

Managed Fast Ethernet Switches Premium Line

IE-SW-PL08M Series (valid for product Rev. 2.0.0)

Hardware Installation Guide

Fifth Edition, July 2019
1243350000/04/07.19

Important note:

This document, the detailed user manual, additional product information, configuration tool and latest firmware can be downloaded using following link:

<http://www.weidmueller.com>

► Select **Product Catalogue**

- ⇒ Select „Industrial Ethernet active“
- ⇒ Select „PremiumLine managed Switches“
- ⇒ Select Product model
 - ⇒ Click and expand section „Downloads“
 - ⇒ Download needed software or documentation

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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 of IE-SW-PL08M series
- Hardware Installation Guide (printed)
- RJ45 to DB9 Console port cable
- Protective caps for unused ports

Optional Accessories (must be ordered separately)

- **EBR-MODULE RS232 Art.No.: 1241430000**
(External module for backing up and restoring the configuration via Switch's RS-232 Console Port)
- **RM-KIT Art.No.: 1241440000**
(Kit for 19"-rack mounting)
- **IE-WALLMOUNT-KIT-46MM Art.No.: 1504440000**
(Kit for wall mounting)



Brief Information for quick access to the Web interface

The Web interface of the managed Switch can be accessed via IP address 192.168.1.110 and subnet mask 255.255.255.0 (Factory default value).

Connect the PC to any port of the managed Switch and set the PC's IP address to a free one of range 192.168.1.0 / 255.255.255.0

Start a web browser and enter the IP address of the connected Switch into the browser's address line.

<http://192.168.1.110>

After the appearance of the login prompt, please enter following login data (factory settings):

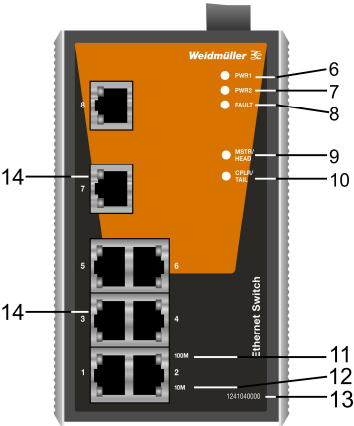
User name: **admin**
Password: **Detmold**

Note: The Web interface uses Java Runtime applets for displaying some Switch parameters. For this reason, your PC must have installed the Java Runtime Engine to be able to configure the Switch without any limitations.

For general settings of the Switch parameters please refer to the manual.

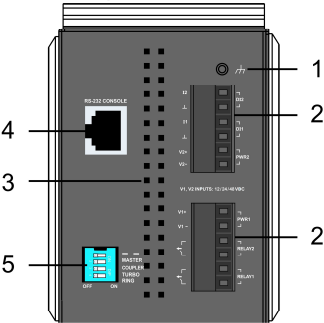
Panel Layout of IE-SW-PL08M(T)-8TX

IE-SW-PL08M(T)-8TX
Front Panel View



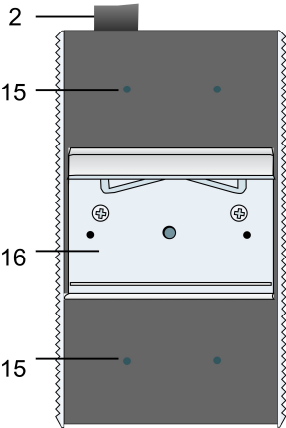
- 1. Grounding screw
- 2. Terminal block for power input
PWR1/PWR2 and relay output
- 3. Heat dissipation orifices
- 4. Console port
- 5. DIP switches
- 6. Power input PWR1 LED
- 7. Power input PWR2 LED
- 8. Fault LED
- 9. MSTR/HEAD: LED indicator
- 10. CPLR/TAIL: LED indicator
- 11. TP port's 100 Mbps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

Top Panel View



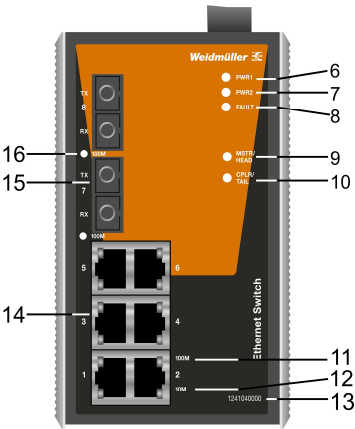
- 1. Screw hole for wall mounting kit
- 2. DIN-Rail kit

