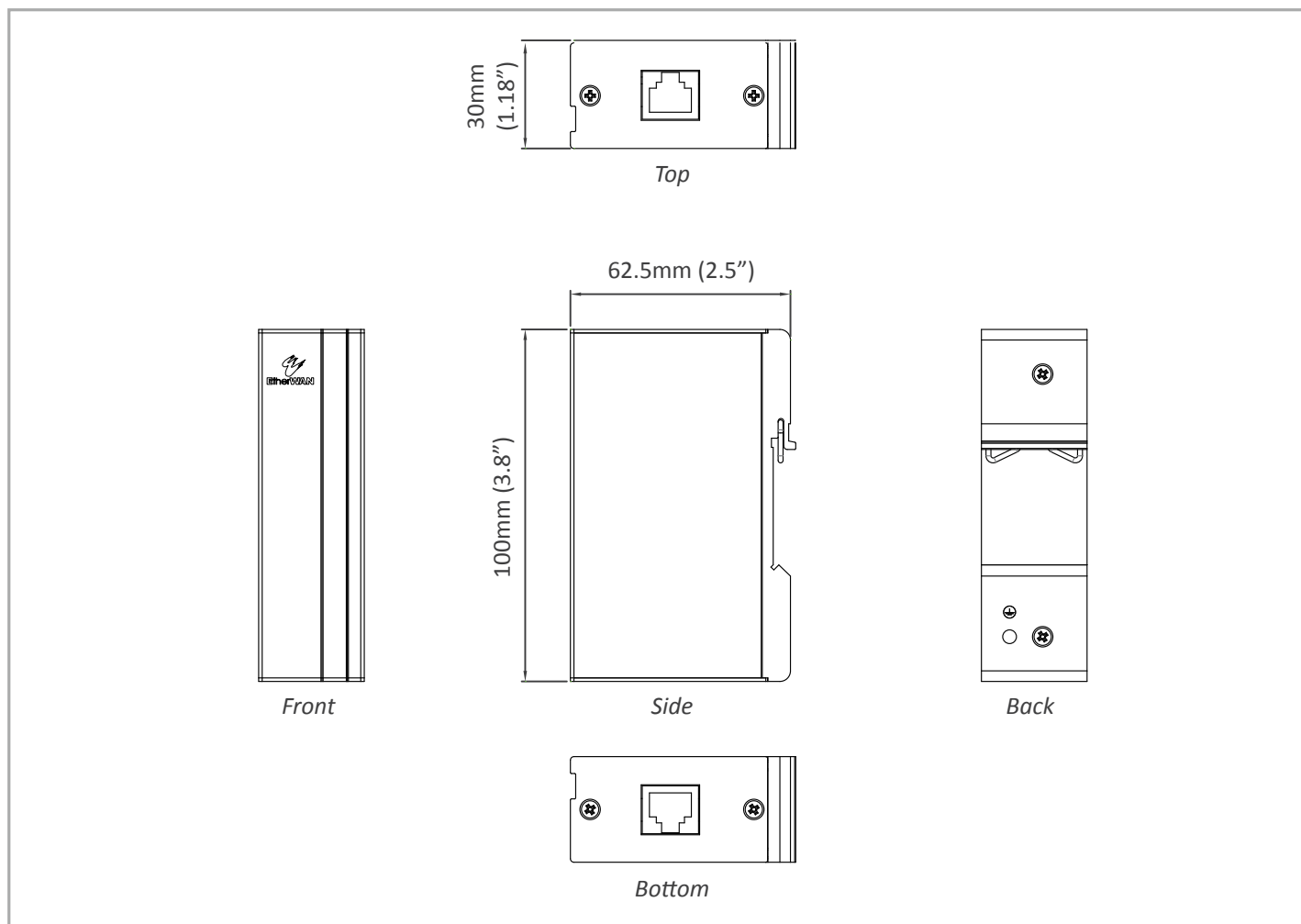
Ordering Information

Model

PD1041	Hardened Surge Protection Device – RJ45

Note: CAT6 cable is recommended

DD-85-48

85W/1.78A 48VDC Industrial Power Supply

Features

- **Wide input voltage range from 12VDC to 36 VDC**
- **-10°C to 60°C operating temperature range**
- **Over-voltage / over-current / reverse input protection**

Hardware Specifications

Power

Output
- DC Voltage: 48VDC
- Current Range: 0 to 1.78A
- Rated Power: 85W

Input
- Voltage Range: 12-36VDC
- Inrush Current: 13A max./12VDC or 50A/36VDC

Protection
- Over Voltage Protection: 56V
- Over-current protection: 110% to 180% of rated value

Mechanical

Casing
- Aluminum case

Dimensions
- 50mm (W) x 148mm (D) x 165mm(H)
  (1.96" (W) x 5.82" (D) x 6.49" (H))

Weight
- 1.2kg (2.64 lb)

Installation
- DIN-Rail and Panel mounting (both mounting kits are included)

Environment

Operating Temperature
- -10°C to 60°C (Refer to output load derating curve)

Storage Temperature
- -20°C to 85°C (-4°F to 158°F)

Working Humidity
- 0% to 95% RH

Derating Curves

Dimensions

Top / Bottom

50mm(1.97")

148mm (5.83")

165mm (6.5")

Front

Side
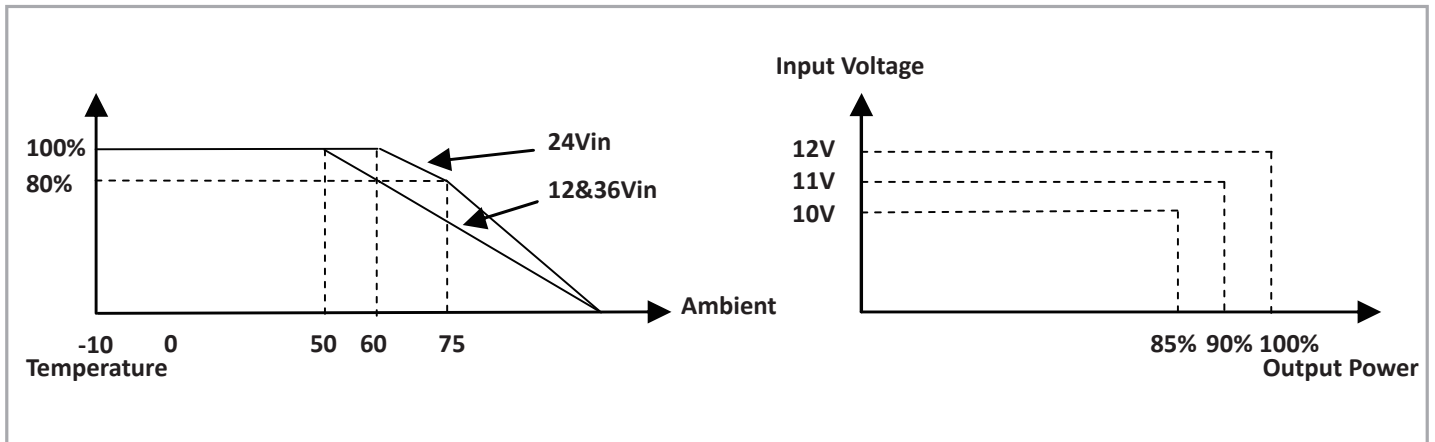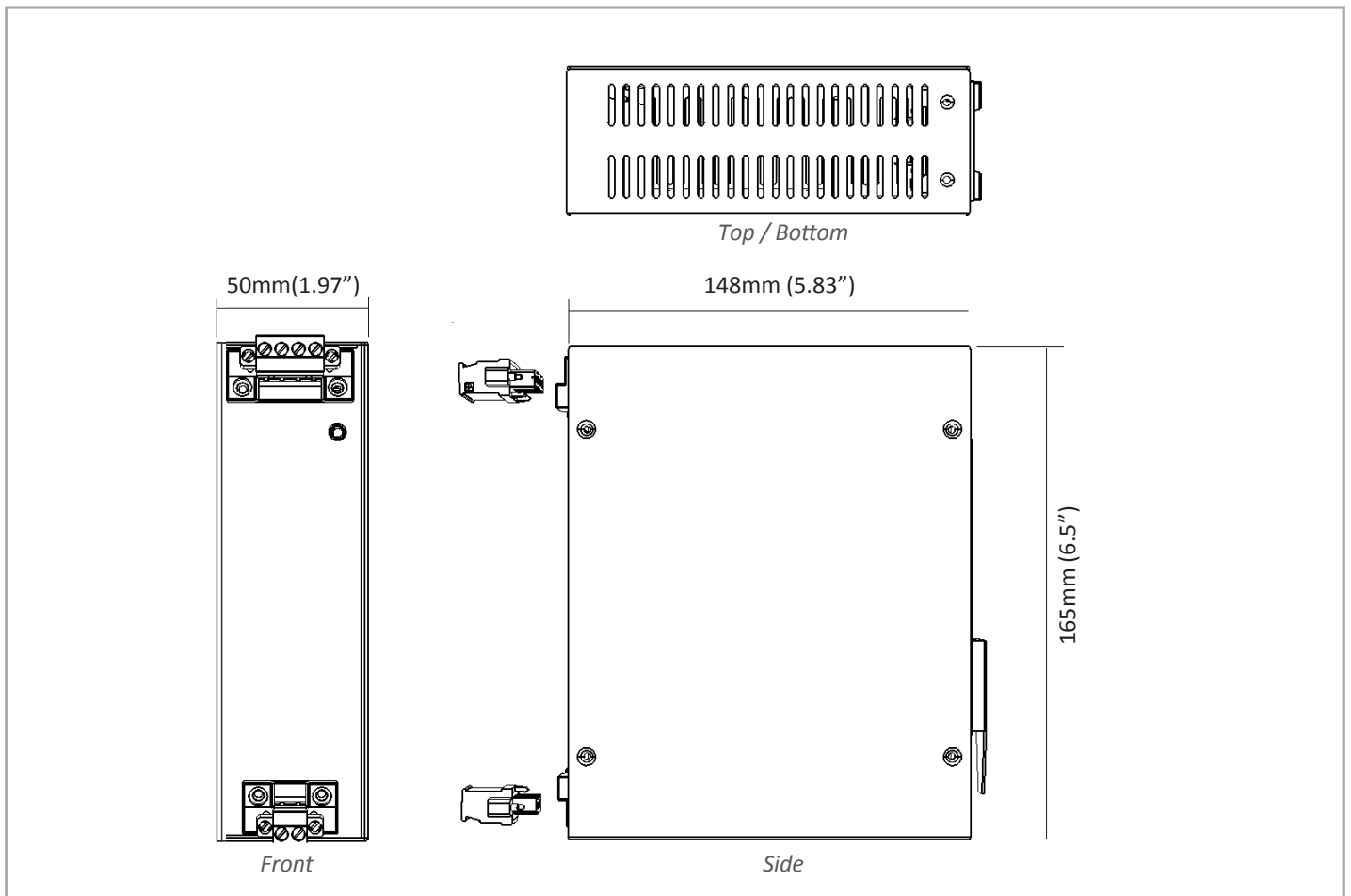
Ordering Information

Model

DD-85-48	85W/1.78A 48VDC Industrial Power Supply

DD-85-55

85W/1.55A 55VDC Industrial Power Supply

Features

- **Wide input voltage range from 12VDC to 36 VDC**
- **-10°C to 60°C operating temperature range**
- **Over-voltage / over-current / reverse input protection**

Hardware Specifications

Power

Output
- DC Voltage: 55VDC
- Current Range: 0 to 1.55A
- Rated Power: 85W

Input
- Voltage Range: 12-36VDC
- Inrush Current: 13A/12VDC or 50A/36VDC

Protection
- Over Voltage Protection: 60V
- Over-current protection: 110% to 180% of rated value

Mechanical

Dimensions
- 50mm (W) x 148mm (D) x 165mm(H)
  (1.96" (W) x 5.82" (D) x 6.49" (H))

Weight
- 1.2kg (2.64 lb)

Installation
- DIN-Rail and Penel mounting (both mounting kits are included)

Environment

Operating Temperature
- -10°C to 60°C (Refer to output load derating curve)

Storage Temperature
- -20°C to 85°C (-4°F to 158°F)

Working Humidity
- 0% to 95% RH

Derating Curves

Dimensions

Top / Bottom

50mm(1.97")

148mm (5.83")

165mm (6.5")

Front

Side

Ordering Information

Model

DD-85-55	85W/1.55A 55VDC Industrial Power Supply

DR-30-24

30W/1.5A 24VDC DIN-Rail Industrial Power Supply

Features

- **-20°C to 60°C operating temperature range**
- **Can be installed on DIN-rail TS-35 / 7.5 or 15**
- **Protections: Short circuit / Over load / Over voltage**
- **UL60950-1, TUV EN60950-1 approved**
- **Universal AC input / Full range**

Hardware Specifications

Power

Power Input
- Voltage Range: 85 to 264VAC, or 120 to 370VDC
- Frequency Range: 47 to 63Hz
- Efficiency: 83%
- AC Current (Typ.): 0.88A / 115VAC; 0.48A / 230VAC
- Inrush Current (Typ.): Cold Start 15A / 115VAC; 30A / 230VAC

Power Output
- DC Voltage: 24V
- Rated Current: 1.5A
- Current Range: 0 to 1.5A
- Rated Power: 36W
- Ripple & Noise (max.): 150mVp-p
- Voltage Adj. Range: 21.6 to 26.4V
- Voltage Tolerance: + / - 1.0%
- Line Regulation: + / - 1.0%
- Load Regulation: + / - 1.0%
- Setup, Rise Time: 100ms, 30ms / 230VAC; 100ms, 30ms / 115VAC at full load
- 100ms, 30ms / 115VAC at full load
- Hold up Time: 100ms / 230VAC; 100ms, 21ms / 115VAC at full load

Mechanical

Casing
- Plastic case

Dimensions
- 78mm (W) x 56mm (D) x 93 mm(H) (3.12" (W) x 2.24" (D) x 3.72" (H))

Weight
- 0.27kg (0.59 lb)

Installation
- DIN-Rail

Protection

Over Voltage Protection
- 27.6 to 32.4V
- Protection type : Shut down o/p voltage, re-power on to recover

Over Load Protection
- 105 to 160% rated output power
- Protection type : Constant current limiting, recovers automatically after fault condition is removed

Environment

Operating Temperature
- -20°C to 60°C (Refer to output load derating curve)

Storage Temperature
- -40°C to 85°C (-4°F to 158°F)

Working Humidity
- 20% to 90%RH non-condensing

Storage Humidity
- 10% to 95%RH

Regulatory Approvals

Safety
- UL60950-1, TUV EN60950-1, design refer to EN50178

EMC
- EN55011
- EN55022 (CISPR22) Class B
- EN61000-3-2, -3
- Withstand Voltage
  - I/P-O/P: 3KVAC
- Isolation Resistance
  - I/P-O/P: 100M Ohms / 500VDC

