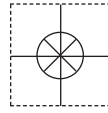


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## **OM-ESW-105-POE Unmanaged Industrial Ethernet POE Switch**



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## **GENERAL SAFETY WARNINGS**

**WARNING:** Do not operate the equipment in the presence of flammable gasses or fumes. Operating electrical equipment in such an environment constitutes a definite safety hazard.

**WARNING:** If the equipment is used in a non-specified manner the protection provided by the equipment may be impaired.

**WARNING:** Do not perform any services on the unit unless qualified to do so. Do not substitute unauthorized parts or make unauthorized modifications to the unit.

**WARNING:** Do not operate the unit with the end plates removed, as this could create a shock or fire hazard.

**WARNING:** Do not operate the equipment in a manner not specified by this manual.

## **ENVIRONMENTAL SAFETY WARNINGS**



**WARNING:** Disconnect the power and allow to cool 5 minutes before touching.

## **ELECTRICAL SAFETY WARNINGS**



**WARNING:** Disconnect the power cable before removing the end plates.

**WARNING:** Do not operate the unit with the end plates removed.

**WARNING:** Properly ground the unit before connecting anything else to the unit. Units not properly grounded may result in a safety risk and could be hazardous and may void the warranty. See the grounding technique section of this user manual for proper ways to ground the unit.

**WARNING:** Do not work on equipment or cables during periods of lightning activity.

**WARNING:** Do not perform any services on the unit unless qualified to do so.

**WARNING:** Observe proper DC Voltage polarity when installing power input cables. Reversing voltage polarity can cause permanent damage to the unit and void the warranty.

## **HAZARDOUS LOCATION INSTALLATION REQUIREMENTS**

1. This equipment is suitable for use in Class I, Div 2, Groups A, B, C, and D, or unclassified or non-hazardous locations only.
2. **WARNING:** Explosion Hazard - Substitution of components may impair suitability for Class I, Division 2.  
**ALERTE:** – Risque D’explosion – Remplacement d’un composant peut empêcher la conformité de Classe I, Division 2.
3. **WARNING:** Explosion hazard, do not disconnect while the circuit is live or unless the area is known to be non-hazardous.  
**ALERTE:** – Risque D’explosion – Ne débranchez pas tant que le circuit est sous tension sauf si la zone est connue pour être non dangereux.
4. **WARNING:** Explosion Hazard - Do not remove or replace the device unless power has been switched off or the area is known to be non-hazardous.  
**ALERTE:** – Risque D’expl osion – Ne pas remplacer le dispositif que l’alimentation est coupée ou que la zone est connue pour être non dangereux.
5. Use 60/75°C rated Copper wire, (0.22Nm) 2 inch-lbs Tightening torque for field installed connectors.
6. **WARNING:** Install only in accordance with Local & National Codes of Authorities Having Jurisdiction.
7. Class I, Div 2 installations require that all devices connected to this product must be UL listed for the area in which it is installed.
8. **WARNING:** Damage may occur to the RJ-45 port of the powered device (PD), if the switch is not powered down before disconnecting the Cat5 cable.

## Functional Overview

The OM-ESW-105-POE Power over Ethernet Unmanaged Industrial Ethernet Switch is designed to provide power over Ethernet for POE capable devices where running a power line is either not possible or not cost effective. This feature allows an end user to power a POE camera, wireless access point, or any other POE capable device without the need for running separate wires for power. This also allows the ability for a centralized battery backup for all these devices.

All 10/100Base-TX ports utilize the RJ45 shielded connectors.

