IP67 unmanaged
Fast Ethernet Switches

IE-SW-IP67-5M12
IE-SW-IP67T-5M12

Hardware Installation Guide

First Edition, March 2014
1516620000/00/03.14

Important note:
This document and additional product information can be downloaded using following link:

http://www.weidmueller.com

► Select **Product Catalogue**
⇨ Select „Industrial Ethernet active“
⇨ Select „IP67 unmanaged Switches“
⇨ Select Product model
⇨ Click and expand section „Downloads“
⇨ Download needed documentation

Weidmüller

Overview

The Weidmüller 5-port unmanaged IP67 Ethernet switch provides a hardened and cost-effective solution for your Ethernet connections. The Switch is IP67-rated to provide protection against shock and foreign particles. IP67-rated products have the following characteristics: (1) dust proof, (2) protection against the effects of temporary immersion in water.

The Switch is available in 2 variants to operate in 2 temperature ranges from -25 to 60°C and -40 to75°C. The device is designed to withstand a high degree of vibration and shock. The rugged hardware design makes it perfect for ensuring that your Ethernet equipment can withstand the rigors associated with critical industrial applications. The switches are rated for use in hazardous locations (Class 1 Division 2) and comply with CE/FCC and UL standards.

Package Checklist

Your Ethernet Switch is shipped with the following items. If any of these items is missing or damaged, please contact your Weidmüller customer service for assistance.

- 1 Ethernet Switch IE-SW-IP67(T)-5M12
- Hardware Installation Guide
- 3 protective caps for unused ports and 8 port labels
- 3 screws for mounting the Switch

Features

High Performance Network Switching Technology

- 5 10/100BaseT(X) ports (4-pin shielded M12 socket with D coding).
- Broadcast storm protection.
- IEEE802.3/802.3u/802.3x.
- Store and Forward switching process type.
- 10/100M, Full/Half-Duplex, MDI/MDIX auto-sensing.

Industrial Grade Reliability

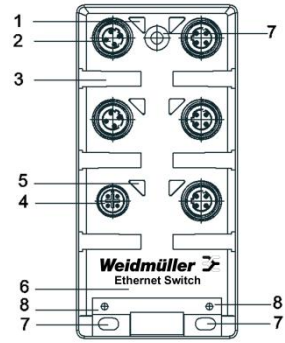
- Active circuit protection.
- Robust connection.
- Dust and immersion proof.

Rugged Design

- Casing design meets IP67 protection standards.
- M12 connectors for robust connections.
- Operating temperature range of -25 to 60°C, or extended operating temperature range of -40 to 75°C (T-models).

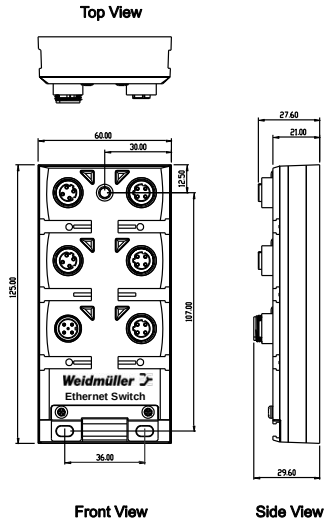
Panel Layout of IE-SW-IP67(T)-5M12

Front Panel View



1. M12 port's 10/100 Mbps LED.
2. 10/100BaseT(X) port (4-pin female shielded M12 socket with D coding).
3. Port Label.
4. Power input (5-pin male shielded M12 socket with A coding).
5. Power input (PWR) LED.
6. Device Type.
7. Holes for attaching the IE-SW-IP67(T)-5M12 to a wall with screws (there are 3 holes: bottom left, bottom right, and top middle).
8. Grounding screws.

Mounting Dimensions (unit = mm)



Panel/Wall Mounting

To mount the IE-SW-IP67(T)-5M12 on the wall use the 3 screws included in the package.

STEP 1: Make 3 screw holes on the wall based on the positions of the 3 screw holes on the switch shown in the mounting dimensions diagram.

STEP 2: Insert one screw in the top-middle screw hole on the switch and screw it into the wall.

