Ethernet Switch - Premium Line

IE-SW-PL08M Series (Managed)

Hardware Installation Guide

Third Edition, October 2012
1243350000/02/10.12

Please note:
This document, the **detailed manual** and any further product information - if available - can be downloaded at the internet link:

http://www.weidmueller.com/downloads

Weidmüller

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-PL08M-Series
- Hardware Installation Guide
- CD-ROM with User's Manual and Windows Utility (option)

  → Please download CD-ROM from Internet page http://www.weidmueller.com/downloads

- RJ45 to DB9 Console port cable
- Protective caps for unused ports

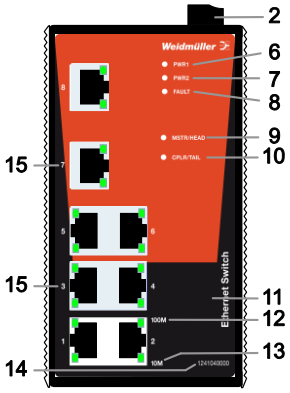
Optional Accessories

- **EBR-Module RS232 (**Automatic Backup Configurator via RS-232 Console Port)
- **RM-KIT** (19" Rack mounting kit)

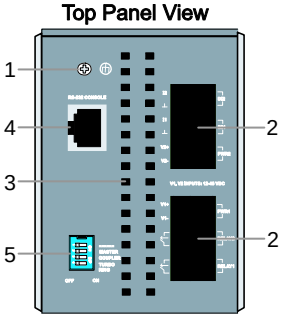
→ More detailed information in datasheet

Panel Layout of IE-SW-PL08M-8TX

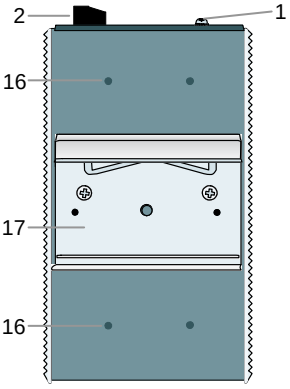
IE-SW-PL08M-8TX
Front Panel View



Top Panel View



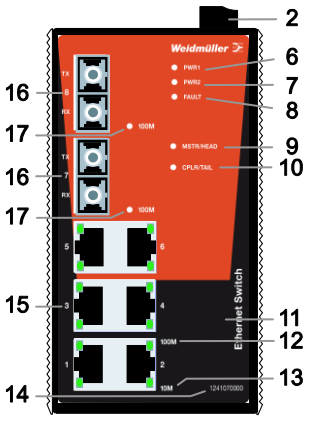
Rear Panel View



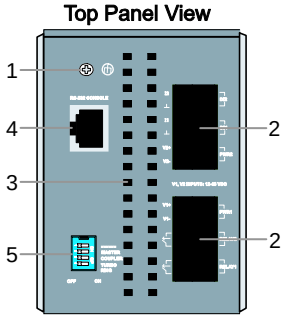
1. Grounding screw
2. Terminal block for power input PWR1/PWR2 and relay output
3. Heat dissipation orifices
4. Console port
5. DIP switches
6. Power input PWR1 LED
7. Power input PWR2 LED
8. Fault LED
9. MSTR/HEAD: LED indicator
10. CPLR/TAIL: LED indicator
11. Label
12. TP port's 100 Mbps LED
13. TP port's 10 Mbps LED
14. Article Number
15. 10/100BaseT(X) ports
16. Screw hole for wall mounting kit
17. DIN-Rail kit

