

Industrial solutions

Fiber optic technology for rough environments

Industrial Ethernet components are characterised by their robust design and fit for use in rough and industrial environments.

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Industrial solutions

Profi Line

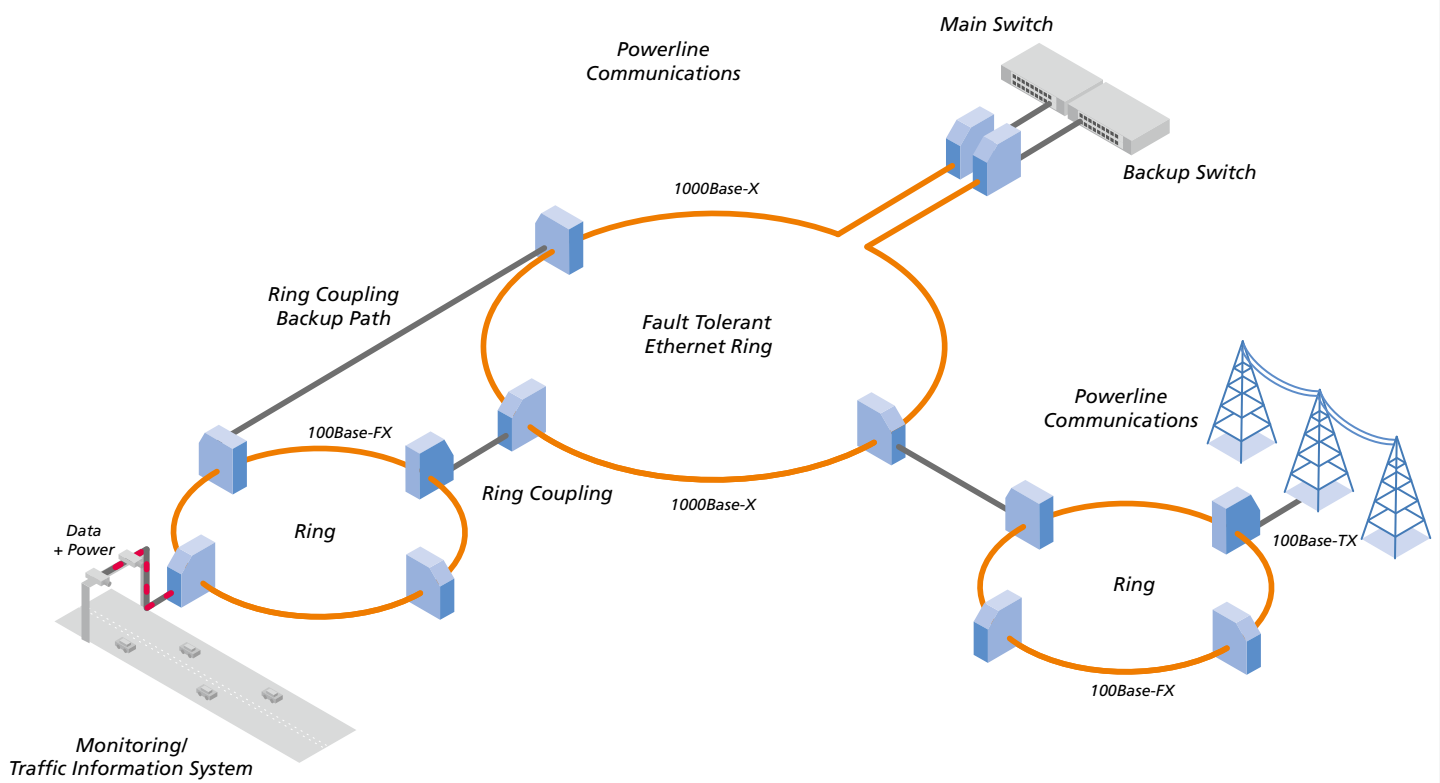
The highest level of hardened devices for rough environments

The IP protocol has long left the area of in-house applications and is in the process of conquering new fields of application. Industrial Ethernet is now a well-established term that describes the use of Ethernet based components with high reliability in rough environments.

The devices of the Profi Line range have been designed for specific applications that are prone to failure. An open firmware concept means that these devices can be adapted flexibly in order to suit individual customer and market requirements.

Extremely challenging applications such as those related to use in the utility and railway sector as well as in potentially explosive underground environments are underpinned by special certifications.

The devices have a protective mechanism patented by MICROSENS which permits the assembly of a fault-tolerant fiber optic ring with reconfiguration times of less than 20 ms. The reduced expenditure on cabling makes the physical ring structure both an optimum and cost-effective network topology.



Industrial Solutions – Profi Line



Profi Line Product Overview

GBE Ring Switches optional with PoE

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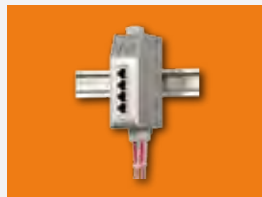


GBE Ring Switches with Railway Certification

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10 Port GBE Switch with Power-over-Ethernet

10 Port Gigabit Ethernet Ring Switches with Power-over-Ethernet Option

Benefits

- Fault tolerant fiber ring with reconfiguration < 20 ms
- Extensive features such as VLAN, QoS, IGMP-Snooping, STP/RSTP etc.
- Web-/SNMP-/CLI- management
- SFP version with 100/1000 Mbps
- Optional storage media card
- Power-over-Ethernet versions
- Operating temperature range -20..+60 °C, extended -40..+75 °C

Description

With its extremely high performance, Gigabit Ethernet offers fast and reliable data transmission. For the user this means more reserve capacity for time-critical applications with increasing data volumes.

The 10 port Gigabit Ethernet Switch has up to three Gigabit Ethernet fiber optic connectors in compliance with 1000Base-SX/LX, which permit building up a fault-tolerant fiber optic ring. In the event of a fault, a mechanism patented by MICROSENS facilitates automatic reconfiguration in less than 20 ms (milliseconds).

The SFP version offers the dual speed support of the SFP port for data rate adjustment (1000Base-X and 100Base-FX). The switch version with SMC card is particularly service-friendly because the entire configuration of the device can be stored in one removable medium. The configuration can be simply transferred.

Description	Art.-No. Version with 24 VDC	Art.-No. PoE-Version 48 VDC
Gigabit Ethernet Industrial Switch with 2x Fiber-Uplink		
10 port Gigabit Ethernet switch, 8x RJ-45 (1x 10/100/1000T + 7x 10/100TX), 2x 1000SX, multimode 850 nm SC duplex, max. 550 m	MS650851M	MS650851PM-48
10 port Gigabit Ethernet switch, 8x RJ-45 (1x 10/100/1000T + 7x 10/100TX), 2x 1000LX, single mode 1310 nm SC duplex, max. 10 km	MS650852M	MS650852PM-48
Gigabit Ethernet Industrial Switch with 3x Fiber-Uplink		
10 port Gigabit Ethernet switch, 8x RJ-45 (1x 10/100/1000T + 7x 10/100TX), 3x 1000SX, multimode 850 nm SC duplex, max. 550 m	MS650861M	MS650861PM-48
10 port Gigabit Ethernet switch, 8x RJ-45 (1x 10/100/1000T + 7x 10/100TX), 3x 1000LX, single mode 1310 nm SC duplex, max. 10 km	MS650862M	MS650862PM-48
Gigabit Ethernet Industrial Switch with 3x SFP-Uplink		
10 port Gigabit Ethernet switch, 8x RJ-45 (1x 10/100/1000T + 7x 10/100TX), 3x 100/1000X dual-speed SFP-Slot (with SFPs)	MS650869M	MS650869PM-48
10 port Gigabit Ethernet switch, 8x RJ-45 (1x 10/100/1000T + 7x 10/100TX), 3x 100/1000X dual-speed SFP-Slot, extended Temperature Range -40..+75 °C	MS650869MX	MS650869PMX-48
10 port Gigabit Ethernet switch, 8x RJ-45 (1x 10/100/1000T + 7x 10/100TX) with Storage Media Card Slot, 3x 100/1000X dual-speed SFP-Slot (without SFPs, with 1x Storage Media Card*)	MS650869MSMC	MS650869PMSMC-48

*Additional storage media on page 89.



