Data Sheet

10GbE Micro Switch with PoE+/++

10G uplinks (IEEE 802.3ae)
2x 1/10GBase-X ports

Up- and downlinks (IEEE 802.3ab/z)
4x or 6x 10/100/1000Base-T ports (depending on variant)

2.5/5G downlink (IEEE 802.3bz)
1x 1/2.5/5GBase-T port (depending on variant)

PoE+/++ PSE user and downlink ports (IEEE 802.3af/at/bt)
4x or 5x 10/100/1000Base-T user ports with PoE(+) (depending on variant)
1x 1/2.5/5GBase-T port PoE(++) (depending on variant)

Docker Virtualization Environment
Integrated Docker system for free programming of custom functions

Compact M45 mounting format
Compact M45 mounting format for simple and building-standard-compliant installation

Fanless design
Maintenance-friendly hardware design without noise emissions

Rotatable user port modules
User port module rotatable by 90°; suitable for horizontal and vertical installation

Standardized network redundancy (ERPS according to ITU-T G.8032v2)
Function set for special redundancy topologies (e.g., ring structures)

MICROSENS NMP integrated
Integrated into the MICROSENS NMP software for simple configuration and administration

Technical Specifications

Switch

Type	Gigabit Ethernet Switch Layer 2+, IEEE 802.3 compliant
Perfor-mance	Store-and-forward, full wire-speed, non-blocking on all ports
Switching Capacity	58 Gbps (MS440607PM) 52 Gbps (MS440608PM)
Jumbo Frames	max. 10,240 bytes
Flow Con-trol	Pause frames (IEEE 802.3x), configurable

Twisted-Pair Ports (User Ports)

Number	4 or 6 (depending on variant; see Micro Switch Variants)
Type	Gigabit Ethernet, triple speed 10/100/1000Base-T
Connector	RJ-45 port, shielded
Cable Type	Twisted-pair cable, Category 5e, impedance 100 Ohm, max. length 100 m
Pinout	Auto MDI/MDI-X, Auto Polarity
Power over Ethernet (PoE)	4x or 5x IEEE 802.3af/at PSE (max. 30W) (depending on variant; see Micro Switch Variants) 1x IEEE 802.3af/at PD (max. 25W) (depending on variant; see Micro Switch Variants)

Twisted-Pair Ports (Multigig Ports)

Number	1 (depending on variant; see Micro Switch Variants)
Type	Gigabit Ethernet, 1/2.5/5GBase-T
Connector	RJ-45 port, shielded
Cable Type	Twisted-pair cable, Category 5e, impedance 100 Ohm, max. length 100 m
Pinout	Auto MDI/MDI-X, Auto Polarity
Power over Ethernet (PoE)	1x Power Sourcing Equipment (PSE) IEEE 802.3af/at/bt max. 60W

Fiber Ports (Uplinks)

Quantity	2
Type	2x SFP slots, 1/10GBase-X supports SFP digital diagnostics function
Connector	LC type (depending on SFP module)

Console Interface

Connector	USB-C

Security

Secure storage of configuration data	SHA-256 encryption for irreversible storage of user passwords
Min. key length	• Asymmetric: 1024 bit • Symmetric: 128 bit
HASH algorithm	Equivalent to or higher than SHA-256
Excluded encryption	DES, DSA, 3DES
Self-protection	Use of an integrated, dedicated secure boot circuit

LED Display

Type	18 LEDs
Link	RJ-45 ports 1..6 Fiber ports 7..8 *Off*: Link down *Green*: Link up, port open *Red*: Link up, blocked
PoE (+)	Twisted pair ports 1..5 *Off*: PoE+ inactive *Green*: PoE+ on, port supplies power *Orange*: PoE+ on, port does not supply power *Red*: PoE error, port does not supply power *Blue*: PoE++ on, port supplies power
On	*Off*: Device not powered *Green*: Device powered
Sys	*Off*: System not ready *Green*: System operating *Other*: see 'Factory default button' in 'Control Panel'

Technical Specifications (continued)

Control Panel

HW Reset Button	Clears memory and MAC tables, reinitializes all connections, current configuration remains intact
Factory Default Button	Pressing the button triggers the following actions: *2s – Blue*: Switch requests an IP address from the Switch IP Configuration Tool or NMP *10s – Blue blinking*: Switch is reset to factory defaults, IP configuration remains unchanged *20s – Magenta blinking*: Switch is fully reset to factory defaults, IP configuration is also reset *30s – Green*: Switch cancels the selected recovery function, complete configuration remains intact

