Weidmüller

# Hardware installation guide

# IEC 61850-3 Managed Fast/Gigabit Ethernet Switch

**IE-SW-SL28M-HV (2779010000)**
**IE-SW-SL28M-LV (2779020000)**
**IE-SW-L3-SL28M-HV (2875580000)**
**IE-SW-L3-SL28M-LV (2875590000)**

## 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.

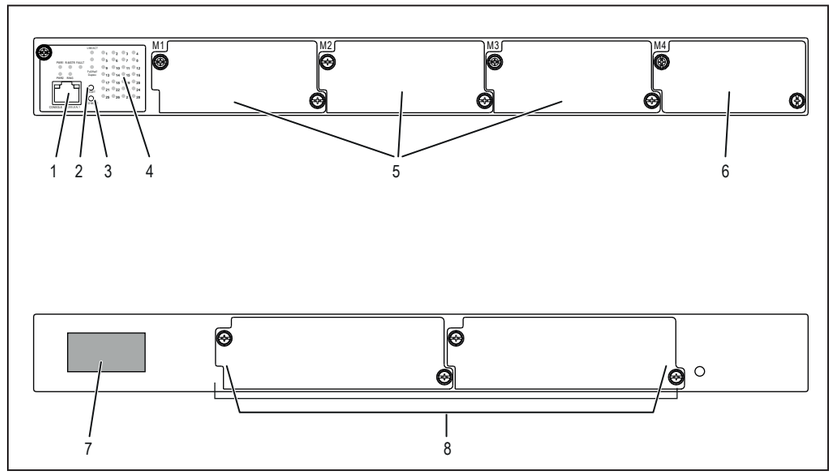
### FCC compliance

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 mounting brackets for a 19" rack. 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



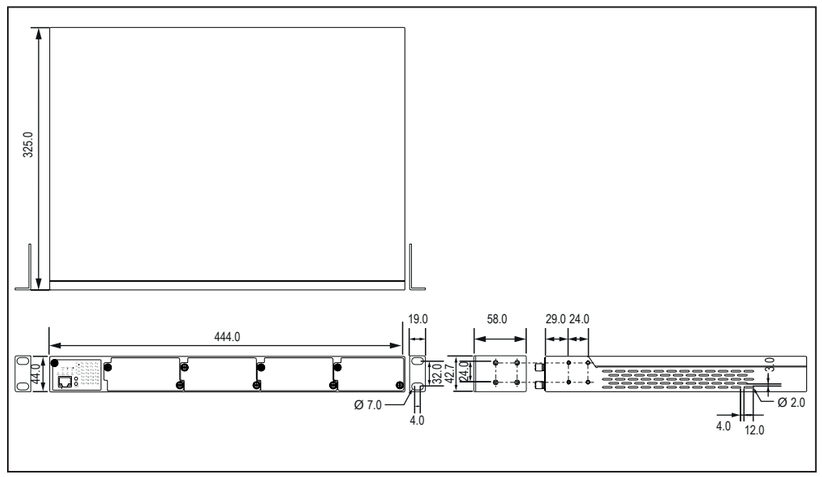

1 Serial console port (RS232)
2 Reset button
3 LED MODE button
4 Port status LEDs (1 – 28)
5 Slots 1 – 3 for interface modules
6 Slot 4 for interface module
7 Terminal block (power input 1, power input 2 and failure relay)
8 Slots for power input modules

## 5. 19" Rack mounting

The Ethernet switch is delivered with the mounting brackets installed in the opposite side of the power connector. With this arrangement, all the data ports will be located on the front side when the Ethernet switch is installed in the 19" rack.

► If you want the data ports of the Ethernet switch be located on the rear side, remove the mounting brackets and install them at the reverse side of the device, using the same 4 screws.
► Once the brackets are installed in the preferred side, orientate them in front of the rack and fasten the brackets to the rack using two screws.

## 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 pins of the power connector 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.