GBE Switch for Railway and Power Substation Applications

10 Port Gigabit Ethernet Ring Switches with Railway and Power Substation Certification

Benefits

- Railway approval according to EN50121-4:2006 and EN50125-3:2003
- Power Substations approval according IEC 61850-3 and IEEE 1613
- 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
- Operating temperature range -40..+75 °C
- Power supplies with railway approval with 24 VDC and 48 VDC / 60 W available

Description

This switch version has been specially certified for applications in the area of rail traffic. 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 1 m distance from the rail track.

With the additional certification according to IEC 61850-3 and IEEE 1613 this switch can be used for data networks in the area of power plants, power substations and power transport.

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.

Furthermore an upgraded version offers the Power-over-Ethernet (PoE) functionality. The switches are designed to be operated under extreme surrounding conditions, and stable operation along the railway line is guaranteed.



Railway certified 60 W Power Supply

Description	Art.-No.
10 port Gigabit Ethernet switch for railway and power substation applications, 8x RJ-45 (1x 10/100/1000T + 7x 10/100TX), 3x 100/1000X dual-speed SFP-Slot, 2x 24 VDC Power Supply Input, redundant	MS650869M-B
10 port Gigabit Ethernet switch for railway and power substation applications, 8x RJ-45 (1x 10/100/1000T + 7x 10/100TX) 3x 100/1000X dual-speed SFP-Slot, PoE according to IEEE802.3af, 2x 48 VDC Power Supply Input, redundant	MS650869PM-48-B
Power Supplies with Railway Certification	
Power Supply with Railway Certification 230 VAC / 24 VDC, 60 W	MS700482-24B
Power Supply with Railway Certification for PoE applications 230 VAC / 48 VDC, 60 W	MS700482-48B



6 Port Fast Ethernet Switch with Ring Function

6 Port Fast Ethernet Ring Switches with Power-over-Ethernet Option

Benefits

- Fault tolerant fiber ring with reconfiguration < 100 ms
- Extensive features such as VLAN, QoS, IGMP-Snooping, STP/RSTP etc.
- Comfortable administration via web interface/SNMP/Telnet or NMP-software
- Power-over-Ethernet version
- Redundant power supply possible
- Effective over voltage protection
- Robust unit in industrial design

Description

Applications in the industrial environment require constant network availability. Fault-tolerant network components are increasingly being deployed to prevent failures and therefore standstill periods in production and other mission critical applications.

The 6 port Fast Ethernet Switch has two fiber optic connectors in compliance with 100Base-FX, which permit switching to a fault-tolerant fiber optic ring. In the event of a fault, a mechanism patented by MICROSENS facilitates reconfiguration in less than 100 ms (milliseconds).

The devices are generally equipped with integrated network management. Extensive switch functions may be easily configured using the web interface/SNMP/Telnet or NMP-software.

An optional version supports the full Power-over-Ethernet function on all four RJ-45 subscriber ports in accordance with IEEE Std. 802.3af. An intelligent power management system monitors the current power consumption of connected terminal devices. The power supply of this version is realized via a 48 VDC input terminal in redundant design.

Description	Art.-No. Version 24 VDC	Art.-No. PoE-Version 48 VDC
Fast Ethernet Industrial Switch for Multimode Applications		
6 port Fast Ethernet switch, 4x 10/100Base-TX, 2x 100Base-FX, multimode 1310 nm ST 2 km	MS650501M	MS650501PM-48
6 port Fast Ethernet switch, 4x 10/100Base-TX, 2x 100Base-FX, multimode 1310 nm SC duplex 2 km	MS650502M	MS650502PM-48
Fast Ethernet Industrial Switch for Single mode Applications		
6 port Fast Ethernet switch, 4x 10/100Base-TX, 2x 100Base-FX, single mode 1310 nm ST 15 km	MS650505M	MS650505PM-48
6 port Fast Ethernet switch, 4x 10/100Base-TX, 2x 100Base-FX, single mode 1310 nm SC duplex 15 km	MS650504M	MS650504PM-48
6 port Fast Ethernet switch, 4x 10/100Base-TX, 2x 100Base-FX, single mode 1310 nm ST 40 km	MS650507M	MS650507PM-48
6 port Fast Ethernet switch, 4x 10/100Base-TX, 2x 100Base-FX, single mode 1310 nm SC duplex 40 km	MS650506M	MS650506PM-48
6 port Fast Ethernet switch, 4x 10/100Base-TX, 2x 100Base-FX, single mode 1550 nm SC duplex 80 km	MS650509M	MS650509PM-48

Versions with extended temperature range -40..+75 °C on request.



5 Port Fast Ethernet Switch

5 Port Fast Ethernet Switches with Power-over-Ethernet Option

Benefits

- Extensive features such as VLAN, QoS, IGMP-Snooping, STP/RSTP etc.
- Comfortable administration via web interface/SNMP/Telnet or NMP-software
- Power-over-Ethernet version
- 24 VDC power supply, redundancy possible
- Effective over voltage protection
- Robust unit in industrial design

Description

The 5 port Fast Industrial Ethernet Switch enables the setting up of powerful Ethernet networks in rough environments with high levels of reliability. The device has an extremely robust design and permits ambient temperatures ranging from -20 to +60 °C or from -40 to +75 °C in the extended version.

Using 10/100Base-TX it is possible to connect up to four end devices via the RJ-45 connectors. A 100Base-FX fiber optic uplink is available for connection to the central device.

An optional version supports the full Power-over-Ethernet function on all four RJ-45 subscriber ports in accordance with IEEE Std. 802.3af. An intelligent power management system monitors the current power consumption of connected devices. The power supply of this version is realized via a 48 VDC input terminal in redundant design.

Description	Art.-No. Version with 24 VDC	Art.-No. PoE-Version 48 VDC
Fast Ethernet Industrial Switch for Multimode Applications		
5 port Fast Ethernet switch, 4x 10/100Base-TX, 1x 100Base-FX, multimode 1310 nm ST 2 km	MS650461M	MS650461PM-48
5 port Fast Ethernet switch, 4x 10/100Base-TX, 1x 100Base-FX, multimode 1310 nm SC duplex 2 km	MS650462M	MS650462PM-48
Fast Ethernet Industrial Switch for Single mode Applications		
5 port Fast Ethernet switch, 4x 10/100Base-TX, 1x 100Base-FX, single mode 1310 nm ST duplex 15 km	MS650465M	MS650465PM-48
5 port Fast Ethernet switch, 4x 10/100Base-TX, 1x 100Base-FX, single mode 1310 nm SC duplex 15 km	MS650464M	MS650464PM-48
5 port Fast Ethernet switch, 4x 10/100Base-TX, 1x 100Base-FX, single mode 1310 nm ST duplex 40 km	MS650468M	MS650468PM-48
5 port Fast Ethernet switch, 4x 10/100Base-TX, 1x 100Base-FX, single mode 1310 nm SC duplex 40 km	MS650467M	MS650467PM-48
5 port Fast Ethernet switch, 4x 10/100Base-TX, 1x 100Base-FX, single mode 1550 nm SC duplex 80 km	MS650469M	MS650469PM-48

Versions with extended temperature range -40..+75 °C on request.



Ethernet/Fast Ethernet Industrial Media Converter

Media Converter for Ethernet/ Fast Ethernet and RS-232/422/485

Benefits

- Robust media converter for Fast Ethernet (100 Mbps) and Ethernet (10 Mbps)
- Additional version for serial protocols RS-232/422/485 with SUB-D9 and screw terminal
- Transparent conversion of the data
- External alarm contacts
- Connection for redundant power supply
- Effective overvoltage protection

Description

MICROSENS supplies special media converters in an industrial version for use in extremely demanding conditions. In addition to Ethernet (10Base-FL/10Base-T) and Fast Ethernet (100Base-FX/100Base-TX), the product range includes converters for serial interfaces. RS-232/V.24, RS-422/V.11 and RS-485 copper/fiber optic converters are available.