## Key Features

- Compact, space saving package
- Full IEEE 802.3 & 100Base-FX Compliance
- IEEE 802.3af Compliant
- **OM-ESW-105-POE** - Five 10/100Base-TX RJ-45 ports (4 PSE ports and 1 uplink port)
- Unmanaged operation
- Extended Environmental Specifications
  - 40°C to 85°C Operating Temperature
  - 40°C to 85°C Storage Temperature
- Operating Humidity: 10% to 90% (Non Condensing)
- Support for Full/Half Duplex Operation
- LED Link/Activity Status Indication
- LED POE Status Indication
- Power Fault Status LEDs
- Auto-negotiation, Auto-sensing Speed, Duplex, and Flow Control
- Up to 1.0 Gb/s Maximum Throughput
- Industry Standard 35mm DIN Rail Mounted Enclosure
- Redundant power inputs (46-49 VDC)
- Supports up to 15.4Watts per channel (13 Watts at the Powered Device (PD ))
- Full wire speed communications
- Hardened metal DIN Rail Enclosure

**E 3 5 6 4 4 3**



## **PACKAGE CONTENTS**

Please make sure the switch package contains the following items:

1. OM-ESW-105-POE
2. Instruction Sheet

Contact your carrier if any items are damaged.

## **UNPACKING**

Remove all the equipment from the packaging, and store the packaging in a safe place. File any damage claims with the carrier.

## **CLEANING**

Clean only with a damp cloth.

## **INSTALLATION**

Read the following warnings before beginning the installation:

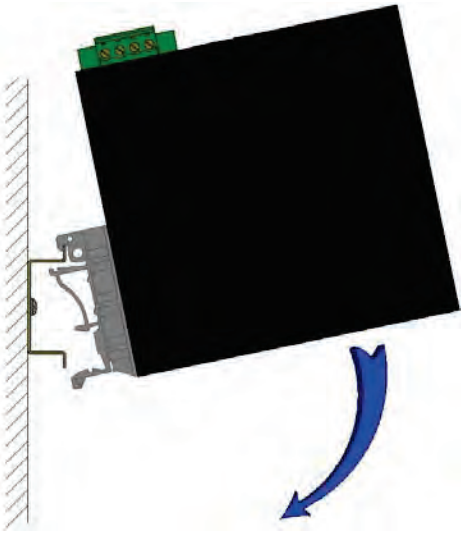
### **WARNING**



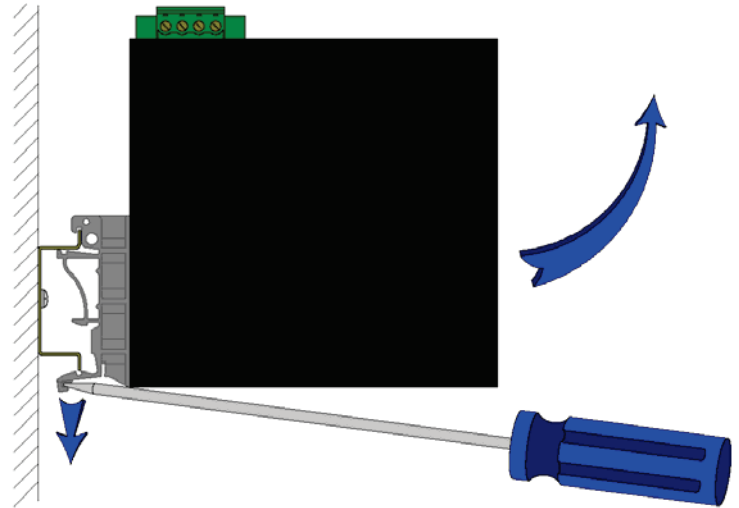
Never install or work on electrical equipment or cabling during periods of lightning activity. Never connect or disconnect power when hazardous gasses are present.

## DIN-Rail Mounting

Install the unit in a standard DIN rail. Recess the unit to allow at least 2" of horizontal clearance for CAT5e cable bend radius.



To install the unit to 35mm industrial DIN rail, place the top edge of the included mounting bracket on the back of the unit against the DIN rail at a 15° angle as shown. Rotate the bottom of the unit to the back (away from you) until it snaps into place.




To remove the unit from the 35mm industrial DIN rail, place a flat head screwdriver into the release clip found at the bottom of the unit, and apply downward force on the clip until it disengages from the bottom of the unit from the DIN rail. Rotate the bottom of the unit towards you and up at an approximate 15° upward angle to completely remove the unit.



