

Introduction

Gigabit Performance

With Gigabit Ethernet Switches your system is already equipped for future bandwidth requirements in the workplace. The full Gigabit Ethernet performance is supported on the optical fibre uplink as well as on the local copper ports.

Integrated Power-over-Ethernet

With the Power-over-Ethernet (PoE) Standard IEEE 802.3af end devices (e.g. VoIP telephones) can be supplied with data as well as power through the connected Twisted-Pair cable which means you don't need an external power supply.

Simple installation

Thanks to snap-in installation which doesn't require any tools the switch can be installed quickly and easily. This system, which is the most compact available, also ensures compatibility with standard international installation systems.

Comprehensive management

The integrated management agent enables full configuration, monitoring and management of all devices in the network via a powerful software package called MICROSENS Device Manager. Extended functions such as VLANs, data prioritisation (QoS) and Power-over-Ethernet can be specifically assigned.

See also document entitled '*MICROSENS Network Management Specifications*'

Features

- **Gigabit Switch**
Fanless Gigabit Ethernet 10/100/1000 MBit/s installation switch in accordance with IEEE 802.3u Layer-2 non-blocking switch, wire-speed forwarding, store-and-forward, max. 1024 MAC addresses, auto-learning and aging, Full Duplex Frame in accordance with IEEE 802.3x.
- **45x45 Design**
Simple snap-in installation with (no screw fixing) in under-window ducts, under-floor ducts, surface housing, cavity walls and table housings, compact dimensions
- **Power Management**
48 V direct voltage for switch and PoE, unused ports are deactivated to reduce energy consumption, maximum power draw of switch 8 W (not including PoE supply), PoE supply maximum 61.6 W (4x 15.4 W).
- **Connections**
4x 10/100/1000Base-TX (RJ-45) with PoE, auto negotiation to identify speed 10/100/1000 MBit/s and semi or full duplex operation, auto crossover for automatic adaptation of the pin configuration to the connected cable for uniform cabling. 1x 1000Base-SX/LX SC or ST duplex for multi-mode or mono-mode optical fibre.

Technical Specifications

Type	Gigabit Ethernet installation switch 45x45 4 Ports 10/100/1000Base-TX with PoE, 1 Port 1000Base-X in accordance with IEEE 802.3 for cable duct/under-floor duct installation
Connections	4x local port 10/100/1000Base-T, RJ-45, PoE 1x Uplink Port 1000Base-SXLX, SC or ST duplex for Multimode or Single Mode optical fibres 1x power supply terminal 48V DC, max 70 W.
Displays	LED display field for local ports <i>Link Status</i> <i>PoE Status</i> for switch <i>Power, Switch Status, Uplink Status</i>
Cable type	STP cable, 100 Ohms, category 5 with RJ-45 plug
Max. cable length	100 m (Twisted-Pair)
Power-over-Ethernet	Integrated controller in accordance with IEEE 802.3af, max. 15.4 W per port
Data Transmission Rate	TP: 10/100, 1000 Mbps FX: 1000 Mbps
Optical Fiber Type	Multimode Optical Fiber 50 or 62.5/125 µm, duplex, ST- or SC-Connector Optional: 9/125 µm single mode Optical Fiber
Multimode	Wavelength: 850 nm Optical Output Power: -10 dBm Sensitivity: -20 dBm Max. Transmission Distance: 550 m (50 µm fiber)*, full duplex
Single mode	Wavelength: 1310 nm Optical Output Power: -8 dBm Sensitivity: -22 dBm Max. Transmission Distance: 10 km*, full duplex
Power Supply	Direct voltage 48VDC (44..57 V) ,max. 8 W for Switch plus max. 4x 15.4 W for supplying connected PoE end devices
Management	Integrated Management Controller
Operating Temperature	0°C to 40°C
Storage Temperature	-20°C to 85°C
Relative Humidity	5% to 80%, non condensing

*Lengths shown are based on the assumption of typical fibre damping and cannot be guaranteed.