A fixture integrated in the device enables direct mounting onto 35 mm DIN rails. The power supply of the converters is provided by an external 24 VDC power adapter. A second power supply can be connected to supply the devices redundantly.

The Ethernet converters are equipped with a switch to change the assignment of the RJ-45 jack. This allows the 100Base-TX copper connection by using conventional 1:1 patch cords.



Media Converter for Fast Ethernet



Media Converter for RS-232

Description	Art.-No. ST-connector	Art.-No. SC-connector
Fast Ethernet Converter		
100Base-TX/FX, multimode 1310 nm, max. 2 km	MS650421	MS650420
100Base-TX/FX, single mode 1310 nm, max. 15 km	MS650425	MS650424
100Base-TX/FX, single mode 1310 nm, max. 40 km	MS650427	MS650426
Ethernet Converter		
10Base-T/FL, multimode 850 nm, max. 2 km	MS650400-T	-
10Base-T/FL, single mode 1310 nm, max. 10 km	MS650405-T	-
Serial Converter		
RS-232, multimode 1310 nm, max. 2 km	MS650142	MS650143
RS-232, single mode 1310 nm, max. 15 km	MS650145	MS650147
RS-422, multimode 1310 nm, max. 2 km	MS650242	MS650243
RS-422, single mode 1310 nm, max. 15 km	MS650245	MS650247
RS-485, multimode 1310 nm, max. 2 km	MS650342	MS650343
RS-485, single mode 1310 nm, max. 15 km	MS650345	MS650347



5 Port Fast Ethernet IP67-Switch

5 Port Fast Ethernet IP67-Switch

Benefits

- Robust metal housing, protection class IP67
- Easy commissioning without manual configuration (auto negotiation, auto MDI/MDI-X)
- Operation temperature range -40..+70 °C
- 5x Fast Ethernet ports with M12 connector

Description

MICROSENS provides a Fast Ethernet switch complying with IP67 protection class in order to fulfil the extreme demands in the industrial environment. This type of protection guarantees complete dust containment, resistance to sprayed water and to jets of water as well as resistance to temporary submersion in water.

The switch is designed for the use in all indoor and outdoor applications. An adapted working environment in terms of humidity and temperature is not necessary. The switch can be installed closer to the relevant application and a special technology in order to protect the housing is not required any more. Working temperatures range widely from -40 to +70 °C.

The compact IP67 switch has 5x Fast Ethernet ports with 10/100Base-TX. All connectors are provided with the M12 technology.



M12 /M12 Extension



M12D / RJ-45 Data Cable

Description

5 port Fast Ethernet industrial switch IP67, 5x 10/100Base-TX, M12D, 1x 9..30 V DC power supply M12A, -40..70 °C

Art.-No.

MS655315

M12 male to M12 male Cat.5 cable, 3 m

MS100230-3,0

M12 male to M12 female Cat.5 cable, 10 m

MS190231-10,0

M12 male to M12 female Cat.5 cable, 30 m

MS190231-30,0

M12 male to RJ-45 Cat.5 data cable, 3 m

MS190234-3,0

M12 5-pin male to M12 5-pin female power cable, 10 m

MS190241-10,0

M12 5-pin male to M12 5-pin female power cable, 30 m

MS190241-30,0

24 VDC Power Supplies



Industrial Power Supplies

Benefits

- Wide input range 85..264 VAC or 83..375 VDC
- Operation temperature range -10..+70 °C
- High efficiency 88% typ.
- Mechanical stability
- Integrated, effective over voltage protection
- Long-term short circuit, overvoltage, and overtemperature protection
- Parallel operation of up to 5 power supplies possible
- Power good LED

Description

The industrial power supplies are designed for extremely challenging use under rough conditions and have been optimally matched for the use with MICROSENS industrial devices.

In addition to the usual features such as effective surge protection or wide range input for worldwide use, these power supply units also offer potential for technical optimisation. The design of the housing enlarges the heat-emitting surface which, combined with the high degree of efficiency, gives the devices a long service life and the highest level of reliability.

The power supply units are supplied with a power of 24, 60 and 120 W. In addition to the standard versions for alternating current input (AC), a DC/DC converter with 24 W output power is available.

The compact power supplies can be directly latched onto DIN rails or mounted on the wall using the brackets supplied with the delivery. Removable clamp terminals simplify wiring.



DC/DC-Converter

Power	Output	Input	Art.-No.
Compact Power Supplies			
24 Watt	24 VDC / 1.0 A	85..264 VAC or 85..375 VDC	MS700420
60 Watt	24 VDC / 2.5 A	85..264 VAC or 85..375 VDC	MS700421
120 Watt	24 VDC / 5.0 A	85..264 VAC or 85..375 VDC	MS700422
DC/DC Converter			
24 Watt	24 VDC / 1.0 A	18..75 VDC	MS700434



Industrial Power Supply 600 W

48 VDC Power Supplies for Power-over-Ethernet Applications

Benefits

- Auto range input 85..235 or 187..264 VAC
- Operation temperature range -25..+70 °C
- High efficiency 87% typ.
- Adjustable output voltage 48..56 VDC
- DC-OK signal via potential free relay contact
- Long-term short circuit, over-voltage, and overtemperature protection
- External on/off

Description

Industrial devices with a Power-over-Ethernet functionality require a power supply with 48 VDC. MICROSENS supplies a graduated range of power supplies for this purpose.

The availability of the overall application is essentially determined by the right choice of power supply. Principal applications are primarily IP based CCTV, wireless LAN or IP-telephony.

Robustness, resistance to electromagnetic interference and high reserves of power guarantee reliable operation. Other important features are a high level of efficiency as well as effective surge and overload protection. The quality has been designed to target a long service life and reliability. Removable clamp terminals simplify the wiring of the power supply units.

In addition to a compact power supply with 60 W, other power supply units are available with output power of 96, 192, 300 and 600 W. The 48 VDC output voltage can be increased up to a range of 56 VDC in order to counteract any drops in voltage that occur in the power supply line.



Power Supplies 96..360 W

Power	Output	Input	Art.-No.
Compact Power Supplies			
60 Watt	48 V DC / 1.25 A	85..264 VAC or 85..375 VDC	MS700430
Power Supplies			
96 Watt	48 V DC / 2.0 A	85..264 VAC	MS700466
192 Watt	48 VDC / 4.0 A	85..264 VAC	MS700467
360 Watt	48 VDC / 7.5 A	85..264 VAC	MS700468
600 Watt	48 VDC / 12.5 A	85..264 VAC	MS700469



SFP Transceiver with extended Temperature Range

SFP Transceiver with extended Temperature Range

Benefits

- Extended temperature range -40..+85 °C
- Installation during operation (hot swap)
- Versions for Fast Ethernet and Gigabit Ethernet
- Simplex option for FTTH applications

Description

The majority of all active network devices are now equipped with modular optical interfaces in the form of SFP ports. For the user this permits the highest possible flexibility in terms of network configuration.

MICROSENS provides a special range of SFP transceivers with extended temperature range especially for the insertion into network devices intended for operation in rough environments. The temperature range for operation is from -40 to +85 °C.

These SFP transceivers generally have an integrated digital diagnostics function and, depending on the version, are designed for Fast Ethernet (100Base-FX) or Gigabit Ethernet (1000Base-SX/LX). Multimode and single mode versions with different optical budget are available.