## FRONT PANEL



### From Top to Bottom:

	Power LED
<b>POE</b>	POE Status LED
<b>SPD</b>	Speed LED
<b>LNK/ACT</b>	Link/Activity LED
<b>RJ45 Ports</b>	Auto sensing 10/100BaseT Connection

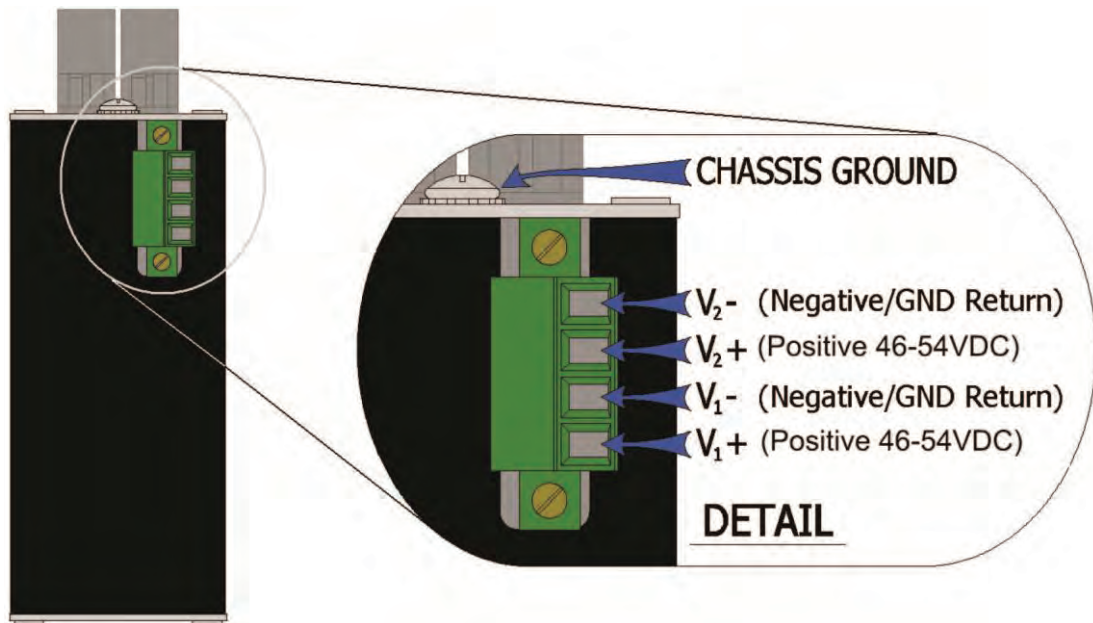
### LED MODE OF OPERATION

LED	Color	Description
 V1	Green	Valid Power (46-54 VDC) is applied
	Red	Invalid Power (<46 VDC) is applied or Power Bus Fault detected
	OFF	No Power is applied to the device
 V2	Green	Valid Power (46-54 VDC) is applied
	Red	Invalid Power (<46 VDC) is applied or Power Bus Fault detected
	OFF	No Power is applied to the device
<b>POE</b>	Green	POE is being applied on the respective port
	Blinking	POE PD detected with improper power classification
	OFF	No POE PD detected on the port
<b>LNK ACT</b>	Green	Link with no or little activity
	Blinking	Link with activity
	OFF	No link established
<b>SPD 100</b>	Green	100 Base
	OFF	10 Base

**Note:** Redundant power inputs will not balance the power load. Only load from one power supply is used at a time.



## APPLYING POWER (Top View)



Unscrew & Remove the DC Voltage Input Plug from the top header.

Install the DC Power Cables into the Plug (observing polarity on unit).

Plug the Voltage Input Plug back into the top header.

Tightening torque for the terminal block power plug is **0.22 Nm/0.162 Pound Foot**.

Turn the power on the wire.

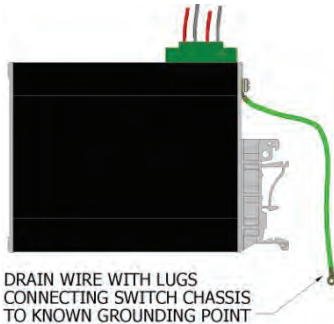
**Note:** It is only safe to turn the power on the wires after the wires have been secured to the switch.