System Components

Two versions of the installation switch are available - for horizontal or vertical installation. A modular design was deliberately for both of the installation options:

- Lower costs for procurement and installation
- Robust and durable design thanks to self-enclosed device, easy handling
- Gigabit connections are directly contacted in the device, which allows short, electrical pathways (EMC) and minimises error-proneness

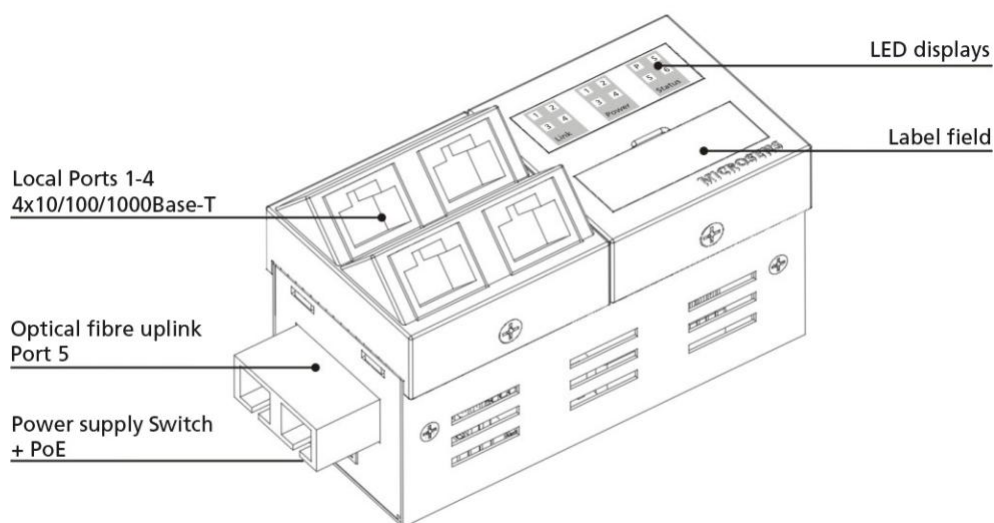


Fig. 1: Horizontal version of Gigabit Ethernet Installation Switch

Resetting the Switch and IP Configuration

The switch can be operated directly using hidden buttons. The buttons are located under the label field on the front of the switch (see Fig. 3).

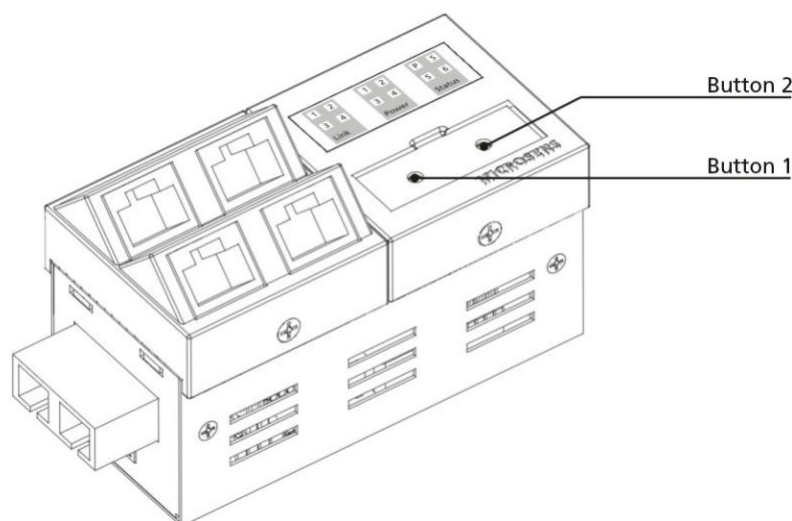


Fig. 2: Position of the Reset buttons (horizontal installation version)

Button 1: Hardware reset:

The device can be reset by briefly pressing Button 1. The reset is carried out by the hardware (cold start). When it is restarted the last configuration saved in the device will be loaded. The IP address and device name will remain unchanged.

NOTE: During the reset the data transfer via the switch is temporarily interrupted.

Button 2: IP configuration / Resetting to factory settings

Button 2 has a dual function, depending on the type of activation:

IP configuration

By pressing Button 2 for at least 3 seconds (until the Status LED starts flashing yellow) an IP configuration query is triggered for the switch. Using a computer within the same Ethernet segment with MICROSENS Device Manager Software that has already been launched the IP address and the device name can now be assigned manually.

Resetting to factory settings

If Button 2 is held down during hardware reset (by briefly pressing Button 1), the configuration of the switches is reset to the factory settings. The IP configuration of the switch remains unchanged. Button 2 has to be held down, until the switch reset cycle has been completed.

LED displays

A total of twelve LEDs are used to display the operating status of the Gigabit Ethernet installation switches.