Description		Art.-No.
Fast Ethernet		
100Base-FX SFP, multimode 1310 nm 2 km, LC duplex		MS100190DX
100Base-FX SFP, single mode 1310 nm 15 km, LC duplex		MS100191DX
Gigabit Ethernet		
1000Base-SX SFP, multimode 850 nm 550 m, LC duplex		MS100200DX
1000Base-LX SFP, single mode 1310 nm 10 km, LC duplex		MS100210DX
WDM (Simplex)	A-Side – TX: 1310 nm, RX: 1550 nm	B-Side – TX: 1550 nm, RX: 1310 nm
100Base-FX SFP, single mode 20 km, LC simplex	MS100191DXA	MS100191DXB
1000Base-LX SFP, single mode 10 km, LC simplex	MS100221DXA	MS100221DXB
1000Base-LX SFP, single mode 20 km, LC simplex	MS100223DXA	MS100223DXB
1000Base-LX SFP, single mode 40 km, LC simplex	MS100224DXA	MS100224DXB

**further versions on request.*



Installation Accessories

Installation Accessories

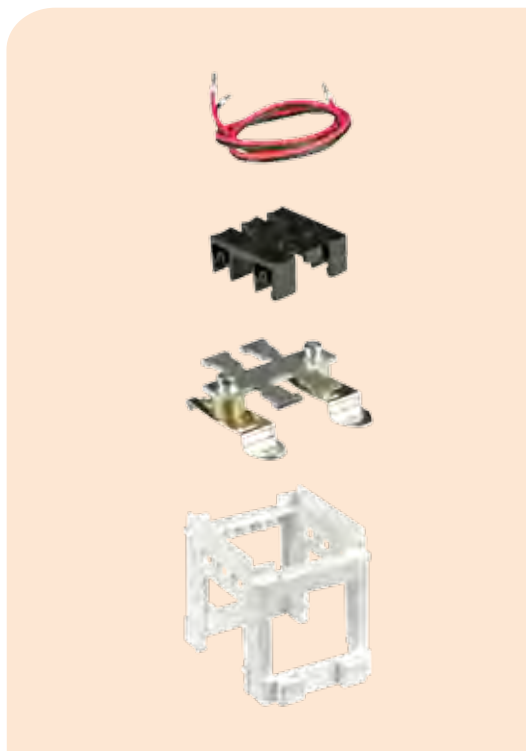
Benefits

- Cable sets for the connection of the power supply, delivered with core cable ends
- Cable guides and cable panels for the strain relief of cablings
- Mounting adapter for "Modular System 45x45", insertion depth flush with the cover of the switch-board

Description

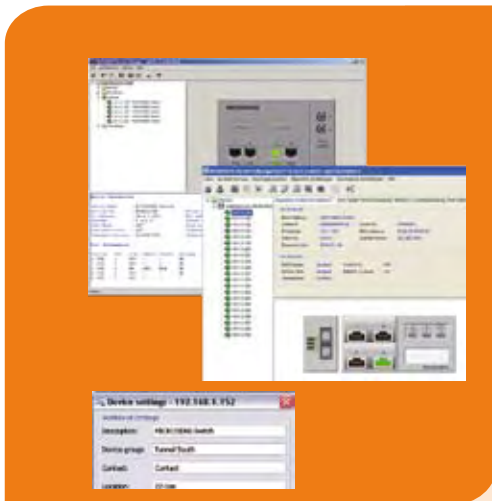
Industrial solutions are usually mounted on DIN-rails. MICROSENS supplies suitable accessories for correct installation. The products are most frequently combined with suitable power supplies. MICROSENS offers corresponding cable sets in different lengths for this purpose.

When it comes to cabling, MICROSENS supplies two levels of tried and tested strain relief systems that are snapped onto the DIN rail. Metal cable safety strips are available for higher levels of traction. Other assembly accessories such as end clamps and brackets for the "Modular System 45x45" complete the industrial solutions range.



Description	Art.-No.
Cable Sets	
Cable feed conductor sleeves 2x 1,5 mm ² 10 cm long, cord red/black, wire ends open	MS190120-0,1
Cable feed conductor sleeves 2x 1,5 mm ² 20 cm long, cord red/black, wire ends open	MS190120-0,2
Cable feed conductor sleeves 2x 1,5 mm ² 50 cm long, cord red/black, wire ends open	MS190120-0,5
Cable Guides or Cable Panels	
1x strain relief for DIN-rail plastics black	MS140820-1
4x strain relief for DIN-rail plastics black	MS140820-4
2x strain relief for DIN-rail metal	MS140821-2
4x strain relief for DIN-rail metal	MS140821-4
Other Accessories	
Block assembly for DIN-rail screwable, aluminium	MS140806
DIN-rail bracket for 45x45 installation switches	MS140805
DIN-rail brace for module 45 1x module 45, plastics	MS140804
SMC-memory card 256 MB for industrial switches -40...+85 °C	MS140890X-256
19" profile with DIN-rail 4 U for installation in 19" cabinets	MS140819

Further accessories and IP67-housing on request.



NMP Network Management Platform – Universal Management

Benefits

- Visualisation of the device status and detailed status information with at a glance
- Automatic detection of all manageable MICROSENS devices in the network
- Logical structuring of the network by definition of device groups
- Integrated SNMP-trap receiver and active monitoring of devices
- Simultaneous configuration of complete groups or all devices
- Automatic firmware update of device groups

Description

Equipment in the Profi and Expert Lines are supported by the network management software (NMP). Furthermore all MICROSENS network components may be configured and monitored using NMP.

The network management tool operates with the aid of lists of devices that permit network components to be grouped together on the basis of a tree diagram. When ring topology is used the groups are automatically generated using the rings while global settings are simultaneously assigned.

In the Professional version the NMP has an integrated topology manager which especially enables the rings to be managed in a clear manner. In addition to general operating parameters, targeted monitoring of ring ports and their connections is possible.

With the server version the NMP is operated on a central server, the access from the clients is done via a web interface. Up to 30 clients can access the server in parallel. For higher demands the NMP server can be operated redundant in the network.

Description	Art.-No.
NMP Professional - management software with 1 year update licence	MS200160-1
NMP Professional - additional update licence for n-years	MS200161-n
NMP Standard - management software with 1 year update licence	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
NMP Server - additional client access licences for n-clients	MS200166-Cn



Element Manager



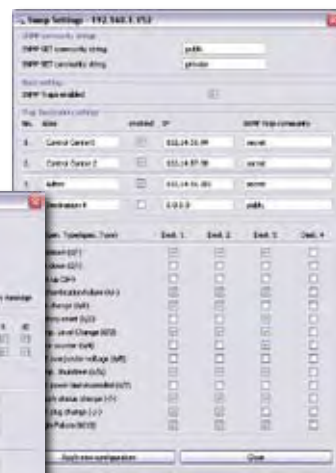
Topology Manager



Port Access Control



IGMP Configuration



SNMP Setting

Industrial solutions

Industrial Switches Profi Line

Gigabit
Ethernet



Gigabit Ethernet Industrial Switch
with ring function

Gigabit Ethernet Industrial
Switch with ring function (SFP)

Interfaces

Number of ports 10/100Base-TX	7	7
Number of ports 10/100/1000Base-T	1	1
Number of ports with PoE		
PoE mode		
100Base-X ports		
1000Base-X ports	2 or 3	
Number of ports SFP		3
Nominal input voltage	18 - 36 VDC	18 - 36 VDC
Power consumption	8 W	8 W
Operating temperature range	-20..+60 °C	-20..+60 °C
Extended operating temperature range*		-40..+75 °C
Dimensions (W x D x H) mm	50 x 108 x 116	50 x 108 x 116

Management features

NMP Management Software	•	•
Telnet / SNMP / Web	•	•
VLAN / QoS / authentication	•	•
Power-over-Ethernet (PoE)	-	-
Ring coupling redundancy	•	•
IGMP snooping	•	•
RSTP	•	•
CDP	•	•

Ordering information

Multimode 850, 4 x ST	MS650850M	
Multimode 850, 4 x SC	MS650851M	
Multimode 850, 6 x SC	MS650861M	
Multimode 1310, 4 x ST		
Multimode 1310, 4 x SC		
Multimode 1310, 2 x ST		
Multimode 1310, 2 x SC		
Single mode 1310, 4 x SC		
Single mode 1310, 4 x ST		
Single mode 1310, 10 km, 4 x SC	MS650852M	
Single mode 1310, 10 km, 6 x SC	MS650862M	
Single mode 1310, 15 km, 2 x SC		
Single mode 1310, 15 km, 2 x ST		
Single mode 1310, 40 km, 2 x SC		
Single mode 1310, 40 km, 2 x ST		
Single mode 1310, 40 km, 4 x SC		
Single mode 1310, 40 km, 4 x ST		
Single mode 1310, 15/40 km, 4 x SC		
SFP version		MS650869M
SFP version for railway application		MS650869M-B

Catalogue page

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* Versions available for extended operating temperature range, article number MS650869MX or MS650869PMX-48.