Power Supply

Input	17..57 VDC (PoE+: 44..57 VDC, 54 VDC typ.)
Power consumption	Typ. 8W (without PoE) max. 130W (incl. PoE) (Full performance only under suitable installation conditions)
Connector	3-pin screw connector, FG/-/+ (1.5 mm²)
Grounding (FG)	6.3 mm flat plug

Environmental Conditions

Temperature	Operation 0..+40 °C Storage -20..+85 °C
Humidity	10..90%, non-condensing
MTBF time	> 200,000 h (SR332)

Mechanical

Dimensions	90 mm x 64 mm x 45 mm (L x W x H, without connectors)
Weight	approx. 300 g
Mounting	45 mm snap-in mounting (without screw fastening)

Delivery / Contents

Standard packaging

Standard packaging unit	1 piece
Contents	1x Micro Switch 1x Power connector 1x Printed Quick Start Guide Included in the device firmware: 1x CLI reference manual 1x Web manual 1x MIB file

Documentation

Quick Start Guide	Flyer, included in delivery; download at microsens.de
User Manual	Download at microsens.de
CLI Reference Manual	• Included in the device firmware for local download • Download at microsens.de
MIB File	Included in the device firmware for local download

Standards

CE	2014/30/EU (EMC) 2011/65/EU (RoHS)
Security	EN 62368-1
Emitted interference	EN 55032 (Class B)
Immunity	EN 55024 EN 55035 EN 61000-6-2

Micro Switch Variants

Art. No.	MS440607PM	MS440608PM
Number of ports	7	8
10/100/1000Base-T ports	4	6
1/2.5/5GBase-T ports	1	0
PoE+ 30W PSE ports	4	5
PoE++ 60W PSE (Class 6) ports	1	0
PoE budget	130W	130W
1/10G SFP+ ports	2	2

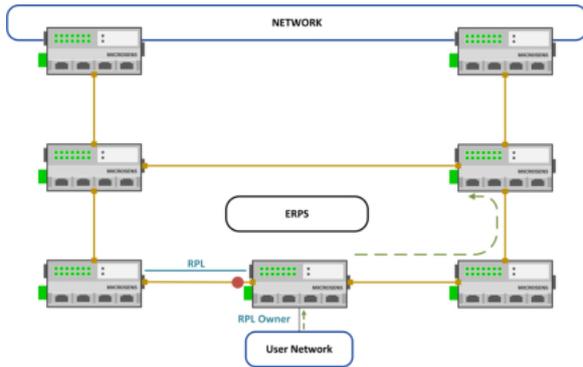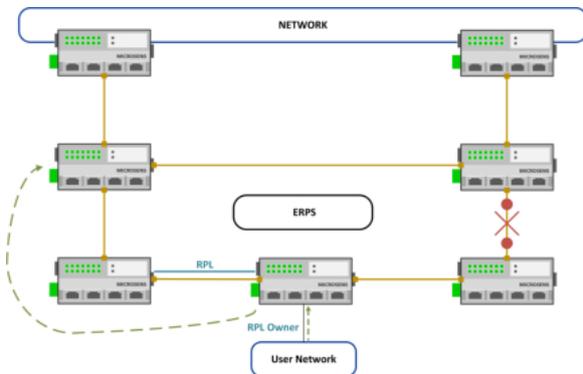## Dimensions

