

## Brève description

### Gigabit Ethernet Micro Switch 6 Port PoE+ Generation 6+



## Description

The 6 port GBE Micro Switch Generation 6 constitutes an extension of the Gigabit Ethernet Micro Switch. In addition to the 1000Base-X fiber optic uplink, for linking to the central distributor, this switch has an additional RJ-45 downlink 10/100/1000Base-T. This additional connection is positioned at the rear of the switch and is also covered after the installation. This additional connection can, amongst other things, be used for cascading other Micro Switches in order to obtain additional connection capacities.

The interconnection of two switches via the TP port offers to increase the reliability of the network. If one fiber connection is interrupted the neighbouring switch handles the data traffic via RSTP.

All five RJ-45 ports (4 user ports and 1 downlink) support the complete Powerover-Ethernet functionality according the IEEE Std. 802.3af and 802.3at (min. 54VDC needed). A powerful Linux-OS offers additional services and feature for future use.

The use of memory-card shortens maintenance and service windows. The whole configuration of the Micro Switch can be moved to another system, just by changing the SD-card. A fault-tolerant journaling file-system is used. An encryption of the SD-Card is as option available.

Intelligent power management monitors the active current consumption of connected end equipment. The switches are powered by an external 54 V DC power supply.

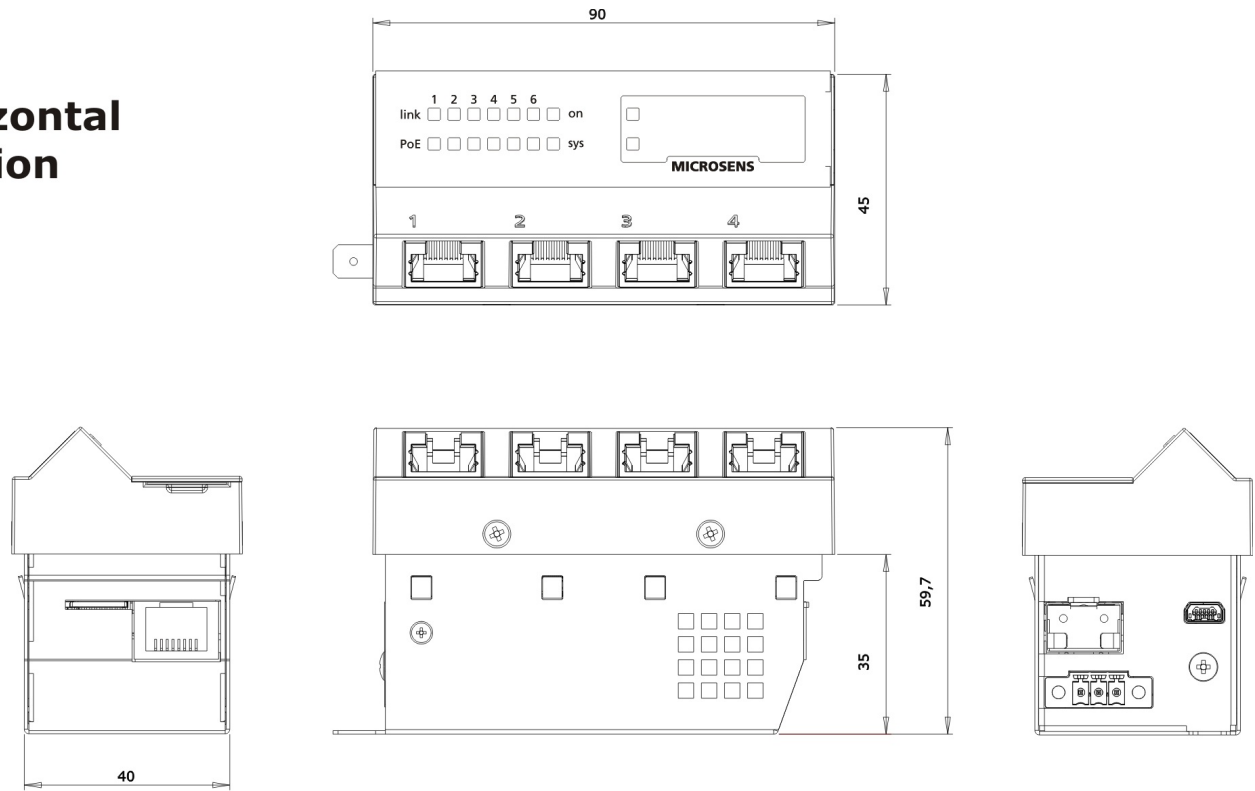
Optional the GBE Micro Switch supports two SFP-Transceivers for redundant fiber-uplinks.

