Weidmüller

Hardware installation guide

IEC 61850-3 Managed Fast/Gigabit Ethernet Switch

IE-SW-SL10M-7TX-3GC-HV (2778950000)
IE-SW-SL10M-7TX-3GC-LV (2778960000)

1. Introduction

Weidmüller Ethernet switches are designed for industrial applications and fitted with a robust housing. To ensure reliable, error-free operation, and to prevent damage or injury, please read the operating instructions, all safety information provided in this document and any other safety information that were supplied with the product.

2. Safety notes

The device heats up during operation. Allow the unit to cool down or use protection gloves when carrying out any work.

The device may only be connected to the supply voltage shown on the product label. Higher voltage than specified will destroy the device.
The device must be supplied by a SELV source as defined in the Low Voltage Directive 2014/35/EU and 2014/30/EU.

Installation, commissioning and maintenance may only be performed by qualified electricians.

Observe the operating instructions.

- Indoor use and pollution degree II, it must be wiped with a dry cloth for clean up the device and label.
- Do not block air ventilation holes.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- Shall be mounted in the industrial control panel and ambient temperature is not exceed 85 °C.

- Utilisation en intérieur et degré de pollution II, il faut l'essuyer avec un chiffon sec pour nettoyer l'appareil et son étiquette.
- Ne bouchez pas les orifices de ventilation.
- Si l'appareil est utilise d'une maniere non specifiee par le fabricant, la protection qu'il apporte peut se voir diminuee.
- Doit être monté dans le panneau de commande industriel et la température ambiante ne doit pas dépasser 85 °C.

Intended use

The device is intended for the realisation of communication networks within an industrial environment. The device may only be used within the scope of the specified technical data. The device is intended to be mounted to a well-grounded mounting surface, such as a metal panel. Any other use may result in unintentional malfunction and damage. Observing the documentation is part of the intended use.

Environmental conditions

This equipment is intended to be used in a restricted access location.
When planning the installation site make sure that the ambient temperature during operation will not exceed the temperature given in the technical data. Also make sure that the air flow will not be compromised by other devices. Ensure that the mounted and wired device is not exposed to any mechanical stress.

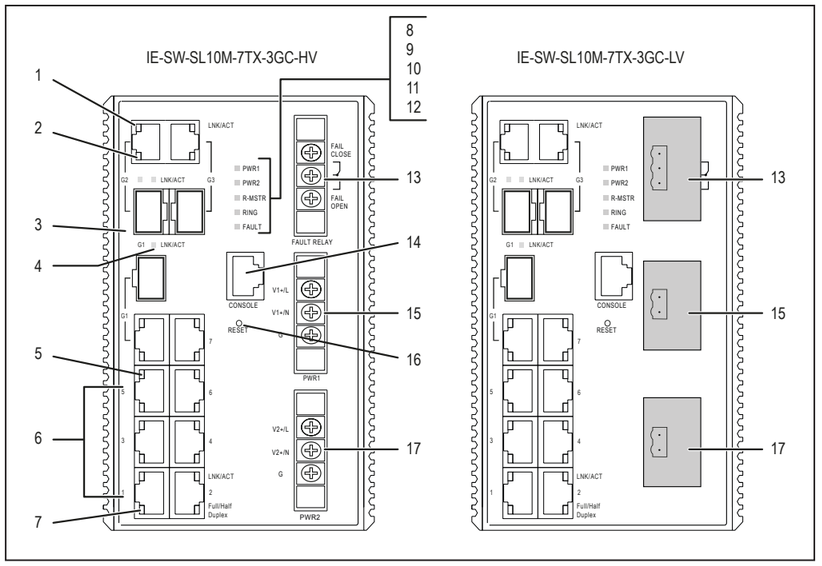
FCC compliance

This device complies with part 15 of FCC Rules. 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.

