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IP67 Fast Ethernet Industrial Switches

ET-8ES-MIL-1 Unmanaged
ET-8MS-MIL-1 Managed

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PRODUCT SUPPORT

To obtain support for Red Lion products, contact Red Lion's technical support.

CONTACT INFORMATION

Inside US: +1 (877) 432-9908

Outside US: +1 (717) 767-6511

Website: www.redlion.net

Support: support.redlion.net

Preface

Installation and Hazardous Area Warnings

These products should not be used to replace proper safety interlocking. No software-based device (or any other solid-state device) should ever be designed to be responsible for the maintenance of consequential equipment or personnel safety. In particular, Red Lion disclaims any responsibility for damages, either direct or consequential, that result from the use of this equipment in any application. All power, input and output (I/O) wiring must be in accordance with Class I, Division 2 wiring methods and in accordance with the authority having jurisdiction.

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient or relocate the receiving antenna; Increase the separation between the equipment and receiver; Connect the equipment into an outlet on a circuit different from that to which the receiver is connected; Consult the dealer or an experienced radio/TV technician for help.

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SECTION 1   **General Specifications**

Overview

This manual will help you install and maintain the IP67 Industrial Ethernet Switch. Installation of these switches will enable the user to manage the network by monitoring/gathering network data, allow for browser or telnet configuration, increase network performance and more.

> **Note:** **This manual only covers the installation and wiring of these switches. Refer to the separate Software User Manual for details on configuring and using any of the management functions such as SNMP, RSTP, IGMP, port mirroring, etc.**

Operation

The IP67 Industrial Ethernet Switch can support 10 Base T (10 Mbps) or 100 Base T (100 Mbps) on all ports. Each of these ports will independently auto-sense the speed, allowing you to interface to regular (10Mb) or fast Ethernet (100Mb) devices.

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Standards and Specs

The IP67 Industrial Ethernet Switch meets the following standards plus others:

General	8 Fast Ethernet ports	
Ethernet switch type	Managed or Unmanaged	
Ethernet protocols supported	All IEEE 802.3	
Ethernet connectors	MIL-DTL-38999 Series III w/ 22D socket (female) contacts (9-35)	
USB/RS232 connector	MIL-DTL-38999 Series III w/ 22D socket (female) contacts (9-35)	
Ethernet speed (10/100 Base TX)	Auto-negotiation (10 or 100 Mbps)	
Ethernet MDI/MDIX	Auto-crossover	
Ethernet TD and RD polarity	Auto-polarity	
Ethernet isolation	1500 Vrms 1 minute	
Latency for 10 Mbps ports	16 μsec	Typically less frame time (Varies on load & settings)
Latency for 100 Mbps ports	5 μsec	
Full or half duplex operation	Yes, automatic on unmanaged, configurable on managed	
MAC addresses supported	2048	
Memory bandwidth	3.2 Gbps	
Power	Automatic power savings when ports are unused	
Power input receptacle	MIL-DTL-38999 Series III w/ pin (male) contacts (9-98) size 20	
Input voltage (all models)	10-30 VDC (continuous)	
Input power (typical – with all ports linked and active)	3 W (unmanaged) 4 W (managed)	
Reverse polarity protection	Yes	
Extended power protection	Exceeds MIL-STD-1275	
Surge protection	100 Volts for 1 second	
Transient protection	15,000 Watts peak	
Spike Protection	5,000 Watts (10x for 10 μsec) or 250 Volts (50x for 100 μsec)	
Environmental	Truly industrial design	
Operating temperature range	-40 to +75 °C (cold startup at -40 °C)	
Storage temperature range	-40 to +85 °C	
Humidity (non-condensing)	5 to 95% RH (Conformal coating availabe by special order)	
Vibration, shock and freefall	MIL-STD-810F; IEC68-2-6, -27 and -32	
Electrical safety	UL508/CSA C22, EN61010-1	
EMC emissions and immunity	MIL-STD-461E; FCC part 15, ICES-003; EN55022, IEC61326-1	
Hazardous locations (Class I, Division 2; Zone 2)	ANSI / ISA 12.12.01, CSA C22.2/213; ATEX IEC60079-0, 15	
Package protection	IP67 dust, oil and water-tight	
Dimensions (L x W x H) (see diagram on next page)	10.5 x 4 x 1.5" (267 x 102 x 38 mm)	
Weight (including caps)	2.20 lbs (1 Kg)	