## Caractéristiques

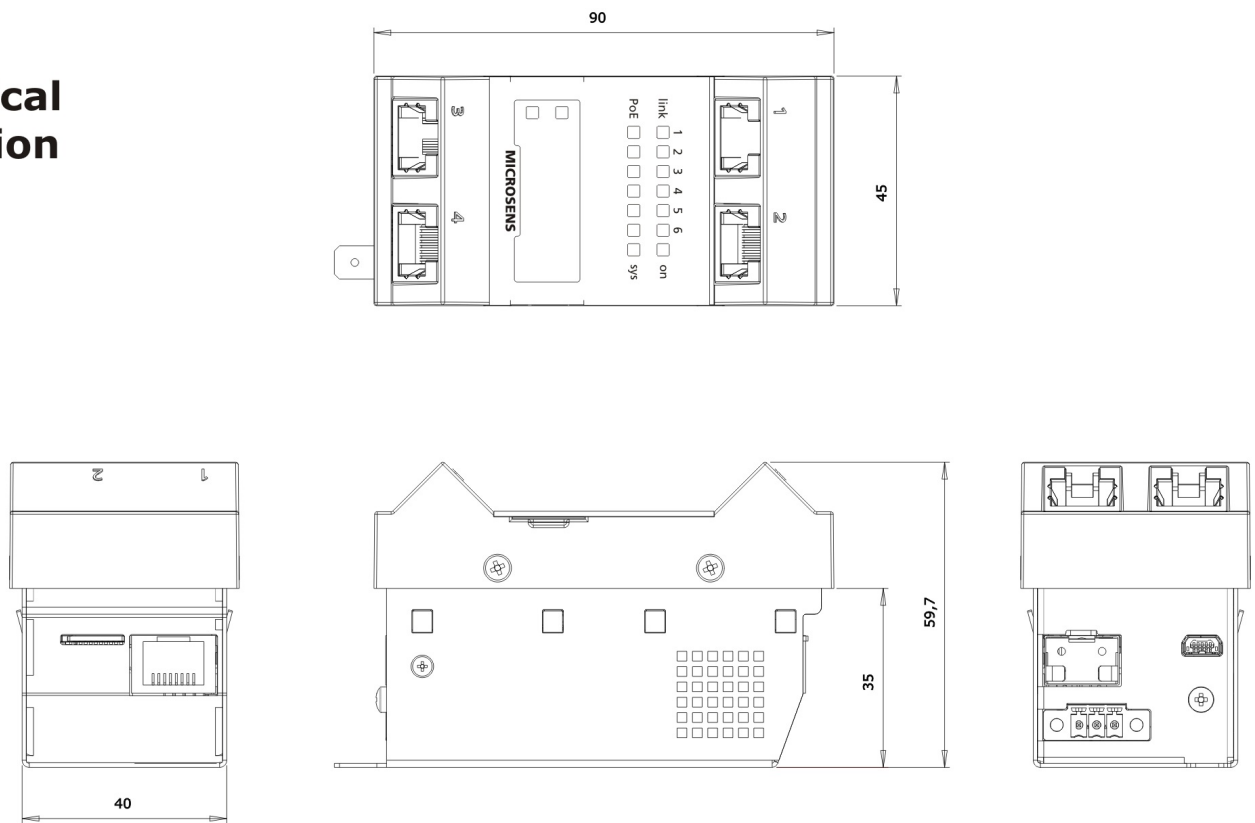
- High performance, full Gigabit Ethernet design
- Energy efficiency by modern chipsets
- RJ-45 downlink-port for hidden connection of Ethernet devices (10/100/1000T)
- Power-over-Ethernet Plus up to 30W at all five RJ-45 ports
- Comfortable administration (Web-, Telnet-, SNMP-interface and NMP-Software)
- High security through VLANs, 802.1X, SSH, HTTPS, accounting etc.
- Fast, tool-free mounting by snap-in installation
- Optional SFP-uplink with dual speed 100/1000 Mbps
- Optional Dual-Fiber-Link support by two SFP slots
- microSD Memory-Card
- Extension-Port for future use

