

Data Sheet

Ruggedized 19" Gigabit Ethernet Switch MS401880MX-BS Series for Power Substation Applications with Ring Function



Overview

Based on a robust design, the hardened Ruggedized 19" Gigabit Fiber Switch from MICROSENS provides maximum performance and flexibility in smallest spaces. Engineered to achieve highest reliability and shortest recovery times, this MICROSENS switch family has become the first-choice solution for Industrial Ethernet infrastructures for Power Substation applications.

The hardware of the Ruggedized 19" Gigabit Ethernet Switch is already designed to deploy future functions which can be activated easily by firmware upgrades. This is facilitated by the latest high-performance switching chipsets in combination with a powerful processor. As a well-established and stable operating system, Linux provides a solid foundation for an intelligent, open, secure, and long-term reliable platform.

Highlights

- Highest Hardware flexibility through 3 slots for media line modules
- Highest Gigabit performance with smallest dimensions
- Industrial design for maximum reliability in harsh environments
- Up to 24 x 1 Gigabit RJ 45 or SFP ports on only 1U in 19" racks
- Certified for Power Substation applications
- Supporting HSR and PTP
- Optimised architecture for increased performance with redundant ring topology
- Range of ambient operation temperature from -40 up to +85 °C
- Exchangeable SD memory card for firmware and configuration
- Flexible firmware architecture for simple software upgrades

Software Features

Gigabit Ethernet Switch

- Fan less Gigabit Ethernet Switch
- Low power consumption switch-chipset, Energy-Efficient Ethernet
- Layer-3
- Max. 8,192 MAC-addresses, automatic learning and aging
- Jumbo-Frames (max. 10,240 Bytes)
- High-availability Seamless Redundancy (IEC 62439-HSR)
- Parallel Redundancy Protocol (IEC 62439-PRP1)
- Precision Time Protocol (IEEE 1588 V2)

System Management

- WEB GUI (http, https)
- CLI (Telnet, SSH, console)
- SNMP v1/v2c/v3
- Central management platform (NMP)
- IP interface configuration per VLAN
- MAC address table
- Syslog
- Configuration upload/download
- Firmware upgrade
- Factory Default Reset
- System reboot
- User right settings
- Port mirroring
- System status and traffic statistics
- SNTP/NTP (Network Time Protocol)
- Exchangeable SD memory card for configuration, CLI scripts, firmware

Port Configuration

- Port enable/disable
- Speed settings
- Half or full duplex
- Flow control
- Port isolation
- Storm control

IP Service

- IPv4 or IPv6
- DHCP Client/Snooping

IP Routing

- Static Routing
- RIP v1/v2
- OSPF v1/v2
- IDRP
- BGP-4
- MPLS
- Routing table settings and status

Virtual LANs (VLANs)

- Access and trunk mode
- IEEE 802.1Q settings
- Private VLANs

Quality of Service (QoS)

- Layer 1 priority (port-based)
- Layer 2 priority based on 802.1Q VLAN tags
- Layer 3 priority based on 802.1p (DSCP)
- 8 priority levels
- Strict priority or WRR (Weighted Round Robin)

Link Aggregation

- LACP according to IEEE 802.3ad

IP Multicast

- IGMP Snooping
- PIM-SM (Protocol Independent Multicast)

Reliability

- Spanning Tree (STP) according to IEEE 802.1D
- Rapid Spanning Tree (RSTP) according to IEEE 802.1w
- eRSTP™ (enhanced RSTP)
- Multiple Spanning Tree (MSTP) according to 802.1Q

- VRRP (Virtual Redundant Route Protocol)

Security

- RADIUS Client (802.1X)
- TACAS+
- Static MAC locking
- Access Control List (ACL)

Power Supply

- 2x 125 VDC Power supply modules, hot-swap backup
 - universal high voltage range from, 80-300Vdc
 - True dual redundant parallel and load sharing capability

Technical Specifications

Switch

Type	Gigabit Ethernet Switch Layer 3, IEEE 802.3 compliant
Performance	Store-and-forward Full wire-speed, non-blocking on all ports
MAC addresses	8,192 addresses, automatic learning and aging
Jumbo Frames	max. 10,240 Bytes

Uplink Ports (SFP+ slots)

Number	4 ports
Type	Dual Speed SFP+ 1/10GBase-X, support of SFP+ digital diagnostics function
Connector	LC (SFP+ transceiver)

CLI Console

Number	1
Connector	USB-C

LED display

Location	Front and rear side
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Alarm Relay Output

Number	2
Current	1A
Voltage	12 VDC

Mechanical

Dimensions	435 x max. 338 x 43.5 mm (w x d x h, without connectors; width incl. mounting brackets: 481 mm)
Weight	Approx. 3.300g (without SFPs)

Protection Class IP 41

Mounting 19" Rack, 1U

Environmental Conditions

Temperature	Operation	-40..+85 °C
	Storage	-40..+85 °C
Note: Maximum continuous operation temperature is up to +75 °C.		
Humidity	10..90%, non condensing	

Module slots

Media module slots	3 slots on front side
Accessory slot	1 slot on front side
Power Supply slots	2 slots on rear side

Buttons

Reset button	Reset of the switch, new upload of the latest stored configuration (direct hardware function)
Factory button	Request of the IP configuration for management, reset back to factory default settings

Media line modules

RJ45-Ports module

Number	8 ports
Type	100/1000BaseT
Connector	RJ-45 port, shielded
Cable type	Twisted-Pair cable, Category 5e, impedance 100 Ohm, length max. 100m
Pin out	Auto MDI/MDI-X, Auto Polarity

Media line modules

Fiber Ports module

Number	8 slots
Type	Dual Speed SFP 100/1000Base-X, support of SFP digital diagnostics function
Connector	LC (SFP transceiver)

PTP/HSR module

Type	2 antenna, 1 RJ-45
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Delivery / Contents

Standard Packaging

Package unit	1 pcs.
Contents	1x Switch 1x SD memory card (inserted) 2x power supply connector 2x I/O connector 1x Quick Start Guide

Standards

CE	2014/30/EU (EMC Directive) 2011/65/EU (RoHS Directive)
Safety	EN 62368-1
Emitted interference	EN 61000-6-4 EN 55032
Electromagnetic Compatibility	EN 61000-6-2 EN 55024
Power Substation	IEC 61850-3:2013 IEC 61000-6-5 Ed. 1.0:2015-08 IEEE 1613: 2009 (Class 2)

Order Information

	Description	Article No.:
	Switch Mainframe with Power Substation Cert. 3 module slots, 4x 1/10GBase-X SFP+, Serial Port, SC-Card, 2x power supply, typ. 125 VDC Input	MS401880MX-BS
	PTP module for IEC 1588v2 time synchronisation for MS400880MX-BS and MS400881MX-BS	MS401882MX-BS
	8x 100/1000Base-X SFP module for MS400880MX-BS and MS400881MX-BS	MS401883MX-BS
	8x 100/1000Base-T RJ-45 module for MS400880MX-BS and MS400881MX-BS	MS401884MX-BS
	Power supply module for MS401880MX-BS 60W, 12 VDC, Prim. 80...300 VDC	MS401880DC-BS

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