3. Package checklist

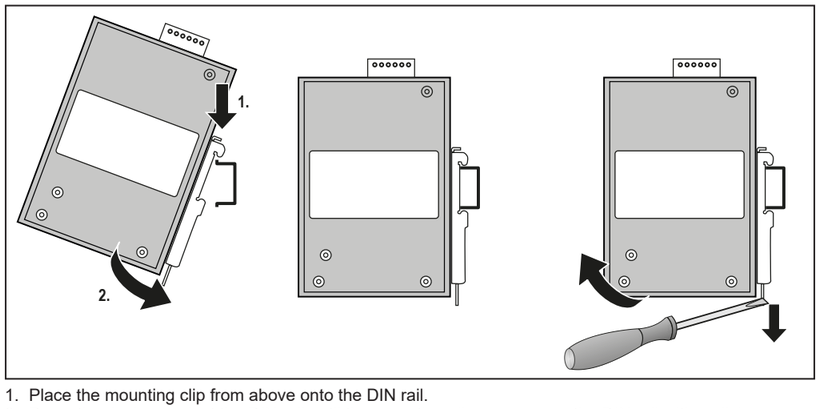
The Ethernet switch is delivered with three terminal connectors (Power supply 1, Power supply 2 and Failure relay) and protective caps for RJ45 ports and SFP ports. Additionally, each Ethernet switch is shipped with the following items:
- Hardware installation guide (printed)
- Serial console cable
- Leaflet for China RoHS Declaration (printed)

4. Panel layout



1 Link/Activity LED 10/100/1000BASE-T(X) ports
2 Port speed LED 10/100/1000BASE-T(X) ports
3 3 x 100/1000BaseSFP ports
4 Link/Activity LEDs for Gigabit Combo ports G1/G2/G3 (for an inserted SFP transceiver)
5 Link/Activity LED 10/100Base-T(X) ports
6 7 x 10/100BASE-T(X) ports
7 Duplex mode LED 10/100Base-T(X) ports (Amber = Full Duplex, OFF=Half Duplex, Off = Collisions)
8 Power input 1 LED (PWR1)
9 Power input 2 LED (PWR2)
10 Ring master status LED
11 Ring status LED
12 Fault LED (PWR1/PWR2 fault or port link loss)
13 Terminal block for failure relay
14 Serial console port (RS232)
15 Terminal block for power input 1
16 Reset button
17 Terminal block for power input 2

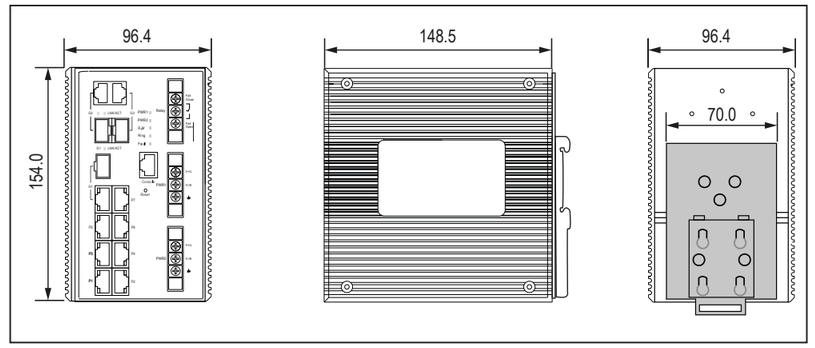
5. DIN rail mounting



1. Place the mounting clip from above onto the DIN rail.
2. Press the device against the DIN rail until the mounting clip engages on the DIN rail with a click.

► To remove the Ethernet switch from the DIN rail pull down the latch with a screwdriver then move the device away from the DIN rail and lift it up.

6. Mounting dimensions [mm]



7. Grounding

ATTENTION

- Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI).
- Run the ground connection from the ground screw (or from the ground pin of the power supply terminal blocks in IE-SW-SL10M-7TX-3GC-HV model) to the grounding surface prior to connecting devices.
- This product is intended to be mounted to a well-grounded mounting surface, such as a metal panel.
- The shielding ground of the RJ45 ports are electrically connected to the ground connection (screw).

8. Wiring redundant power supply and fault alarm relay

The switch has redundant power supply modules and provides a fault alarm relay for detecting the user-configurable failure events
- Interruption of Power 1 or Power 2
- Link loss of Ethernet ports.

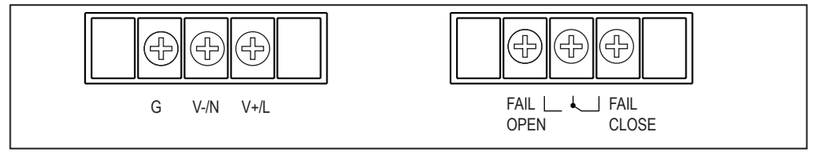
In the IE-SW-SL10M-7TX-3GC-HV model, the connectors are protected with a transparent cover that has to be removed before wiring. After wiring is completed, this cover has to be put back to the connectors.

Warning

- Take into consideration the following guidelines before wiring the device
- Terminal block is suitable for 12-24AWG.
- The temperature rating of the input connection cable should be higher than 105 °C.

