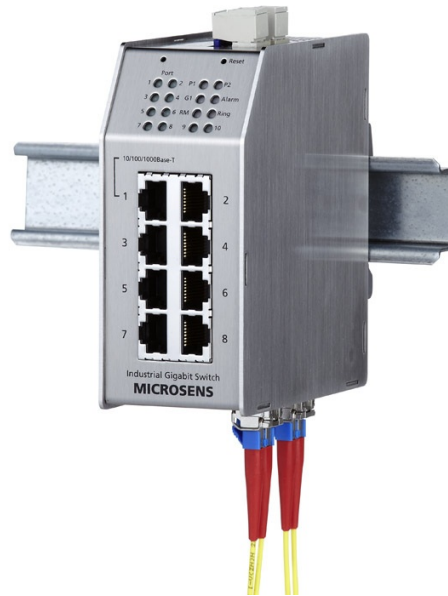


Product Overview

Gigabit Ethernet Industrial Switch 10 Port with Railway and Power Substation Certification



Description

This switch version has been specially certified for applications in the area of rail traffic and power substations. Certification in accordance with the standards EN50121-4:2006 (for more stringent EMC requirements on electromagnetic interference resistance) and EN50125-3:2003 (temperature, climate, vibration and shock resistance) means the device may be installed directly in 1m distance from the rail track.

The accredited Gigabit switch has 1000Base-X fiber optic ports permitting the construction of a fiber optic ring (fast redundancy). The fast redundancy is made possible by a mechanism patented by MICROSENS that executes a reconfiguration of the Ethernet network in a millisecond in the event of a fault.

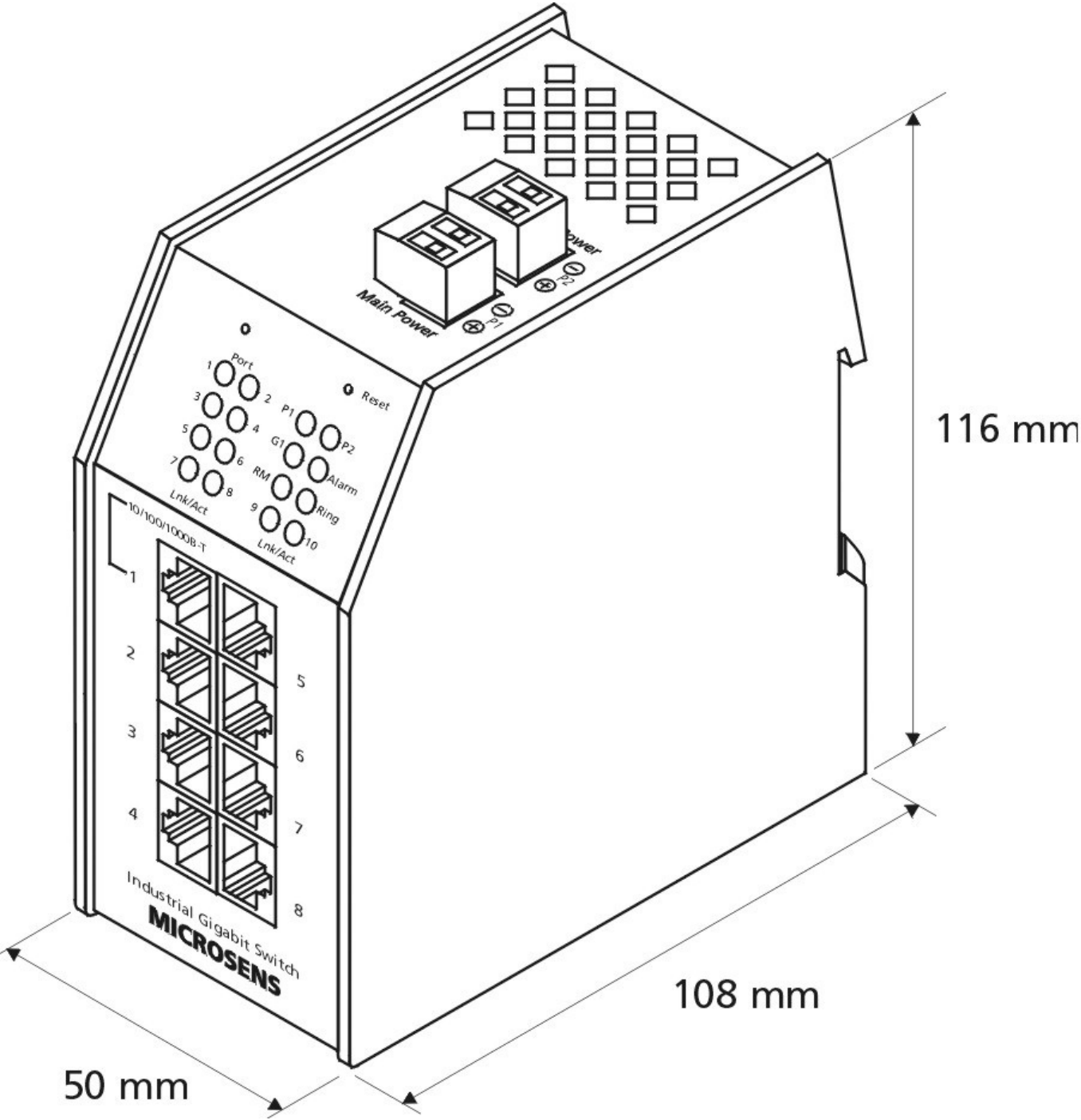
An upgraded version furthermore offers the Power over Ethernet (PoE) functionality. PoE enables IP-telephones, wireless access points, web cameras, access control systems etc. to be supplied with power via the data connection.