Rear Panel View



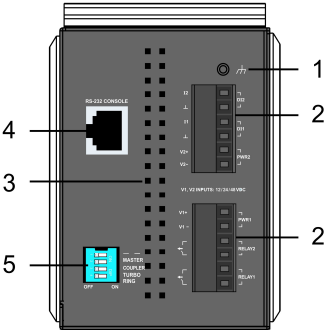
Panel Layout of IE-SW-PL08M(T)-6TX-2SC(S)

IE-SW-PL08M(T)-6TX-2SC
Front Panel View



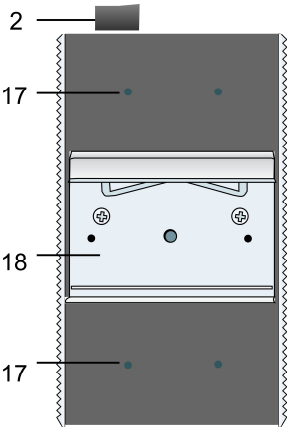
- 1. Grounding screw
- 2. Terminal block for power input PWR1/PWR2 and relay output
- 3. Heat dissipation orifices
- 4. Console port
- 5. DIP switches
- 6. Power input PWR1 LED
- 7. Power input PWR2 LED
- 8. Fault LED
- 9. MSTR/HEAD: LED indicator
- 10. CPLR/TAIL: LED indicator
- 11. TP port's 100 Mbps LED
- 12. TP port's 10 Mbps LED
- 13. Article Number

Top Panel View



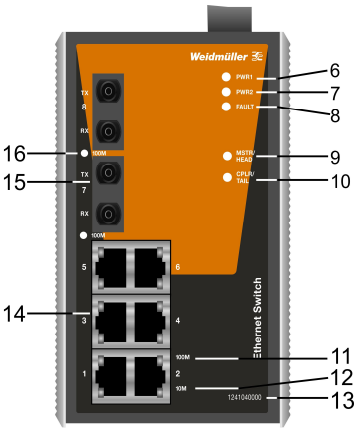
- 1. Grounding screw
- 2. Terminal block for power input PWR1/PWR2 and relay output
- 3. Heat dissipation orifices
- 4. Console port
- 5. DIP switches
- 6. Power input PWR1 LED
- 7. Power input PWR2 LED
- 8. Fault LED
- 9. MSTR/HEAD: LED indicator
- 10. CPLR/TAIL: LED indicator
- 11. TP port's 100 Mbps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

Rear Panel View



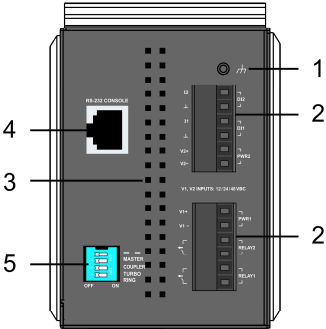
Panel Layout of IE-SW-PL08M(T)-6TX-2ST

IE-SW-PL08M(T)-6TX-2ST
Front Panel View



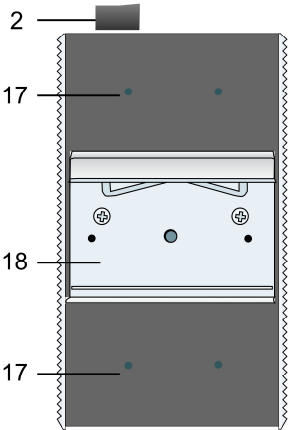
- 1. Grounding screw
- 2. Terminal block for power input
PWR1/PWR2 and relay output
- 3. Heat dissipation orifices
- 4. Console port
- 5. DIP switches
- 6. Power input PWR1 LED
- 7. Power input PWR2 LED
- 8. Fault LED
- 9. MSTR/HEAD: LED indicator
- 10. CPLR/TAIL: LED indicator
- 11. TP port's 100 Mbps LED
- 12. TP port's 10 Mbps LED
- 13. Article Number