Panel Layouts of IE-SW-PL08M-6TX-2SC/2SCS and IE-SW-PL08M-6TX-2ST

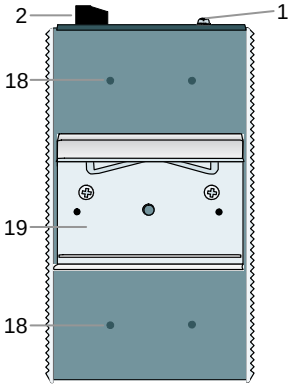
IE-SW-PL08M-6TX-2SC
Front Panel View



Top Panel View



Rear Panel View

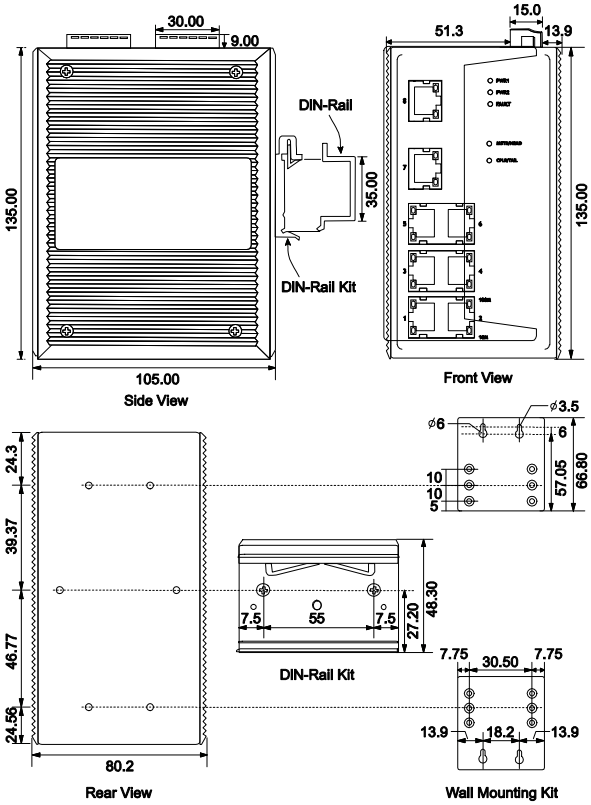


NOTE:

The appearance of models IE-SW-PL08M-6TX-2SC, IE-SW-PL08M-6TX-2SCS and IE-SW-PL08M-6TX-2ST are - apart from the optical connectors - identical.

1. Grounding screw
2. Terminal block for power input PWR1/PWR2 and relay output
3. Heat dissipation orifices
4. Console port
5. DIP switches
6. Power input PWR1 LED
7. Power input PWR2 LED
8. Fault LED
9. MSTR/HEAD: LED indicator
10. CPLR/TAIL: LED indicator
11. Label
12. TP port's 100 Mbps LED
13. TP port's 10 Mbps LED
14. Article Number
15. 10/100BaseT(X) ports
16. 100BaseFX ports
17. FX port's 100 Mbps LEDs
18. Screw hole for wall mounting kit
19. DIN-Rail kit

Mounting Dimensions (unit = mm)

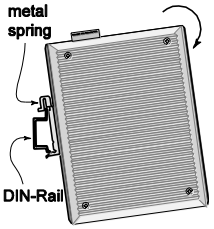


DIN-Rail Mounting

The aluminum DIN-Rail attachment plate should already be fixed to the back panel of the IE-SW-PL08M Series when you take it out of the box.

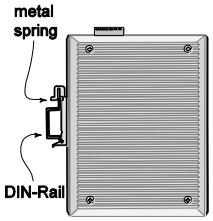
STEP 1:

Insert the top of the DIN-Rail into the slot just below the stiff metal spring.



STEP 2:

The DIN-Rail attachment unit will snap into place as shown.



To remove the IE-SW-PL08M switch from the DIN-Rail, simply reverse Steps 1 and 2.

II 3G ATEX Information

1. Certificate number DEMKO 11 ATEX 150189X
2. Ambient range (-40°C ≤ Tamb ≤ 75°C)
3. Certification string (Ex nC nL IIC T4)
4. Standards covered (EN60079-0:2006, EN60079-15:2005)
5. The conditions of safe usage:
   - These products must be mounted in an IP54 enclosure.
   - Install in an area of pollution degree 2 or less.
   - Use a conductor wire of size 0.2 mm² or greater.
   - PROVISIONS SHALL BE MADE, EITHER IN EXTERNAL TO THE APPARATUS, TO PREVENT THE RATED VOLTAGE BEING EXCEEDED BY THE TRANSIENTS DISTURBANCES OF MORE THAN 40 %

Wiring Requirements

WARNING

The power for this product is intended to be supplied by a Listed Power Unit, with output marked LPS, and rated to deliver 12 to 45 VDC at a maximum of 600 mA.