STEP 3: Screw in the remaining 2 screws through the bottom-left and bottom-right holes on the switch.

Wiring Requirements

WARNING

Turn the power off before disconnecting modules or wires. The correct power supply voltage is listed on the product label. Check the voltage of your power source to make sure that you are using the correct voltage. Do NOT use a voltage greater than what is specified on the product label.

These devices must be supplied by a SELV source as defined in the Low Voltage Directive 2006/95/EC and 2004/108/EC.

ATTENTION

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your Weidmüller switch.

This device has UL508 approval. Use copper conductors only, 60/75°C, Tighten To 4.5 pound-inches. For use in Pollution Degree 2 Environment.

ATTENTION

Safety First!

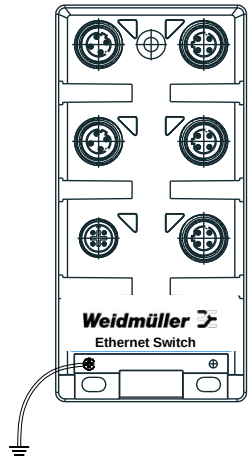
Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size. If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

You should also heed the following guidelines:

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.
  NOTE: Do not run signal or communications wiring and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.
- You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separated.
- It is strongly advised that you label wiring to all devices in the system when necessary.

Grounding the IE-SW-IP67(T)-5M12

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.



ATTENTION

This product is intended to be mounted to a well-grounded mounting surface such as a metal panel.

10/100BaseT(X) Ethernet Port Connection

The IE-SW-IP67(T)-5M12 has 5 10/100BaseT(X) Ethernet ports (4-pin shielded M12 socket with D coding). The 10/100BaseTX ports located on the front panel are used to connect to Ethernet-enabled devices. Most users configure these ports for Auto MDI/MDI-X mode, in which case the port's pinouts are adjusted automatically depending on the type of Ethernet cable used (straight-through or cross-over), and the type of device (NIC-type or HUB/Switch-type) connected to the port.

In what follows, we give pinouts for both MDI (NIC-type) ports and MDI-X (HUB/Switch-type) ports. We also give cable wiring diagrams for straight-through and cross-over Ethernet cables.

Pinouts for sockets on IE-SW-IP67(T)-5M12

TP Port

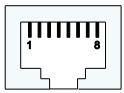
-Pin 1: TD +
-Pin 2: RD +
-Pin 3: TD -
-Pin 4: RD -

Power input

-Pin 1: Input V+
-Pin 2: Not assigned
-Pin 3: Input V-
-Pin 4: Not assigned
-Pin 5: Function ground

Pinouts for RJ45 (8-pin)

RJ45 (8-Pin)