EMS

EN61000-4-2,3,4,5,6,8,11
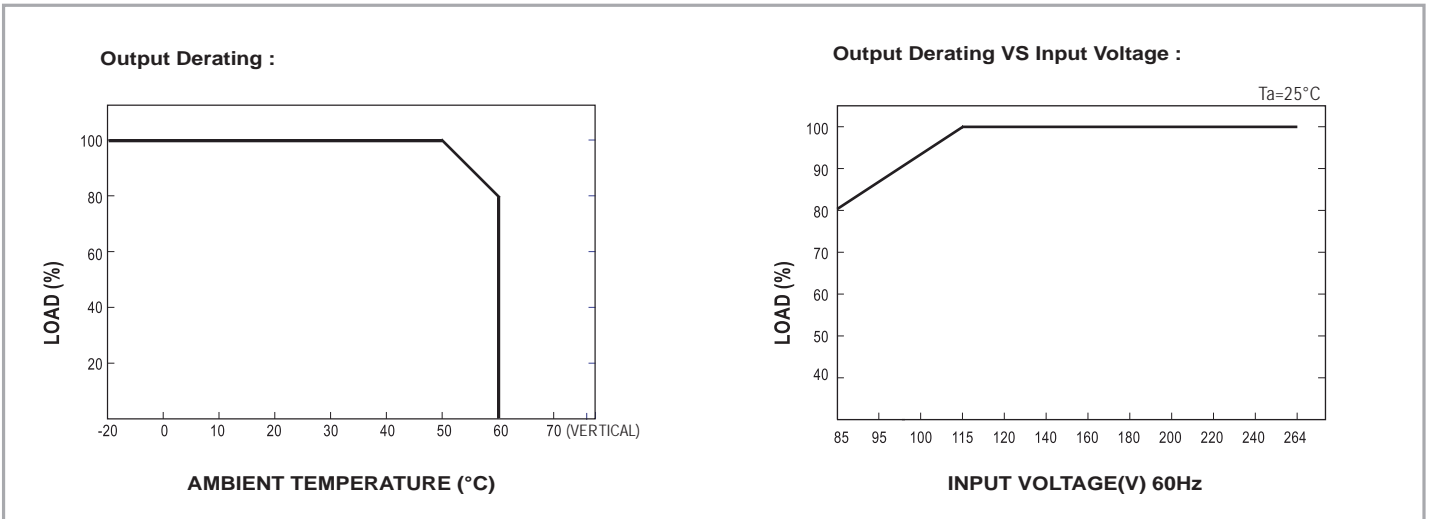
ENV50204

EN55024

EN61000-6-2

EN61204-3 Heavy industry level, criteria A

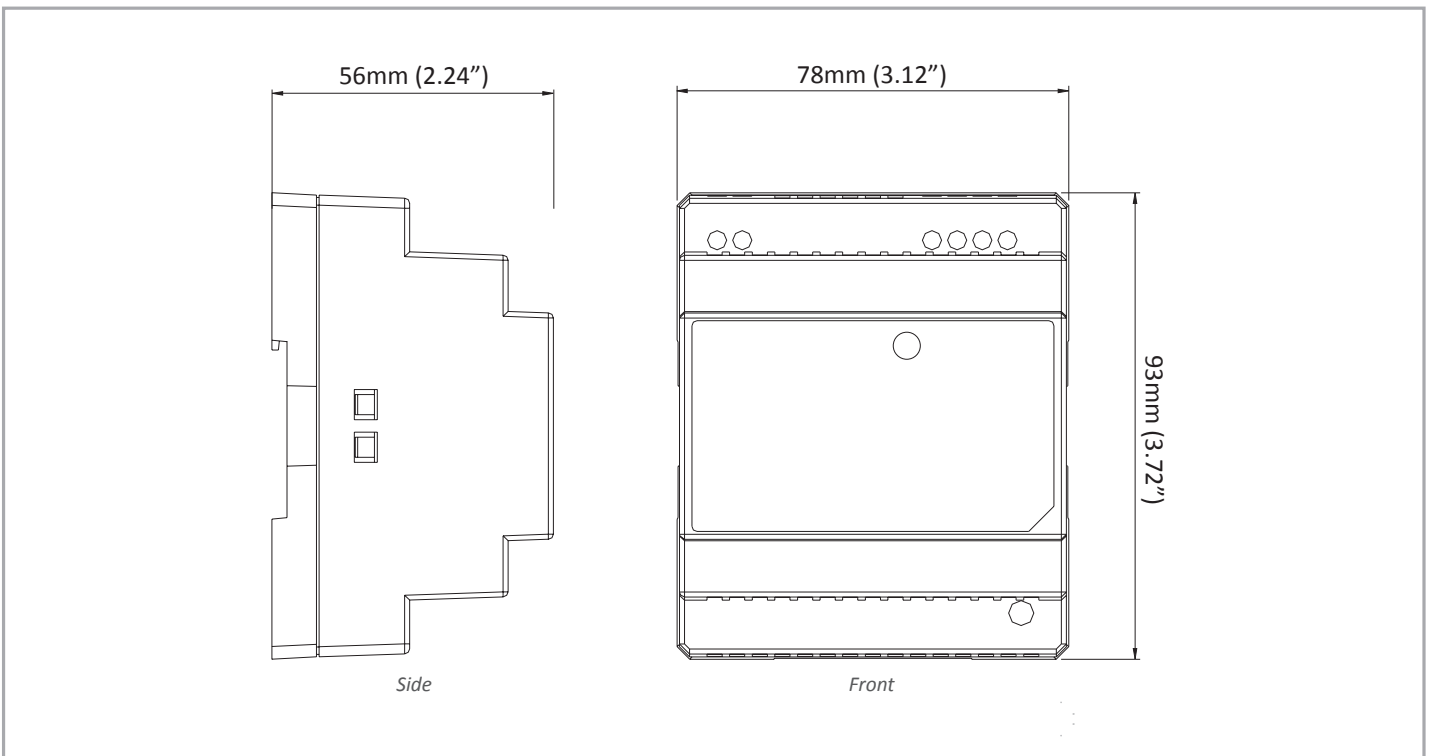#### Environmental Test Compliance
- Vibration
  - 10 to 500Hz, 2G 10min. / 1 cycle, period for 60 min. each along X, Y, Z axes

Derating Curves

Output Derating :

Output Derating VS Input Voltage :

Ta=25°C

Dimensions

56mm (2.24")

78mm (3.12")

93mm (3.72")

Side

Front

Ordering Information

Model

DR-30-24	30W/1.5A DIN-Rail 24VDC Industrial Power Supply

DR-30-12

24W/1.5A DIN-Rail 24VDC Industrial Power Supply

Features

- **-20°C to 60°C operating temperature range**
- **Can be installed on DIN-rail TS-35 / 7.5 or 15**
- **Protections: Short circuit / Over load / Over voltage**
- **Isolation class II**
- **UL60950-1, TUV EN60950-1 approved**

Hardware Specifications

Power

Power Input
- Voltage Range: 85 to 264VAC; 120 to 370VDC
- Frequency Range: 47 to 63Hz
- Efficiency: 81%
- AC Current (Typ.): 0.88A / 115VAC; 0.48A / 230VAC
- Inrush Current (Typ.): Cold Start 15A / 115VAC; 30A / 230VAC

Power Output
- DC Voltage: 12V
- Rated Current: 2A
- Current Range: 0 to 2A
- Rated Power: 24W
- Ripple & Noise (max.): 120mVp-p
- Voltage Adj. Range: 10.8 to 13.2V
- Voltage Tolerance: + / - 1.0%
- Line Regulation: + / - 1.0%
- Load Regulation: + / - 1.0%
- Setup, Rise Time: 100ms, 30ms / 230VAC; 100ms, 30ms / 115VAC at full load
- Hold up Time: 100ms / 230VAC; 21ms / 115VAC at full load

Mechanical

Casing
- Plastic case

Dimensions
- 78mm (W) x 56mm (D) x 93 mm(H) (3.12" (W) x 2.24" (D) x 3.72" (H))

Weight
- 0.27kg (0.59 lb)

Installation
- DIN-Rail

Protection

Over Voltage Protection
- 13.8 to 16.2V
- Protection type: Shut down o/p voltage, re-power on to recover

Over Load Protection
- 105 to 160% rated output power
- Protection type : Constant current limiting, recovers automatically after fault condition is removed

Environment

Operating Temperature
- -20°C to 60°C (Refer to output load derating curve)

Storage Temperature
- -40°C to 85°C (-4°F to 158°F)

Working Humidity
- 20% to 90%RH non-condensing

Storage Humidity
- 10% to 95%RH

Regulatory Approvals

Safety

UL EN60950-1

TUV EN60950-1, design refer to EN50178

EMC

EN55011

EN55022 (CISPR22) Class B

EN61000-3-2, -3
- Withstand Voltage:
  - I/P-O/P: 3KVAC
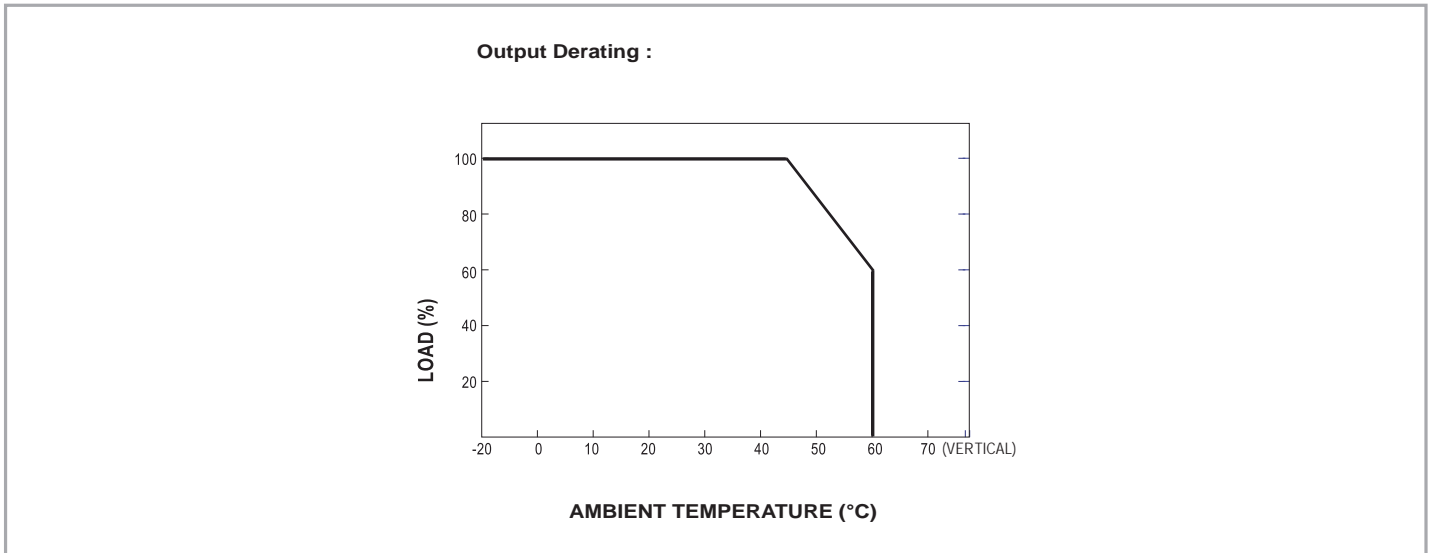- Isolation Resistance:
  - I/P-O/P: 100M Ohms / 500VDC

EMS

EN61000-4-2,3,4,5,6,8,11

ENV50204

EN55024

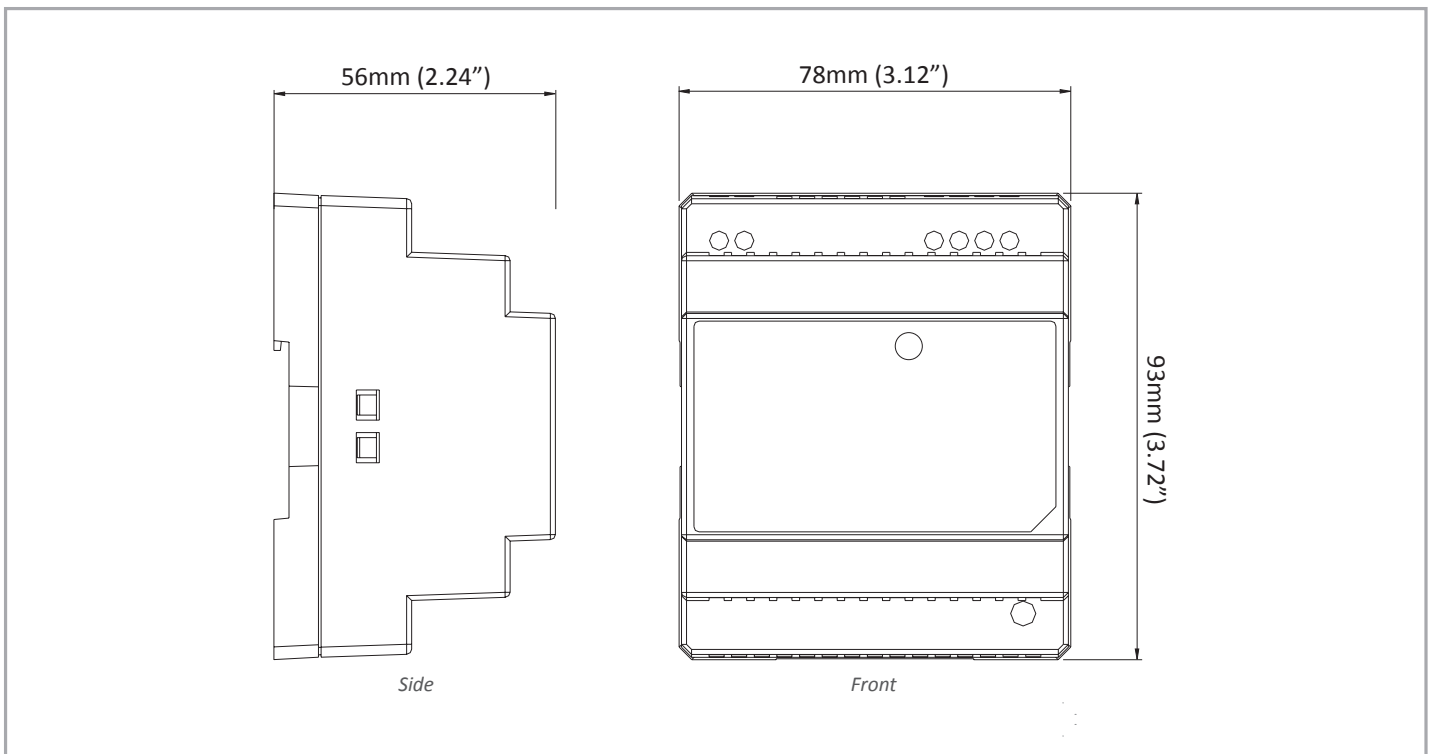**EN61000-6-2**

EN61204-3 Heavy industry level, criteria A

Environmental Test Compliance
- Vibration
  - 10 to 500Hz, 2G 10min. / 1 cycle, period for 60 min. each along X, Y, Z axes

Derating Curves

Output Derating :

LOAD (%) vs AMBIENT TEMPERATURE (°C)

Output Derating VS Input Voltage :

Ta=25°C

LOAD (%) vs INPUT VOLTAGE(V) 60Hz

Dimensions

56mm (2.24")

Side

78mm (3.12")

93mm (3.72")

Front

Ordering Information

Model

DR-30-12	24W/2A DIN-Rail 12VDC Industrial Power Supply

DR-60-24

60W/2.5A DIN-Rail 24VDC Industrial Power Supply

EtherWAN

Features

- **-20°C to 60°C operating temprature range**
- **Can be installed on DIN-rail TS-35 / 7.5 or 15**
- **Protections: Short circuit / Over load / Over voltage / Over temperature**
- **Isolation class II**
- **UL60950-1, TUV EN60950-1 approved**

Hardware Specifications

Power

Power Input
- Voltage Range: 88 to 264VAC; 124 to 370VDC
- Frequency Range: 47 to 63Hz
- Efficiency: 84% AC Current (Typ.): 1.2 / 115VAC; 0.8A / 230VAC
- Inrush Current (Typ.): Cold Start 18A / 115VAC; 36A / 230VAC