Military Standards Compliance

Mil Standard	Specification	Description
MIL-STD-810F; 501.4, I; 501.4, II	+70 °C Transport/Storage +65 °C operating	High Temperature
MIL-STD-810F; 502.4, I; 501.4, II	-20 °C Transport/Storage -10 °C operation	Low Temperature
MIL-STD-810F; 507.4	95%	Humidity
MIL-STD-810F; 500.4, II	9000 Feet	Low pressure operating
MIL-STD-810F; 500.4, I	15000 Feet	Low pressure transportation
MIL-STD-810F; 514	5-1000 Hz	Vibration
MIL-STD-810F; 516,	Half sinus 40 g 11 msec	Mechanical Shock
MIL-STD-810F; 516, V	Drop on table	Handling Shock
MIL-STD-810F; 509	5% salt for 48 hours	Salt
MIL-STD-810F; 510, I	According to specs	Sand and Dust
MIL-STD-810F, Method 514.5	Vibration while in transport	
MIL-STD-810F, Method 512.4	Immersion into water; rain and wind resistance	
MIL-STD-1275B	100 V for 1 second 15,000 Watts peak 250 V (50 times for 100 µsec)	Surge Protection Transient Voltage Spike Protection
MIL-STD-461E-RE102	2 MHz to 18 GHz	Radiated emissions(ground)
MIL-STD-461E-RS103	2 MHz to 18 GHz	Radiated susceptibility

Safety Warnings (Consignes de Sécurité)

Strictly abiding by these warnings will help ensure the safe installation, startup and operation of the switch.

Le strict respect de ces avertissements contribuera à assurer la sécurité de l'installation, le démarrage et le fonctionnement de l'interrupteur.

INSTALL THE SWITCH IN ACCORDANCE WITH ALL LOCAL AND NATIONAL ELECTRICAL CODES.
INSTALLEZ L'APPAREIL CONFORMÉMENT AUX CODES ÉLECTRIQUES LOCAUX ET NATIONAUX.

LIGHTNING DANGER: DO NOT WORK ON EQUIPMENT DURING PERIODS OF LIGHTNING ACTIVITY.
INSTALLEZ L'APPAREIL CONFORMÉMENT AUX CODES ÉLECTRIQUES LOCAUX ET NATIONAUX.

WARNING (EXPLOSION HAZARD) AVERTISSEMENT (RISQUE D'EXPLO-SION)

SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS 1, DIVISION 2 (ZONE 2).
LA SUBSTITUTION DE TOUT COMPOSANT PEUT NUIRE À LA CONFORMITÉ DE CLASSE I, DIVISION 2 (ZONE 2).

WARNING (EXPLOSION HAZARD) AVERTISSEMENT (RISQUE D'EXPLO-SION)

WHEN IN HAZARDOUS LOCATIONS, DISCONNECT POWER BEFORE REPLACING OR WIRING UNITS.

LORSQUE DANS DES ENDROITS DANGEREUX, DÉBRANCHEZ LE CORDON D'ALIMENTATION AVANT DE REMPLACER OU DE BRANCHER DES MODULES.

WARNING (EXPLOSION HAZARD) AVERTISSEMENT (RISQUE D'EXPLO-SION)

DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NONHAZARDOUS.
NE DÉBRANCHEZ PAS L'ÉQUIPEMENT PENDANT QUE LE CIRCUIT EST DIRECT OU À MOINS QUE L'ENVIRONNEMENT SOIT CONNU POUR ÊTRE LIBRE DE CONCENTRATIONS INFLAMMABLES.

SECTION 2   LED Indicators

Overview

The IP67 Industrial Ethernet switches have communication LEDs for each port, an "OK" output LED, a status LED and power LEDs. Refer to the sample picture below for the location of these LEDs.

LED Locations

Status LED

The Status LED indicates the overall health of the switch. It is normally ON solid indicating that no internal CPU or software problems are detected. It will flash when loading firmware and briefly on power up or reset. Otherwise, if it is OFF or flashing for an extended period of time, then a problem is detected. In this case, please contact your switch supplier for support.

Power LEDs

There is a power LED labeled as Power. It will be on solid when power is applied to the switch.

LNK LED

The port LEDs are multifunctional and indicate link confirmation, activity, and speed.

LED	INDICATION
FLASHING	There is a proper Ethernet connection (Link) between the port and another Ethernet device and that there is communications activity.
ON SOLID	There is a proper Ethernet connection (Link) between the port and another Ethernet device, but no communications activity is detected.
OFF	There is not a proper Ethernet connection (Link) between the port and another Ethernet device. Make sure the cable has been plugged securely into the ports at both ends.

100 LED

The port LEDs are multifunctional and indicate link confirmation, activity, and speed.

LED	INDICATION
ON	A 100 Mbps (100 Base T) connection is detected.
OFF	A 10 Mbps (10 Base T) connection is detected.