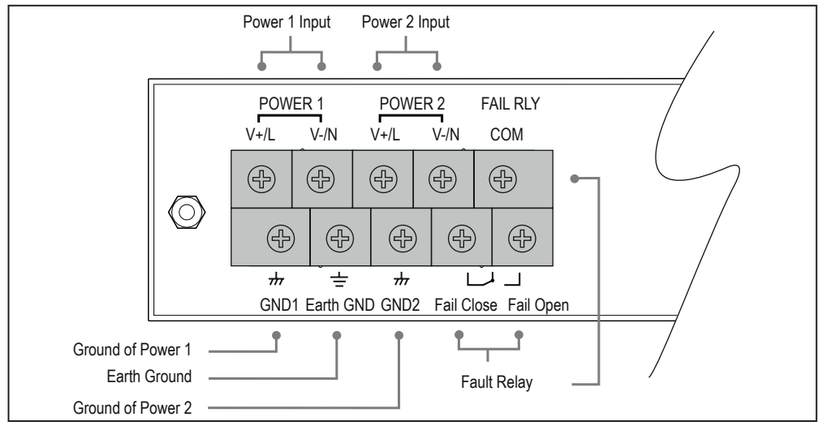
The terminal block is protected with a transparent cover that has to be removed before wiring. After wiring is completed, this cover has to be put back to the terminal block.

### 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 a modular device with four available slots where different interface modules can be installed.
Slots 1, 2 and 3 can allocate modules with Fast/Gigabit Ethernet interfaces whilst slot 4 can be equipped with a Gigabit/10Gigabit interface module.

The interface modules for slots 1, 2 and 3 have a different connector than interface modules for slot 4. Remove the connector's protective plastic cover before inserting any interface module in the Ethernet switch.

In total, there are ten interface modules available. For more detailed information about the communication interface of each module, please read the respective data sheet that is available to download from Weidmüller website (Product catalogue/Automation & Software/Industrial Ethernet/Substation Line managed Switches/Select Module).

## 9.1 Interface modules for slots 1, 2 and 3

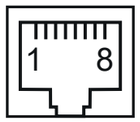
The slots 1, 2 and 3 of the switch can allocate any of the following modules:
– IE-SWM-SL08-8GT (2779140000): 8 x 10/100/1000BaseT(X) ports
– IE-SWM-SL08-8GESFP (2779150000): 8 x 100/1000BaseSFP ports
– IE-SWM-SL04-4SCS (2779160000): 4 x 100Base-FX ports (single-mode fiber/SC connector)
– IE-SWM-SL04-4SC (2779170000): 4 x 100Base-FX ports (multi-mode fiber/SC connector)
– IE-SWM-SL04-4STS (2779180000): 4 x 100Base-FX ports (single-mode fiber/ST connector)
– IE-SWM-SL04-4ST (2779190000): 4 x 100Base-FX ports (multi-mode fiber/ST connector)
– IE-SWM-SL02-2GC-PRP/HSR (2985050000): 2 x Gigabit combo-ports with PRP/HSR RedBox

## 9.2 Interface modules for slot 4

The slot 4 of the switch can allocate any of the following modules:
– IE-SWM-SL04-4GESFP (2779200000): 4 x 1000BaseSFP ports
– IE-SWM-SL02-2GESFP+ (2779210000): 2 x 10GBaseSFP+ ports
– IE-SWM-SL04-4GESFP+ (2779220000): 4 x 10GBaseSFP+ ports

## 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: 115200 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 Rebooting or resetting the switch

The behaviour of the reset button can be configured in the web interface (menu **Factory Default**). The default setting acts as described here.