Power Output
- DC Voltage: 24V
- Rated Current: 2.5A
- Current Range: 0 to 2.5A
- Rated Power: 60W
- Ripple & Noise (max.): 150mVp-p
- Voltage Adj. Range: 21.6 to 26.4V
- Voltage Tolerance: + / - 1.0%
- Line Regulation: + / - 1.0% Load Regulation: + / - 1.0%
- Setup, Rise Time: 100ms, 30ms / 230VAC; 200ms, 30ms / 115VAC at full load
- Hold up Time: 100ms / 230V

Mechanical

Casing
- Plastic Case

Dimensions
- 78mm (W) x 56mm (D) x 93mm (H) (3.17" (W) x 2.2" (D) x 3.66" (H))

Weight
- 0.3Kg

Installation
- DIN-Rail

Protection

Over Voltage Protection
- 27.6 - 32.4V
- Protection type : Shut down o/p voltage , re-power on to recover

Over Load Protection
- 105 -160% rated output power
- Protection type : Constant current limiting, recovers automatically after fault condition is removed

Environment

Operating Temperature
- -20°C to 60°C (-4°F to 140°F)

Storage Temperature
- -40°C to 85°C (-40°F to 185°F)

Working Humidity
- 20% to 90%RH non-condensing

Storage Humidity
- 10% to 95%RH

Regulatory Approvals

Safety
- UL60950-1, TUV EN60950-1 approved, design refer to EN50178

EMC
- EN55011
- EN55022 (CISPR22) Class B
- EN61000-3-2, -3
- Withstand Voltage:
  ◦ I/P-O/P: 3KVAC
- Isolation Resistance:
  ◦ I/P-O/P: 100M Ohms / 500VDC

EMS Immunity
- EN61000-4-2,3,4,5,6,8,11
- ENV50204
- EN55024
- N61000-6-2
- EN61204-3, EN50082-2, Heavy industry level, criteria A

Environmental Test Compliance
- Vibration 10 to 500Hz, 2G 10min. / 1 cycle, period for 60 min. each along X, Y, Z axes

Derating Curves

Output Derating :

LOAD (%) vs AMBIENT TEMPERATURE (°C)

Dimensions

56mm (2.24")

Side

78mm (3.12")

93mm (3.72")

Front

Ordering Information

Model

DR-60-24	60W/2.5A DIN-Rail 24VDC Industrial Power Supply

DR-75-24

75W/3.2A DIN-Rail 24VDC Industrial Power Supply

Features

- **-10°C to 60°C operating temperature range**
- **Can be installed on DIN-rail TS-35/7.5 or 15**
- **Short circuit/over load/over voltage/over temperature protections**
- **UL508 (industrial control equipment) approved**

Hardware Specifications

Power

Power Input
- Voltage Range: 85 to 264VAC; 120 to 370VDC
- Frequency Range: 47 to 63Hz
- Efficiency: 80%
- AC Current (Typ.): 1.6A / 115VAC; 0.96A / 230VAC
- Inrush Current (Typ.): Cold Start 20A / 115VAC; 40A / 230VAC Leakage Current: <1mA / 240VAC

Power Output
- DC Voltage: 24V
- Rated Current: 3.2A Current
- Range: 0 to 3.2A
- Rated Power: 76.8W
- Ripple & Noise (max.): 150mVp-p
- Voltage Adj. Range: 24 to 28V
- Voltage Tolerance: ± 1.0%
- Line Regulation: ± 0.5%
- Load Regulation: ± 1.0%
- Setup, Rise Time: 1000ms, 60ms / 230VAC; 1800ms, 60ms / 115VAC at full load
- Hold up Time: 60ms / 230VAC; 12ms / 115VAC at full load

Mechanical

Casing
- Aluminum case

Dimensions
- 55.5mm (W) x 100mm (D) x 125.2 mm(H) (2.22" (W) x 4" (D) x 5.00" (H))

Weight
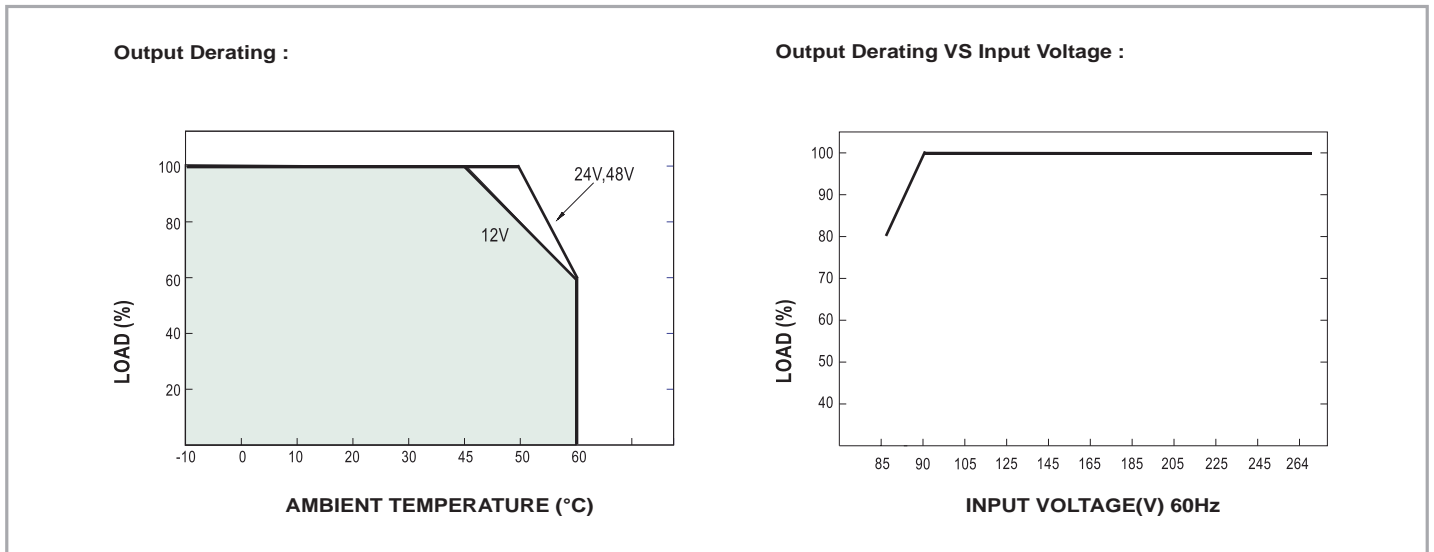- 0.6kg (1.32 lb)

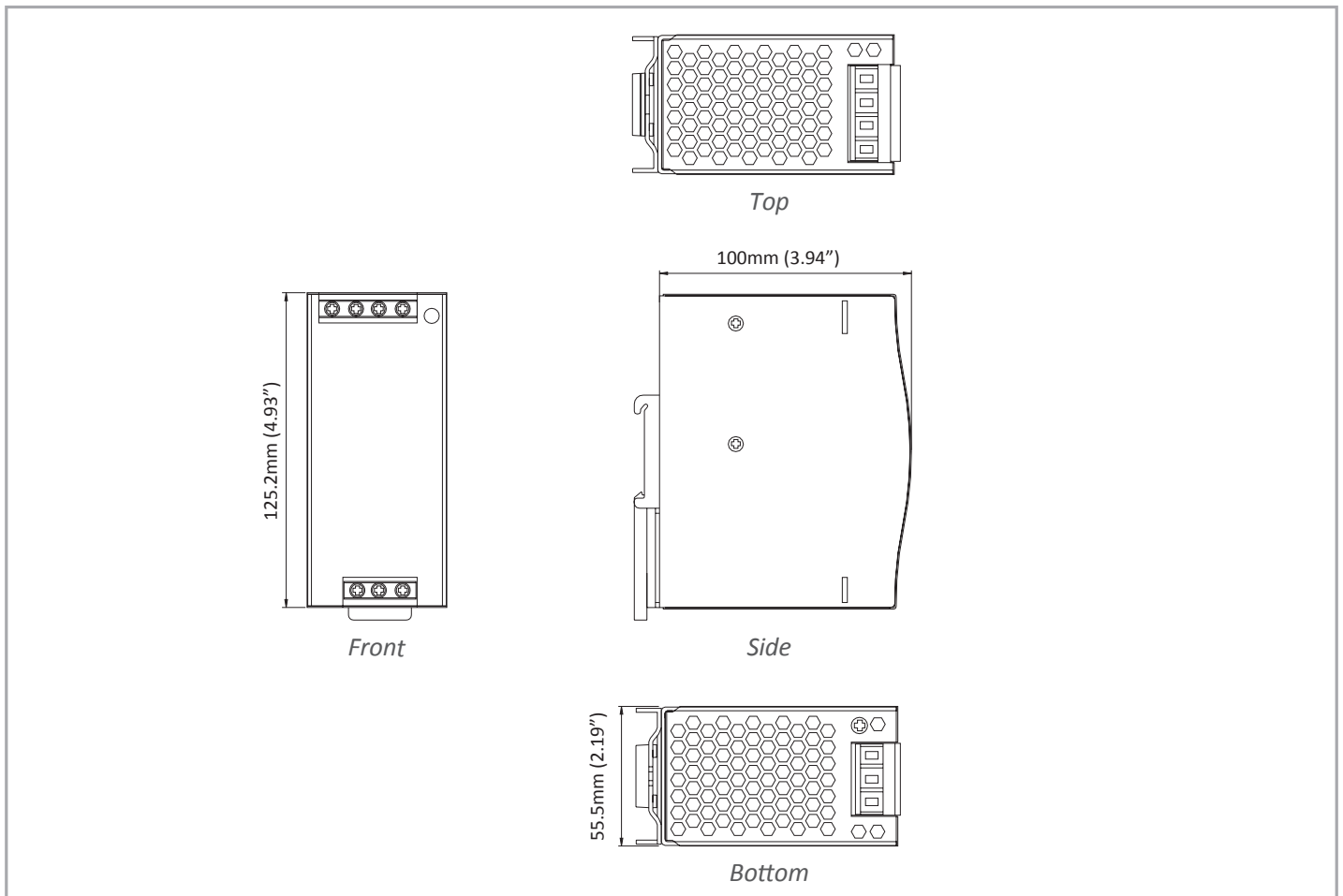#### Installation
- DIN-Rail

Protection

Over Voltage Protection
- 29 to 34V
- Protection type : Hiccup mode, recovers automatically after fault condition is removed

Over Load Protection
- 105 to 150% rated output power Protection type : Constant current limiting, recovers automatically after fault condition is removed

Environment

Operating Temperature
- -10°C to 60°C (Refer to output load derating curve)

Storage Temperature
- -20°C to 85°C (-4°F to 158°F)

Working Humidity
- 20% to 90%RH non-condensing

Storage Humidity
- 10% to 95%RH

Regulatory Approvals

Safety
- UL508, TUV EN60950-1 Approved

EMC
- EN55011 EN55022 (CISPR22) Class B EN61000-3-2, -3
- Withstand Voltage:
  ◦ I/P-O/P: 3KVAC
  ◦ I/P-FG: 1.5KVAC
  ◦ O/P-FG: 0.5KVAC
- O/P-DC OK: 0.5KVAC Isolation Resistance:
  ◦ I/P-O/P
  ◦ I/P-FG
  ◦ O/P-FG: 100M Ohms / 500VDC

EMS
- EN61000-4-2,3,4,5,6,8,11
- ENV50204
- EN55024 E
- N61000-6-2 (EN50082-2), Heavy industry level, criteria A

Environmental Test Compliance
- Vibration
  ◦ 10 to 500Hz, 2G 10min./1 cycle, period for 60 min. each along X, Y, Z axes

Derating Curves

Output Derating :

Output Derating VS Input Voltage :

Dimensions

Top

Front

Side

Bottom

100mm (3.94")

125.2mm (4.93")

55.5mm (2.19")

Ordering Information

Model

DR-75-24	75W/3.2A DIN-Rail 24VDC Industrial Power Supply

DR-75-48

75W/1.6A DIN-Rail 48VDC Industrial Power Supply

EtherWAN

Features

- **-10°C to 60°C operating temprature range**
- **Can be installed on DIN-rail TS-35/7.5 or 15**
- **Short circuit/over load/over voltage/over temperature protections**
- **UL508 (industrial control equipment) approved**

UL508

Hardware Specifications

Power

Power Input
- Voltage Range: 85 to 264VAC; 120 to 370VDC
- Frequency Range: 47 to 63Hz
- Efficiency: 81%
- AC Current (Typ.): 1.6A / 115VAC; 0.96A / 230VAC
- Inrush Current (Typ.): Cold Start 20A / 115VAC; 40A / 230VAC
- Leakage Current: <1mA / 240VAC

Power Output
- DC Voltage: 48V
- Rated Current: 1.6A
- Current Range: 0 to 1.6A
- Rated Power: 76.8W
- Ripple & Noise (max.): 240mVp-p
- Voltage Adj. Range: 48 to 53V
- Voltage Tolerance: ± 1.0%
- Line Regulation: ± 0.5%
- Load Regulation: ± 1.0%
- Setup, Rise Time: 1000ms, 60ms/230VAC; 1800ms, 60ms/115VAC at full load
- Hold up Time: 60ms / 230VAC; 12ms / 115VAC at full load

Mechanical

Casing
- Aluminum case

Dimensions
- 55.5mm (W) x 100mm (D) x 125.2 mm(H) (2.22" (W) x 4" (D) x 5.00" (H))

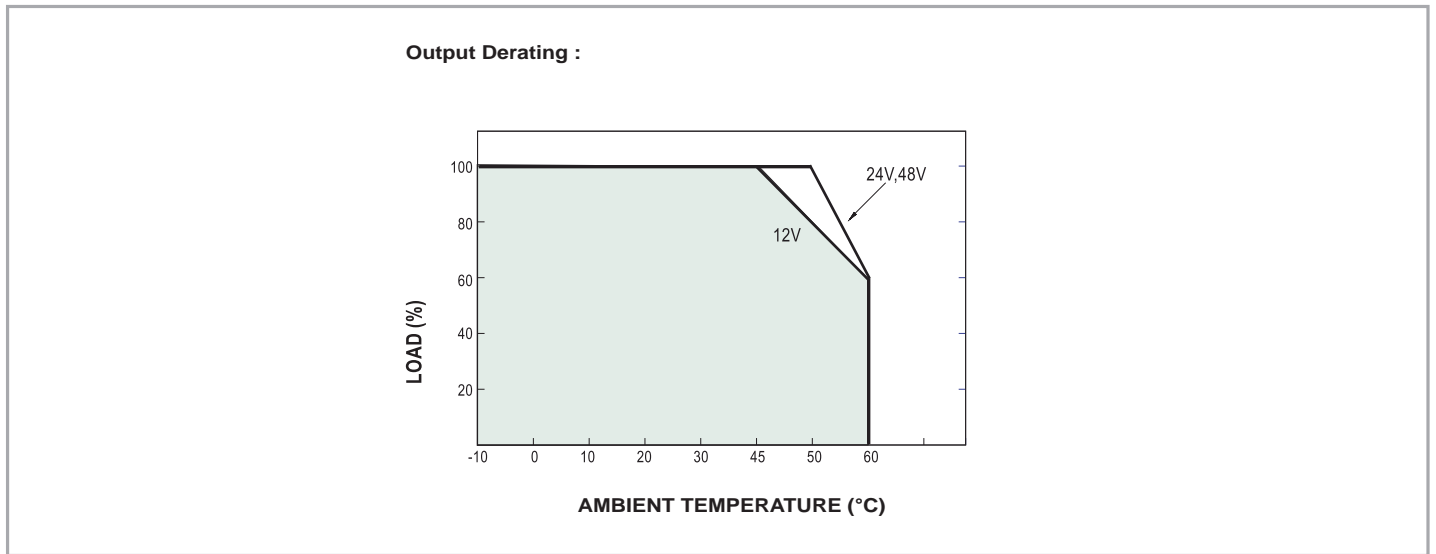**Weight**
- 0.6kg (1.32 lb)

