## Product Overview

# Gigabit Ethernet 13 Port Basic-Switch Profi Line Modular


## Description

The new Profi Line Modular switches from MICROSENS offer top performance and flexibility in confined spaces.

The modular design of the Profi Line Modular switches enables expansions tailored to needs, which limits the initial investment to the minimum necessary.

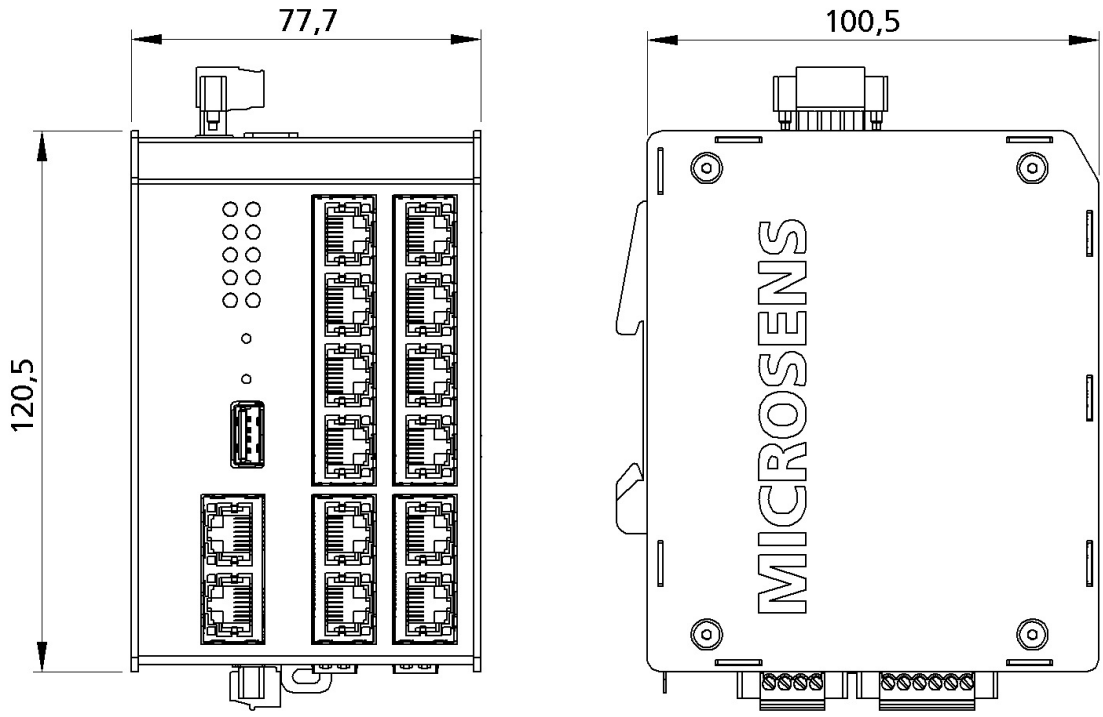
Even the basic switch module offers thirteen gigabit ports, of which four, as combo ports, can be expanded to fiber optic connections. Despite its space-saving design, it has two alarm inputs/outputs, for example for cabinet monitoring or integrating a sensor/actuator. The copper ports offer PoE/PoE+ with which the terminal devices connected can be supplied with electricity economically and without additional cabling work. The switches themselves can also work without their own power supply, supplied via PoE/PoE+ as powered devices.

For maximum scalability, expansion modules with six or twelve Gigabit Ethernet ports are available that can simply be connected on the side to match demand. The expansion modules also have gigabit combo ports with which an impressive number of fiber optic connections can be achieved economically and in relation to usage.

## Properties

- Gigabit performance with Energy-Efficient Ethernet
- Power-over-Ethernet+ (802.3at),maximum of 30 W per port
- Extended temperature range
- Compact metal housing for DIN rail assembly
- Robust design, extension modules available
- Redundant power inputs
- Linux kernel, open standards, long-term availability
- SD card for firmware and configuration
- Fault tolerance with minimum recovery times

## Dimensions



# Specifications

## General

| | |
|---|---|
| **Type** | Gigabit Ethernet Switch Layer 2+, IEEE 802.3 compliant, fanless |
| **Performance** | Store-and-forward, Full wire-speed, non-blocking on all ports |
| **MAC-Adresses** | 8,192 addresses, automatic learning and aging |
| **Jumbo Frames** | max. 10,240 bytes |
| **VLANs** | Tagging IEEE 802.3ac<br>Priorisation IEEE 802.1p<br>VLAN IDs 0..4095<br>256 VLANs<br>Static and dynamic VLAN table |
| **Quality of Service** | 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 |
| **Management** | CLI: telnet, ssh<br>Web: http, https<br>SNMPv1, SNMPv2c, SNMPv3<br>Microsens NMP-Software<br>Serial Interface (RJ-45) |

## Local Ports (Twisted-Pair)

| | |
|---|---|
| **Number of Ports** | 9 + 4(Combo-Ports) |
| **Type** | Gigabit Ethernet, triple speed 10/100/1000Base-T |
| **Connector** | RJ-45 jack, shielded |
| **Cable Type** | Twisted-Pair cable, category 5e, impedance 100 Ohm, length max. 100 m |
| **Flow Control** | Pause frames (IEEE 802.3x), configurable |
| **Pinout** | Auto MDI/MDI-X, auto polarity |
| **Power-over-Ethernet** | 8x Power Sourcing Equipment (PSE) IEEE 802.3at and 802.3af class 0, max. 30 W, forced-mode (legacy-devices), max. 200 W total power<br>1x Powered Device (PD) IEEE 802.3at and 802.3af class 0, max. 30 W, forced-mode (legacy-devices) |