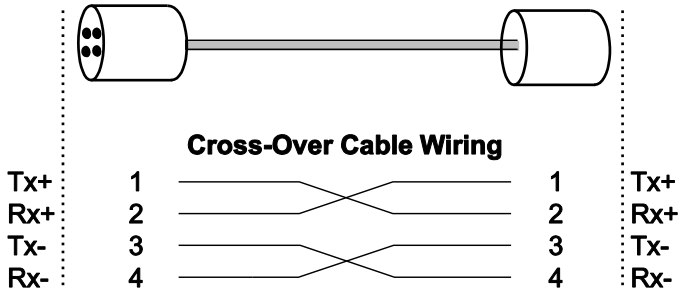
MDI Port Pinouts

Pin	Signal
1	Tx +
2	Tx -
3	Rx +
6	Rx -

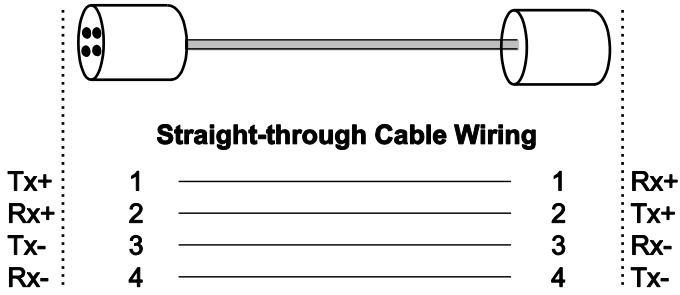
MDI-X Port Pinouts

Pin	Signal
1	Rx +
2	Rx -
3	Tx +
6	Tx -

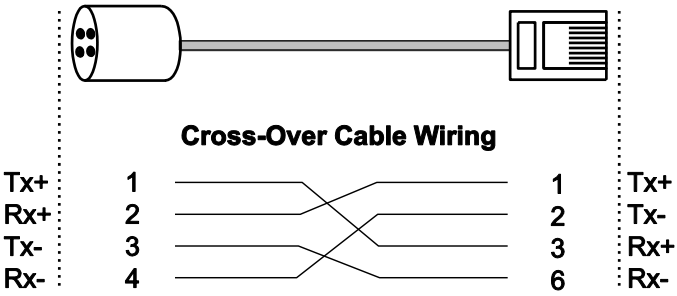
M12 (4-pin, M) to M12 (4-pin, M) Cross-Over Cable Wiring



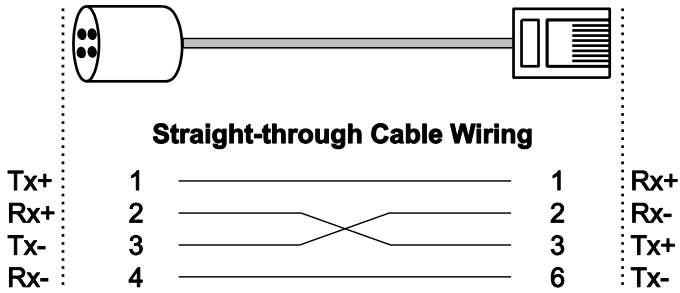
M12 (4-pin, M) to M12 (4-pin, M) Straight-Trough Cable Wiring



M12 (4-pin, M) to RJ45 (8-pin) Cross-Over Cable Wiring



M12 (4-pin, M) to RJ45 (8-pin) Straight-Trough Cable Wiring



LED Indicators

Several LED indicators are located on the IE-SW-IP67(T)-5M12 front panel. The function of each LED is described in the table below.

LED	Color	State	Description
PWR	AMBER	On	Power is being supplied to the power input.
		Off	Power is **not** being supplied to the power input.
LNK/ACT (10M)	AMBER	On	TP port's 10 Mbps link is active.
		Blinking	Data is being transmitted at 10 Mbps
		Off	TP port's 10 Mbps link is inactive.
LNK/ACT (100M)	GREEN	On	TP port's 100 Mbps link is active
		Blinking	Data is being transmitted at 100 Mbps.
		Off	TP port's 100 Mbps link is inactive.

Auto MDI/MDI-X Connection

The Auto MDI/MDI-X function allows users to connect IE-SW-IP67(T)-5M12's 10/100BaseTX ports to any kind of Ethernet device, without needing to pay attention to the type of Ethernet cable being used for the connection. This means that you can use either a straight-through cable or cross-over cable to connect the IE-SW-IP67(T)-5M12 to Ethernet devices.

Dual Speed Functionality & Switching

The IE-SW-IP67(T)-5M12 10/100 Mbps switched M12 ports auto negotiate with the connected device to use the fastest data transmission rate supported by both devices. All of Weidmüller's unmanaged switches are plug-and-play devices, so that software configuration is not required. The half/full duplex mode for the switched M12 ports is user dependent and changes (by auto-negotiation) to full or half duplex, depending on which transmission speed is supported by the attached device.

Switching and Address Learning

The IE-SW-IP67(T)-5M12 has an address table that can hold up to 1000 node addresses, which makes it suitable for use with large networks. The address tables are self-learning, so that as nodes are added or removed, or moved from one segment to another, the IE-SW-IP67(T)-5M12 automatically keeps up with new node locations. An address-aging algorithm causes the least-used addresses to be deleted in favor of newer, more frequently used addresses. To reset the address buffer, power down the unit and then power it back up.