Installation
- DIN-Rail

Protection

Over Voltage Protection
- 58 to 65V
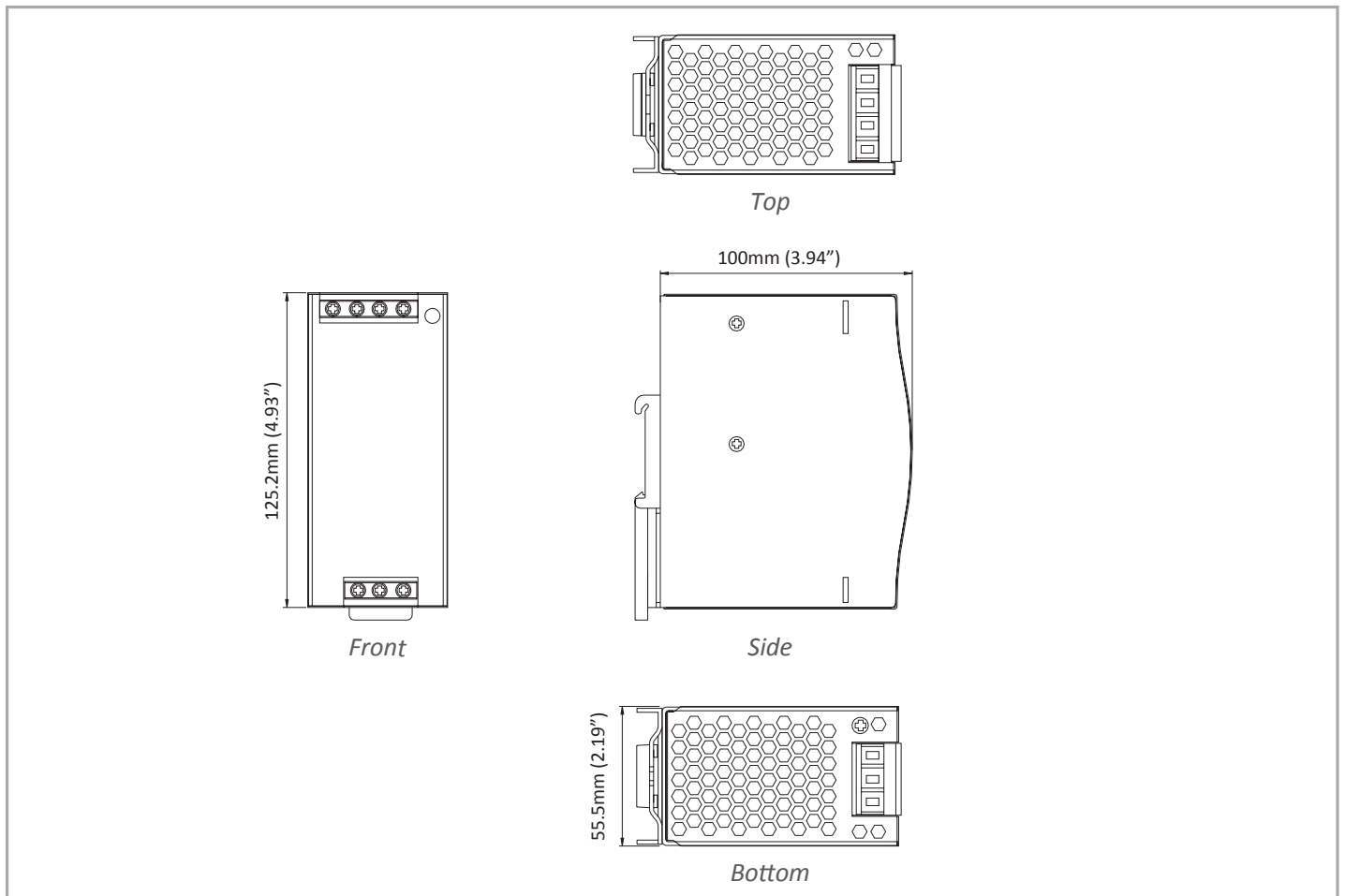- Protection type : Hiccup mode, recovers automatically after fault condition is removed

Over Load Protection
- 105 to 150% rated output power Protection type: Constant current limiting, recovers automatically after fault condition is removed

Environment

Operating Temperature
- -10°C to 60°C (Refer to output load derating curve)

Storage Temperature
- -20°C to 85°C (-4°F to 158°F)

Working Humidity
- 20% to 90%RH non-condensing

Storage Humidity
- 10% to 95%RH

Regulatory Approvals

Safety
- UL508, TUV EN60950-1 Approved

EMC
- EN55011
- EN55022 (CISPR22) Class B
- EN61000-3-2, -3
- Withstand Voltage:
  ◦ I/P-O/P: 3KVAC
  ◦ I/P-FG: 1.5KVAC
  ◦ O/P-FG: 0.5KVAC
- O/P-DC OK: 0.5KVAC Isolation Resistance:
  ◦ I/P-O/P
  ◦ I/P-FG
  ◦ O/P-FG: >100M Ohms / 500VDC

EMS
- EN61000-4-2,3,4,5,6,8,11
- ENV50204
- EN55024 E
- N61000-6-2 (EN50082-2), Heavy industry level, criteria A

Environmental Test Compliance
- Vibration
  ◦ 10 to 500Hz, 2G 10min./1 cycle, period for 60 min. each along X, Y, Z axes

Derating Curves

Output Derating :

Output Derating VS Input Voltage :

Dimensions

Top

Front

125.2mm (4.93")

100mm (3.94")

Side

55.5mm (2.19")

Bottom

Ordering Information

Model

DR-75-48	75W/1.6A DIN-Rail 48VDC Industrial Power Supply

DR-120-24

120W/5A DIN-Rail 24VDC Industrial Power Supply

Features

- **-10°C to 60°C operating temperature range**
- **Can be installed on DIN-rail TS-35 / 7.5 or 15**
- **Short circuit/over load/over voltage/over temperature protections**
- **UL508 (industrial control equipment) approved**

Hardware Specifications

Power

Power Input
- Voltage Range: 88 to 132VAC/ 176 to 264VAC by switch; 240 to 370VDC
- Frequency Range: 47 to 63Hz
- Efficiency: 84%
- AC Current (Typ.): 2.6A / 115VAC; 1.6A / 230VAC
- Inrush Current (Typ.): Cold Start 20A / 115VAC; 40A / 230VAC
- Leakage Current: <3.5mA / 240VAC

Power Output
- DC Voltage: 24V
- Rated Current: 5A
- Current Range: 0 to 5A
- Rated Power: 120W Ripple & Noise (max.): 80mVp-p
- Voltage Adj. Range: 24 to 38V
- Voltage Tolerance: + / - 1.0%
- Line Regulation: + / - 0.5%
- Load Regulation: + / - 1.0% Setup, Rise Time: 500ms, 70ms / 230VAC; 500ms, 70ms / 115VAC at full load
- Hold up Time: 36ms / 230VAC; 32ms / 115VAC at full load

Mechanical

Casing
- Aluminum case

Dimensions
- 65.5mm (W) x 100mm (D) x 125.2 mm(H) (2.62" (W) x 4" (D) x 5.00" (H))

Weight
- 0.79kg (1.74 lb)

Installation
- DIN-Rail

Protection

Over Voltage Protection
- 29 to 33V
- Protection type : Shut down o/p voltage, re-power on to recover

Over Load Protection
- 105 to 150% rated output power
- Protection type : Constant current limiting, recovers automatically after fault condition is removed

Over Temperature Protection
- 90°C + / - 5°C (TSW1) Protection type: Shutdown o/p voltage, recovers automatically after temperature goes down

Environment

Operating Temperature
- -10°C to 60°C (Refer to output load derating curve)

Storage Temperature
- -20°C to 85°C (-4°F to 158°F)

Working Humidity
- 20% to 90%RH non-condensing

Storage Humidity
- 10% to 95%RH

Regulatory Approvals

Safety
- UL508, TUV EN60950-1 Approved

EMC
- EN55011
- EN55022 (CISPR22) Class B
- EN61000-3-2, -3
- Withstand Voltage:
  - I/P-O/P: 3KVAC
  - I/P-FG: 1.5KVAC
  - O/P-FG: 0.5KVAC
- Isolation Resistance:
  - I/P-O/P
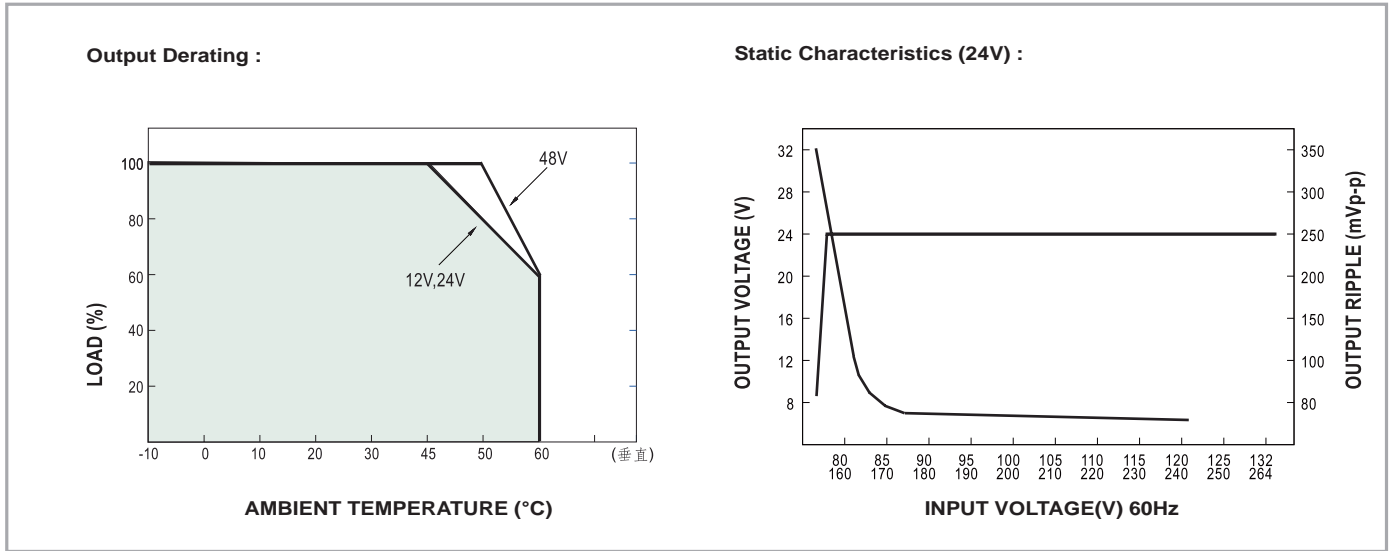 - I/P-FG
  - O/P-FG: 100M Ohms / 500VDC

EMS
- EN61000-4-2,3,4,5,6,8,11
- ENV50204
- EN55024
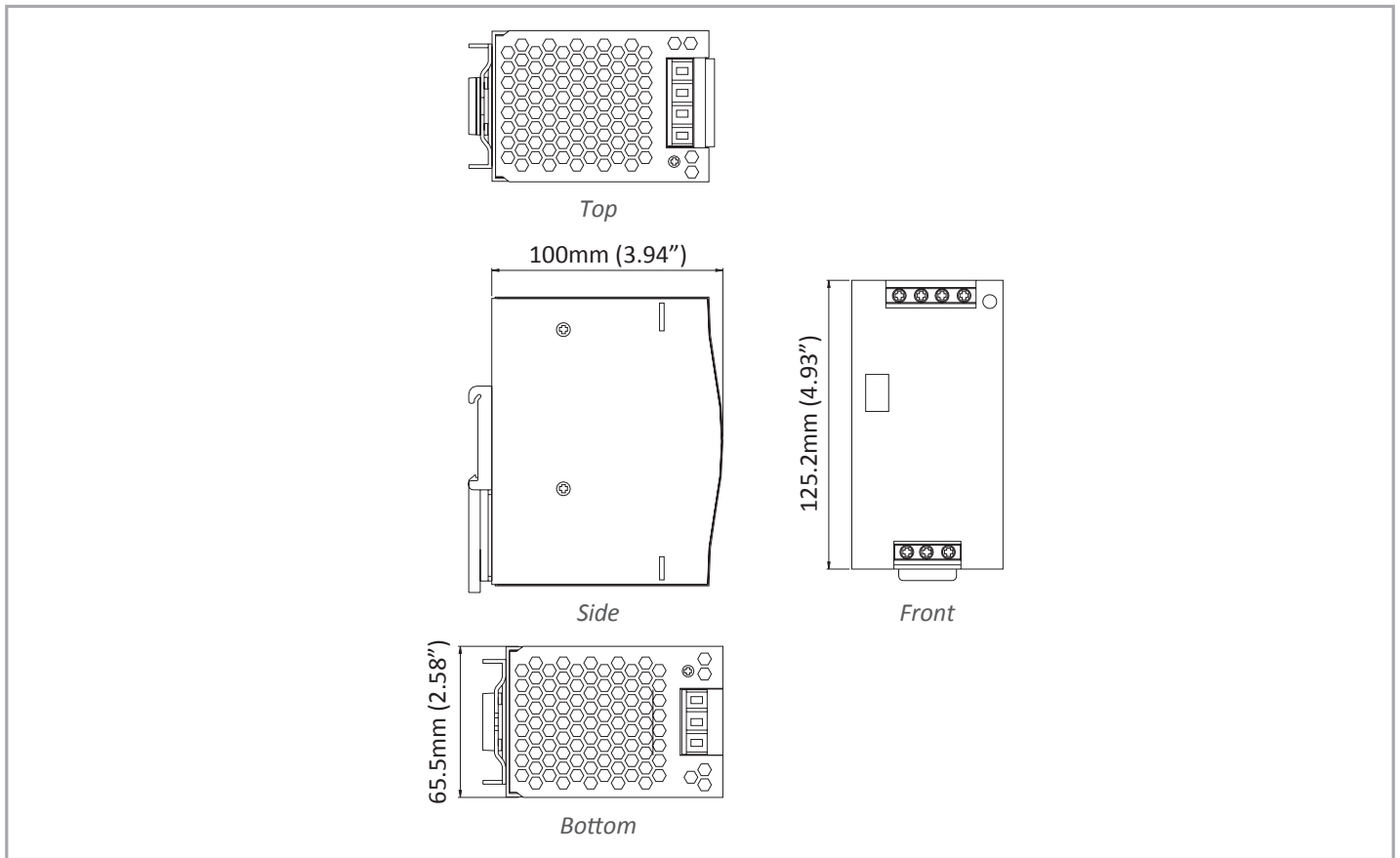- EN61000-6-2 (EN50082-2), Heavy industry level, criteria A

Environmental Test Compliance
- Vibration
  - 10 to 500Hz, 2G 10min./1 cycle, period for 60 min. each along X, Y, Z axes

Derating Curves

Output Derating :

Dimensions

Top

100mm (3.94")

125.2mm (4.93")

Front

55.5mm (2.19")

Side

Bottom

Ordering Information

Model

DR-120-24	120W/5A DIN-Rail 24VDC Industrial Power Supply

DR-120-48

120W/2.5A DIN-Rail 48VDC Industrial Power Supply

Features

- **-10°C to 60°C operating temperature range**
- **Can be installed on DIN-rail TS-35/7.5 or 15**
- **Short circuit/over load/over voltage/over temperature**
- **UL508 (industrial control equipment) approved**

Hardware Specifications

Power

Power Input
- Voltage Range: 88 to 132VAC / 176 to 264VAC by switch ; 248 to 370VDC
- Frequency Range: 47 to 63Hz
- Efficiency: 85%
- AC Current (Typ.): 2.6A / 115VAC; 1.6A / 230VAC
- Inrush Current (Typ.): Cold Start 20A / 115VAC; 40A / 230VAC
- Leakage Current: <3.5mA / 240VAC