Dimensions

Horizontal  
Version



Vertical  
Version



## Données techniques

### Généralités

|                           |                                                                                                                                                                        |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>               | Gigabit Ethernet Switch Layer 2+, IEEE 802.3 compliant                                                                                                                 |
| <b>Performance</b>        | Store-and-forward, Full wire-speed, non-blocking on all ports                                                                                                          |
| <b>Adresses MAC</b>       | 8,192 addresses, automatic learning and aging                                                                                                                          |
| <b>Jumbo Frames</b>       | max. 10,240 bytes                                                                                                                                                      |
| <b>VLAN</b>               | Tagging IEEE 802.3ac<br>Priorisation IEEE 802.1p<br>VLAN IDs 0..4095<br>256 VLANs<br>Static and dynamic VLAN table<br>VLAN-Modes: access, trunk, hybrid                |
| <b>Quality of Service</b> | 4 hardware-queues per port<br>prioritisation according to:<br>* IPv4/IPv6<br>* VLAN priority IEEE 802.1p<br>* port<br>queue weighting strict or weighted, configurable |
| <b>Management</b>         | CLI: telnet, ssh<br>Web: http, https<br>SNMPv1, SNMPv2c, SNMPv3<br>Microsens NMP-Software                                                                              |

### Ports locaux (other)

|                        |          |
|------------------------|----------|
| <b>Nombre de ports</b> | 1        |
| <b>Type</b>            | RS 232   |
| <b>Connecteur</b>      | Mini-USB |

### Uplink (Optique fixe)

|                          |                                                                                                                            |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>Nombre de ports</b>   | 1                                                                                                                          |
| <b>Type</b>              | Gigabit Ethernet<br>Multimode: 1000Base-SX<br>Single Mode: 1000Base-LX                                                     |
| <b>Connecteur</b>        | ST or DC duplex                                                                                                            |
| <b>Type de fibre</b>     | Multimode: 50 or 62.5/125 µm fiber<br>Single Mode: 9/125 µm fiber                                                          |
| <b>Distance</b>          | Multimode: 550 m<br>Single Mode: 10 km, 20 km (optional)<br>actual distance may depend on fiber performance                |
| <b>Puissance Optique</b> | Multimode 850nm:<br>-9,5..-4 dBm<br>Single Mode 1310nm 10 km:<br>-9,5..-3 dBm<br>Single Mode 1310nm 20 km:<br>-9,5..+3 dBm |

### Ports locaux (Twisted-Pair)

|                             |                                                                       |
|-----------------------------|-----------------------------------------------------------------------|
| <b>Nombre de ports</b>      | 4                                                                     |
| <b>Type</b>                 | Gigabit Ethernet, triple speed 10/100/1000Base-T                      |
| <b>Connecteur</b>           | RJ-45 jack, shielded                                                  |
| <b>Type de câble</b>        | Twisted-Pair cable, category 5e, impedance 100 Ohm, length max. 100 m |
| <b>Flow Control</b>         | Pause frames (IEEE 802.3x), configurable                              |
| <b>Position des broches</b> | Auto MDI/MDI-X, auto polarity                                         |
| <b>Power-over-Ethernet</b>  | Power Sourcing Equipment (PSE) IEEE 802.3at and 802.3af, max. 30 W    |

### Uplink (slot pour SFP)

|                        |                                                                                                                |
|------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Nombre de ports</b> | 1 (only MS440209PM-48G6 & MS440219PM-48G6)<br>2x SFP Uplink available (only MS440207PM-48G6 & MS440217PM-48G6) |
|------------------------|----------------------------------------------------------------------------------------------------------------|

Please use transceiver with extended temp. range, only!