## Uplink (Pluggable Transceiver)

| | |
|---|---|
| **Number of Ports** | 4 (Combo-Ports) |
| **Type** | Fast/Gigabit Ethernet, 100/1000Base-X |
| **Connector** | SFP-Slot |
| **Flow Control** | Pause frames (IEEE 802.3x), configurable |

## Display

| | |
|---|---|
| **Type** | 10 LEDs (RGB-LED) |
| **Power** | Local ports 1 to 9:<br>green: PoE sourcing<br>blue: PoE+ active<br>orange: PoE standby<br>red: PoE error |
| **Link** | Local ports 1 to 8:<br>blinking: activity<br>green: authorized/forwarding<br>orange: blocked<br>red: unauthorized |
| **Status** | Switch Status (S)<br>green: device ready |

## Uplink (Fixed Optical Transceiver)

| | |
|---|---|
| **Number of Ports** | 4 (Combo-Ports) |
| **Type** | Gigabit Ethernet<br>Multimode: 1000Base-SX<br>Single Mode: 1000Base-LX |
| **Connector** | ST or SC duplex |
| **Fiber Cable Type** | Multimode: 50 or 62.5/125 µm fiber<br>Single Mode: 9/125 µm fiber |
| **Distance** | Multimode: 550 m<br>Single Mode: 10 km, 20 km (optional)<br>actual distance may depend on fiber performance |
| **Output Optical Power** | 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 |
| **Receiver Sensitivity** | 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) |
| **Flow Control** | Pause frames (IEEE 802.3x), configurable |

Status
blinking: activity
green: authorized/forwarding
orange: blocked
red: unauthorized

Power Downlink (P)
green: PoE sourcing
blue: PoE+ active
orange: PoE standby
red: PoP error

Ring: Switch configured for ring mode
RM: Ring Master (only in ring mode)

Signal (in/out):
red: Alarm

## Power Supply (DC)

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|---|---|
| **Input Voltage** | 2x 44..57 VDC (54 VDC typ.), redundant Power<br>For 802.at services 54VDC (min.) is required. |
| **Power Consumption** | Typ. 9 W (device only), max. 200 W (incl. PoE+) |
| **Connector** | 2x 3 pin screw clamp, PE/-/+ AWG 16 |

## Environment

| | |
|---|---|
| **Operating Temperature** | -40..+75 °C |
| **Storage Temperature** | -40°..85°C |
| **Relative Humidity** | 5% to 90% non condensing |

## Mechanical

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|---|---|
| **Dimensions** | 120.5 mm x 77.7 mm x 100.5 mm (h x w x d) |

## Standards Compliance

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|---|---|
| **CE Mark** | 2004/108/EC (EMC)<br>2006/95/EG (Low Voltage) |
| **Safety** | EN 60950-1:2011-1 |
| **Electromagnetic Emission** | EN 55022:2011-12 |
| **Electromagnetic Immunity** | EN 55024:2011-09 |
| **IEEE (Ethernet)** | 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 |
| **Other** | EN 50121-4:2006 (railway applications - electromagnetic compatibility)<br>EN 50125-3:2003 (railway applications - environmental conditions)<br>IEC 61850-3 (electrical substation automation)<br>IEEE 1613 (electric power substations) |

## Reliability

| | |
|---|---|
| **MTBF** | 400.000 h |
| **Method** | calculated, MIL-HDBK-217F |

# Order Information

| Description | Article Number |
|---|---|
| **Profi Line Modular Basis-Module** | |
| Modular Industrial Gigabit Ethernet Basic-Switch, 8x 10/100/1000T PoE+ (PSE), 1x 10/100/1000T PoE+ (PD), 4x Dual Media Ports: 100/1000X SFP-Slot or 10/100/1000T, integrated CPU, Serial Port, USB Port, SD Memory Card Slot, I/O: 2x in, 2x out, 2x power input 24..57 VDC | **MS652119PM** |
| **Profi Line Modular Expansion Modules** | |
| Profi Line Modular 6 Port Expansion Module, 4x 10/100/1000T PoE+ (PSE), 2x Dual Media Ports: 100/1000X SFP-Slot or 10/100/1000T | **MS652219PM** |
| Profi Line Modular 12 Port Expansion Module, 8x 10/100/1000T PoE+ (PSE), 4x Dual Media Ports: 100/1000X SFP-Slot or 10/100/1000T | **MS652419PM** |

# Accessories

| Description | Article Number |
|---|---|
| End clamp for DIN rail 35mm, 2 screws, width: 10 mm, color: aluminium | **MS140806** |
| SFP Gigabit Ethernet Transceiver 1000Base-SX, Multimode 850nm, digital Diagnostics, exten. temp.-range: -40..85°C | **MS100200DX** |
| SFP Gigabit Ethernet Transceiver 1000Base-LX, Single Mode 1310nm, digital Diagnostics, -40..85°C | **MS100210DX** |
| nmp Professional - MICROSENS Network Management Platform - java software and one year update license | **MS200160-1** |
| nmp Professional - additional one year update license | **MS200161-n** |
| nmp Standard - MICROSENS Network Management Platform - java software and one year update license | **MS200162-1** |
| NMP Standard - additional update licence for n-years | **MS200163-n** |
| NMP Server - management software with 1 year update licence, incl. 5 clients | **MS200164-1** |
| NMP Server - additional update licence for n-years | **MS200165-n** |