Power Output
- DC Voltage: 48V
- Rated Current: 2.5A
- Current Range: 0 to 2.5A Rated Power: 120W
- Ripple & Noise (max.): 100mVp-p Voltage Adj.
- Range: 48 to 53V
- Voltage Tolerance: ± 1.0%
- Line Regulation: ± 0.5%
- Load Regulation: ± 1.0%
- Setup, Rise Time: 500ms, 70ms / 230VAC; 500ms, 70ms / 115VAC at full load
- Hold up Time: 36ms / 230VAC; 32ms / 115VAC at full load

Mechanical

Casing
- Aluminum case

Dimensions
  65.5mm (W) x 100mm (D) x 125.2 mm(H)
  (2.62" (W) x 4.00" (D) x 5.00" (H))

Weight
- 0.79kg (1.74 lb)

Installation
- DIN-Rail

Protection

Over Voltage Protection
- 58 to 65V
- Protection type : Shut down o/p voltage, re-power on to recover

Over Load Protection
- 105 to 150% rated output power
- Protection type : Constant current limiting, recovers automatically after fault condition is removed

Over Temperature Protection
- 90°C + / - 5°C (TSW1) Protection type: Shut down o/p voltage, recovers automatically after temperature goes down

Environment

Operating Temperature
- -10°C to 60°C (Refer to output load derating curve)

Storage Temperature
- -20°C to 85°C (-4°F to 158°F)

Working Humidity
- 20% to 90%RH non-condensing

Storage Humidity
- 10% to 95%RH

Regulatory Approvals

Safety
- UL508, UL60950-1, TUV EN60950-1 approved

EMC
- EN55011
- EN55022 (CISPR22) Class B
- EN61000-3-2, -3
- Withstand Voltage:
  ○ I/P-O/P: 3KVAC
  ○ I/P-FG: 1.5KVAC
  ○ O/P-FG: 0.5KVAC
- Isolation Resistance:
  ○ I/P-O/P
  ○ I/P-FG
  ○ O/P-FG: 100M Ohms / 500VDC

EMS
- EN61000-4-2,3,4,5,6,8,11
- ENV50204
- EN55024
- EN61000-6-2 (EN50082-2), Heavy industry level, criteria A

Environmental Test Compliance
- Vibration
  ○ 10 to 500Hz, 2G 10min./1 cycle, period for 60 min. each along X, Y, Z axes

Derating Curves

Output Derating :

Static Characteristics (24V) :

Dimensions

Top

100mm (3.94")

125.2mm (4.93")

Side

Front

65.5mm (2.58")

Bottom

Ordering Information

Model

DR-120-48	120W/2.5A DIN-Rail 48VDC Industrial Power Supply

SDR-120-48

120W/2.5A DIN-Rail 48VDC Industrial Power Supply

Features

- **-25°C to 70°C operating temperature range**
- **High efficiency 90.5% and low power dissipation**
- **Short circuit/over load/over voltage/over temperature protections**
- **Can be installed o DIN-rail TS-35/7.5 or 15**
- **UL508 (industrial control equipment) approved**

Hardware Specifications

Power

Power Input
- Voltage Range: full load 88 to 264VAC, 124 to 370VDC
- Frequency Range: 47 to 63Hz
- Efficiency: 90.5%
- AC Current (Typ.): 1.4A/115VAC, 0.7A/230VAC
- Inrush Current (Typ.): 35A/115VAC, 70A/230VAC
- Leakage Current: <1mA / 240VAC

Power Output
- DC Voltage: 48V
- Rated Current: 2.5A
- Current Range: 0 to 2.5A
- Rated Power: 120W
- Peak Current: 3.75A
- Ripple & Noise (max.): 120mVp-p
- Voltage Adj. Range: 48 to 55V
- Voltage Tolerance: ± 1.0%
- Line Regulation: ± 0.5%
- Load Regulation: ± 1.0%
- Setup, Rise Time: 1500ms, 60ms/230VAC, 3000ms, 60ms/115VAC at full load
- Hold up Time: 20ms/230VAC, 20ms/115VAC at full load

Mechanical

Casing
- Aluminum case

Dimensions
- 40mm (W) x 113.5mm (D) x 125.2mm (H)
  (1.6" (W) x 4.46" (D) x 4.93" (H))

Weight
- 0.67kg

Installation
- DIN-Rail

Protection

Over Voltage Protection
- 56 to 65V
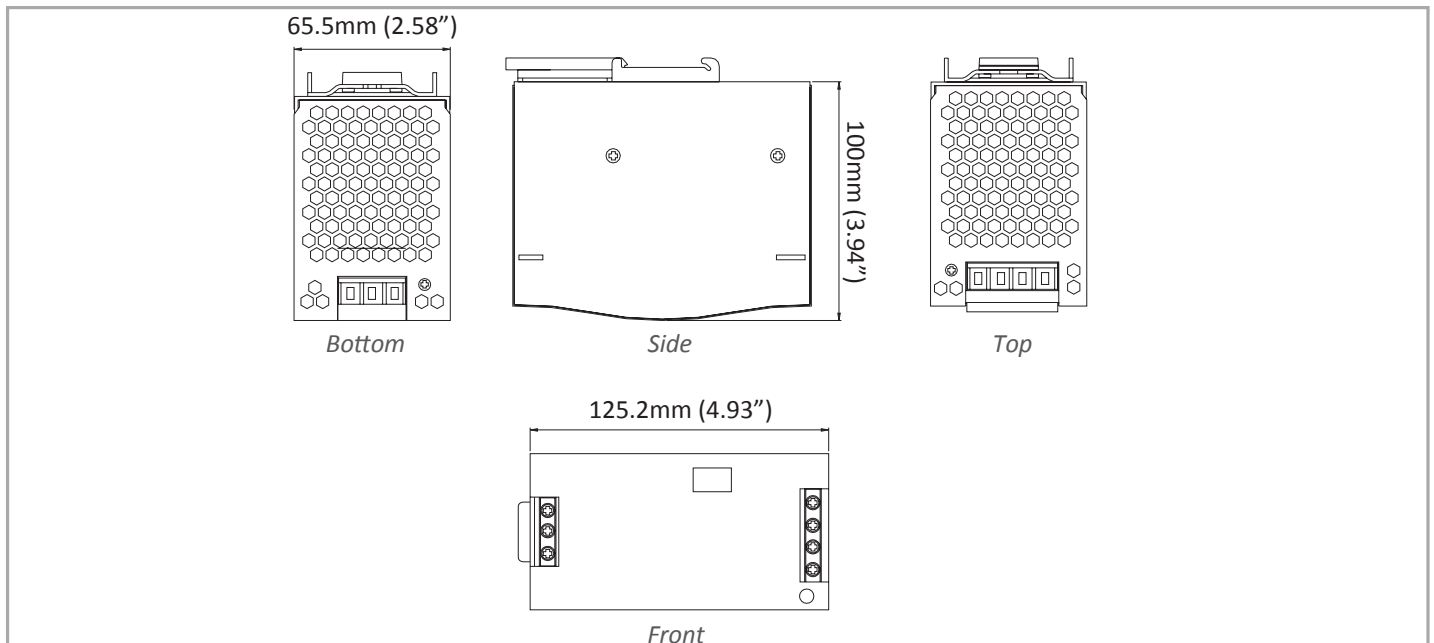- Protection type : Shut down o/p voltage, re-power on to recover

Over Load Protection
- Normally works within 110 to 150% rated output power for more than 3 seconds and then shut down o/p voltage
- >150% rated power, constant current limiting with auto-recovery within 3 seconds and shut down o/p voltage after 3 seconds

Over Temperature Protection
- 95°C ± 5°C (TSW: detected on heatsink of power switch)
- Protection type: Shut down o/p voltage, recovers automatically after temperature goes down

Environment

Operating Temperature
- -25°C to 70°C (-13°F to 158°F)
- Refers to output load derating curve

Storage Temperature
- -40°C to 85°C (-40°F to 185°F), 10 to 95% RH

Working Humidity
- 20% to 95% RH non-condensing

Storage Humidity
- 10% to 95% RH

Regulatory Approvals

Safety
- UL508, TUV EN60950-1 approved

EMI
- Compliance to EN55022 (CISPR22) Class B

EMC
- Withstand Voltage:
  - I/P-O/P: 3KVAC
  - I/P-FG: 1.5KVAC
  - O/P-FG: 0.5KVAC
  - O/P-DC OK: 0.5KVAC
- Isolation Resistance:
  - I/P-O/P
  - I/P-FG
  - O/P-FG: >100M Ohms / 500VDC / 25°C / 70% RH
- Harmonic Current: Compliance to EN61000-3-2,-3

EMS
- Compliance to EN61000-4-2,3,4,5,6,8,11, ENV50204, EN55024, EN61000-6-2 (EN50082-2), EN61204-3, heavy industry level, criteria A, SEMI F47, GL approved

Environmental Test Compliance
- Vibration
  - Component:10 to 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes; mounting: Compliance to IEC60068-2-6

Derating Curves

Output Derating :

Output Derating VS Input Voltage :

Dimensions

65.5mm (2.58")

100mm (3.94")

125.2mm (4.93")

Bottom   *Side*   *Top*

Front

Ordering Information

Model

SDR-120-48	120W/2.5A DIN-Rail 48VDC Industrial Power Supply

SDR-240-48

240W/5A DIN-Rail 48VDC Industrial Power Supply

Features

- **-25°C to 70°C operating temperature range**
- **High efficiency 94% and low power dissipation**
- **Short circuit/over load/over voltage/over temperature protections**
- **Can be installed on DIN-Rail TS-35/7.5 or 15**
- **UL508 (industrial control equipment) approved**

Hardware Specifications

Power

Power Input
- Voltage Range: 88 to 264VAC; 124 to 370VDC
- Frequency Range: 47 to 63Hz
- Power Factor(Typ.): 0.93 / 230VAC; 0.99 / 115VAC at full load
- Efficiency: 94%
- AC Current (Typ.): 2.6A / 115VAC; 1.3A / 230VAC
- Inrush Current (Typ.): 33A / 115VAC; 65A / 230VAC
- Leakage Current: <1mA / 240VACC

Power Output
- DC Voltage: 48V
- Rated Current: 5A
- Current Range: 0 to 5A
- Rated Power: 240W
- Peak Current: 7.5A
- Peak Power: 360W (3 sec.)
- Ripple & Noise (max.): 120mVp-p
- Voltage Adj. Range: 48 to 55V
- Voltage Tolerance: + / - 1.0%
- Line Regulation: + / - 0.5%
- Load Regulation: + / - 1.0%
- Setup, Rise Time: 1500ms, 60ms / 230VAC;3000ms, 60ms / 115VAC at full load
- Hold up Time: 20ms / 230VAC; 20ms / 115VAC at full load

Mechanical

Casing
- Aluminum case

Dimensions
- 63mm (W) x 113.5mm (D) x 125.2 mm(H) (2.52" (W) x 4.54" (D) x 5.00" (H))

Weight
- 1.03kg (2.27 lb)

Installation
- DIN-Rail

Protection

Over Voltage Protection
- 56 to 65V
- Protection type : Shut down o/p voltage with auto-recovery

Over Load Protection
- Normally works within 110 to 150% rated output power for more than 3 seconds and then shut down o/p voltage

- >150% rated power, constant current limiting with auto-recovery within 2 seconds and may cause to shut down if over 2 seconds

Over Temperature Protection
- 95°C + / - 5°C (TSW: detect on heatsink of power switch)
- Protection type: Shut down o/p voltage, recovers automatically after temperature goes down

Environment

Operating Temperature
- -25°C to 70°C (Refer to output load derating curve)

Storage Temperature
- -40°C to 85°C (-40°F to 158°F)

Working Humidity
- 20% to 90%RH non-condensing

Storage Humidity
- 10% to 95%RH

Regulatory Approvals

Safety
- UL508, TUV EN60950-1 approved

EMC
- EN55022 (CISPR22) Class B
- Withstand Voltage:
  - I/P-O/P: 3KVAC
  - I/P-FG: 1.5KVAC
  - O/P-FG: 0.5KVAC
  - O/P-DC OK: 0.5KVAC
- Isolation Resistance:
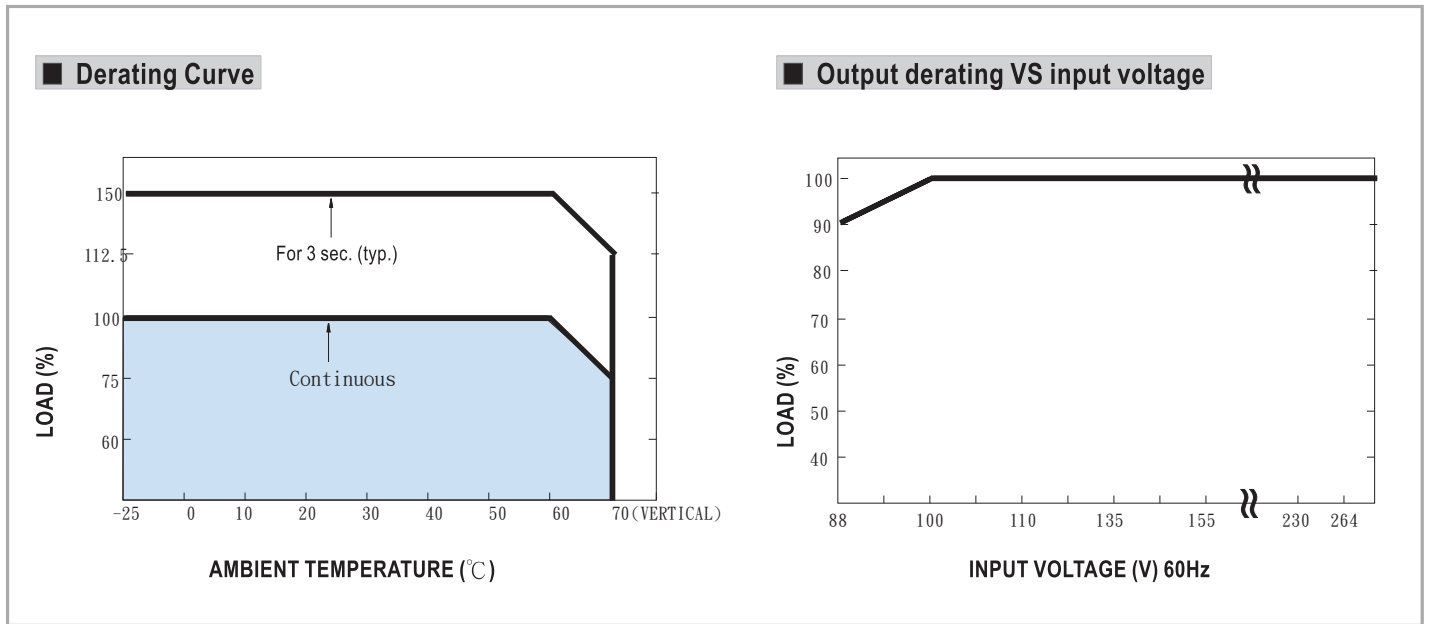 - I/P-O/P
  - I/P-FG
  - O/P-FG: >100M Ohms / 500VDC