Fast Ethernet



Gigabit Ethernet Industrial Switch with Ring Function and PoE (SFP)

Gigabit Ethernet Industrial Switch with ring function and PoE

Fast Ethernet Industrial Switch

Fast Ethernet Industrial Switch with ring function

7	7	4	4
1	1		
8	8		
PSE	PSE	1	2
	2 or 3		
3			
48 VDC	48 VDC	18 - 36 VDC	18 - 36 VDC
70 W (62 W for PoE)	70 W (62 W for PoE)	6 W	6 W
-20..+60 °C	-20..+60 °C	-20..+60 °C	-20..+60 °C
50 x 108 x 116	50 x 108 x 116	38 x 108 x 116	38 x 108 x 116
		not manageable	manageable
•	•		•
•	•		•
•	•		VLAN/QoS
-	•		-
•	•		-
•	•		•
•	•		•
•	•		-
	MS650850PM-48		
	MS650851PM-48		
	MS650861PM-48		
			MS650501M
			MS650502M
		MS650461	MS650461M
		MS650462	MS650462M
	MS650852PM-48		
	MS650862PM-48		
		MS650464	MS650464M
		MS650465	MS650465M
		MS650467	MS650467M
		MS650468	MS650468M
			MS650506M
			MS650507M
			MS650508M
MS650869PM-48			
MS650869PM-48-B			
80/81	80	83	83
			82

Industrial solutions

Expert Line

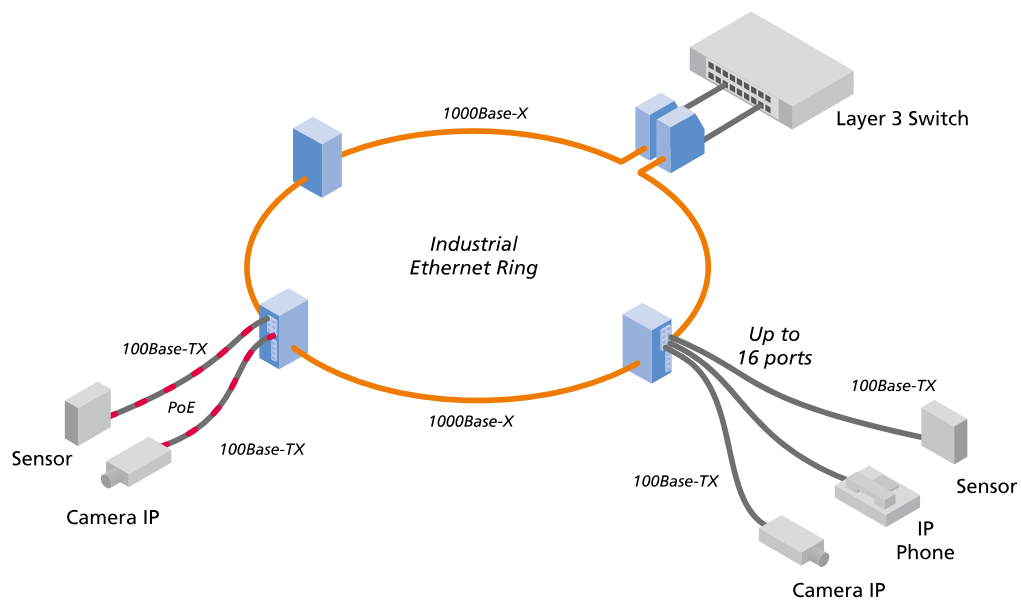
The highest level of robust design for rough environments

The devices of the Expert Line constitute a link between the specific solutions provided with the Profi Line switches/converters and the simple and competitive solutions offered with the Entry Line devices. The comprehensive features of devices of the Expert Line mean they are deployed in high quality applications ranging from the control network to CCTV.

The range of possible applications is enhanced by the possibility of the construction of fault-tolerant fiber optic rings (M-Rings). Furthermore, the ring topology can also be combined with standard protocols such as Spanning Tree (STP) and Rapid Spanning Tree (RSTP), thus producing additional flexibility for the network structure.

The devices are fully supported in terms of network management by the MICROSENS NMP (network management platform). Above all this enables a multitude of devices to be configured and administered easily.

The devices of the Expert Line product range are characterised by their general support of features such as QoS, VLANs, Port Trunking with LACP, bandwidth control, 802.1X authentication and IGMP-Snooping. Versions with an increased number of user ports or with Power-over-Ethernet are also available.



Industrial Solutions – Expert Line



Expert Line Product Overview

8 Port GBE Switch

6x 10/100/1000Base-T
2x 100/1000Base-X with
2x SFP combo ports.

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18 Port FE Switch

16x 10/100Base-TX
2x 100/1000Base-X with
2x SFP combo ports.

99

10 Port FE Switch with PoE

8x 10/100Base-TX with PoE
2x 100/1000Base-X with
2x SFP combo ports.

100



Power Supplies 24 and 48 VDC

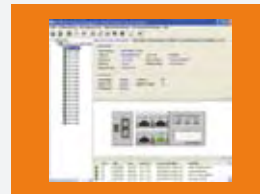
Power supplies
in different
power classes.

86

SFP-Transceiver with extended Temperature Range

Especially adjusted trans-
ceiver for industrial use.

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Network Management

NMP - Network
Management Platform.

90



8 Port GBE Ring Switch

8 Port Gigabit Ethernet Switch

Benefits

- Redundant connection with ring functionality or dual homing with a backup time of less than 20 ms
- Standardised management access via SNMPv1/v2c/v3, Telnet, web and NMP
- Extensive features such as VLAN, QoS, IGMP snooping, STP/RSTP, port trunking
- SFP ports for flexible combination of multimode and single mode with different distances
- SFP ports with dual speed for 100X and 1000X
- Temperature range -10..+60 °C

Description

The 8 port Gigabit Industrial Ethernet Switch is characterised by the full Gigabit support which is provided to all of the eight 10/100/1000Base-T ports. The Gigabit performance means that more reserve capacity can be set aside for time-critical applications or for increasing bandwidth. This also has a direct impact on the stability and availability of networks.

Two of the eight RJ-45 ports are designed for alternative use via an SFP module. Due to the modular design it is possible to freely combine the appropriate SFP multimode and Single Mode transceivers as well as different choices of range. A further advantage is the dual speed support (100Base-FX/1000Base-X) of the SFP module. This allows Gigabit and Fast Ethernet fiber optic networks to be directly coupled to each other.

The construction of a fault-tolerant fiber optic ring is possible via the SFP ports. A special mechanism (M-Ring) makes network reconfiguration possible in less than 20 ms (milliseconds) in the event of a fault. For critical networks the central connection of a Gigabit Ethernet switch may alternatively take place redundantly via the dual homing function. The GBE switch may be freely combined with other switches of the Expert Line range.

Description	Art.-No.
8 port industrial Gigabit Ethernet switch with M-Ring function, 6x 10/100/1000Base-T, 2x 100/1000X SFP or 2x 10/100/1000Base-T dual media	MS651310M



Fast Ethernet Ring Switch

18 Port Fast Ethernet Switch with Gigabit Uplink

Benefits

- High port density
- Redundant connection with ring functionality or dual homing with a backup time of less than 20 ms
- Standardised management access via SNMPv1/v2c/v3, Telnet, web and NMP
- Extensive features such as VLAN, QoS, IGMP snooping, STP/RSTP, port trunking
- SFP ports with dual speed for 100X and 1000X
- Temperature range -10..+60 °C

Description

With its 16 Fast Ethernet (10/100Base-TX) and two Gigabit Ethernet ports the 18 port switch offers a high number of connections per square kilometre. The two Gigabit Ethernet ports serve as uplink ports and are designed both as RJ-45 (10/100/1000Base-T) and as SFP port (100/1000Base-X) (dual media).