|                     |                                          |
|---------------------|------------------------------------------|
| <b>Type</b>         | Fast/Gigabit Ethernet, 100/1000Base-X    |
| <b>Connecteur</b>   | SFP-Slot                                 |
| <b>Flow Control</b> | Pause frames (IEEE 802.3x), configurable |

|                     |                                                                                                                                                      |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sensibilité</b>  | Multimode 850nm:<br>-18 dBm (max. 0 dBm)<br>Single Mode 1310nm 10 km:<br>-20 dBm (max. -3 dBm)<br>Single Mode 1310nm 20 km:<br>-23 dBm (max. -3 dBm) |
| <b>Flow Control</b> | Pause frames (IEEE 802.3x),<br>configurable                                                                                                          |

#### Port de cascade (Twisted-Pair)

|                             |                                                                             |
|-----------------------------|-----------------------------------------------------------------------------|
| <b>Nombre de ports</b>      | 1                                                                           |
| <b>Type</b>                 | Gigabit Ethernet, triple speed<br>10/100/1000Base-T                         |
| <b>Connecteur</b>           | RJ-45 jack, shielded                                                        |
| <b>Type de câble</b>        | Twisted-Pair cable, category<br>5e, impedance 100 Ohm,<br>length max. 100 m |
| <b>Flow Control</b>         | Pause frames (IEEE 802.3x),<br>configurable                                 |
| <b>Position des broches</b> | Auto MDI/MDI-X, auto polarity                                               |
| <b>Power-over-Ethernet</b>  | Power Sourcing Equipment<br>(PSE) IEEE 802.3at and<br>802.3af, max. 30 W    |

#### Champ d'affichage

|                      |                                                                                                                                                                               |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Bouton Reset</b>  | Reset of device, last saved<br>configuration is reloaded                                                                                                                      |
| <b>Bouton Config</b> | Pressed separately: Request<br>IP-configuration for<br>management agent.<br><br>Pressed together with reset-<br>button: Reset to factory default<br>settings, can be disabled |

#### Environnement

|                                |            |
|--------------------------------|------------|
| <b>Température ambiante</b>    | 0..40 °C   |
| <b>Température de stockage</b> | -20..85 °C |

#### Uplink (Twisted-Pair)

|                             |                                                                             |
|-----------------------------|-----------------------------------------------------------------------------|
| <b>Nombre de ports</b>      | 1 (MS450186PM-48G6 and<br>MS450187PM-48G6 only)                             |
| <b>Type</b>                 | Gigabit Ethernet,<br>triple speed 10/100/1000Base-<br>T                     |
| <b>Connecteur</b>           | RJ-45 jack, shielded                                                        |
| <b>Type de câble</b>        | Twisted-Pair cable, category<br>5e, impedance 100 Ohm,<br>length max. 100 m |
| <b>Flow Control</b>         | Pause frames (IEEE 802.3x),<br>configurable                                 |
| <b>Position des broches</b> | Auto MDI/MDI-X, auto polarity                                               |
| <b>Power-over-Ethernet</b>  | Powered Device (PD)<br>IEEE 802.3at and 802.3af,<br>max. 30 W               |

#### LED

|               |                                                                                                                                                                                                                                                                                                |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Power</b>  | Local ports 1 to 4:<br>green: PoE sourcing<br>blue: PoE+ active<br>orange: PoE standby<br>red: PoE error                                                                                                                                                                                       |
| <b>Link</b>   | Local ports 1 to 4:<br>blinking: activity<br>green: authorized/forwarding<br>orange: blocked<br>red: unauthorized                                                                                                                                                                              |
| <b>Statut</b> | Switch Status (S)<br>green: device ready<br><br>Status uplink (5) downlink (6)<br>blinking: activity<br>green: authorized/forwarding<br>orange: blocked<br>red: unauthorized<br><br>Power Downlink(P)<br>green: PoE sourcing<br>blue: PoE+ active<br>orange: PoE standby<br>red: PoP error     |
| <b>Type</b>   | 14 LEDs<br>LED-Modes (generally):<br>dynamic: LED display static<br>states and blink when data is<br>present on a port<br>static: LED display static states<br>but do not blink with data<br>quiet: Display is reduced to sys<br>and on LED. Port LEDs remain<br>off<br>dark: All leds are off |