EMS
- EN61000-4-2,3,4,5,6,8,11, ENV50204, EN55024, EN61204-3, EN61000-6-2 (EN50082-2), Heavy industry level, criteria A approved
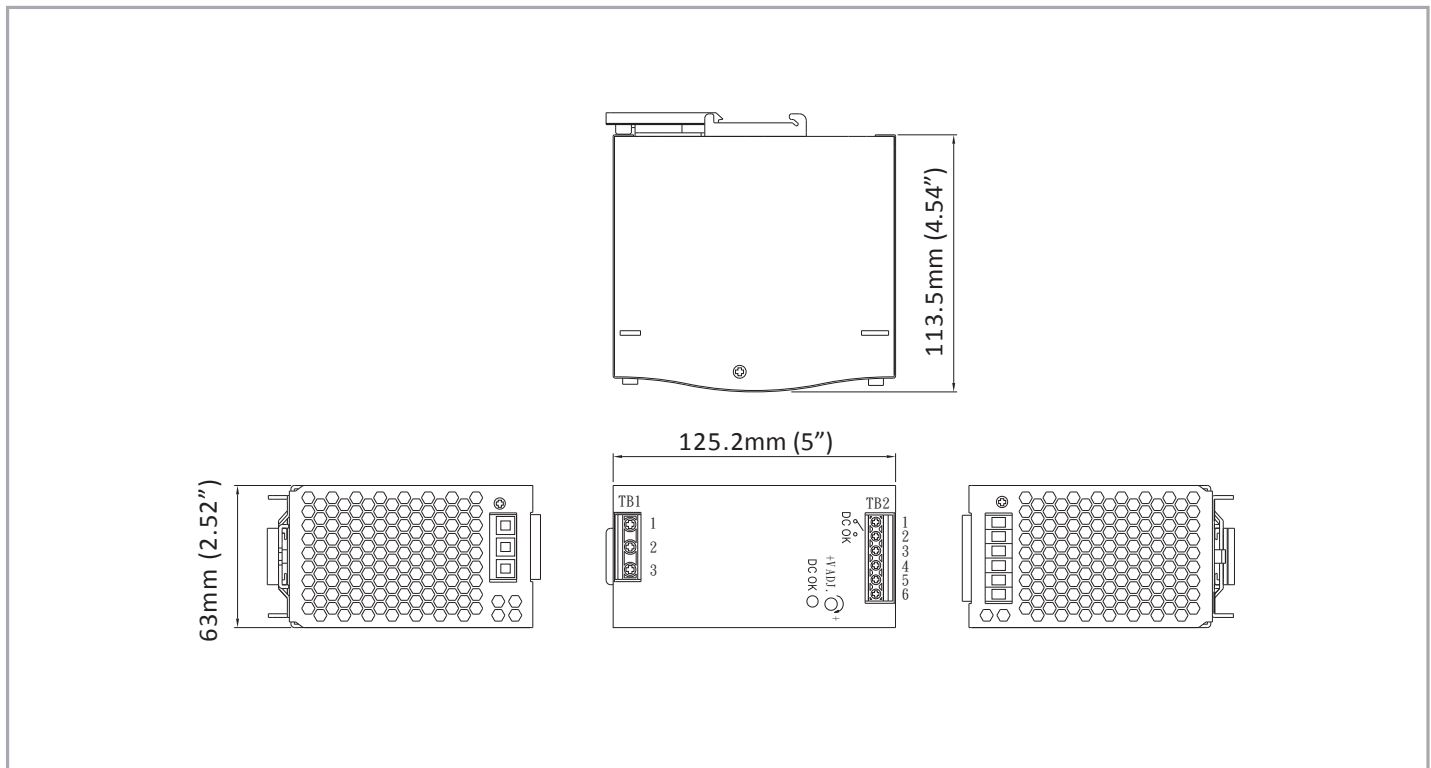
Environmental Test Compliance
- Vibration
  - 10 to 500Hz, 2G 10min./1 cycle, period for 60 min. each along X, Y, Z axes

Derating Curves

■ Derating Curve

■ Output derating VS input voltage

Dimensions

Ordering Information

Model

SDR-240-48	240W/5A DIN-Rail 48VDC Industrial Power Supply

SDR-480-48

480W/10A DIN-Rail 48VDC Industrial Power Supply

Features

- **High efficiency 94% and low power dissipation**
- **UL508 (industrial control equipment) approved**
- **EN61000-6-2 (EN50082-2) industrial immunity level**
- **-25°C to 70°C operating temperature range**

Hardware Specifications

Power

Power Input
- Voltage Range: 90 to 240VAC or 127 to 370VDC
- Frequency Range: 47 to 63Hz
- Power Factor (Typ.): 0.94 / 230VAC;
- 0.99 / 115VAC at full load
- Efficiency: 94%
- AC Current (Typ.): 5A/115VAC; 2.5A/230VAC
- Inrush Current (Typ.): 40A/115VAC; 80A/230VAC
- Leakage Current: <0.8mA / 240VAC

Power Output
- DC Voltage: 48V Rated Current: 10A
- Current Range: 0 to 10A
- Rated Power: 480W
- Peak Current 15A Peak Power: 720W (3sec.)
- Ripple & Noise (max.): 120mVp-p
- Voltage Tolerance: ± 1.0%
- Line Regulation: ± 0.5%
- Load Regulation: ± 1.0%
- Setup, Rise Time: 1500ms, 150ms/230VAC 3000ms, 150ms/115VAC at full load
- Hold up Time: 14ms/230VAC at full load

Mechanical

Casing
- Aluminum case

Dimensions
- 85.5mm (W) x 128.5mm (D) x 125.2 mm(H) (3.42" (W) x 5.14" (D) x 5.01" (H))

Weight
- 1.6kg (3.52 lb)

Installation
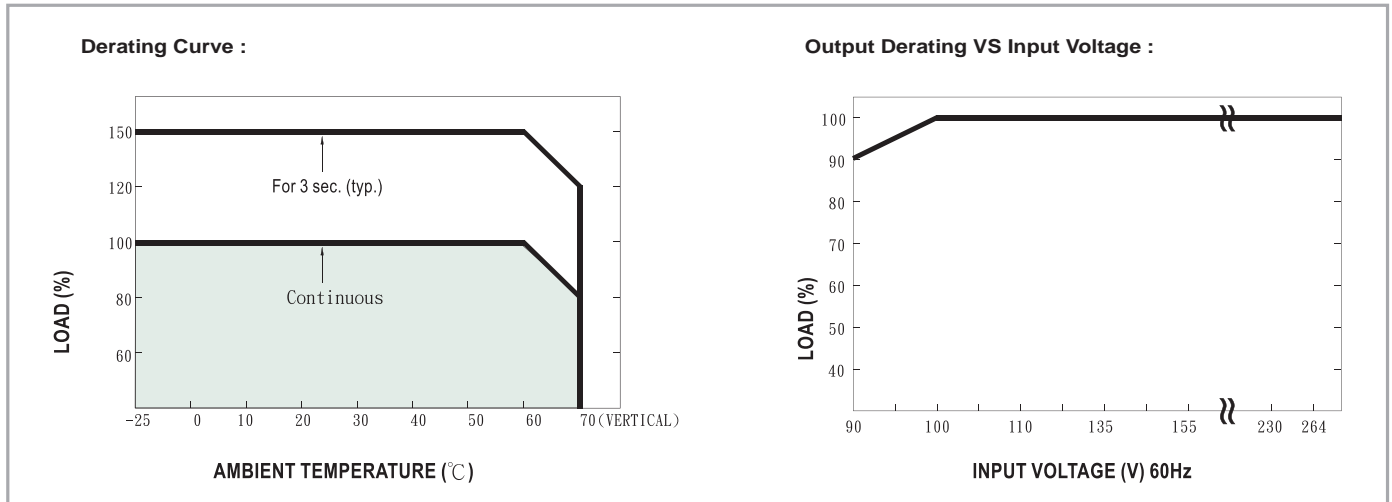- DIN-Rail

Protection
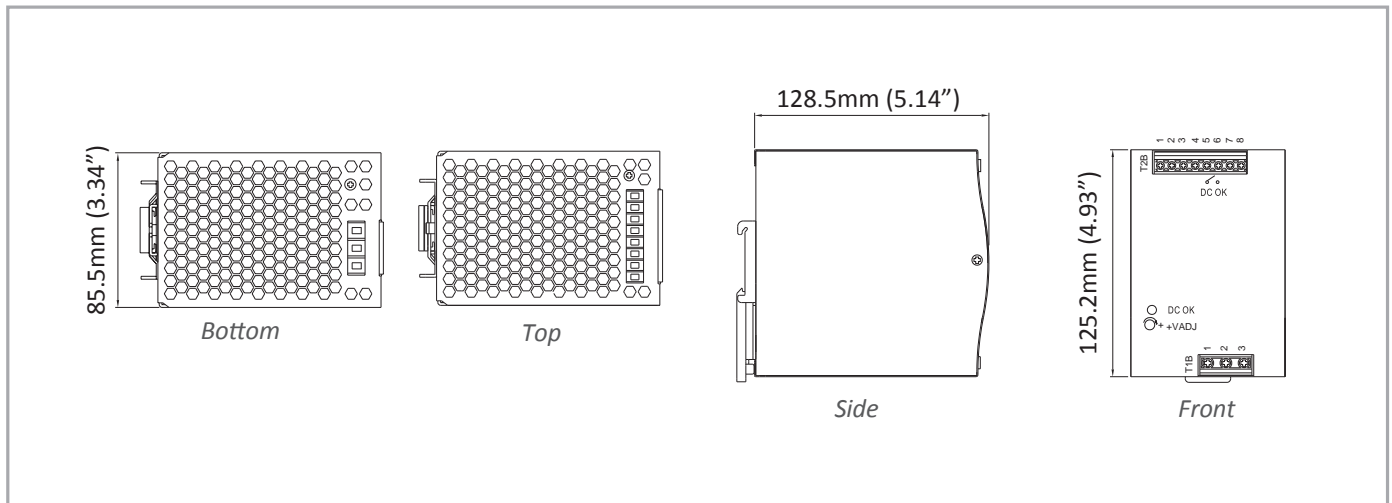
Over Voltage Protection
- 56 - 65V

Over Load Protection
- Normally works within 110 to 150% rated output power for more than 3 seconds and then shut down o/p voltage with auto-recovery

Over Temperature Protection
- 105°C ± 5°C (TSW : detect on heatsink of power switch)
- Shut down o/p voltage, recovers automatically after temperature goes down

Environmental

Operating Temperature
- -25°C to 70°C (Refer to output load derating curve)

Storage Temperature
- -40°C to 85°C (-40°F to 158°F)

Working Humidity
- 20% to 90%RH non-condensing

Storage Humidity
- 10% to 95%RH

Regulatory Approvals

Safety
- UL508
- TUV EN60950-1

EMC
- EN55022
- EN61000-3-2
- EN61000-3-3
- Withstand Voltage
  - I/P-O/P:3KVAC
  - I/P-FG:1.5KVAC
  - O/P-FG:0.5KVAC
  - O/P-DC OK:0.5KVAC
- Isolation Resistance
  - I/P-O/P
  - I/P-FG
  - O/P-FG:>100M Ohms / 500VDC / 25°C / 70% RH

EMS
- EN61000-4-2,3,4,5,6,8,11 ENV50204 EN55024 EN61000-6-2 (EN50082-2) EN61204-3 Heavy industry level, criteria A , SEMI F47 approved

Environmental Test Compliance
- IEC60068-2-6
  - Component:10 to 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes; mounting: Compliance to IEC60068-2-6

Derating Curves

Derating Curve :

Output Derating VS Input Voltage :

Dimensions

Bottom

Top

Side

Front

85.5mm (3.34")

128.5mm (5.14")

125.2mm (4.93")

Ordering Information

Model

SDR-480-48	480W/10A DIN-Rail 48VDC Industrial Power Supply

MDR-40-48
40W/0.83A 48VDC Industrial Power Supply

Features

- **-20°C to 70°C operating temperature range**
- **Can be installed on DIN-Rail TS-35/7.5 o 15**
- **Short circuit/over load/over voltage protections**
- **No load power consumption < 0.75W**
- **NEC class 2/LPS compliant**

Hardware Specifications

Power

Power Input
- Voltage Range: 85 to 264VAC; 120 to 370VDC
- Frequency Range: 47 to 63Hz
- Efficiency: 88%
- AC Current (Typ.): 1.1A / 115VAC; 0.7A / 230VAC
- Inrush Current (Typ.): Cold Start
  30A / 115VAC;
  60A / 230VAC

Power Output
- DC Voltage: 48V
- Rated Current: 0.83A
- Current Range: 0 to 0.83A
- Rated Power: 39.8W
- Ripple & Noise (max.): 200mVp-p
- Voltage Adj. Range: 48 to 56V
- Voltage Tolerance: + / - 1.0%
- Line Regulation: + / - 1.0%
- Load Regulation: + / - 1.0%
- Setup, Rise Time: 500ms, 30ms / 230VAC;
  500ms, 30ms / 115VAC at full load
- Hold up Time: 50ms / 230VAC; 20ms / 115VAC at full load

Mechanical

Casing
- Plastic case

Dimensions
- 40mm (W) x 100mm (D) x 90 mm(H)
  (1.6" (W) x 4.0" (D) x 3.6" (H))

Weight
- 0.3kg (0.66 lb)

Installation
- DIN-Rail

Protection

Over Voltage Protection
- 57.6 to 64.8V
- Protection type : Shut down o/p voltage, re-power on to recover

Over Load Protection
- 105 to 150% rated output power
- Protection type : Constant current limiting, recovers automatically after temperature goes down

Environment

Operating Temperature
- -20°C to 70°C (Refer to output load derating curve) (Tested @ -40°C to 75°C)

Storage Temperature
- -40°C to 85°C (-40°F to 158°F)

Working Humidity
- 20% to 90%RH non-condensing

Storage Humidity
- 10% to 95%RH

Regulatory Approvals

Safety
- TUV EN60950-1
- UL60950-1
- NEC class 2 / LPS compliant
- UL508

EMC
- EN55011
- EN55022 (CISPR22) Class B
- EN61204-3 Class B
- EN61000-3-2, -3
- Withstand Voltage:
  ◦ I/P-O/P: 3KVAC
  ◦ I/P-FG: 1.5KVAC
  ◦ O/P-FG: 0.5KVAC
- Isolation Resistance:
  ◦ I/P-O/P
  ◦ I/P-FG
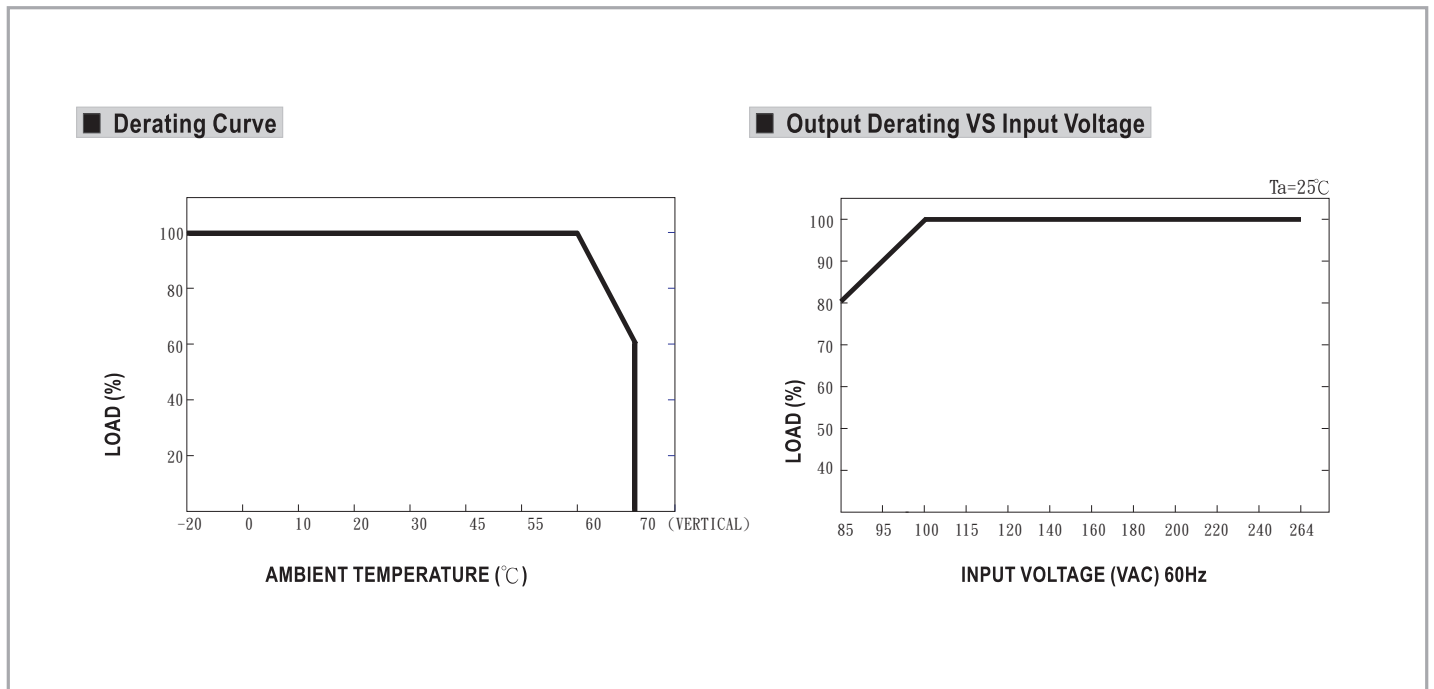 ◦ O/P-FG: >100M Ohms / 500VDC / 25°C / 70%RH