**WARNING:** Inserting the input plug while the 48VDC is applied may cause arcing, and damage the input connector permanently.

**Note:** Either  $V_1$  or  $V_2$  can be connected to power for minimal operation. For redundant power operation,  $V_1$  and  $V_2$  plugs must be connected to separate DC Voltage sources. Use wire sizes of 10-20 gauge. The power cord should be limited to less than 10 meters in order to ensure optimum performance.

## GROUNDING TECHNIQUES FOR OM-ESW-105-POE

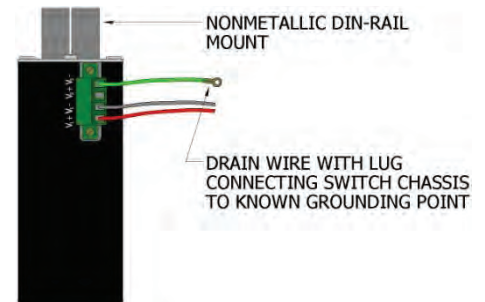
The grounding philosophy of any control system is an integral part of the design. OM-ESW-105-POE switches are designed to be grounded, but the user has been given the flexibility to float the switch when required. The best noise immunity and emissions (i.e. CE) are obtained when the OM-ESW-105-POE switch chassis is connected to earth ground via a drain wire.



Users may run a drain wire & lug from the screw provided on the back face of the enclosure. In the event the provided grounding screw has been lost, care should be taken to limit the penetration of the outer skin by less than 1/4". Failure to do so may cause irreversible damage to the internal components of the switch.

Note: Ensure the power supply is grounded properly before applying power to the grounded switch. This may be verified by using a voltmeter to determine that there is no voltage difference between the power supply's negative output terminal and the chassis grounding point of the switch.

As an alternative grounding method, both V- legs of the power input connector are connected to chassis internally on the PCB. Connecting a drain wire to earth ground from one of the V- terminal plugs as shown here will ground the switch and the chassis. The power leads from the power source should be limited to 3 meters or less in length.



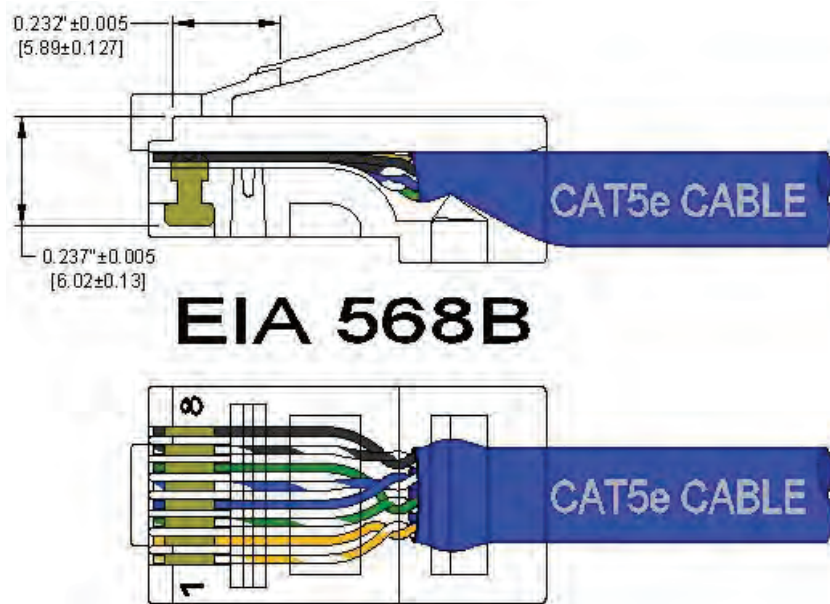
If the use of shielded cables is required, it is generally recommended to only connect the shield at one end to prevent ground loops and interfere with low level signals (i.e. thermocouples, RTD, etc.). Cat5e cables manufactured to EIA-568A or 568B specifications are required for use with the OM-ESW-105-POE switches.



In the event all Cat5e patch cable distances are small (i.e. All Ethernet devices are located the same local cabinet and/or referenced to the same earth ground), it is permissible to use fully shielded cables terminated to chassis ground at both ends in systems void of low level analog signals.