MS440607PM
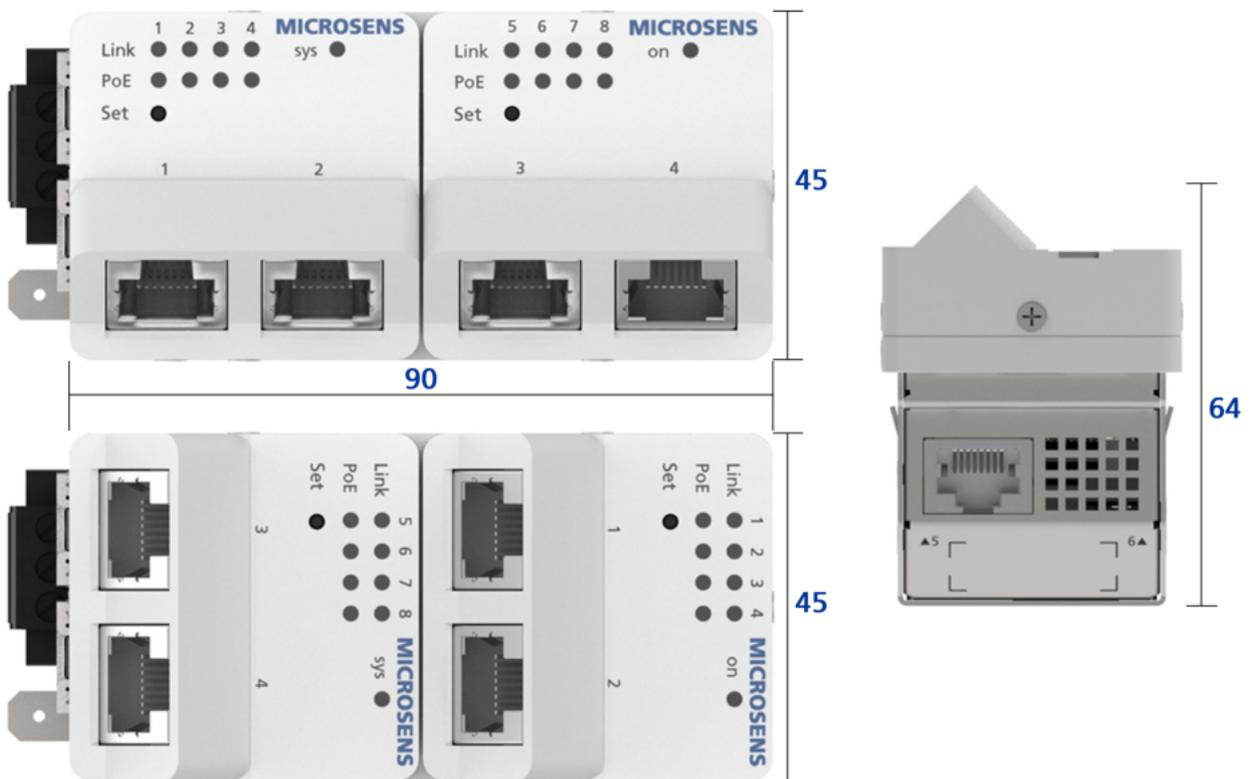
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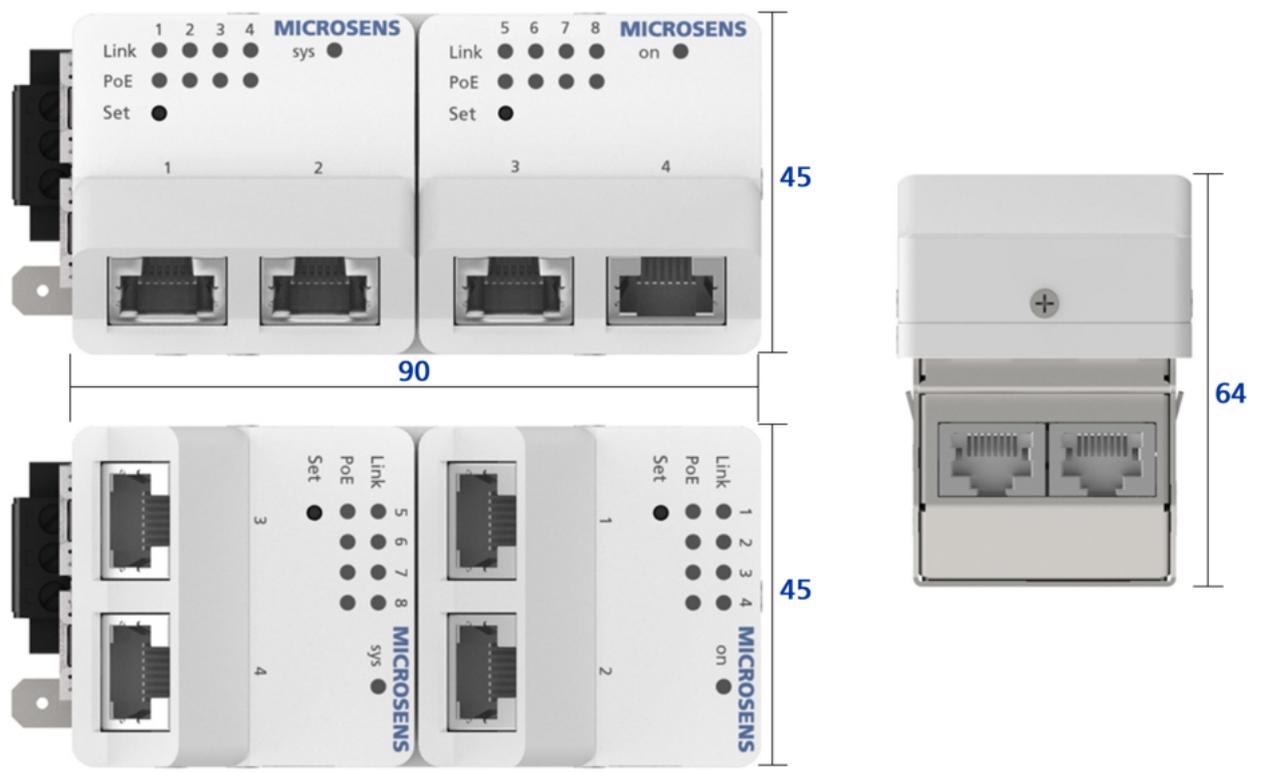
Ethernet Ring Protection Switching (ERPS acc. to ITU-T G.8032v2)