EMS
- EN61000-4-2,3,4,5,6,8,11
- ENV50204
- EN55024
- EN61000-6-2
- EN61204-3
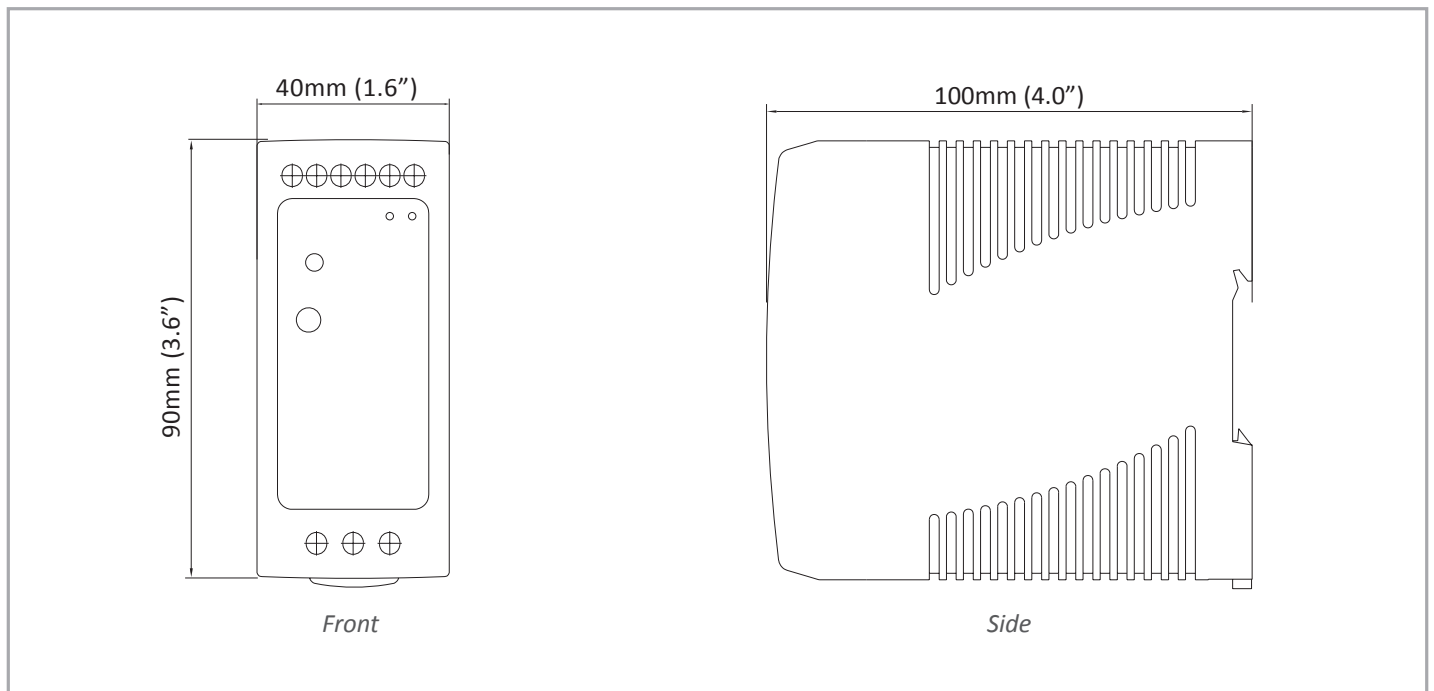- Heavy industry level, criteria A

Environmental Test Compliance
- IEC60068-2-6
  ◦ Component: 10 to 500Hz, 2G 10min. / 1 cycle, period for 60 min. each along X, Y, Z axes

Derating Curves

■ **Derating Curve**

■ **Output Derating VS Input Voltage**

Ta=25℃

LOAD (%)

100
80
60
40
20

−20 0 10 20 30 45 55 60 70 (VERTICAL)

AMBIENT TEMPERATURE (℃)

LOAD (%)

100
90
80
70
60
50
40

85 95 100 115 120 140 160 180 200 220 240 264

INPUT VOLTAGE (VAC) 60Hz

Dimensions

40mm (1.6")

90mm (3.6")

Front

100mm (4.0")

Side

Ordering Information

Model

MDR-40-48	40W/0.83A DIN-Rail 48VDC Industrial Power Supply

GS-120A-48

120W/2.5A 48VDC Power Adapter with Latched DC Jack in Plastic Housing

Features

- **The GS-120A-48 power adapter can be used with EtherWAN's EX34000, EX38000, EX38000A, EX45000, EX46000, EX48000, EX48000A, EX78000, EL1032, and EL1033 Series.**

Hardware Specifications

Power

Input Rating
- 85 - 264VAC (47 - 63Hz) / 120 - 370VDC

Output Rating
- 120W, 48VDC, 0 - 2.5A

Mechanical

Casing
- Plastic case

Operating Temperature
- -30°C to 70°C (32°F to 158°F)

Output Connector
- DC Jack with latch

Ordering Information

Model

GS120A-48X	120W/2.5A 48VDC Power Adapter

Input Plug Options (X)

1	US
2	EU
3	UK
4	AU
5	JP

41-136042

36W/3A 12VDC Hardened Power Adapter with Open Wire in Plastic Housing

EtherWAN

Features

- **The 41-136042 power adapter can be used with the following EtherWAN models:**
  - EX33000, EX35000, EX41000, EX43000, EX47000, EX61000, EX61000A, EX62000, EX63000, EX65000, EX71000, EX72000, EX73000, EX94000, EX95000, EX96000, EL900, EL9000, EL9020, EL9100, EL1141, ED3341, ED3344, ED3141, and ED3171 Series.
- **Complies with NEMA TS1 & TS2 environmental requirements for traffic control equipment**

Hardware Specifications

Power

Input Rating
- 90 - 264VAC (47 - 63Hz)

Output Rating
- 36W, 12VDC, 0-3A

Mechanical

Casing
- Plastic case

Operating Temperature
- -40°C to 75°C (-40°F to 167°F)

Output Connector
- open wire for terminal block

Ordering Information

Model

41-136042-X	36W/3A 12VDC Hardened Power Adapter

Input Plug Options (X)

1	US
2	EU
3	UK
4	AU
5	JP
6	SA

41-136043

36W/3A 12VDC Hardened Power Adapter with DC Plug in Aluminum Housing

Features

- **The 41-136043 power adapter can be used with the following EtherWAN Model:**
  - ○ ED3101 and ED3331
- **Complies with NEMA TS1 & TS2 environmental requirements for traffic control equipment**

Hardware Specifications

Power

Input Rating
- 90 - 264VAC (47 - 63Hz)

Output Rating
- 36W, 12VDC, 0 - 3A

Mechanical

Casing
- Aluminum case

Operating Temperature
- -40°C to 75°C (-40°F to 167°F)

Output Connector
- DC plug

Ordering Information

Model

41-136043-X	36W/3A 12VDC Hardened Power Adapter

Input Plug Options (X)

1	US
2	EU
3	UK
4	AU
5	JP
6	SA

41-136044

36W/3A 12VDC Hardened Power Adapter with Latched DC Jack in Aluminum Housing

Features

- **The 41-136044 power adapter can be used with the following EtherWAN models:**
  - EX33000, EX35000, EX41000, EX43000, EX47000, EX61000, EX61000A, EX62000, EX63000, EX65000, EX71000, EX72000, EX73000, EX94000, EX95000, EX96000, EL900 EL9000, EL9020, EL9100, EL1141, ED3341, ED3344, ED3141, and ED3171 Series.
- **Complies with NEMA TS1 & TS2 environmental requirements for traffic control equipment**

Hardware Specifications

Power

Input Rating
- 90 - 264VAC (47 - 63Hz)

Output Rating
- 36W, 12VDC, 0 - 3A

Mechanical

Casing
- Aluminum case

Operating Temperature
- -40°C to 75°C (-40°F to 167°F)

Output Connector
- DC jack with latch

Ordering Information

Model

41-136044-X	36W/3A 12VDC Hardened Power Adapter

Input Plug Options (X)

1	US
2	EU
3	UK
4	AU
5	JP
6	SA

41-136046

36W/3A 12VDC Hardened Power Adapter with Open Wire in Aluminum Housing

Features

- **The 41-136046 power adapter can be used with the following EtherWAN models:**
  - EX33000, EX35000, EX41000, EX43000, EX47000, EX61000, EX61000A, EX62000, EX63000, EX65000, EX71000, EX72000, EX73000, EX95000, EX96000, EL1141, EL900, EL9000, EL9020, EL9100, ED3341, ED3344, ED3141, and ED3171 Series.
- **Complies with NEMA TS1 & TS2 environmental requirements for traffic control equipment**

Hardware Specifications

Power

Input Rating
• 90 - 264VAC (47 - 63Hz)

Output Rating
• 36W, 12VDC, 0 - 3A

Mechanical

Casing
• Aluminum case

Operating Temperature
• -40°C to 75°C (-40°F to 167°F)

Output Connector
• Open wire for terminal block

Ordering Information

Model

41-136046-X	36W/3A 12VDC Hardened Power Adapter

Input Plug Options (X)

1	US
2	EU
3	UK
4	AU
5	JP
6	SA

TransRack

Features

- **DIN-Rail devices inside a standard 19" rack or cabinet**
- **Unique depth adjustment feature to fit equipment in any size**
- **One standard 35mm (1.38") DIN-Rail track included**
- **Patent-pending design**

Specifications

Mechanical

Material
• Heavy-duty cold-rolled steel

Dimensions
• 464mm (19") x 105mm(4.13") x 285mm (11.22") (W x H x D)

Dimensions

285

23.5 - 203.5

Side

105

76.2
89
92.7

464

Front

445.6

480

Top
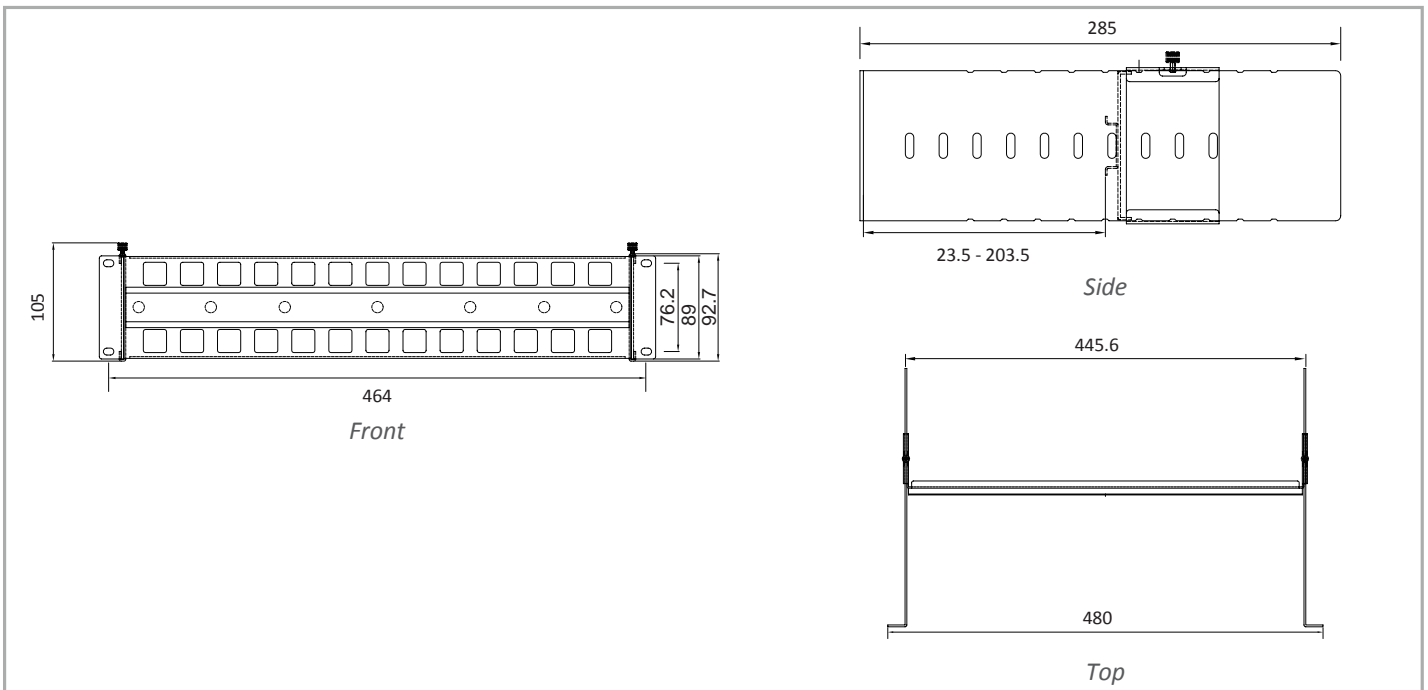
Ordering Information

Model

Transrack	KR-DINRAILB

Mounting Kits

Ordering Information

DIN-Rail Mounting Kits

Part Name		Description
KD-31003		DIN-Rail mounting kit For ED3101, ED3331 series (Can be mounted using hardware version V3 and above with holes on the bottom cases)
KD-AA5100		DIN-Rail mounting kit For EL1032T and EX42900 series
KD-AA78000		DIN-Rail mounting kit For EX73900, EX78000, EX78602, EX78900, EX48000A, EX48000, EX38000 and DD-85-48 series
KD-AA96000		DIN-Rail mounting kit For EX43000, EL1141, ED3145, ED3146, ED3171, ED3175, EX33000, EX34000, EX35000, ED3538, ED3638, EX42200, EX45000, EX46100, EX47000, EX63000, EX61000A, EX71000, EX73000, EX83000, EL900, EL9100, EX94000, EX95000 and EL9000 series
KD-AAEL950		DIN-Rail mounting kit For EL910 and EL950 series
KD-BK1360		DIN-Rail mounting kit For 41-136043, 41-136044 and 41-136046 series

Panel Mounting Kits

Part Name	Description
KP-BK6212	Panel mounting kit (Black) For EX74000, EX72000, EX62000, and DD-85-48 Series
KP-AA96-480	Panel mounting kit For EX33000, EX34000, EX35000, EX43000, EX45000, EX46100, EX47000, EX61000A, EX63000, EX71000, EX73000, EX78000, EX94000, EX95000, EL900, EL9000, EL9020, EL9100, EL1141, ED3341, ED3344, ED3141, and ED3171 series