#### Alimentation (continue - DC)

|                     |                                                                              |
|---------------------|------------------------------------------------------------------------------|
| <b>Entrée</b>       | 44..57 VDC (54 VDC typ.)<br>For 802.at services 54VDC<br>(min.) is required. |
| <b>Consommation</b> | Typ. 4 W (device only), max. 80<br>W (incl. PoE+)                            |

|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                    |                                                                     |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------------|
| <b>Humidité rel. Air</b> 10..90%, non condensing |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Connecteur</b> 3 pin screw clamp, PE/-/+ AWG 16 |                                                                     |
|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Mise à la terre (PE)</b> 6.3 mm flat-pin plug   |                                                                     |
| <b>Normes</b>                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Boîtier</b>                                     |                                                                     |
| <b>CE</b>                                        | 2004/108/EC (EMC)<br>2006/95/EG (Low Voltage)                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Dimensions</b>                                  | 90 mm x 45 mm x 58 mm (l x w x d, without connectors) bevelled edge |
| <b>Sécurité</b>                                  | EN 60950-1:2011-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Profondeur</b>                                  | 35 mm                                                               |
| <b>Emission</b>                                  | EN 55022:2011-12                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Poids</b>                                       | 320 g                                                               |
| <b>Immunité</b>                                  | EN 55024:2011-09                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Couleur</b>                                     | Standard color: pure white (alternative colors on request)          |
| <b>IEEE (Ethernet)</b>                           | 802.3i 10Base-T<br>802.3u 100Base-T<br>802.3z 1000Base-X<br>802.3ab 1000Base-T<br>802.3az Energy Efficient Ethernet<br>802.3x Flow Control<br>802.3ac VLAN Tagging<br>802.3af PoE<br>802.3at PoE+<br>802.1AB LLDP<br>802.1D Spanning Tree<br>802.1Q Tagged VLANs<br>802.1p Packet Prioritisation<br>802.1w Rapid Spanning Tree<br>802.1X Network Access Control                                                                                                                             | <b>Fiabilité</b>                                   |                                                                     |
| <b>RFC</b>                                       | IPv4:<br>- RFC 791 (IPv4)<br>- RFC 826 (ARP)<br>- RFC 792 (ICMP)<br>- RFC 2131 (DHCP)<br>- RFC 2474/3260 (IPv4 DiffServ/IPv6 Traffic Class)<br>- RFC 4541 (IGMP)                                                                                                                                                                                                                                                                                                                            | <b>MTBF</b>                                        | 100.000 h                                                           |
|                                                  | IPv6:<br>- RFC 2460/2464/3484/3513 (IPv6)<br>- RFC 2462 (Address Configuration)<br>- RFC 2463 (ICMPv6)<br>- RFC 2461 (Neighbor Discovery Protocol)<br>- RFC 3315 (DHCPv6)<br>- RFC 3810/4604 (MLD)<br><br>- RFC 4330 (NTP)<br>- RFC 1155/1156/1157 (SNMPv1)<br>- RFC 1901/1905/1906 (SNMPv2)<br>- RFC 3411/3412/3584 (SNMPv3)<br>- RFC 2574/3414 (USM)<br>- RFC 2575/3415 (VACM)<br>- RFC 2865 (RADIUS)<br>- RFC 2866 (Accounting)<br>- RFC 2868 (Tunnel Attributes)<br>- RFC 5424 (Syslog) | <b>Méthode</b>                                     | calculated, MIL-HDBK-217F                                           |

## Caractéristiques additionnelles

---

|                                  |                                                                                                                    |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>Software caractéristiques</b> | <ul style="list-style-type: none"><li>- Dual Stack IPv4/IPv6</li><li>- Port Monitor</li><li>- CDP v1, v2</li></ul> |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------|