It is no longer necessary to install data and power cables to every network device, so that costs can be significantly reduced. The switches are designed to be operated under extreme surrounding conditions and stable operation along the railway line is guaranteed.

Properties

- Railway approval according to EN50121-4:2006 and EN50125-3:2003
- Power Substation approval according to IEC61850-3 and IEEE1613
- Fault tolerant fiber ring with reconfiguration < 20 ms
- Extensive features such as VLAN, QoS, IGMP-Snooping, STP/RSTP etc.
- Flexibility through SFP version with dual speed 100/1000 Mbps
- Power-over-Ethernet version
- Redundant power supply possible
- Operating temperature range -40..+75 °C
- Power supplies with railway approval with 24 VDC and 48 VDC / 60 W available

Dimensions



Specifications

General

Type	Gigabit Ethernet Switch Layer 2+, IEEE 802.3 compliant
Performance	Store-and-forward, Full wire-speed, non-blocking on all ports
MAC-Adresses	8,192 addresses, automatic learning and aging
VLANs	Tagging IEEE 802.3ac Priorisation IEEE 802.1p VLAN IDs 0..4095 Static and dynamic VLAN table
Quality of Service	4 hardware-queues per port prioritisation according to: * IPv4/IPv6 * VLAN priority IEEE 802.1p * port queue weighting strict or weighted, configurable"
Management	CLI: telnet Web: http SNMPv1, SNMPv2c Microsens NMP-Software

Uplink (Pluggable Transceiver)

Number of Ports	3
Type	Fast/Gigabit Ethernet, 100/1000Base-X
Connector	SFP-Slot
Flow Control	Pause frames (IEEE 802.3x), configurable

Display

Power	P1 Green: Main Power Supply active Orange: Main Power Supply missing P2 Green: Backup Power Supply active Orange: Backup Power Supply missing
Link	Port 1-8 Link (on) and activity (flashing) of the TP ports Port 9-10 Link (on) and activity (flashing) of the fiber ports
Status	G1 Green: Copper port 1 with Gigabit Ethernet speed Orange: Third SFP fiber port active, copper port 1 without function (optional) Ring: Switch configured for ring mode RM: Ring Master (only in ring mode) Alarm: Fiber link interrupted or Power Supply problem