Switching, Filtering, and Forwarding

Each time a packet arrives at one of the switched ports, a decision is made to filter or forward the packet. Packets with source and destination addresses belonging to the same port segment will be filtered, constraining those packets to one port, and relieving the rest of the network from the need to process them. A packet with destination address on another port segment will be forwarded to the appropriate port, and will not be sent to the other ports where it is not needed. Packets that are used in maintaining the operation of the network (such as the occasional multi-cast packet) are forwarded to all ports. The IE-SW-IP67(T)-5M12 operates in the store-and-forward switching mode, which eliminates bad packets and enables peak performance to be achieved when there is heavy traffic on the network.

Auto-Negotiation and Speed Sensing

All of the IE-SW-IP67(T)-5M12's Ethernet ports independently support auto-negotiation for speeds in the 10BaseT and 100BaseTX modes, with operation according to the IEEE 802.3u standard. This means that some nodes could be operating at 10 Mbps, while at the same time, other nodes are operating at 100 Mbps.

Auto-negotiation takes place when an M12 cable connection is made, and then each time a LINK is enabled. The Switch advertises its capability for using either 10 Mbps or 100 Mbps transmission speeds, with the device at the other end of the cable expected to advertise in the same way. Depending on what type of device is connected, this will result in agreement to operate at a speed of either 10 Mbps or 100 Mbps.

Note about possible lost of data packages in case of "Duplex mismatching"

If the Switch' AutoNeg-Port is connected to a **non-negotiating** device, then the Switch will set its port transmission speed same as the connected device but is unable to correctly detect the duplex mode. As result the port is set to the correct speed but is using always the half duplex mode as required by the IEEE 802.3u standard in such cases. For correct transmission the non-negotiating port has to be set to half-duplex mode (speed either 10 or 100 Mbit/s).

Specifications

Technology	
Standards	IEEE 802.3 for 10BaseT IEEE 802.3u for 100BaseT(X) IEEE 802.3x for Flow Control
Processing Type	Store and Forward
Flow Control	IEEE 802.3x flow control, back pressure flow control
Interface	
M12 Ports	10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
LED Indicators	Power, LNK/ACT
Power	
Input Voltage	24 to 45 VDC 18 to 30 VAC (47 to 63 Hz)
Input Current	0.12A @ 24 VDC 0.28A @ 24 VAC
Connection	M12 A-coding 5-pin male connector, single power input
Overload Current Protection	1.1 A
Reverse Polarity Protection	Present
Physical Characteristics	
Housing	Plastic, IP67 protection
Dimensions	60 x 125 x 29.6 mm (W x H x D)
Weight	250 g
Installation	Panel/Wall Mounting
Environmental Limits	
Operating Temperature	Standard models: -25 to 60°C (-13 to 140°F) Wide temp. models: -40 to 75°C (-40 to 167°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), Level 3 EN61000-4-3 (RS), surpasses Level 3 EN61000-4-4 (EFT), Level 3 EN61000-4-5 (Surge), Level 3 EN61000-4-6 (CS), Level 2 EN61000-4-8, EN61000-4-11
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

MTBF (meantime between failures)	
Time	370,224 hrs
Database	Telcordia (Bellcore), GB 25°C
WARRANTY	
Time Period	5 years

Weidmüller gives a 5 year warranty on this product in accordance with the warranty terms as described in the general conditions of sale of the Weidmüller company which has sold the products to you. Weidmüller warrants to you that such products the defects of which have already existed at the time when the risk passed will be repaired by Weidmüller free of charge or that Weidmüller will provide a new, functionally equivalent product to replace the defective one. Safe where expressly described otherwise in writing in this catalogue/product description, Weidmüller gives no warranty or guarantee as to the interoperability in specific systems or as to the fitness for any particular purpose. To the extent permitted by law, any claims for damages and reimbursement of expenses, based on whatever legal reason, including contract or tort, shall be excluded. Where not expressly stated otherwise in this warranty, the general conditions of purchase and the expressive liability commitments therein of the respective Weidmüller company which has sold the products to you shall be applicable.

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