OK LED

This LED is not used in the standard model and will always be off. On special order units with dual power inputs, the OK LED will be lit when both the P1 and P2 pins have power applied.
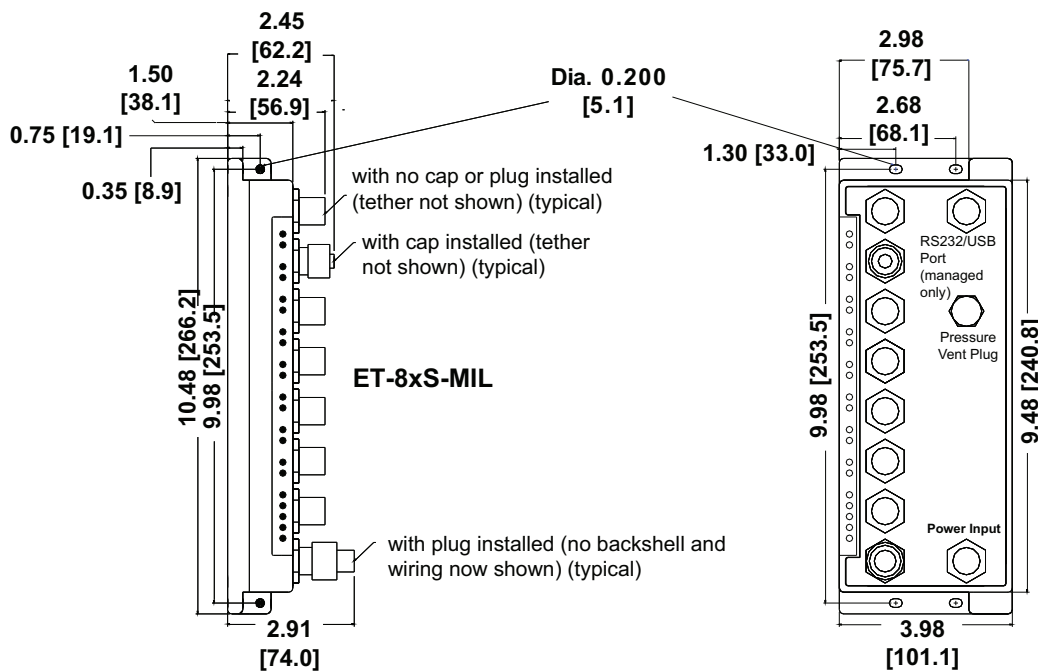
SECTION 3   Mechanical Dimensions and Installation

Overview

The IP67 Industrial Ethernet Switch can be mounted either on its edge or flat, as shown below. All LED's are visible from either mounting position.

>   **Note: Mounting holes will accept a #12 size screw or smaller.**

DIMENSIONS In inches (mm)

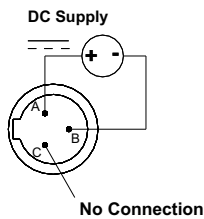# SECTION 4   Power and Communication Wiring

Overview

The IP67 Industrial Switches can be powered from the same DC source that is used to power your other devices. 10 to 30 VDC needs to be applied between Pin A and Pin B as shown below.

> **Note:** **Any of the available mounting holes may be used for grounding and electrical bonding of the switch.**
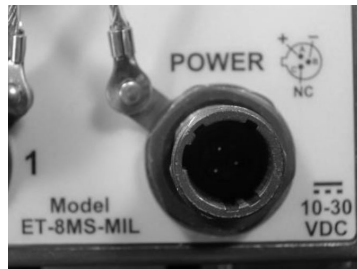
To Ensure Proper Ground:

- If grounding to the mounting panel, please use star washers with the mounting screws.
- If grounding with a ground wire or strap, please use a star washer under the wire lug.

In both cases above, the star washer must be in direct contact with the switch's case in order to bite through the protective coating.
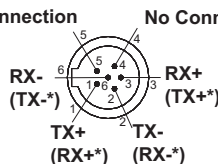
DC Supply

* also allowed due to the auto-mdi/mdix-crossover

RS232 and USB

No Connection   No Connection

USB-DM   USB-CNX (VBUS)

RX- (TX-*)   RX+ (TX+*)

USB-DP   RS232-TD (output)

TX+ (RX+*)   TX- (RX-*)

GND   RS232-RD (input)

Shell = A, Insert = 98, Contacts = P, Keying = A

Shell = A, Insert = 35, Contacts = S, Keying = N

Shell = A, Insert = 35, Contacts = S, Keying = A

Power Input Wiring All Models (ET-8xS-MIL)