Single Ring ERPS

- Basic Setup: One ring of Ethernet switches.

- How It Works:
  A single link is blocked to prevent loops.

 If a failure occurs, ERPS unblocks the backup path.

- Use Case: Smaller networks or setups where one ring is enough for redundancy.

Multi-Ring ERPS

- Advanced Setup: Multiple rings connected together.

- How It Works:
  - Different rings are linked through inter-connection nodes (specific switches that connect multiple rings).
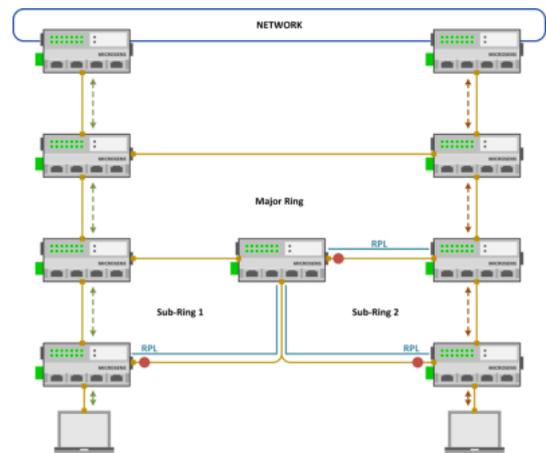
  - If a failure occurs in one ring, ERPS can reroute traffic through another ring.
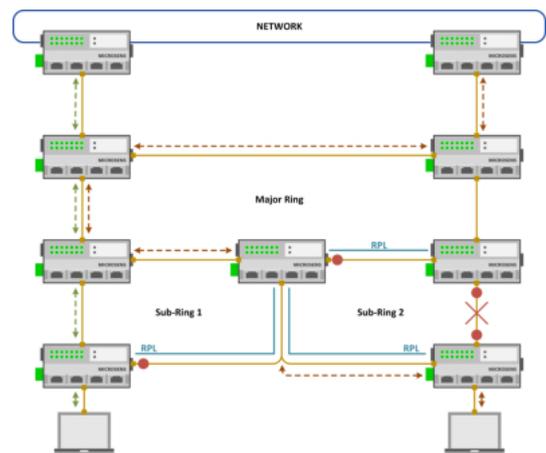
- Use Case: Larger networks where traffic needs multiple backup paths for better reliability.

Ordering Infomation

Description	Art.-No.
7-Port 10G Micro Switch PoE++ 2x 1/10GX SFP+-Slots, SNMP-man., 17..57VDC, 4x 10/100/1000T PoE+, Userports rotatable, 1x 1/2.5/5G PoE++, microSD-Slot, Console port (USB-C)	**MS440607PM**
8-Port 10G Micro Switch PoE++ 2x 1/10GX SFP+-Slots, SNMP-man., 17..57VDC, 5x 10/100/1000T PoE+, Userports rotatable, 1x 10/100/1000T PD, microSD-Slot, Console port (USB-C)	**MS440608PM**