WARNING

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your Ethernet Switch. 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.

Please read and follow these important 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 through the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.
- 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 separate.
- It is strongly advised that you label wiring to all devices in the system, when necessary.

Grounding the Ethernet Switch

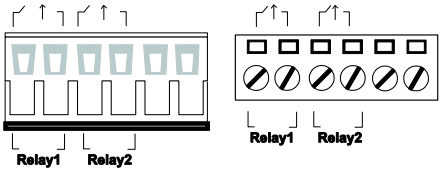
Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.

ATTENTION

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

Wiring the Relay Contact

The IE-SW-PL08M has two sets of relay output—relay 1 and relay 2. Each relay contact consists of two contacts of the terminal block on the IE-SW-PL08M top panel. Refer to the next section for detailed instructions on how to connect the wires to the terminal block connector, and how to attach the terminal block connector to the terminal block receptor.



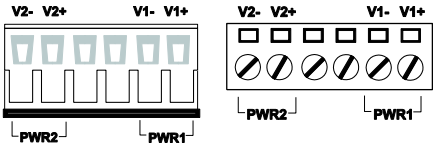
The fault circuit will open if::

1. A relay warning event is triggered, OR
2. The IE-SW-PL08M Switch is the Master of this Turbo Ring, and the Turbo Ring is broken, OR
3. Start-up failure.

If none of these three conditions is met, the fault circuit will remain closed.

Wiring the Redundant Power Inputs

The IE-SW-PL08M switch has two sets of power inputs—power input 1 and power input 2. Top and front views of one of the terminal block connectors are shown below.



Take the following steps to wire the redundant power inputs:

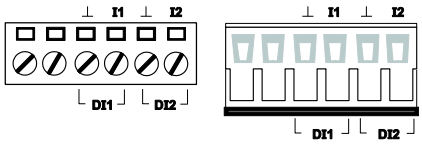
STEP 1: Insert the negative/positive DC wires into the V-/V+ terminals.
STEP 2: To keep the DC wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.
STEP 3: Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on the Ethernet Switch top panel.

ATTENTION

Before connecting the Ethernet Switch to the DC power inputs, make sure the DC power source voltage is stable.

Wiring the Digital Inputs

The IE-SW-PL08M unit has two sets of digital inputs, DI 1 and DI 2. Each DI consists of two contacts of the 6-pin terminal block connector on the Ethernet Switch top panel. The remaining contacts are used for the Ethernet Switch two DC inputs. Top and front views of one of the terminal block connectors are shown below.



Take the following steps to wire the digital inputs:

STEP 1: Insert the negative (ground)/positive DI wires into the ⊥/I1 terminals.
STEP 2: To keep the DI wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.
STEP 3: Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on the IE-SW-PL08M Series top panel.

Communication Connections

IE-SW-PL08M models have 8 or 6 10/100BaseT(X) Ethernet ports, and 0 (zero) or 2 100BaseFX (SC/ST-type connector) fiber ports.
In this section, we present two types of diagrams—Pinout Diagrams and Cable Wiring Diagrams—to convey information about the ports and the cables used to connect IE-SW-PL08M Series to other devices:

Pinouts—The meaning of the "Pinouts" diagrams is straightforward. The diagrams simply display the type of signal passing through each of the port's pins.

Cable Wiring—Diagrams labeled "Cable Wiring" present standard cable wiring schemes for cables used to connect Ethernet Switch's ports to other devices. These diagrams display three pieces of information:

1. When building your own cable, refer to the "pin-to-pin" Cable Wiring information displayed between the two vertical dashed lines to see which pin of the connector on the left should be connected to which pin of the connector on the right.
2. The information to the left of the left vertical dashed lines gives the pinouts of the relevant Ethernet Switch port.
3. The information to the right of the right vertical dashed line gives the pinouts of the opposing device's port.