The construction of a fault-tolerant fiber optic ring is possible via the SFP ports. In the event of a fault, a special mechanism (M-Ring) facilitates network reconfiguration in less than 20 ms (milliseconds). For mission critical applications the central connection of a Gigabit Ethernet switch may alternatively take place redundantly via the dual homing function. Combination with other switches of the Expert Line range is possible.

Due to the modular design of the fiber optic connectors it is possible to freely combine multimode and single mode fibers as well as different choices of range. A further advantage is the dual speed support of the SFP port providing speed adaptation (1000Base-X and 100Base-FX).

Description

18 port industrial switch with M-Ring function, 16x 10/100Base-TX, 2x 100/1000Base-X SFP or 2x 10/100/1000Base-T dual media

Art.-No.

MS651230M



FE Ring Switch
with 8x PoE

10 Port Fast Ethernet Switch with PoE and Gigabit Uplink

Benefits

- Power-over-Ethernet according to IEEE802.3af on 8 TX ports
- Redundant connection with ring functionality or dual homing with a backup time of less than 20 ms
- Standardised management access via SNMPv1/v2c/v3, Telnet, web and NMP
- Extensive features such as VLAN, QoS, IGMP snooping, STP/RSTP, port trunking
- SFP ports for flexible combination of multimode and single mode with different distances
- SFP ports with dual speed for 100X and 1000X
- Temperature range -10..+60 °C

Description

The 10 port Fast Ethernet Switch provides the Power-over-Ethernet functionality on eight ports (10/100Base-TX) in accordance with IEEE 802.3af. Two other ports serve as uplink ports and are designed as dual media both as RJ-45 (10/100/1000Base-T) or SFP port (100Base-FX/1000Base-X).

PoE enables IP-telephones, wireless access points, web cameras etc. to be supplied with power via the data connection. It is no longer necessary to install data or power cables to every network device, so that costs can be significantly reduced.

The construction of a fault-tolerant fiber optic ring is possible via the SFP ports. In the event of a fault a special mechanism (M-Ring) facilitates network reconfiguration in less than 20 ms (milliseconds). For mission critical networks the central connection of a Gigabit Ethernet switch may alternatively take place redundantly via the dual homing function. Combination with other switches from the Expert Line range is possible.

Due to the modular design of the fiber optic ports it is possible to freely combine multimode and single mode fibers as well as different choices of range. A further advantage is dual speed support providing speed adjustment (1000Base-X and 100Base-FX).

Description

10 port industrial PoE-switch with M-Ring function, 8x 10/100Base-TX with PoE, 2x 100/1000Base-X SFP or 2x 10/100/1000Base-T dual media

Art.-No.

MS651220PM-48

Industrial Switches

Expert Line Ring Switches



Expert Line managed 8 Port GBE Switch with M-Ring Function

Expert Line managed 10 Port FE Switch with M-Ring Function and PoE

Expert Line managed 18 Port FE Switch with M-Ring Function

Interfaces

No. of 10/100TX ports	-	8	16
No. of 10/100/1000T ports	6	2	2
No. of Combo Ports (SFP+10/100/1000T)	2	2	2
No. of ports with PoE	-	8	-
PoE mode	-	PSE	-
Nominal input voltage	12 - 48 VDC	48 VDC	12 - 48 VDC
Power consumption	18 W	max. 116 W (w/ PoE, Full Load)	11.5 W
Operating temperature range	-10 °C .. 60 °C	-10 °C .. 60 °C	-10 °C .. 60 °C
Extended operating temperature range*	-40 °C .. 85 °C	-40 °C .. 85 °C	-40 °C .. 85 °C
Dimensions (W x D x H) mm	69 x 132 x 176	69 x 132 x 176	69 x 132 x 176

Management features

Telnet / Web	• / •	• / •	• / •
SNMPv1 / SNMPv2 / SNMPv3	• / • / •	• / • / •	• / • / •
Network Management Platform (NMP)	•	•	•
VLAN / QoS / authentication	• / • / •	• / • / •	• / • / •
Power-over-Ethernet (PoE)	-	•	-
Ring / Dual Homing / Ring Coupling	• / • / •	• / • / •	• / • / •
IGMP-snooping	•	•	•
Spanning Tree / Rapid Spanning Tree	• / •	• / •	• / •
Flow Control	•	•	•
SNMP Trap / System Event Log	• / •	• / •	• / •
Port Trunking	•	•	•
Firmware upload (TFTP)	•	•	•

Ordering information

8 ports	MS651310M		
10 ports		MS651220PM-48	
16 ports			MS651230M

Catalogue page

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100

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*on request available.

Industrial solutions

Entry Line

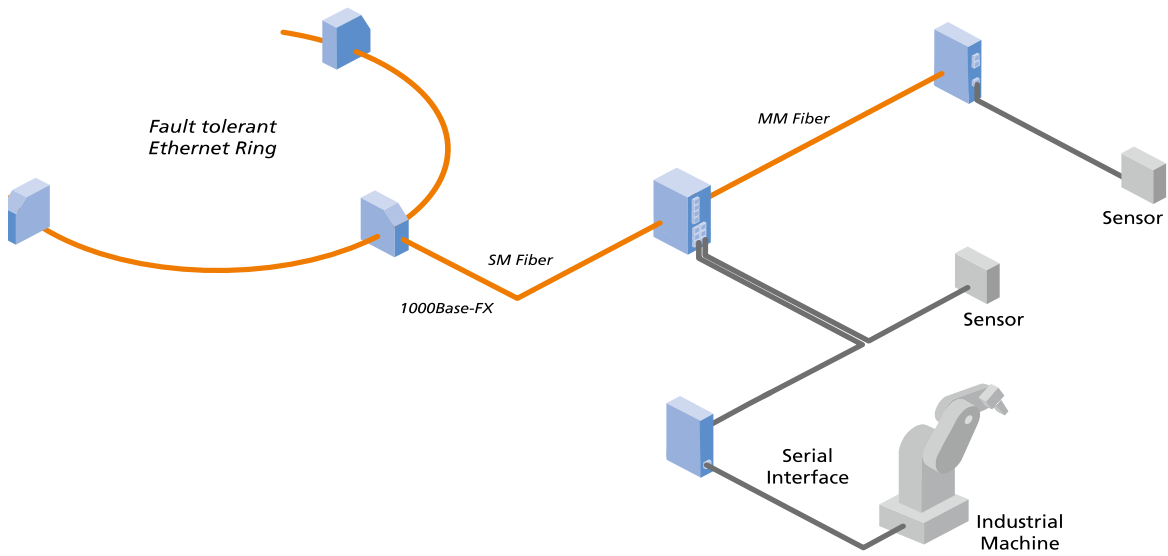
Industrial Ethernet with highest efficiency regarding cost and functionality

The market also needs basic, extremely competitive, reliable products for diverse industrial applications.

MICROSENS has been an established manufacturer of industrial Ethernet devices for many years. In addition to the success of fiber optic switches widely used in the market, there also supplied several devices based on twisted pair cabling.

The use of copper wiring still is very cost-effective especially for lower data rates in the terminal device sector. Therefore these copper switches are extremely well suited for industrial networking particularly across short distances. In such an environment the benefits of the Entry Line product range become very apparent:

- Cost-effectiveness
- Easy installation
- Simple in operation (Plug and Play)
- Compact design
- Extended temperature range
- Relay contacts



Industrial Solutions - Entry Line



Industrial solutions

Entry Line Product Overview

Gigabit Ethernet Switches

5/8 Port Gigabit Ethernet Switches
optional with 1/2 SFP-ports.

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Fast Ethernet Switches

5 and 8 Port Fast Ethernet
Switches, optional with
Fiber Ports.

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Fast Ethernet Switches with Power-over-Ethernet

5 and 8 Port Fast Ethernet
Switches, with fiber ports,
optional with PoE.

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Gigabit and Fast Ethernet Bridges, optional with PoE

Gigabit Bridge,
Fast Ethernet Bridge,
optional with PoE.

109

RS-232/422/485 Device Server

RS-232/422/485 Converter to
Ethernet (IP). 10/100TX or
100FX fiber interface.

110



Fast Ethernet VDSL Extender

Fast Ethernet Extender,
10/100TX via VDSL
max. 1900 m.