Local Ports (Twisted-Pair)

Number of Ports	8
Type	1x Gigabit Ethernet, triple speed 10/100/1000Base-T 7 x Fast Ethernet, dual speed 10/100Base-TX
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	Power Sourcing Equipment (PSE) IEEE 802.3af class 0, max. 15.4 W, forced-mode (legacy-devices), pinout wires 1/2 (+), 3/6 (-) (MS650869PM-48-B only)

Uplink (Twisted-Pair)

Number of Ports	1
Type	Gigabit Ethernet, triple speed 10/100/1000Base-T Combo-Port (3rd SFP-Port)
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	Powered Device (PSE) IEEE 802.3af class 0, max. 15.4 W, forced-mode (legacy-devices), pinout wires 1/2 (+), 3/6 (-)

Power Supply (DC)

Input Voltage	2x 48 VDC (redundant ports)
Power Consumption	8 W (typ.)
Fuse	1 A
Connector	screw terminals

Environment

Operating Temperature	-40°C..70°C
Storage Temperature	-40°..85°C
Relative Humidity	5% to 90% non condensing

Standards Compliance

IEEE (Ethernet)	802.3i 10Base-T 802.3u 100Base-T 802.3z 1000Base-X 802.3ab 1000Base-T 802.3x Flow Control 802.3ac VLAN Tagging 802.3af PoE (MS MS650869PM-48-B, only) 802.1D Spanning Tree 802.1Q Tagged VLANs 802.1p Packet Prioritisation 802.1w Rapid Spanning Tree 802.1X Network Access Control
Other	EN 50121-4:2006 (railway applications - electromagnetic compatibility) EN 50125-3:2003 (railway applications - environmental conditions) IEC 61850-3 (electrical substation automation) IEEE 1613 (electric power substations)
RFC	IPv4: - RFC 791 (IPv4) - RFC 826 (ARP) - RFC 792 (ICMP) - RFC 2131 (DHCP) - RFC 2474/3260 (IPv4 DiffServ/IPv6 Traffic Class) - RFC 4541 (IGMP) - RFC 1769 (SNTP) - RFC 1155/1156/1157 (SNMPv1) - RFC 1901/1905/1906 (SNMPv2) - RFC 3411/3412/3584 (SNMPv3) - RFC 2574/3414 (USM) - RFC 2575/3415 (VACM) - RFC 2865 (RADIUS) - RFC 2866 (Accounting) - RFC 2868 (Tunnel Attributes) - RFC 5424 (Syslog)

Reliability

MTBF	400,000 h
Method	calculated, MIL-HDBK-217F

Mechanical

Dimensions	50 mm x 108 mm x 116 mm (w x d x h)
Weight	955 g (MS650869M-B) 743 g (MS650869PM-48-B)
Mounting	DIN rail
Protection class	IP 30

Additional Features

Software	- MICROSENS Ring-Protocol - Port Monitor - CDP v1, v2
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Order Information

Description	Article Number
Gigabit Ethernet Industrial Switch for ring configuration 1x 10/100/1000Base-T, 7x 10/100Base-TX, 3x 100/1000Base-X SFP-Slot, 24 VDC	MS650869M-B
Gigabit Ethernet Industrial Switch for ring configuration 1x 10/100/1000Base-T, 7x 10/100Base-TX, 3x 100/1000Base-X SFP-Slot, Power-over-Ethernet, 48 VDC	MS650869PM-48-B

Accessories

Description	Article Number
DIN Rail Power Supply 60Watt for Railway Applications, Output Voltage 24 VDC Input Voltage 90-264VAC, temp. range -40..70°C	MS700482-24B
DIN Rail Power Supply 60Watt for Railway Applications, Output Voltage 48 VDC Input Voltage 90-264VAC, temp. range -40..70°C	MS700482-48B
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

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