NOTE

1. The pin numbers for male DB9 and DB25 connectors, and hole numbers for female DB9 and DB25 connectors are labeled on the connector. However, the numbers are typically quite small, so you may need to use a magnifying glass to see the numbers clearly.

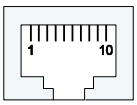
B. The pin numbers for both 8-pin and 10-pin RJ45 connectors (and ports) are typically not labeled on the connector (or port). Refer to the following Pinout and Cable Wiring diagrams to see how RJ45 pins are numbered

RS-232 Connection

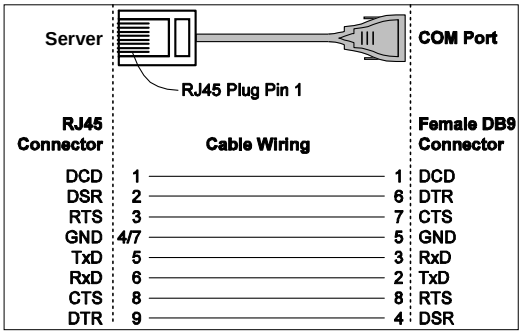
IE-SW-PL08M Series has one RS-232 (10-pin RJ45) console port, located on the top panel. Use an RJ45-to-DB9 cable (wiring diagram below) to connect IE-SW-PL08M Series console port to your PC's COM port. You may then use a console terminal program, such as Windows Hyper Terminal, to access IE-SW-PL08M Series console configuration utility.

RJ45 (10-pin) Console Port Pinouts

Pin	Description
1	------
2	DSR
3	------
4	GND
5	TxD
6	RxD
7	GND
8	------
9	DTR
10	------



RJ45 (10-pin) to DB9 (F) Cable Wiring



10/100BaseT(X) Ethernet Port Connection

The 10/100BaseT(X) ports located on Ethernet Switch's front panel are used to connect to Ethernet-enabled devices.

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

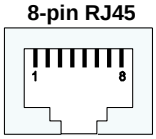
MDI Port Pinouts

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

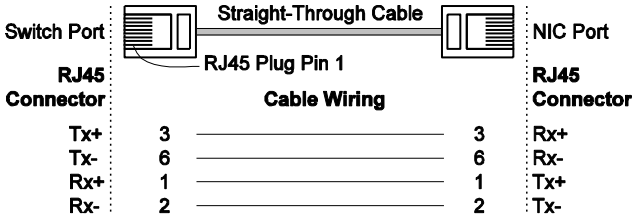
MDI-X Port Pinouts

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

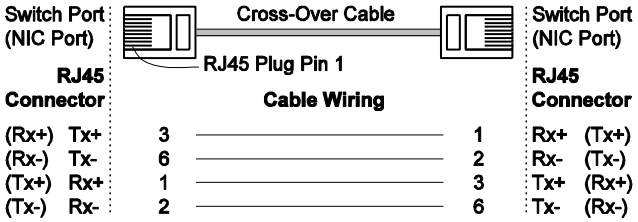
8-pin RJ45



RJ45 (8-pin) to RJ45 (8-pin) Straight-Through Cable Wiring



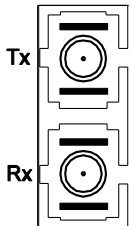
RJ45 (8-pin) to RJ45 (8-pin) Cross-Over Cable Wiring



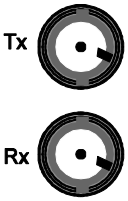
100BaseFX Ethernet Port Connection

Remember to connect the **Tx (transmit)** port of device I to the **Rx (receive)** port of device II, and the **Rx (receive)** port of device I to the **Tx (transmit)** port of device II.

SC-Port Pinouts



ST-Port Pinouts



ATTENTION

This is a Class 1 Laser/LED product. To avoid causing serious damage to your eyes, do not stare directly into the Laser Beam.