Accessories

Power Supply Modules	
Installation power supply PoE+ 65W primary 115..230VAC, 1m feed line, open 3x 1.5mm², secondary 54VDC / 1.2A, 1m feed line, Combicon connector, on C-profile adapter, 35 mm rail (Combo / DIN)	**MS700741**
Installation power supply PoE+ 65W primary 115..230VAC, 1m feed line, open 3x 1.5mm², secondary 54VDC / 1.2A, 1m feed line, Combicon connector, on C-profile adapter, on front console (panel) BK 80 mm	**MS700741-FTH**
Installation power supply PoE+ 65W primary 115..230VAC, 1m feed line, open 3x 1.5mm², secondary 54VDC / 1.2A, 1m feed line, Combicon connector	**MS700743**
Installation power supply PoE+ 150W primary 115..230VAC, 1m feed line, open 3x 1.5mm², secondary 54VDC / 2.8A, 1m feed line, Combicon connector, on C-profile adapter, 35 mm rail (Combo / DIN)	**MS700743-UNI**
Installation power supply PoE+ 150W primary 115..230VAC, 1m feed line, open 3x 1.5mm², secondary 54VDC / 2.8A, 1m feed line, Combicon connector, on front console panel adapter BK 80 mm	**MS700743-FTH**
M45 Micro Power Supply PoE+ 70W primary 115..230VAC, Combicon connector, M45 format, secondary 54VDC / 1.2A, 0.5m feed line	**MS700750**
M45 Micro Power Supply PoE+ 150W primary 115..230VAC, Combicon connector, M45 format, secondary 54VDC / 2.8A, 1m feed line	**MS700751**

Accessories

SFP Transceivers (additional variants available on request)	
LPC SFP+ 10G Transceiver SR Multimode 850nm, DDM, LC duplex, -40..+85°C	**MS100700DX-V2**
LPC SFP+ 10G Transceiver LR SingleMode 1310nm, 10km, DDM, LC duplex, -40..+85°C	**MS100702DX-V2**
LPC SFP+ 10G Transceiver LR SingleMode TX 1270nm, RX 1330nm, 10km, DDM, LC simplex, -40..+85°C	**MS100702DXA-V2**
LPC SFP+ 10G Transceiver LR SingleMode TX 1330nm, RX 1270nm, 10km, DDM, LC simplex, -40..+85°C	**MS100702DXB-V2**
SFP GbE Transceiver 1.25G SX Multimode 850nm, DDM, LC diagnostics, -40..85°C	**MS100200DX**
SFP GbE Transceiver 1.25G LX SingleMode 1310nm, DDM, LC diagnostics, -40..85°C	**MS100210DX**
Mounting Kits	
M45 universal mounting kit for E2 device box consisting of mounting adapter and cover frame, RAL9010	**MS140029**
M45 mounting kit for anchor rail with C-profile consisting of cover frame, mounting adapter, 2x device carriers, preassembled, RAL9010	**MS140040BR2**
Underfloor mounting kit Ackermann GB3 incl. cup consisting of device carrier, cover, M45 blind module UF, front side milled	**MS140027**
Software for network management and configuration	
NMP Web+ Enterprise Base installation, 1x usage license for NMP Web+ Professional, incl. lifetime updates, Server/client on different PCs in networks	**MS200500**
NMP Web+ Professional Base installation, 1x usage license for NMP Web+ Enterprise, incl. lifetime updates, Server/client on one PC	**MS200501**
One-year device license grants the right to manage a MICROSENS device via NMP Web+ for one year	**MS200509-01**
Two-year device license grants the right to manage a MICROSENS device via NMP Web+ for two years	**MS200509-02**
Additional software variants Further variants of device licenses are listed in the data sheet for NMP Web+; see www.microsens.de	

Services

Description	Art.-No.
Warranty extension after the 24-month manufacturer warranty	
1-year warranty extension	**MSGV01**
2-year warranty extension	**MSGV02**
3-year warranty extension	**MSGV03**
Customer-specific preconfiguration	
Customer-specific preconfiguration of a component	**MSKonfig**
Customer-specific preconfiguration (configuration file already available)	**MSKonfig-OK**
The manufacturer's warranty is defined in the General Terms and Conditions (§10) of MICROSENS GmbH & Co. KG	

Our General Terms and Conditions of Sale (GTCS) apply to all orders. Please refer to: https://www.microsens.com/fileadmin/files/downloads/Impressum/MICROSENS_AVB_EN.pdf

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