Top Panel View

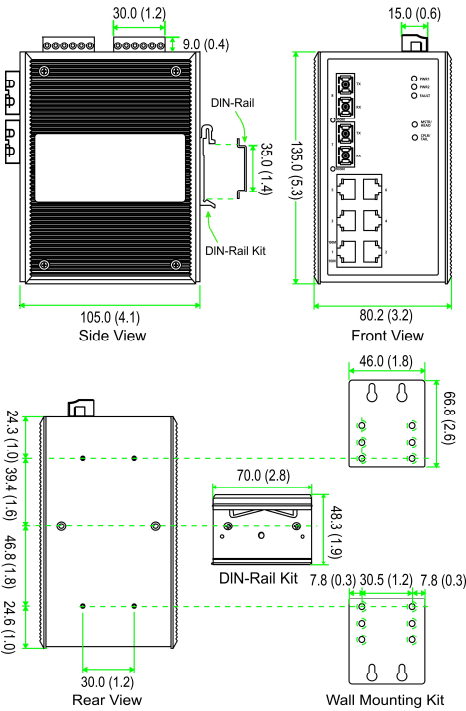


- 1. 10/100BaseT(X) ports
- 2. 100BaseFX ports
- 3. FX port's 100 Mbps LED
- 4. Screw hole for wall mounting kit
- 5. DIN-Rail kit

Rear Panel View



Mounting Dimensions (unit = mm)



DIN-Rail Mounting

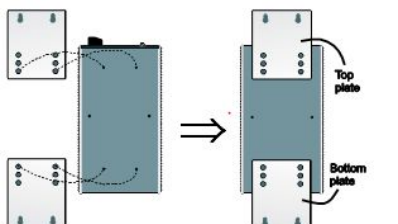
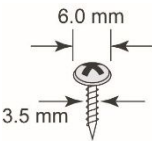
The aluminum DIN-Rail attachment plate should already be fixed to the back panel of the Ethernet Switch when you take it out of the box. If you need to reattach the DIN-Rail attachment plate, make sure the stiff metal spring is situated towards the top, as shown in the figures below.

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 below.
<p>Diagram showing the DIN-Rail being inserted into the slot below the metal spring.</p>	<p>Diagram showing the DIN-Rail attachment unit snapped into place.</p>

To remove the Ethernet Switch from the DIN-Rail, simply reverse Steps 1 and 2 above.

Wall Mounting (with optional kit)

For some applications, you will find it convenient to mount the Switch on the wall, as shown in the following figures.

STEP 1: Remove the aluminum DIN-Rail attachment plate from the switch's rear panel and then attach the wall mount plates as shown in the diagram at the right.	
STEP 2: Mounting the switch on the wall requires 4 screws. Use the switch, with wall mount plates attached, as a guide to mark the correct locations of the 4 screws. The heads of the screws should be less than 6.0 mm in diameter, and the shafts should be less than 3.5 mm in diameter, as shown in the figure at the right.	

NOTE Before tightening the screws into the wall, make sure the screw head and shank size are suitable by inserting the screw into one of the keyhole-shaped apertures of the wall mounting plates.

Do not screw the screws in completely—leave about 2 mm to allow room for sliding the wall mount panel between the wall and the screws.

STEP 3:
Once the screws are fixed on the wall, insert the four screw heads through the large parts of the keyhole-shaped apertures, and then slide the switch downwards, as indicated. Tighten the four screws for added stability.

ATEX Information



1. Certificate number DEMKO 19 ATEX 2220X
2. Ambient range: $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq 75^{\circ}\text{C}$ (models with suffix -T),
 $-10^{\circ}\text{C} \leq T_{\text{amb}} \leq 60^{\circ}\text{C}$ (models without suffix -T)
3. Certification string: Ex nA nC IIC T4 Gc
4. Standards covered:
EN 60079-0:2012+A11:2013, EN 60079-15:2010,
5. The conditions of safe usage:
 - The equipment shall only be used in an area of at least pollution degree 2, as defined in IEC/EN 60664-1.
 - The equipment shall be installed in an enclosure that provides a minimum ingress protection of IP 54 in accordance with IEC/EN 60079-0.

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 48 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

Be sure to 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.

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. A 4 mm² conductor must be used when connection to the external grounding screw is utilized.