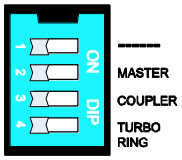
Turbo Ring DIP Switch Settings

IE-SW-PL08M models are plug-and-play managed redundant Ethernet switches. The proprietary Turbo Ring protocol provides better network reliability and faster recovery time. Turbo Ring's recovery time is less than 300 ms (**Turbo Ring**) or 20 ms (**Turbo Ring V2**) - compared to a 3- to 5-minute recovery time for commercial switches - decreasing the possible loss caused by network failures in an industrial setting.

There are 4 Hardware DIP Switches for Turbo Ring on the top panel of IE-SW-PL08M switch that can help setup the Turbo Ring easily within seconds. If you do not want to use a hardware DIP switch to setup the Turbo Ring, you can use a web browser, telnet, or console to disable this function.

NOTE Please refer to the ***Turbo Ring DIP Switch*** section and ***Using Communication Redundancy*** section in User's Manual for more detail information about the settings and usage of ***Turbo Ring*** and ***Turbo Ring V2***.

IE-SW-PL08M-Series DIP Switches



The default setting for each DIP Switch is OFF. The following table explains the effect of setting the DIP Switch to the ON position.

"Turbo Ring" DIP Switch Settings

DIP 1	DIP 2	DIP 3	DIP 4
Reserved for future use.	ON: Enables this Ethernet Switch as the Ring Master.	ON: Enables the default "Ring Coupling" ports.	ON: Activates DIP switches 1, 2, 3 to configure "Turbo Ring" settings.
	OFF: This Ethernet Switch will not be the Ring Master.	OFF: Do not use this Ethernet Switch as the ring coupler.	OFF: DIP switches 1, 2, 3 will be disabled.

"Turbo Ring V2" DIP Switch Settings

DIP 1	DIP 2	DIP 3	DIP 4
ON: Enables the default "Ring Coupling (backup)" port.	ON: Enables this Ethernet Switch as the Ring Master.	ON: Enables the default "Ring Coupling" port.	ON: Activates DIP switches 1, 2, 3 to configure "Turbo Ring V2" settings.
OFF: Enables the default "Ring Coupling (primary)" port.	OFF: This Ethernet Switch will not be the Ring Master.	OFF: Do not use this Ethernet Switch as a ring coupler.	OFF: DIP switches 1, 2, 3 will be disabled.

NOTE You must enable the Turbo Ring function first before using the DIP switch to active the Master and Coupler functions.

NOTE If you do not enable any of the IE-SW-PL08M switches to be the Ring Master, the Turbo Ring protocol will automatically choose the switch with the smallest MAC address range to be the Ring Master. If you accidentally enable more than one switch to be the Ring Master, these switches will auto-negotiate to determine which one will be the Ring Master.

LED Indicators

There are several LEDs on the Ethernet Switch front panel. The function of each LED is described in the following table.

LED	Color	State	Description

PWR1	AMBER	On	Power is being supplied to power input PWR1.
		Off	Power is not being supplied to power input PWR1.
PWR2	AMBER	On	Power is being supplied to power input PWR2.
		Off	Power is not being supplied to power input PWR2.
FAULT	RED	On	When (1) a relay warning event is triggered, (2) the switch is the Master of this Turbo Ring, and the Turbo Ring is broken, or (3) start-up failure.
		Off	When a relay warning event is not triggered.
MSTR/HEAD	GREEN	On	When the switch is set as the Master of the Turbo Ring, or as the Head of the Turbo Chain.
		Blinking	The switch has become the Ring Master of the Turbo Ring, or the Head of the Turbo Chain, after the Turbo Ring or the Turbo Chain is down.
		Off	When the switch is not the Master of this Turbo Ring or is set as the Member of the Turbo Chain.
CPLR/TAIL	GREEN	On	When the switch coupling function is enabled to form a back-up path, or when it's set as the Tail of the Turbo Chain.
		Blinking	When the Turbo Chain is down.
		Off	When the switch disables the coupling function, or is set as the Member of the Turbo Chain.
10M (TP)	GREEN	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.
100M (TP)	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.
100M (FX)	GREEN	On	FX port’s 100 Mbps is active.
		Blinking	Data is being transmitted at 100 Mbps.
		Off	FX port’s 100 Mbps is inactive.