111

SFP-Transceiver with extended Temperature Range

Especially adjusted Trans-
ceiver for industrial use.

88



Power Supplies 24 and 48 VDC

Power Supplies
in different
power classes.

86



5 and 8 Port Gigabit Ethernet Switch with SFP-Slot

5/8 Port Gigabit Ethernet Switches with SFP-Slots

Benefits

- Gigabit performance for Industrial Ethernet
- Cost efficient and compact design
- Automatic configuration
- 12..48 VDC power input, redundant
- Effective overvoltage protection
- Potential free alarm relay contact
- 5 port version: SFP slot for 1000X
- 8 port version: dual speed SFP slot for 100X or 1000X

Description

The Entry Line product range offers graduated Gigabit Ethernet switches for rough environments. Therefore it contains compact switches with up to 8 GBE ports. The basic products are designed for copper-based networks and have 5 or 8 RJ-45 ports with 10/100/1000Base-T.

The 5 port version may optionally be provided with an SFP port and is therefore ideally suited for use in a fiber optic network. The pluggable SFP transceiver provides the greatest possible flexibility when selecting the optical connection.

The product with the highest port number of this range has two modular SFP ports. Ports 7 and 8 may optionally be used via the RJ-45 or SFP port. An important feature is the dual speed capability of the SFP port. Gigabit Ethernet (1000Base-X) as well as Fast Ethernet (100Base-FX) are supported, in which case provision takes place via a suitable SFP transceiver. In this way Fast Ethernet fiber optic networks can be easily incorporated into Gigabit structures.

The devices are taken into operation without any manual configuration (plug & play). Ports are set automatically by Auto Negotiation (10/100/1000Base-T) and Auto MDI/MDI-X.



8 Port GBE Switch with SFP-Ports

Description	Art.-No.
5 port Gigabit Ethernet switch 5x 10/100/1000Base-T	MS655200
5 port Gigabit Ethernet switch 4x 10/100/1000T 1x 1000X, 1x SFP-port	MS655201
8 port Gigabit Ethernet switch 8x 10/100/1000Base-T	MS655208
8 port Gigabit Ethernet switch 8x 10/100/1000T 2x 1000X, 2x SFP-port (100/1000 Mbps dual speed)	MS655210

Please find suitable SFP transceiver on page 88.



8 and 5 Port
Fast Ethernet Switches

Fast Ethernet Switches

Benefits

- Easy configuration, no extensive configuration
- 5x or 8x 10/100TX ports
- Version with fiber port for multimode and single mode
- 12..48 VDC power input, redundant
- Potential free contact indicates power loss
- Effective overvoltage protection

Description

The Entry Line series comprises a number of compact Fast Ethernet switches. The basic devices have 5x or 8x RJ-45 copper ports.

Extended switch versions are equipped with additional fiber optic ports. For example, in addition to the 4x 10/100Base-TX ports in the 5 port version, a fiber optic port is available in the multimode or single mode version. The 6 port Fast Ethernet switch also has two fiber optic ports and can therefore be used for cascading.

The devices can be operated immediately and require no configuration. Ports are set automatically by Auto-Negotiation (10/100/1000Base-T) and Auto MDI/MDI-X.

The power supply ports are designed redundantly. An isolated alarm contact reports a possible fault in the power supply of the device.

Description	Art.-No.
5 port Fast Ethernet switch 5x 10/100TX	MS655100
8 port Fast Ethernet switch 8x 10/100TX	MS655140
5 port Fast Ethernet switch 4x 10/100TX 1x 100FX, 1x multimode 1310 nm SC duplex 2 km	MS655102
5 port Fast Ethernet switch 4x 10/100TX 1x 100FX, 1x single mode 1310 nm SC duplex 30 km	MS655104
6 port Fast Ethernet switch 4x 10/100TX 2x 100FX, 2x multimode 1310 nm SC duplex 2 km	MS655122
6 port Fast Ethernet switch, 4x 10/100TX, 2x 100FX, 2x single mode 1310 nm SC duplex 30 km	MS655124



Fast Ethernet Switches with 4x PoE

Fast Ethernet Switches with Power-over-Ethernet

Benefits

- Easy configuration, no extensive configuration
- 4x 10/100TX ports with PoE according to IEEE802.3af
- Version with fiber port for multimode and single mode
- 48 VDC power input, redundant
- Potential free contact indicates power loss
- Effective overvoltage protection

Description

Selected Fast Ethernet switches are available with integrated Power-over-Ethernet functionality. Four 10/100Base-TX ports facilitate the direct supply of terminal devices via the data connection in accordance with IEEE 802.3af with an output of up to 15.4 W per port.

In the copper version the device has a fifth 10/100Base-TX uplink port. Other versions are provided with a fiber optic port in the multimode or single mode version.

Generally the power supply to devices is 48 VDC. The ports are designed redundantly. Dedicated LED displays provide information on the power supply status up to the PoE functionality for each port.

The devices can be operated immediately and require no configuration. Connectors are set automatically by Auto-Negotiation (10/100/100Base-TX) and Auto MDI/MDI-X as well as in accordance with the PoE standard IEEE 802.3af.

Description	Art.-No.
5 port Fast Ethernet PoE-switch, 4x 10/100TX with PoE, 1x 10/100TX uplink, 48 VDC power supply	MS655100P-48
5 port Fast Ethernet switch 4x 10/100TX with PoE, 1x 100FX multimode 1310 nm SC duplex 2 km, 48 VDC power supply	MS655102P-48
5 port Fast Ethernet switch 4x 10/100TX with PoE, 1x 100FX, single mode 1310 nm SC duplex 30 km, 48 VDC power supply	MS655104P-48



Gigabit Ethernet Bridge with SFP-Port

Gigabit and Fast Ethernet Bridges with PoE-Option

Benefits

- Optional converter or bridging function (via DIP-switch)
- Power-over-Ethernet optional
- Automatic speed adjustment per Auto Negotiation
- Integrated Auto Crossover function for use of standardized patch cable
- Link Through function
- SFP-Slot for 1000Base-X
- Optional for extended temperature range -40 to +75 °C

Description

The Fast and Gigabit Ethernet bridges of the Industrial Ethernet Entry Line range create the interface between fiber optic and copper applications. In addition to fiber optic/copper coupling, bridging technology provides speed adjustment for 10/100Base-TX or 10/100/1000Base-T.

The Fast Ethernet Bridges can also be operated using a DIP switch in 100 Mbps converter mode (100BaseTX to 100BaseFX); this is reducing latency times to a minimum.

A Fast Ethernet Bridge with integrated PoE controller is available for Power-over-Ethernet applications. An access point or IP camera connected via fiber optics can be directly supplied with power here.

With its modular uplink port the Gigabit Ethernet Bridge provides maximum flexibility during connection. Conventional multimode or single mode SFPs can be inserted.

The devices can be operated immediately and require no configuration. Connectors for power supply are designed redundantly. An isolated alarm contact reports a possible fault in the power supply.



Fast Ethernet Bridge

Description	Art.-No.
Fast Ethernet Bridging converter 1x 10/100TX 1x 100FX, multimode 1310 nm SC duplex	MS655060
Fast Ethernet Bridging converter 1x 10/100TX 1x 100FX, single mode 1310 nm SC duplex 30 km	MS655062
Fast Ethernet Bridging converter 1x 10/100TX with PoE 1x 100FX, multimode 1310 nm SC duplex, 48 VDC	MS655060P-48
Fast Ethernet Bridging converter 1x 10/100TX with PoE 1x 100FX, single mode 1310 nm SC duplex 30 km, 48 VDC	MS655062P-48
Gigabit Ethernet Bridging converter 1x 10/100/1000T 1x 1000X, 1x SFP-port	MS655099



Ethernet Device Server
RS-232/422/485

RS-232/422/485 Device Server

Benefits

- Universal for RS-232/422/485
- Conversion to Ethernet (IP)
- Emulation of a virtual COM port on a PC (Driver)
- Version with integrated fiber port (100FX)
- Operation in a pair for point to point connection possible
- Windows software included
- 12..48 VDC power input

Description

The Device Server facilitates a simple and fast network connection of serial devices with RS-232, RS-422 or RS-485 interfaces. Transmission takes place via the existing Ethernet IP-topology.