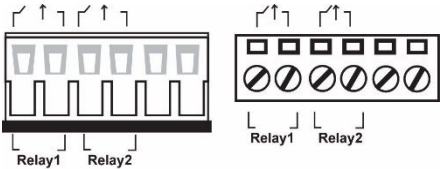


ATTENTION

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’s 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.



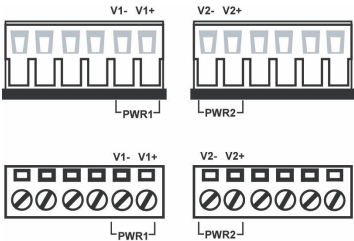
The fault circuit will open if:

- 1. A relay warning event is triggered, OR
- 2. The IE-SW-PL08M Switch is the Master of a 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 view of both terminal block connectors is 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.

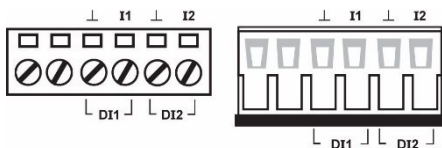


ATTENTION

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 switch 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's top panel. Top and front views of the terminal block connector are shown below.



Take the following steps to wire the digital inputs:

STEP 1: Insert the negative (ground)/positive DI wires into the \perp /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's top panel.

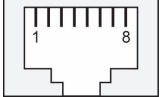
Communication Connections

The 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

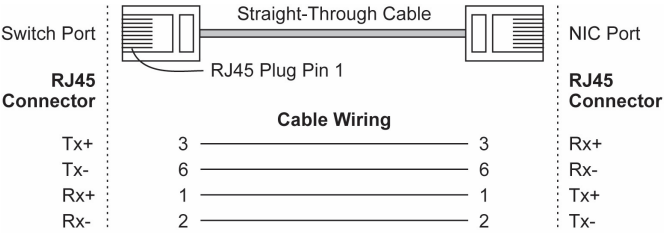
10/100BaseT(X) Ethernet Port Connection

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

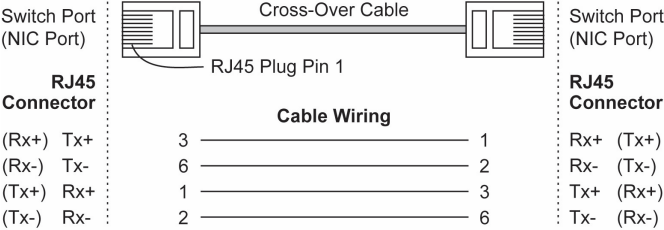
Next, we show pinouts for both MDI (NIC-type) ports and MDI-X (HUB/Switch-type) ports, and show cable wiring diagrams for straight-through and cross-over Ethernet cables.

MDI Port Pinouts		MDI-X Port Pinouts		8-pin RJ45
Pin	Signal	Pin	Signal	
1	Tx+	1	Rx+	
2	Tx-	2	Rx-	
3	Rx+	3	Tx+	
6	Rx-	6	Tx-	

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



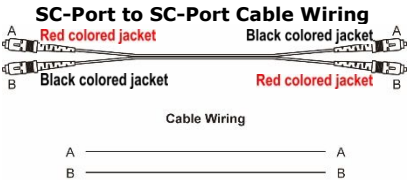
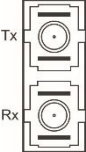
RJ45 (8-pin) to RJ45 (8-pin) Cross-Over Cable Wiring



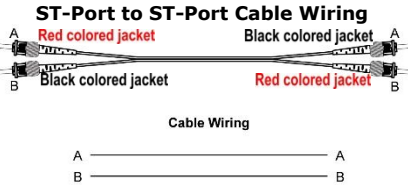
100BaseFX Ethernet Port Connection (Fiber)

Remember to connect the Tx (transmit) port of device 1 to the Rx (receive) port of device 2, and the Rx (receive) port of device 1 to the Tx (transmit) port of device 2. Fiber optic connections generally are using the full-duplex transmission mode.

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.

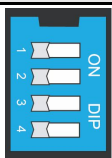
Turbo Ring DIP Switch Settings

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 the 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 detailed information about the settings and usage of **Turbo Ring** and **Turbo Ring V2**.