Avertissement

- Tenez compte des directrices suivantes avant de câbler l'appareil.
- Le bornier est convient pour 12-24AWG.
- La température de service nominale du câble d'entrée doit être supérieure à 105 °C.



Behaviour of the failure relay

- Relay contact is connected between COMMON and FAIL CLOSE if the device is powered off.
- Relay contact is connected between COMMON and FAIL OPEN if the device is powered on and no alarm conditions exist (neither Power Failure Alarms nor Port Link Loss Alarms are activated, see web menu Warnings/Fault Relay Alarm).
- Relay contact is connected between COMMON and FAIL CLOSE if any of an activated alarm condition happens.

9. Communication connections

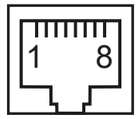
The Ethernet switch is equipped with following communication interfaces:
– 7 x 10/100BASE-T(X) ports
– 3 x Ethernet combo ports, that can be used either as 10/100/1000BASE-T(X) ports or alternatively as 100/1000BASE-X ports with respective SFP transceivers

Please only use cables suitable for the respective type of communication and ensure that signals are protected from possible interference.

9.1 10/100BASE-T(X) RJ45 ports

The 10/100BaseT(X) ports located on the front panel are used to connect to Ethernet-enabled devices. The following table shows pinouts for both MDI ports (NIC-type) and MDI-X ports (HUB/Switch-type). Auto MDI-X ensures that both wiring-schemes are supported (automatic crossover function).

10/100BASE-T(X) RJ45 pinouts

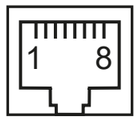
MDI port pinouts		MDI-X port pinouts		8-pin RJ45
Pin	Signal	Pin	Signal	
1	Tx+	1	Rx+	
2	Tx-	2	Rx-	
3	Rx+	3	Tx+	
6	Rx-	6	Tx-	

9.2 Combo ports

The Ethernet switch is equipped with combo ports that can be used either as 10/100/1000Base-T(X) ports with RJ45 connector or with optional SFP transceivers (mini GBIC) for 100/1000Base-X (e.g. for connections with fiber optic technology over long distances). For correct function, please note that only one function of a combo port may be used and connected at a time. The RJ45 port can only be used if no SFP module is plugged in.

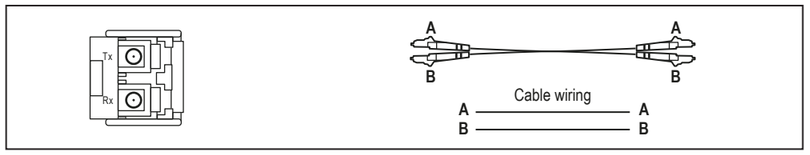
1000BASE-T Ethernet port connection

1000BASE-T data is transmitted on differential TRD+/- signal pairs over copper wires.

Pin	Signal	
1	TRD(0)+	
2	TRD(0)-	
3	TRD(1)+	
4	TRD(2)+	
5	TRD(2)-	
6	TRD(1)-	
7	TRD(3)+	
8	TRD(3)-	

100/1000BASE-X SFP fiber optic port

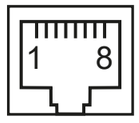
The 100/1000BaseSFP type slots require either a 100BaseSFP or a 1000BaseSFP fiber transceiver (mini-GBIC) to work properly. Please only use SFP modules and cables that are compatible with each other to establish an optical connection.



For a LC-Port with separate transmit and receive ports please 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.

9.3 RS232 console port

The RS232 interface with RJ45 connector can be used to access the switch console for configuration.

Pin	Pin assignment	Communication parameters	8-pin RJ45
1	not assigned	Baud rate: 9600 bps	
2	RxD	Data bit: 8	
3	TxD	Parity: No	
5	GND	Stop bit: 1	
4, 6 ... 8	not assigned	Flow control: No	

10. User management

10.1 Device access (login to web interface)

The web interface of the switch can be accessed via following factory default settings:

IP address / Netmask: 192.168.1.110 / 255.255.255.0
User name: admin
Password: Detmold

► Connect the PC to any Ethernet 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 prompt (login) enter the login credentials.
► Confirm your input with **OK**.
The home page of the switch will be displayed.

For detailed information about configuration and use of the device features please regard the manual.
The manual is available to download from the Weidmüller website: Product catalogue/Automation & Software/Industrial Ethernet/Substation Line managed Switches/Select Product/Click and expand section „Downloads"/Download needed software or documentation.