## Emballage

---

|                 |                                                                                                                                                                                                        |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Standard</b> | <ul style="list-style-type: none"><li>1x Micro Switch</li><li>1x MicroSD Card (extra part-no.)</li><li>1x Power-plug</li><li>1x Quick Installation Guide</li><li>1x Set piktogramm-labels</li></ul>    |
| <b>En vrac</b>  | <ul style="list-style-type: none"><li>20x Micro Switch</li><li>20x MicroSD Card (extra part-no.)</li><li>20x Power-plug</li><li>1x Quick Installation Guide</li><li>20x Set piktogramm-label</li></ul> |

## Désignation

### Description

### N° article

#### Horizontal Mounting

GBE Installation Switch 4x10/100/1000Base-TX + PoE/PoE+, Uplink: 1x1000Base-SX, ST Multimode 850nm, Downlink: 1x10/100/1000Base-TX + PoE/PoE+, horizontal version, 44..57 VDC power supply **MS440200PM-48 G6+**

GBE Installation Switch 4x10/100/1000Base-TX + PoE/PoE+, Uplink: 1x1000Base-SX, SC Multimode 850nm, Downlink: 1x10/100/1000Base-TX + PoE/PoE+, horizontal version, 44..57 VDC power supply **MS440201PM-48 G6+**

GBE Installation Switch 4x10/100/1000Base-TX + PoE/PoE+, Uplink: 1x1000Base-LX, SC Single mode 1310 nm, Downlink: 1x10/100/1000Base-TX + PoE/PoE+, horizontal version, 44..57 VDC power supply **MS440202PM-48 G6+**

GBE Installation Switch 4x10/100/1000Base-TX + PoE/PoE+, Uplink: 1x1000Base-LX, ST Single mode 1310 nm, Downlink: 1x10/100/1000Base-TX + PoE/PoE+, horizontal version, 44..57 VDC power supply **MS440203PM-48 G6+**

GBE Installation Switch 4x10/100/1000Base-TX + PoE/PoE+, Uplink: 2x 100/1000Base-X SFP Slot, horizontal version, 44..57 VDC power supply **MS440207PM-48 G6**

GBE Installation Switch 4x10/100/1000Base-TX + PoE/PoE+, Uplink: 1x 1000Base-X SFP Port, Downlink: 1x10/100/1000Base-TX + PoE/PoE+, horizontal version, 44..57 VDC power supply **MS440209PM-48 G6+**

GBE Installation Switch 4x10/100/1000Base-TX + PoE/PoE+, Uplink: 1x10/100/1000Base-TX, Downlink: 1x10/100/1000Base-TX + PoE/PoE+ (PD), horizontal version, 44..57 VDC power supply **MS450186PM-48 G6+**

#### Vertical Mounting

GBE Installation Switch 4x10/100/1000Base-T + PoE/PoE+, Uplink: 1x1000Base-SX, ST Multimode 850nm, Downlink: 1x10/100/1000Base-T + PoE/PoE+, vertical version, 44..57 VDC power supply **MS440210PM-48 G6+**

GBE Installation Switch 4x10/100/1000Base-T + PoE/PoE+, Uplink: 1x1000Base-SX, SC Multimode 850 nm, Downlink: 1x10/100/1000Base-T + PoE/PoE+, vertical version, 44..57 VDC power supply **MS440211PM-48 G6+**

GBE Installation Switch 4x10/100/1000Base-T + PoE/PoE+, Uplink: 1x1000Base-LX, SC Single mode 1310 nm, Downlink: 1x10/100/1000Base-T + PoE/PoE+, vertical version, 44..57 VDC power supply **MS440212PM-48 G6+**

GBE Installation Switch 4x10/100/1000Base-TX + PoE/PoE+, Uplink: 1x1000Base-LX, ST Single mode 1310 nm, Downlink: 1x10/100/1000Base-TX + PoE/PoE+, vertical version, 44..57 VDC power supply **MS440213PM-48 G6+**

GBE Installation Switch 4x10/100/1000Base-TX + PoE/PoE+, Uplink: 2x 100/1000Base-X SFP Slots, vertical version, 44..57 VDC power supply **MS440217PM-48 G6**

GBE Installation Switch 4x10/100/1000Base-T + PoE/PoE+, Uplink: 1x1000Base-SX, 1x 1000Base-X SFP Port, Downlink: 1x10/100/1000Base-T + PoE/PoE+, vertical version, 44..57 VDC power supply **MS440219PM-48 G6+**