► To reboot the switch (warm start) and set the IP to factory default IP, press the reset button for less than 5 seconds.
► To reset the switch configuration 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/Amber | Green | Power supplied to power input PWR1 |
| | | Amber | Power supplied to power input PWR2 and not to power input PWR1 |
| PWR2 | Green/Amber | Green | Power supplied to power input PWR2 |
| | | Amber | Power supplied to power input PWR1 and not 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 | Red | On | Fault relay indication for power failure and port link loss |
| LNK/ACT | Green | On | LEDs 1 to 28 indicate port activity |
| 10/100/1000/10000M | Green | On | LEDs 1 to 28 indicate port speed |
| Full/Half Duplex | Green | On | LEDs 1 to 28 indicate Full/Half Duplex Mode |
| 1 to 28 in LNK/ACT mode | Green | On | Port link is active |
| | | Off | Port link is inactive |
| | | Blinking | Data is transmitted |
| 1 to 28 in 10/100/1000/10000M mode | Green/Amber | Green | Port speed is set to 1000 or 10000 Mbps |
| | | Amber | Port speed is set to 10 or 100 Mbps |
| 1 to 28 in Full/Half Duplex mode | Green/Amber | Green | Port is set to Full Duplex Mode |
| | | Amber | Port is set to Half Duplex Mode |

The operation of LEDs 1 to 28 is programmed with the LED MODE button at the front panel (LNK/ACT, 10/100/1000/10000M or Full/Half Duplex). By default, the LEDs are programmed in LNK/ACT mode.

# 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<br>IEEE 802.3u for 100BASE-TX and 100BASE-FX<br>IEEE 802.3ab for 1000BASE-T<br>IEEE 802.3z for 1000BASE-X<br>IEEE 802.3ae for 10Gigabit Ethernet<br>IEEE 802.3x for flow control<br>IEEE 802.3ad for port trunk with LACP<br>IEEE 802.1D for STP (Spanning Tree protocol)<br>IEEE 802.1w for RSTP (Rapid Spanning Tree protocol)<br>IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol)<br>IEEE 802.1p for Class of Service<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1X for Authentication<br>IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) | |
| **Interfaces** | | |
| Slots 1, 2 and 3 | See section 9.1 | |
| Slot 4 | See section 9.2 | |
| RS232 console port | RS232 Interface with RJ45 connector for console access | |
| LED indicators | PWR1, PWR2 (Power), Fault (Relay), Ring Master, Ring Status, Port Link/Activity/Speed, , Full/Half duplex and Speed | |
| Relay contact | max. 1 A @ 24 V DC | |
| **Power supply** | **... -LV** | **... -HV** |
| Input voltage | 24 ... 72 V DC | 100 ... 370 V DC, 100 ... 240 V AC |
| Power consumption (max.) | 40 W | 41 W |
| Connection | Fork/ring lug connection, wiring cable 12 ... 24AWG | |
| Overload current protection | Yes | |
| Reverse polarity protection | Yes | |
| **Physical characteristics** | **... -LV** | **... -HV** |
| Housing | IP30 protection, metal | |
| Dimensions (W x H x D) | 440.0 x 44.0 x 325.0 mm (17.32 x 1.73 x 12.80 inch) | |
| Weight | 6450 g | 6600 g |
| Installation | 19" Rack | |
| **Environmental conditions** | | |
| Operating temperature | -40 ... 85 °C (-40 ... 185 °F) -20 ... 60 °C (-4 ... 140 °F) if 10G SFP+ used | |
| 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, IEEE 1613 | |
| EMC | FCC Part 15 Subpart B, CISPR 22 Class A,<br>IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV,<br>IEC 61000-4-3 RS: 80 MHz to 1 Ghz: 10 V/m,<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV,<br>IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV,<br>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 | |
| Safety | EN 62368-1 | |
| **MTBF** | **... -LV** | **... -HV** |
| Time | 608,907 hrs<br>246,537 hrs (worst combination interface modules) | 647,420 hrs<br>316,958 hrs (worst combination interface modules) |
| Database | Telcordia SR332 | |
| **Warranty** | | |
| Time period | 5 years | |

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