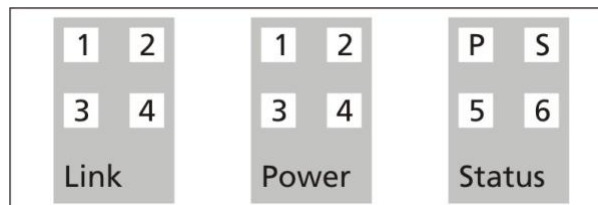


Figure 3: LED displays

Link Status

LED	Meaning	Function		
Link	Link Status	Colour	Status	Description
1,2,3,4			Off	No link to port
		Green	static	Link to port
		Green	flashing	Data transfer to port

Power-over-Ethernet

Power	PoE Status	Colour	Status	Description
1,2,3,4		–	Off	PoE function deactivated
		Green	Static	PoE function active
		Orange	Static	Connected PD is supplied with PoE
				PoE function active
				No PD identified
		Red	Static	PoE function active
				Port locked by Power Management

Switch Status

P	Power	Colour	Status	Description
		–	Off	Device deactivated
		Green	static	Device fully operational
S	Switch Status	–	off	Device in normal operating condition
		Orange	static	Reset sequence is carried out
		Orange	flashing	IP configuration is triggered
		Green	flashing	Restoration to factory settings carried out
5	Uplink Status	–	off	No link to port
		Green	static	Logical link to uplink port (Auto negotiation completed)
		Green	flashing	Date transfer to port
		Orange	static	Optical link to port (Auto negotiation not completed)
6	Downlink Status	Colour	Status	Description
			off	deactivated