Auto MDI/MDI-X Connection

The Auto MDI/MDI-X function allows users to connect the10/100BaseTX 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-PL08M switches to Ethernet devices.

Fiber Ports

The fiber ports are factory-built as either multi-mode or single-mode SC/ST connectors. Therefore, you should use fiber cables that have SC/ST connectors at both ends. When plugging the connector into the port, make sure the slider guide is positioned to the right side such that it fits snuggly into the port.

Specifications

Technology	
Standards	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X) and 100Base FX, IEEE 802.3x for Flow Control, IEEE 802.1D for Spanning Tree Protocol, IEEE 802.1w for Rapid STP, IEEE 802.1Q for VLAN Tagging, IEEE 802.1p for Class of Service, IEEE 802.1X for Authentication, IEEE 802.3ad for Port Trunk with LACP
Protocols	IGMPv1/v2, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, BootP, TFTP, SNTP, SMTP, RARP, GMRP, LACP, RMON, HTTP, HTTPS, Telnet, Syslog, DHCP Option 66/67/82, SSH, SNMP Inform, Modbus/TCP, LLDP, IEEE 1588 PTP, IPv6
MIB	MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1,2,3,9
Forwarding and Filtering Rate	148810 pps
Processing Type	Store and Forward
Flow Control	IEEE802.3x flow control, back pressure flow control
Interface	
RJ45 Ports	10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
Fiber Ports	100BaseFX ports (SC/ST connector)
Console	RS-232 (RJ45)
LED Indicators	PWR1, PWR2, FAULT, 10/100M (TP port), 100M (Fiber Port), MSTR/HEAD and CPLR/TAIL
Relay Contact	Two relay outputs with current carrying capacity of 1A @ 24 VDC
DIP Switches	Master, Coupler, Turbo Ring, Reserve
Digital Input	Two inputs with the same ground, but electrically isolated from the electronics • For state “1”: +13 to +30V • For state “0”: -30 to +3V • Max. input current: 8 mA

Optical Fiber

	Multi-mode	Single-mode
Wavelength	1300 nm	1310 nm
Max. Tx	-10 dBm	0 dBm
Min. Tx	-20 dBm	-5 dBm
Rx Sensitivity	-32 dBm	-34 dBm
Link Budget	12 dB	29 dB
Typical Distance	5 km (a) 4 km (b)	40 km (c)
Saturation	-6 dBm	-3 dBm
a. using [50/125 μm, 800 MHz*km] cable b. using [62.5/125 μm, 500 MHz*km] cable c. using [9/125 μm, 3.5 PS/(nm*km)] cable		

Power

Input Voltage	12 to 45 VDC, redundant inputs
Input Current (@24V)	IE-SW-PL08M-8TX: Max. 0.26A IE-SW-PL08M-6TX-2SC/ST/SCS: Max. 0.36A
Connection	Two removable 6-pin terminal blocks
Overload Current Protection	Present
Reverse Polarity Protection	Present

Mechanical

Casing	IP30 protection, metal case
Dimensions	80.5 × 135 × 105 mm (W × H × D)
Weight	1.040 kg
Installation	DIN-Rail, Wall Mounting

Environment

Operating Temperature	0 to 60°C (32 to 140°F) -40 to 75°C (-40 to 167°F) for -T models
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

Regulatory Approvals

Safety	UL60950-1, UL 508, CSA C22.2 No. 60950-1, EN60950-1
Hazardous Location	UL/cUL Class I, Division 2, Groups A, B, C, and D. ATEX Class I, Zone 2, Ex nC nL IIC T4
EMI	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), Level 2 EN61000-4-3 (RS), Level 3 EN61000-4-4 (EFT), Level 3 EN61000-4-5 (Surge), Level 3 EN61000-4-6 (CS), Level 3 EN61000-4-8 EN61000-4-11 EN61000-4-12

Shock	IEC60068-2-27
Freefall	IEC60068-2-32
Vibration	IEC60068-2-6

WARRANTY 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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