GBE Installation Switch 4x10/100/1000Base-TX + PoE/PoE+, Uplink: 1x10/100/1000Base-TX, Downlink: 1x10/100/1000Base-TX + PoE/PoE+ (PD), horizontal version, 44..57 VDC power supply **MS450187PM-48 G6+**

## Accessoires

| Description                                                                                                                                                      | N° article           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Micro Storage Media Card 4GB for MICROSENS G6-Switches, -25..+85°C                                                                                               | <b>MS140894X-4G</b>  |
| Labeling-Sheet (DIN-A4) with 80 labels for G6-Switches, suitable for laser-printers, perforated, 10 sheets per sheet.<br>Form generated by NMP-Software          | <b>MS140005</b>      |
| Système de fixation dans boîtier 45x45 double (plaque métallique + cadre S99)                                                                                    | <b>MS140029</b>      |
| Installation set consisting of cover frame (168 x 85 mm), adapter plate and 2x device support, pre-assembled, Colour: pure white                                 | <b>MS140040BR2</b>   |
| Installation set consisting of cover frame (168 x 85 mm), front-locking device support, 1x blind cover<br>Colour: pure white                                     | <b>MS140040F2</b>    |
| Tehalit cable channel mounting set, front fixed incl. power supply 110-230 VAC / 48 VDC, 65 W                                                                    | <b>MS700675-EKTH</b> |
| Hollow wall mountingbox, support plate, cover frame and blind cover (pure-white)<br>Socket dimensions: 183 x 69 x 50 (mm)                                        | <b>MS140040HW3</b>   |
| Concealed wall socket triple, support plate, cover frame and blind cover<br>Socket dimensions: 186 x 90 x 50                                                     | <b>MS140040UP3</b>   |
| Ackermann Installation set consisting of socket (208 mm length), device support, 1x 45 mm blind cover, 1x socket cover<br>Scope of delivery: parts pre-assembled | <b>MS140027</b>      |
| Two-component installation set for PUK, consisting of a device support and ½ blind cover in pure white                                                           | <b>MS140121</b>      |
| Alimentation 48V/1,35A 65W pour Micro-Switchs avec PoE de norme EN 60601-1-                                                                                      | <b>MS700680</b>      |
| Power supply 100-230 VAC / 54 VDC, 1.35 A, 65 W                                                                                                                  | <b>MS700701</b>      |
| Power supply 100-230 VAC / 54 VDC, 1.35 A, 65 W, open wire ends, fixed cable, conducted grounding                                                                | <b>MS700710</b>      |
| SFP Gigabit Ethernet 1000Base-SX, Multimode 850nm, digital Diagnostics, -40..85°C                                                                                | <b>MS100200DX</b>    |
| SFP Gigabit Ethernet 1000Base-LX, Monomode 1310nm, digital Diagnostics, -40..85°C                                                                                | <b>MS100210DX</b>    |
| SFP Fast Ethernet 100Base-FX, Multimode 1310nm, digital Diagnostics, -40..85°C                                                                                   | <b>MS100190DX</b>    |
| SFP Fast Ethernet 100Base-FX, Monomode 1310nm, digital Diagnostics, -40..85°C                                                                                    | <b>MS100191DX</b>    |
| MICROSENS Network Management Platform nmp professionnel - licence software + 1 an de updates                                                                     | <b>MS200160-1</b>    |
| MICROSENS Network Management Platform nmp standard - licence software + 1 an de updates                                                                          | <b>MS200162-1</b>    |
| MICROSENS Network Management Platform nmp Server - licence software + 1 an de updates, 5 clients                                                                 | <b>MS200164-1</b>    |

This document in whole or in part may not be duplicated, reproduced, stored or retransmitted without prior written permission of MICROSENS GmbH & Co. KG. All information in this document is provided 'as is' and subject to change without notice. MICROSENS GmbH & Co. KG disclaims any liability for the correctness, completeness or quality of the information provided, fitness for a particular purpose or consecutive damage. MICROSENS is a trademark of MICROSENS GmbH & Co. KG. Any product names mentioned herein may be trademarks and/or registered trademarks of their respective companies.