Dimensions

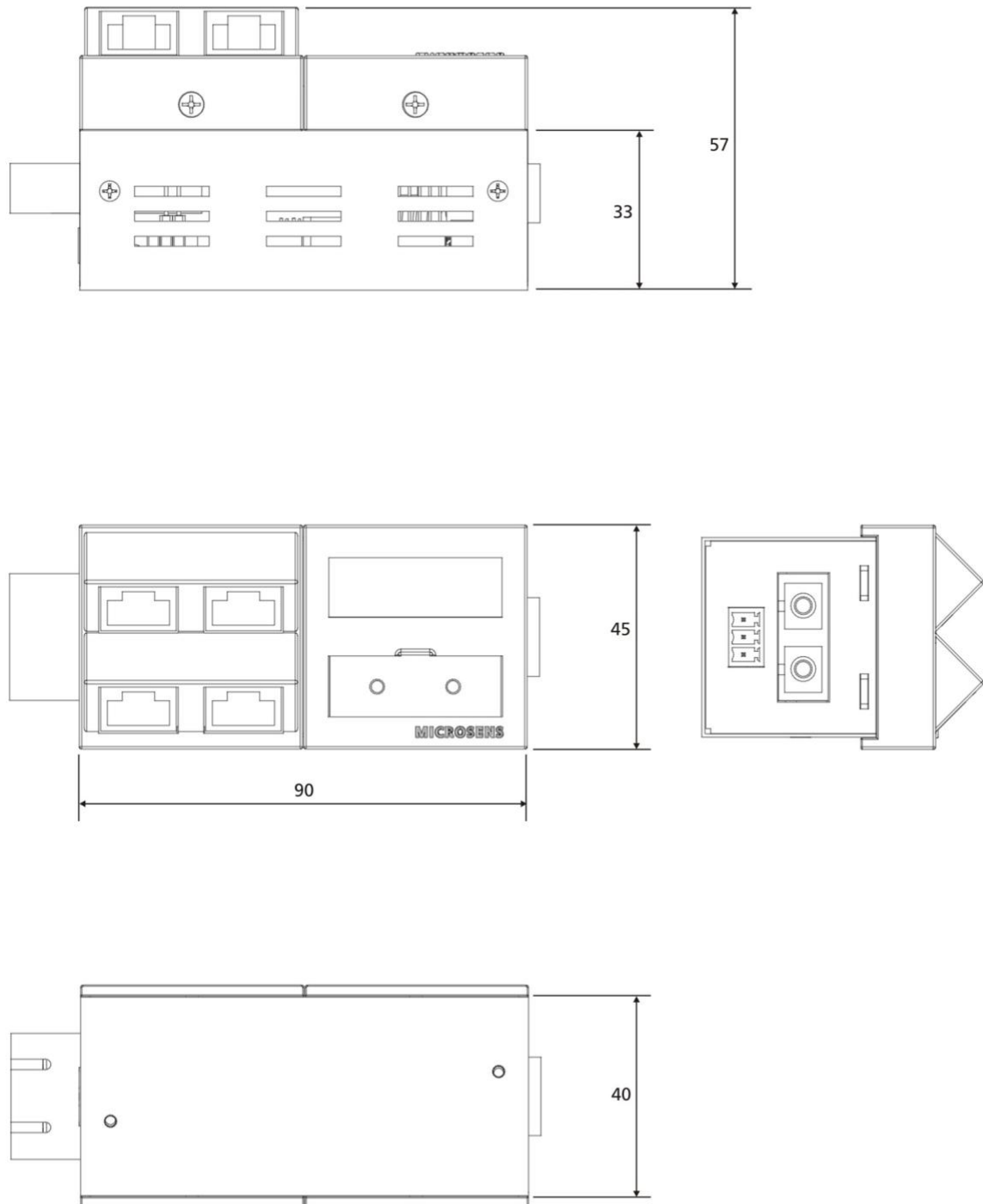


Fig. 4: Dimensions of horizontal installation version



Fig. 5: Dimensions of vertical installation version

Power Supply

The installation switch has a 48 V DC supply. An external network component can be used for connecting to 230 V AC (MS700675). The network component has an output of 65 W and ensures the power supply to the switch and the PoE end devices (max. 4 x 15 W).

Safety Guidelines

DANGER! Optical components may emit laser light.

NOTE: Infrared emission as used for fibre optical data transfer is invisible to the human eye but can cause long-term damage to the eyes.

To avoid damage to the eyes:

- Never look directly at the terminals of optical components or optical fibres. Risk of blinding!
- Put covers on all unused optical connections.
- Only operate the transmission link once all connections have been established.

The active laser components used in this product correspond to **Laser Class 1**.

Further Documentation

- You can find this document online via the Newslink -> 710180
- Performance overview MICROSENS network management -> 710154
- Data sheet for 45x45 installation system -> 710183
- White Paper Power management for Power-over-Ethernet -> 710125

Ordering Information

	Art. No.	Description	Connections
Horizontal Installation	MS450860PM-48	Gigabit Ethernet Installation Switch 4x10/100/1000T, 1 x 1000Base-SX, ST Multimode 850 nm, horizontal installation, 48 V DC power supply, manageable VLANs, QoS, 4x PoE ports	4xRJ-45 1x ST duplex 1x3-pole 48V DC
	MS450861PM-48	Gigabit Ethernet Installation Switch 4x10/100/1000T, 1 x 1000Base-SX, SC Multimode 850 nm, horizontal installation, 48 V DC power supply, manageable VLANs, QoS, 4x PoE ports	4x RJ-45 1x SC duplex 1x3-pole 48V DC
	MS450862PM-48	Gigabit Ethernet Installation Switch 4x10/100/1000T, 1 x 1000Base-LX, SC single mode 1310 nm, horizontal installation, 48 V DC power supply, manageable VLANs, QoS, 4x PoE ports	4x RJ-45 1x SC duplex 1x3-pole 48V DC
Vertical Installation	MS450870PM-48	Gigabit Ethernet Installation Switch 4x10/100/1000T, 1 x 1000Base-SX, ST Multi- mode 850 nm, vertical installation, 48 V DC power supply, manageable VLANs, QoS 4x PoE ports	4x RJ-45 1x ST duplex 1x3-pole 48V DC
	MS450871PM-48	Gigabit Ethernet Installation Switch 4x10/100/1000T, 1 x 1000Base-SX, SC Multi- mode 850 nm, vertical installation, 48 V DC power supply, manageable VLANs, QoS	4x RJ-45 1x SC duplex 1x3-pole 48V DC
	MS450872PM-48	Gigabit Ethernet Installation Switch 4x10/100/1000T, 1 x 1000Base-LX, SC single mode 1310 nm, vertical installation, 48 V DC power supply, manageable VLANs, QoS	4x RJ-45 1x SC duplex 1x3-pole 48V DC

Accessories (Extract)

Art. No.	Description
MS140029	Universal installation kit for installation in standard under-window ducts (installation adapter + cover frame, white)
MS200150	Device Manager PC Software V3.x MICROSENS Switch Management (CD-ROM)
MS700675	Switched power supply, Input: 230V, Output: 48V/1.35 A 65 W for 45x45, Power-over-Ethernet Switch
MS700430	Hat rail power supply 60 Watt 48 V/1.25 A, wide range input 85-264 V AC

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