10.2 Reset button

► To reboot the switch (warm start), press the reset button for 2 to 3 seconds.
► To reset the switch to factory default settings, press the reset button for more than 5 seconds.

11. LED indicators

The following table describes the functions of the LED indicators at the front panel.

LED	Color	Status	Description
PWR1	Green	On	Power supplied to power input PWR1.
PWR2	Green	On	Power supplied to power input PWR2.
R-MSTR (ring master)	Green	On	Is ring master of an enabled O-Ring.
RING	Green	On	O-Ring redundancy is enabled.
		Blinking	Ring structure is broken (no redundancy).
FAULT	Amber	On	Fault relay indication for power failure and port link loss.
LNK/ACT Ports 1 - 7	Green	On	Port's link is active.
		Off	Port's link is inactive.
		Blinking	Data is transmitted.
Full / Half Duplex Ports 1 - 7	Amber	On	Port is set to Full Duplex Mode.
		Off	Port is set to Half Duplex Mode.
		Blinking	Packet collisions detected.
LNK/ACT RJ45 combo port G1-G3	Green	On	Port's link is active.
		Off	Port's link is inactive.
10/100/1000M RJ45 combo ports G1-G3	Amber	On	Port speed is 100 Mbps
		Off	Port speed is 10 or 1000 Mbps
LNK/ACT 100/ 1000Base-X combo ports G1-G3	Green	On	Port's fiber link is active.
		Off	Port's fiber link is inactive.

12. Disposal

Observe the notes for proper disposal of the product. You can find the notes here: www.weidmueller.com/disposal.

13. Specifications

Technology		
Ethernet standards	IEEE 802.3 for 10BASE-T IEEE 802.3u for 100BASE-TX and 100BASE-FX IEEE 802.3ab for 1000BASE-T IEEE 802.3z for 1000BASE-X IEEE 802.3x for flow control IEEE 802.3ad for port trunk with LACP IEEE 802.1D for STP (Spanning Tree protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1X for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
Processing type	Store-and-forward	
MAC address table size	8K	
Backplane bandwidth	7.4 Gbps	
Interfaces		
RJ45 ports	7 x 10/100BASE-T(X) auto negotiation speed, F/H duplex mode and auto MDI/MDI-X connection	
Combo ports (RJ45/SFP)	3 x 10/100/1000BaseT(X) or 100/1000BaseSFP	
RS232 ponsole port	RS232 Interface with RJ45 connector for console access	
LED indicators	PWR1, PWR2 (Power), Fault (Relay), Ring Master, Ring Status, Port Link/Activity/Speed, Port Full/Half Duplex Mode	
Relay contact	3-pin connector, max. 1 A @ 24 V DC	
Power supply	**IE-SW-SL10M-7TX-3GC-LV**	**IE-SW-SL10M-7TX-3GC-HV**
Input voltage	12 ... 52 V DC	88 ... 373 V DC, 85 ... 264 V AC
Power consumption (max.)	10 W	12 W
Connection	Clamping yoke connection (2-pin), Wiring cable 12 ... 24AWG	Fork/Ring lug connection (3-pin), Wiring cable 12 ... 24AWG
Overload current protection	Yes	
Reverse polarity protection	Yes	
Physical characteristics	**IE-SW-SL10M-7TX-3GC-LV**	**IE-SW-SL10M-7TX-3GC-HV**
Housing	IP30 protection, metal	
Dimensions (W x H x D)	96.4 x 154.0 x 148.5 mm (3.80 x 6.06 x 5.85 inch)	
Weight	1415 g	1935 g
Installation	DIN-rail	
Environmental conditions		
Operating temperature	-40 ... 85 °C (-40 ... 185 °F)	
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)	
Ambient relative humidity	5 ... 95 % (non-condensing)	
Operating altitude	Up to 2000 m	
Regulatory approvals		
Power T&D	IEC 61850-3	
EMC	FCC Part 15 Subpart B, CISPR 22 Class A, IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV, IEC 61000-4-3 RS: 80 MHz to 1 Ghz: 10 V/m, IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV, IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV, IEC 61000-4-6 CS: 10 Vrms	
Shock	IEC 60870-2-2 class Cm	
Free fall	IEC 60870-2-2 class Cm	
Vibration	IEC 60870-2-2 class Cm 62368-1	
Safety	EN 62368-1	
MTBF	**IE-SW-SL10M-7TX-3GC-LV**	**IE-SW-SL10M-7TX-3GC-HV**
Time	528,570 hrs	599,113 hrs
Database	Telcordia SR332	
Warranty		
Time period	5 years	

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