Ethernet Wiring All Models (ET-8xS-MIL)
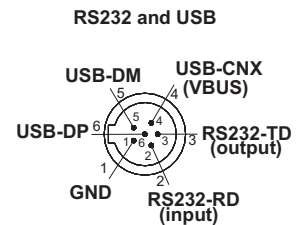
Console Port Wiring Managed Models (ET-8MS-MIL)

Sixnet® ET-8ES-MIL-1 and ET-8MS-MIL-1

SECTION 5   Mating Connections Wiring

Overview

The IP67 Industrial Switches meet or exceed all MIL-STD-38999 Series III for severe environmental applications. All connectors and their mating couplings have EMI shielding and ESD, moisture and corrosion resistance. All mating connectors will self-lock with one 360 degree turn of the coupling nut.

Mating Connections

The following mating plugs are suggested to interface with the switch.

Ethernet plug
D38999/26WA35PN
(w/ pin contacts and Normal keying)

Power Plug
D38999/26WA98SA
(w/ socket contacts and "A" keying)

USB/RS232 Plug   **Typical Plug**
D38999/26WA35PA
(w/ pin contacts and "A" keying)

> **Note:** The W in the above recommended plugs specifies cadmium plating. However, you may choose a different plating to meet your requirements. The MIL receptacles on the switch have black nickel plating which is RoHS compliant.

Cable Distance

The maximum cable length for 10/100 Base T is typically 100 meters (328 ft.).

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Service and Support Information

Service Information

We sincerely hope that you never experience a problem with any of our products. If you do need service, call Red Lion at 1-877-432-9908 for Technical Support. A trained specialist will help you determine the source of the problem. Many problems are easily resolved with a single phone call. If it is necessary to return a unit to us, an RO (Repair Order) can be obtained on the Red Lion website.

Red Lion tracks the flow of returned material with our RO system to ensure speedy service. You must include this RO number on the outside of the box so that your return can be processed immediately.

Be sure to have your original purchase order number and date purchased available.

We suggest that you give us a repair purchase order number in case the repair is not covered under our warranty. You will not be billed if the repair is covered under warranty.

Please supply us with as many details about the problem as you can. The information you supply will be written on the RO form and supplied to the repair department before your unit arrives. This helps us to provide you with the best service, in the fastest manner. Repairs are completed as soon as possible. If you need a quicker turnaround, ship the unit to us by air freight. We give priority service to equipment that arrives by overnight delivery.

We apologize for any inconvenience that the need for repair may cause you. We hope that our rapid service meets your needs. If you have any suggestions to help us improve our service, please give us a call. We appreciate your ideas and will respond to them.

For Your Convenience:

Please fill in the following and keep this manual with your Red Lion system for future reference:

P.O. #:_____ Date Purchased: _____

Purchased From:_____

Serial Number: _____

Product Support

Technical Support:
Inside US: +1 877 432-9908
Outside US: +1 717 767-6511
Support: support.redlion.net
Hours: 8:00 am to 6:00 pm EST

Red Lion Controls
20 Willow Springs Circle
York, PA 17406
Website: www.redlion.net

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LIMITED WARRANTY

(a) Red Lion Controls Inc., (the "Company") warrants that all Products shall be free from defects in material and workmanship under normal use for the period of time provided in "Statement of Warranty Periods" (available at www.redlion.net) current at the time of shipment of the Products (the "Warranty Period"). **EXCEPT FOR THE ABOVE-STATED WARRANTY, COMPANY MAKES NO WARRANTY WHATSOEVER WITH RESPECT TO THE PRODUCTS, INCLUDING ANY (A) WARRANTY OF MERCHANTABILITY; (B) WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE; OR (C) WARRANTY AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS OF A THIRD PARTY; WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE.** Customer shall be responsible for determining that a Product is suitable for Customer's use and that such use complies with any applicable local, state or federal law.

(b) The Company shall not be liable for a breach of the warranty set forth in paragraph (a) if (i) the defect is a result of Customer's failure to store, install, commission or maintain the Product according to specifications; (ii) Customer alters or repairs such Product without the prior written consent of Company.

(c) Subject to paragraph (b), with respect to any such Product during the Warranty Period, Company shall, in its sole discretion, either (i) repair or replace the Product; or (ii) credit or refund the price of Product provided that, if Company so requests, Customer shall, at Company's expense, return such Product to Company.

(d) **THE REMEDIES SET FORTH IN PARAGRAPH (c) SHALL BE THE CUSTOMER'S SOLE AND EXCLUSIVE REMEDY AND COMPANY'S ENTIRE LIABILITY FOR ANY BREACH OF THE LIMITED WARRANTY SET FORTH IN PARAGRAPH (a).**