A virtual COM port is set up on a control PC through the installation of special drivers. This enables any number of device servers to be connected. Communication with the devices takes place via the network connection of the PC.

In the case of a point-to-point application the devices can also be used in pairs after appropriate configuration. Powerful Windows software facilitates the configuration and control of devices.

The type of interface (RS-232/422/485) can be freely selected. For the Ethernet connection, depending on the version, the devices have two RJ-45 connectors (2 port switch 10/100BaseTX or for redundant connection) and a fiber optic uplink (1x 100BaseFX).



Device Server with Fiber-Uplink

Description	Art.-No.
Ethernet Device Server, 1x RS-232/422/485, 2x 10/100TX, Power Supply 12..48 VDC	MS655400
Ethernet Device Server, 1x RS-232/422/485, 1x 100FX, multimode 1310 nm SC duplex 2 km, Power Supply 12..48 VDC	MS655401
Ethernet Device Server, 1x RS-232/422/485, 1x 100FX, single mode 1310 nm SC duplex 15 km, power supply 12..48 VDC	MS655403
4 port Ethernet Device Server, 4x RS-232/422/485, 2x 10/100TX Power Supply 12..48 VDC	MS655420



VDSL Extender

Benefits

- Transmission of Fast Ethernet via 2-wire cables
- High performance of up to 50 Mbps (at 300 m)
- Easy commissioning with plug-and-play
- 12..48 VDC power input, redundant
- Effective overvoltage protection
- Potential free alarm relay contact
- Operation temperature range -40..+75 °C
- Vibration proof and shock resistant

Description

The Fast Ethernet VDSL Extender offers transmission of Fast Ethernet across conventional 2-wired lines (telephone or ISTY cable) at distances of up to 1900 m.

With transmission speeds of up to 50 Mbps, this extender provides high network performance and can achieve a range of up to 300 m. The bandwidth that can be achieved is reduced correspondingly in the case of greater distances of up to 1900 m. The use of devices is in pairs according to the master/slave principle, in which case configuration is performed using a DIP switch.

The network connection takes place via an RJ-45 jack with 10/100Base-TX. The 2-wire line can optionally be connected via an RJ-11 jack or a clamp terminal. The maximum transmission speed is automatically negotiated in 10 speed levels according to distance and transmission quality and signalled to the user via LED displays.

In an extended version, the VDSL2 Extender, the maximum transmission capacity can be increased up to 88 Mbps (at 300 m). The maximum distance possible is 2000 m with a data rate of 9 Mbps. The device is design for an operating temperature range of -40 to +75 °C. Here the connection to the 2-wire cable is done via a RJ-45 port.



Description	Art.-No.
Fast Ethernet VDSL Extender, 10/100Base-TX via 2-wire cables (RJ-11 jack or terminal clamp) up to 50 Mbps, 12..48 VDC Power Supply, redundant connection	MS655010
Fast Ethernet VDSL2 Extender, 10/100Base-TX via 2-wire cables (RJ-11 jack) up to 88 Mbps, 12..48 VDC Power Supply, redundant connection	MS655020X

Product Overview Entry Line



Gigabit Ethernet Switches

Fast Ethernet Switches

5 and 8 Port Gigabit Ethernet Switch

5 and 8 Port Gigabit Ethernet Switch with SFP-uplink

5 and 8 Port Fast Ethernet Switch

5 and 6 Port Fast Ethernet Switch with FX-uplink

Interfaces

	5 and 8 Port Gigabit Ethernet Switch	5 and 8 Port Gigabit Ethernet Switch with SFP-uplink	5 and 8 Port Fast Ethernet Switch	5 and 6 Port Fast Ethernet Switch with FX-uplink
Number of 10/100/1000T ports	5 or 8	5 or 8	-	-
Number of 10/100TX ports	-	-	5 or 8	4
Number of PoE-ports	-	-	-	-
SUB-D9	-	-	-	-

Uplinks

	5 and 8 Port Gigabit Ethernet Switch	5 and 8 Port Gigabit Ethernet Switch with SFP-uplink	5 and 8 Port Fast Ethernet Switch	5 and 6 Port Fast Ethernet Switch with FX-uplink
Number of 100/1000X SFP ports	-	1 or 2	-	-
Number of 1000X SFP ports	-	-	-	-
Number of 100FX ports	-	-	-	1 or 2

Features

	5 and 8 Port Gigabit Ethernet Switch	5 and 8 Port Gigabit Ethernet Switch with SFP-uplink	5 and 8 Port Fast Ethernet Switch	5 and 6 Port Fast Ethernet Switch with FX-uplink
Configuration	Plug'n'Play	Plug'n'Play	Plug'n'Play	Plug'n'Play
Auto Negotiation	•	•	•	•
Auto MDI/MDI-X	•	•	•	•
Power supply redundant	•	•	•	•
Voltage range	12 - 48 VDC	12 - 48 VDC	12 - 48 VDC	12 - 48 VDC
Power consumption	5 W (MS655200) 8 W (MS655208)	5 W (MS655201) 17 W (MS655210)	3 W (MS655100) 5 W (MS655140)	4 W (MS655102/104) 6 W (MS655122/124)
Operating temperature range	-10..+60 °C	-10..+60 °C	-10..+60 °C	-10..+60 °C
Potential-free relais contact	•	•	•	•
Overvoltage protection	•	•	•	•
Dimensions max. in mm	30 x 95 x 140	72 x 105 x 152	30 x 95 x 140	30 x 95 x 140

Ordering information

	5 and 8 Port Gigabit Ethernet Switch	5 and 8 Port Gigabit Ethernet Switch with SFP-uplink	5 and 8 Port Fast Ethernet Switch	5 and 6 Port Fast Ethernet Switch with FX-uplink
Version with 2x RJ-45	-	-	-	-
Version with 5x RJ-45	MS655200	-	MS655100	-
Version with 8x RJ-45 uplink	MS655208	-	MS655140	-
Version with 1x SFP-uplink	-	MS655201	-	-
Version with 2x SFP-uplink	-	MS655210	-	-
1x multimode uplink 1310 nm, SC	-	-	-	MS655102
1x single mode uplink 1310 nm, SC	-	-	-	MS655104
2x multimode uplink 1310 nm, SC	-	-	-	MS655122
2x single mode uplink 1310 nm, SC	-	-	-	MS655124

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Bridges

Power-over-Ethernet

RS-232/422/485 Device Server

Gigabit Ethernet Bridge

Fast Ethernet Bridge

5 Port Fast Ethernet
Switch optional with
FX-uplink

Fast Ethernet Bridge

Twisted Pair uplink

Fiber-uplink

1	-	-	-	-	-
-	1	5 / 4	1	2	-
-	-	4	1	-	-
-	-	-	-	1	1
-	-	-	-	-	-
1	-	-	-	-	-
-	1	0 / 1	1	-	1
DIP-switch	DIP-switch	Plug'n'Play	DIP-switch	Software	Software
•	•	•	•	•	-
•	•	•	•	•	-
•	•	•	•	•	•
12 - 48 VDC	12 - 48 VDC	48 VDC	48 VDC	12 - 48 VDC	12 - 48 VDC
5 W	3 W (MS655060) 2 W (MS655062)	3 W w/o PoE, 57 W full load w/ PoE (MS655102P-48)	-	-	-
-10..+60 °C	-10..+60 °C	-10..+60 °C	-10..+60 °C	-10..+60 °C	-10..+60 °C
•	•	•	•	•	•
•	•	•	•	•	•
30 x 95 x 140	30 x 95 x 140	30 x 95 x 140	30 x 95 x 140	72 x 32 x 100	72 x 32 x 100
-	-	-	-	MS655400	-
-	-	MS655100P-48	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
MS655099	-	-	-	-	-
-	MS655060	MS655102P-48	MS655060P-48	-	MS655401
-	MS655062	MS655104P-48	MS655062P-48	-	MS655403
-	-	-	-	-	-
-	-	-	-	-	-
109	109	108	109	110	110