## RJ45 CONNECTOR CRIMP SPECIFICATIONS

Please reference the illustration below for your Cat5 cable specifications:




## CONNECTING THE UNIT

For 10Base-T ports, plug a Category 3 (or greater) twisted pair cable into the RJ45 connector. For 100Base-T ports, plug a Category 5 (or greater) twisted pair cable into the RJ45 connector. Connect the other end to the far end station. Verify that the LNK LED's are ON once the connection has been completed. To connect any other port to another Switch or Repeater, use a standard Cat5 straight through or crossover cable.

**Warning:** Creating a port to port connection on the same switch (i.e. loop) is an illegal operation and will create a broadcast storm which will crash the network!

## TROUBLESHOOTING

1. Make sure the  (Power LED) is ON.
2. Make sure you are supplying sufficient current for the OM-ESW-105-POE and all powered devices plugged into it. **Note: The inrush current and steady state current is dependent on the power requirements of the powered devices plugged into the POE switch.**
3. Verify that the POE light is on solid if a valid POE PD is connected to the port.
4. Verify that Link LED's are ON for both ports.
5. Verify cabling used between stations.
6. Verify that cabling is Category 3 or greater for 10Mbit Operation.

## **FCC STATEMENT**

This product complies with Part 15 of the FCC-A Rules.

Operation is subject to the following conditions:

- (1) This device may not cause harmful interference
- (2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class A 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. Operation of this device in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## **INDUSTRY CANADA**

This Class A digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. Operation is subject to the following two conditions; (1) this device digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. Operation is subject to the following two conditions; (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Cet appareillage numérique de la classe A répond à toutes les exigences de l'interférence canadienne causant des règlements d'équipement. L'opération est sujette aux deux conditions suivantes: (1) ce dispositif peut ne pas causer l'interférence nocive, et (2) ce dispositif doit accepter n'importe quelle interférence reçue, y compris l'interférence qui peut causer l'opération peu désirée.

## **Regulatory Approvals:**

**Safety:** UL Listed per ANSI/ISA-12.12.01-2000 (US and Canada) is listed for use in Class I, Div 2, Groups A, B, C, D, T4

**EMI:** EN 61000-6-4, EN 55011 - Class A  
FCC Title 47, Part 15, Subpart B - Class A  
ICES-003 – Class A

**EMS:** EN6 1000-6-2  
IEC 61000-4-2 (ESD)  
IEC 1000-4-3 (RS)  
IEC 61000-4-4 (EFT)  
IEC 61000-4-5 (Surge)  
IEC 61000-4-6 (Conducted Disturbances)

## **KEY SPECIFICATIONS**

### **Physical**

<i>Height:</i>	3.5" (8.89cm)
<i>Width:</i>	1.489" (3.78cm)
<i>Depth:</i>	3.53" (8.96cm)
<i>Weight:</i>	0.7 lbs. (0.31kg)

### **Electrical**

<i>Input Voltage:</i>	46-49 VDC
<i>Input Current:</i>	1.6 A @ 48 VDC (under full load) 65 mA @ 48 VDC (no POE in use, switch in full use)
<i>Inrush Current:</i>	26 Amp/1.3 ms @ 48VDC
<i>Input Ripple:</i>	Less than 100 mV
<i>Input Wire Size:</i>	10-20 AWG

### **Environmental**

<i>Operating Temperature:</i>	-40°C to 85°C
<i>Storage Temperature:</i>	-40°C to 85°C
<i>Operating Humidity:</i>	10% to 90% (Non Condensing)
<i>Operating Altitude:</i>	0 to 10,000 ft.

### **Network Media**

<i>10BaseT:</i>	> Cat-3 Cable
<i>100BaseT:</i>	> Cat-5 Cable

### **Connectors**

10/100BaseTX:	RJ45 UTP Port
---------------	---------------

### **Recommended Minimum Wiring Clearance:**

*Top: 1 " (2.54 cm)*  
*Front: 2 " (5.08 cm)*

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## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **37 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **three (3) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

## RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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