IE-SW-PL08M Series DIP Switches



MASTER
COUPLER
TURBO
RING

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

"Turbo Ring V2" DIP Switch Settings

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

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 to be the Ring Master. If you accidentally enable more than one IE-SW-PL08M switch to be the Ring Master, these switches will auto-negotiate to determine which one will be the Ring Master.

NOTE To switch on the Master or Coupler functions of the DIP switch, you must enable the Turbo Ring DIP Switch first.

LED Indicators

There are several LEDs on the Ethernet Switch's 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 a 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	When the Turbo Ring or Turbo Chain is broken or 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 broken
		Off	When the switch is not the Master of this Turbo Ring or is set as a Member of a Turbo Chain
CPLR/TAIL	GREEN	On	When the switch's coupling function is enabled to form a back-up path, or when it is set as the Tail of a Turbo Chain

		Blinking	When the Turbo Chain is down.
		Off	When the coupling function at the switch is disabled or is set as a Member of a Turbo Chain
10M (TP) Bottom LED of RJ-45 Port	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) Top LED of RJ-45 Port	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 link is active
		Blinking	Data is being transmitted at 100 Mbps.
		Off	FX port's 100 Mbps link is inactive.

Auto MDI/MDI-X Connection

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

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 Radius 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, LLDP, IEEE 1588 PTP, IPv6
Industrial Protocols	PROFINET/RT (PN-I/O device according to CC-B), EtherNet/IP, Modbus/TCP
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	148.810 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-Duplex 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 <ul style="list-style-type: none">• For state “1”: +13 to +30V• For state “0”: -30 to +3V• Max. input current: 8 mA			
Optical Fiber				
		100Base FX		
		Multi-mode	Single-mode	
Fiber Cable Type		OM1	50/125 μm 800 MHz*km	G.652
Typical Distance		4 km	5 km	40 km
Wavelength	Typical (nm)	1300		1310
	TX Range (nm)	1260 to 1360		1280 to 1340
	RX Range (nm)	1100 to 1600		1100 to 1600
Optical Power	TX Range (dBm)	-10 to -20		0 to -5
	RX Range (dBm)	-3 to -32		-3 to -34
	Link Budget (dB)	12		29
	Dispersion Penalty (dB)	3		1
Note: When connecting single-mode fiber over a short distance, we recommend putting an attenuator to prevent the transceiver from being damaged by excessive optical power.				
Typical Distance: To reach the typical distance of a specified fiber transceiver, please refer to the following formula: Link budget(dB) > dispersion penalty(dB) + total link loss(dB).				

Power	
Input Voltage	12/24/48 V DC, 2 redundant inputs
Input Current (@ 24 V)	IE-SW-PL08M(T)-8TX: max. 0.22 A IE-SW-PL08M(T)-6TX-2SC/2ST/2SCS: max. 0.3 A
Rating	12/24/48 VDC, 0.62/0.3/0.16 A Relay output 24 VDC/1 A (Resistive), Class 2
Connection	Two removable 6-pin terminal blocks
Overload Current Protection	Present
Reverse Polarity Protection	Present
Mechanical	
Housing	Metal, IP30 protected
Dimensions	80.5 × 135 × 105 mm (W × H × D)
Weight	1.04 kg
Installation	DIN-Rail, Wall Mounting (optional kit)
Environment	
Operating Temperature	Standard models: -10 to 60°C (14 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	
Safety	UL60950-1, UL 508, EN60950-1 (LVD)
Hazardous Location	UL/cUL Class I, Division 2, Groups A, B, C, and D ATEX Zone 2: EN 60079-0:2012+A11:2013 EN 60079-15:2010
EMC	EN 55032/24; CISPR 32, FCC Part 15B Class A IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Shock	IEC60068-2-27
Freefall	IEC60068-2-31
Vibration	IEC60068-2-6
MTBF (mean time between failures)	
Time	1,105,486 hrs (IE-SW-PL08M(T)-8TX) 1,043,909 hrs (IE-SW-PL08M(T)-6TX-2SC/2ST/2SCS)
Database	Telcordia (Bellcore), GB
WARRANTY	
Time Period	5 years

**WARNING**

This equipment is intended to be used in a restricted access location.

HOT SURFACE!! Before touching it, special attention or protection is required.

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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