Rack mounting Kits

Part Name		Description
KR-BKEL900		19" Rack mounting kit (Black) For EL900, EL9000, EL9020, EL9100, EL1141, ED3341, ED3344, ED3141, and ED3171 series
KR-BK-43-400		19" Rack mounting kit (Black) For EX95000, EX33000, EX34000, EX45000 and EX46100 series
KR-BK71000		19" Rack mounting kit (Black) For EX71000, EX61000A and ED3175 series
KR-BK72-400		19" Rack mounting kit (Black) For EX72000 and EX62000 series
KR-BK74-400		19" Rack mounting kit (Black) For EX74000 series
KR-AE612-400		19" Rack mounting kit (Black) For EX1616W, EX1624W, EX27000 (Single Power), EX29000 (Single Power), EX49000A, EX75000, EX76000, EX77000 (Single Power), EX87000 (Single Power), EX89000 (Single Power), and EMC1200R series
KR-EW612-400		19" Rack mounting kit (White) For EX1608SF series
KR-BK1600R-410		19" Rack mounting kit (Black) For EMC1600 series
KR-BK17		19" Rack mounting kit (Black) For EX17008, EX17008A, EX17908 and EX17908A series

SFP Fiber Transceiver Series
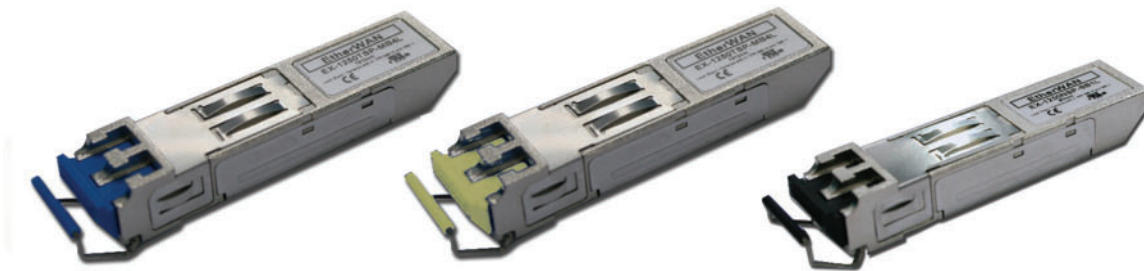
Spotlight

- All SFPs have been tested with the best operating performance on EtherWAN switches
- The characteristics are performed in accordance with Telcordia Specification GR-468-CORE
- Single +3.3V Power Supply
- RoHS Compliant and Lead-free
- AC/AC Differential Electrical Interface
- Eye Safety Designed to meet Laser Class 1 compliant with EN60825-1
- Compliant with Multi-Source Agreement (MSA) Small Form Factor Pluggable (SFP)
- EMC requirement meets FCC in the United States and CENELEC EN55022 (CISPR 22) in Europe

Ordering Information

100BASE SFP Series*

Non-Hardened (Operating Temperature : 0°C to 70°C / 32°F to 158°F)

Model Name	Distance	Cable Type	Connector Type	Wavelength	Link Budget **	Optical Output Power	Sensitivity
EXFE-R1S4-05H1	100 m	-	TX	-	-	-	-
EX-0155NSP-MB2L	2 Km	62.5 / 125 μm, MM	Duplex LC	1310 nm	13 dbm	-19 to -14 dBm	-32 dbm
EX-LM38-A3S-TC-N-B3	2 Km	62.5 / 125 μm / 50 / 125 μm, MM	Single LC	TX:1310 nm / RX:1550 nm	18 dBm	-10 to 0 dbm	-28 dbm
EX-LM48-A3S-TC-N-B5	2 Km	62.5 / 125 μm / 50 / 125 μm, MM	Single LC	TX:1550 nm / RX:1310 nm	18 dBm	-10 to 0 dbm	-28 dbm
EX-0155TSP-MB5L	15 Km	9 / 125 μm, SM	Duplex LC	1310 nm	17 dbm	-15 to -8 dBm	-32 dbm
EX-0155TBP-MB5L	20 Km	9 / 125 μm, SM	Single LC	TX:1310 nm / RX:1550 nm	18 dBm	-14 to -8 dBm	-32 dbm
EX-0155TBP-LB5L	20 Km	9 / 125 μm, SM	Single LC	TX:1550 nm / RX:1310 nm	18 dBm	-14 to -8 dBm	-32 dbm
EX-0155TSP-MB6L	40 Km	9 / 125 μm, SM	Duplex LC	1310 nm	29 dBm	-5 to 0 dBm	-34 dbm
EX-0155TBP-MB6L	40 Km	9 / 125 μm, SM	Single LC	TX:1310 nm / RX:1550 nm	26 dBm	-8 to -3 dbm	-34 dbm
EX-0155TBP-KB6L	40 Km	9 / 125 μm, SM	Single LC	TX:1550 nm / RX:1310 nm	26 dBm	-8 to -3 dbm	-34 dbm

100BASE SFP Series*
Hardened (Operating Temperature : -40°C to 85°C / -40°F to 185°F)

Model Name	Distance	Cable Type	Connector Type	Wavelength	Link Budget**	Optical Output Power	Sensitivity
EX-0155NSP-MB2L-A	2 Km	62.5 / 125 μm, MM	Duplex LC	1310nm	13 dBm	-19 to -14 dbm	-32 dbm
EX-LM38-A3S-TI-N-B3	2 Km	62.5 / 25 μm / 50 / 125 μm, MM	Single LC	TX: 1310 nm / RX:1550 nm	18 dbm	-10 to 0 dbm	-28 dbm
EX-LM48-A3S-TI-N-B5	2 Km	62.5 / 125 μm / 50 / 125 μm, MM	Single LC	TX: 1550 nm / RX:1310 nm	18 dbm	-10 to 0 dbm	-28 dbm
EX-0155TSP-MB5L-A	15 Km	9 / 125 μm, SM	Duplex LC	1310nm	19 dbm	-15 to -8 dbm	-34 dbm
EX-0155TBP-MB5L-A	20 Km	9 / 125 μm, SM	Single LC	TX: 1310 nm / RX:1550 nm	18 dBm	-14 to -8 dbm	-32 dbm
EX-0155TBP-LB5L-A	20 Km	9 / 125 μm, SM	Single LC	TX: 1550 nm / RX:1310 nm	18 dBm	-14 to -8 dbm	-32 dbm
EX-0155TSP-MB6L-A	40 Km	9 / 125 μm, SM	Duplex LC	1310nm	30 dbm	-5 to 0 dbm	-35 dbm
EX-0155TBP-MB6L-A	40 Km	9 / 125 μm, SM	Single LC	TX: 1310 nm / RX:1550 nm	26 dbm	-8 to -3 dbm	-34 dbm
EX-0155TBP-KB6L-A	40 Km	9 / 125 μm, SM	Single LC	TX: 1550 nm / RX:1310 nm	26 dbm	-8 to -3 dbm	-34 dbm

More SFP options upon the request

** Link Budget data is based on pair of the same SFP modules*

Gigabit SFP Series*
Non-Hardened (Operating Temperature : 0°C to 70°C / 32°F to 158°F)

Model Name	Distance	Cable Type	Connector Type	Wavelength	Link Budget**	Optical Output Power	Sensitivity
EX-1250NSP-SB1L S	275 m / 550 m	62.5 / 125 μm / 50 / 125 μm, MM	Duplex LC	850 nm	7.5 dBm	-9.5 to -4 dBm	-17 dBm
EX-1250TBP-MB1L S	550 m	62.5 / 125 μm / 50/125 μm, MM	Single LC	TX: 1310 nm / RX: 1550 nm	7 dBm	-10 to -4 dBm	-17 dBm
EX-1250TBP-LB1L S	550 m	62.5 / 125 μm / 50 / 125 μm, MM	Single LC	TX: 1550 nm / RX: 1310 nm	7 dBm	-10 to -4 dBm	-17 dBm
EX-1250TSP-MB2L S	2 Km	62.5 / 125 μm, MM	Duplex LC	1310 nm	13.5 dBm	-9.5 to -3 dBm	-23 dBm
EX-1250TSP-MB4L S	10 Km	9 / 125 μm, SM	Duplex LC	1310 nm	11.5 dBm	-9.5 to -3 dBm	-21 dBm
EX-1250TBP-MB4L S	10 Km	9 / 125 μm, SM	Single LC	TX: 1310 nm / RX: 1550 nm	12 dBm	-9 to -3 dBm	-21 dBm
EX-1250TBP-KB4L S	10 Km	9 / 125 μm, SM	Single LC	TX: 1550 nm / RX: 1310 nm	12 dBm	-9 to -3 dBm	-21 dBm
EX-1250TSP-MB5L S	20 Km	9 / 125 μm, SM	Duplex LC	1310 nm	15 dBm	-9 to -3 dBm	-24 dBm
EX-1250TBP-MB5L S	20 Km	9 / 125 μm, SM	Single LC	TX: 1310 nm / RX: 1550 nm	15 dBm	-8 to -3 dBm	-23 dBm
EX-1250TBP-KB5L S	20 Km	9 / 125 μm, SM	Single LC	TX: 1550 nm / RX: 1310 nm	15 dBm	-8 to -3 dBm	-23 dBm
EX-LS38-C3L-TC-N-EB (DDM)	40 Km	9 / 125 μm, SM	Duplex LC	1310 nm	20 dBm	-3 to +2 dBm	-23 dBm
EX-LS38-C3L-TC-N-CE (DDM)	40 Km	9 / 125 μm, SM	Single LC	TX: 1310 nm / RX: 1550 nm	20 dBm	-3 to +2 dBm	-23 dBm
EX-LS48-C3L-TC-N-CE (DDM)	40 Km	9 / 125 μm, SM	Single LC	TX: 1550 nm / RX: 1310 nm	20 dBm	-3 to +2 dBm	-23 dBm
EX-LS38-C3U-TC-N-CE (DDM)	60 Km	9 / 125 μm, SM	Single LC	TX: 1310 nm / RX: 1550 nm	24 dBm	0 to +5 dBm	-24 dBm
EX-LS48-C3U-TC-N-CE (DDM)	60 Km	9 / 125 μm, SM	Single LC	TX: 1550 nm / RX: 1310 nm	23 dBm	-2 to +4 dBm	-25 dBm
EX-LS48-C3U-TC-N-EB (DDM)	70 Km	9 / 125 μm, SM	Duplex LC	1550 nm	23 dBm	0 to +5 dBm	-23 dBm
EX-LS48-C3U-TC-N51-CE (1510 nm) (DDM)	80 Km	9 / 125 μm, SM	Single LC	TX: 1510 nm / RX: 1570 nm	24 dBm	-2 to +3 dBm	-26 dBm
EX-LS48-C3U-TC-N57-CE (1570 nm) (DDM)	80 Km	9 / 125 μm, SM	Single LC	TX: 1570 nm / RX: 1510 nm	24 dBm	-2 to +3 dBm	-26 dBm

Gigabit SFP Series*
Hardened (Operating Temperature : -40°C to 85°C / -40°F to 185°F)

Model Name	Distance	Cable Type	Connector Type	Wavelength	Link Budget**	Optical Output Power	Sensitivity
EXGT-R154-05H3	100 m	TX	TX	-	-	-	-
EX-1250NSP-SB1L-A S	275 m/ 550 m	62.5 / 125 μm/ 50/125 μm, MM	Duplex LC	850 nm	7.5 dBm	-9.5 to -4 dBm	-17 dBm
EX-1250TBP-MB1L-A S	550 m	62.5 / 125 μm/ 50/125 μm, MM	Single LC	TX: 1310 nm / RX: 1550 nm	7 dBm	-10 to -4 dBm	-17 dBm
EX-1250TBP-LB1L-A S	550 m	62.5 / 125 μm/ 50/125 μm, MM	Single LC	TX: 1550 nm / RX: 1310 nm	7 dBm	-10 to -4 dBm	-17 dBm
EX-LM38-C3S-TI-N-CE (DDM)	550 m	62.5 / 125 μm, MM	Single LC	TX: 1310 nm / RX: 1550 nm	8 dBm	-10 to +2 dBm	-18 dBm
EX-LM48-C3S-TI-N-CE (DDM)	550 m	62.5 / 125 μm, MM	Single LC	TX: 1550 nm / RX: 1310 nm	10 dBm	-8 to 0 dBm	-18 dBm
EX-1250TSP-MB2L-A S	2 Km	62.5 / 125 μm, MM	Duplex LC	1310 nm	13.5 dBm	-9.5 to -3 dBm	-23 dBm
EX-1250TSP-MB4L-A S	10 Km	9 / 125 μm, SM	Duplex LC	1310 nm	11.5 dBm	-9.5 to -3 dBm	-21 dBm
EX-1250TBP-MB4L-A S	10 Km	9 / 125 μm, SM	Single LC	TX: 1310 nm / RX: 1550 nm	12 dBm	-9 to -3 dBm	-21 dBm
EX-1250TBP-KB4L-A S	10 Km	9 / 125 μm, SM	Single LC	TX: 1550 nm / RX: 1310 nm	12 dBm	-9 to -3 dBm	-21 dBm
EX-1250TSP-MB5L-A S	20 Km	9 / 125 μm, SM	Duplex LC	1310 nm	15 dBm	-9 to -3 dBm	-24 dBm
EX-1250TBP-MB5L-A S	20 Km	9 / 125 μm, SM	Single LC	TX: 1310 nm / RX: 1550 nm	15 dBm	-8 to -3 dBm	-23 dBm
EX-1250TBP-KB5L-A S	20 Km	9 / 125 μm, SM	Single LC	TX: 1550 nm / RX: 1310 nm	15 dBm	-8 to -3 dBm	-23 dBm
EX-LS38-C3L-TI-N-CE (DDM)	40 Km	9 / 125 μm, SM	Single LC	TX: 1310 nm / RX: 1550 nm	20 dBm	-3 to +2 dBm	-23 dBm
EX-LS48-C3L-TI-N-CE (DDM)	40 Km	9 / 125 μm, SM	Single LC	TX: 1550 nm / RX: 1310 nm	20 dBm	-3 to +2 dBm	-23 dBm
EX-LS38-C3U-TI-N-CE (DDM)	60 Km	9 / 125 μm, SM	Single LC	TX: 1310 nm / RX: 1550 nm	24 dBm	0 to +5 dBm	-24 dBm
EX-LS48-C3U-TI-N-CE (DDM)	60 Km	9 / 125 μm, SM	Single LC	TX: 1550 nm / RX: 1310 nm	23 dBm	-2 to +4 dBm	-25 dBm
EX-LS38-C3L-TI-N-EB (DDM)	40 Km	9 / 125 μm, SM	Duplex LC	1310 nm	20 dBm	-3 to +2 dBm	-23 dBm
EX-LS48-C3U-TI-N-EB (DDM)	70 Km	9 / 125 μm, SM	Duplex LC	1550 nm	23 dBm	0 to +5 dBm	-23 dBm

More SFP options upon the request

** *Link Budget data is based on pair of the same SFP modules*

10GBASE SFP Series*
Non-Hardened (Operating Temperature : 0°C to 70°C / 32°F to 158°F)

Model Name	Distance	Cable Type	Connector Type	Wavelength	Link Budget**	Optical Output Power	Sensitivity
EX-LM28-H3S-TC-N	30 m / 80 m	662.5 / 125 μm / 50 / 125 μm, MM	Duplex LC	850nm	2.8 dBm	-7.1 to -1 dBm	-9.9 dBm
EX-LS38-H3S-TC-N	10 Km	SMF	Duplex LC	1310nm	8.4 dBm	-6 to 0.5 dBm	-14.4 dBm

More SFP options upon the request

** *Link Budget data is based on pair of the same SFP modules*