MICROSENS

System Catalogue 2019
Industrial Solutions

PROFI LINE MODULAR
PROFI LINE RACK
PROFI LINE
ENTRY LINE

MICROSENS fiber optic solutions
intelligent, reliable, high-performance

Fiber optic technology from MICROSENS guarantees reliable communication at various locations and in the most adverse environments. Overground, underground, in office buildings, as well as in traffic control techno- logy, over large or short distances - our technologies transmit your data fast and securely.

Individually adjusted to the challenges of industrial solutions, you will find details about our solutions for harsh environments on the following pages.

MICROSENS - Get Connected!

Company

Solutions & Users

Industrial Solutions

01 Future-oriented ideas & their successful implementation

MICROSENS - Innovation from conviction

Transmitting information via fiber optic connections offers numerous benefits.
MICROSENS GmbH & Co. KG recognised this very early on. As one of the pioneers, the company has developed and manufactured high-performance fiber optic transmission systems in Germany since 1993. Customised to the demands of diverse applications and embedded in comprehensive concepts for individual sectors. But, above all, close to the customer. Technical challenges from customer projects are incorporated directly into product development.

This leads to
• robust and fail-safe solutions for industrial environments,
• fiber optic based, yet cost-efficient concepts for the office and workplace,
• as well as optical transport systems for future-oriented wide area networks and efficient coupling of sites.

Moreover, the affiliated companies in the euromicron group develop strategic fiber optic applications and technologies. You can benefit from these synergy effects as well.

Oriented to the future since 1993

1993 _ Establishment of the company MICROSENS.

1995 _ The „Fiber To The Office" (FTTO) concept is developed and lays the foundation for one of today's key services of MICROSENS. In-house manu- facturing commences.

2001 _ A new trend-setting product division opens up with Industrial networking. Development of the redundancy mechanism for constructing fault-tolerant ring networks.

2003 _ Optical multiplexing systems achieves transmission capacities of up to 2.5 Gbps per channel.

2006 _ MICROSENS becomes part of the fast-growing, high-yield euromicron group, which focuses on network and fiber optic technologies with various industry partici- pations. This sets the course for further growth.

2007 _ MICROSENS introduces a new transmission plat- form for high speed services. The flexible transmission system supports data transfer speeds of 10 Gigabit per transmission channel.

2011 _ MICROSENS expands its optical communication competence by acquiring TeraMile GmbH.

2013 _ With generation 6, MICROSENS presents a newly developed, ground-breaking platform for constructing professional building and industrial networks. Trans- mission system for wide area networks with 100 Gbps is introduced.

2016 _ MICROSENS offers innovative IP-based automa- tion solutions for the digital building with Smart Office and Smart Lighting

MICROSENS – From Germany to the world

MICROSENS products are used on all continents of the world. Customers worldwide put their trust in the innovative concepts and in quality „Made in Germany".

All the information comes together at the company head- quarters in Hamm in Westphalia (Germany). Here, qualified employees develop and manufacture most of the high tech products. Extensive laboratory and field tests, as well as continuous monitoring of all processes, ensure the quality of all components. Each individual device that leaves the pro- duction facilities in Hamm is tested for its functionality. The central sales department, which is in direct contact with the end customer, feeds new ideas directly into the development department.

Sales teams in their own subsidiaries in France and Poland maintain contact with the customers in their region. Togeth- er with system integrators worldwide, MICROSENS realises sophisticated projects with high-performance technological components.

Made in Germany

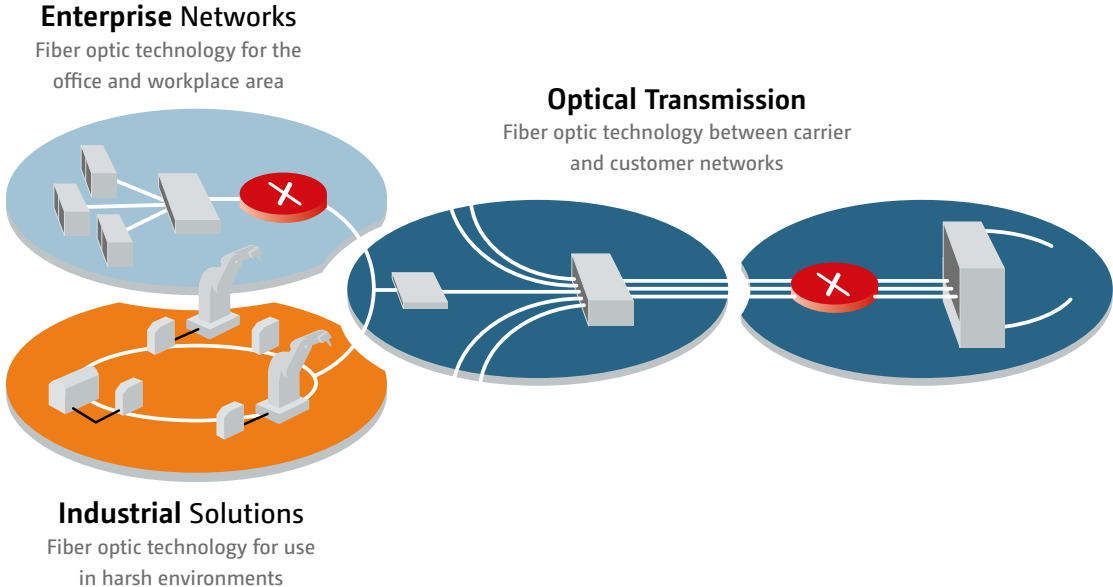# 02 Intelligent networks & their wide variety of applications

Fiber optic technology – solutions on different levels

We live in a world of data and information. Companies, authorities, and institutions rely on the secure, fast, and reliable transmission of data and information. Fiber optic technology by MICROSENS offers application-specific solutions on different levels.

The emphasis in networking workplaces is on cost-efficient and yet high- performance components that are easy to implement and administered.

In the field of optical transport, the key aspects are flexibility, security, and speed of data transmission. The field of industrial solutions offers solutions that work reliably even in harsh environments.

No matter at what level MICROSENS products are used, they can be integrated in existing networks easily. Our standards-compliant development and a modular structure for numerous components ensures this.

Enterprise Networks
Fiber optic technology for the
office and workplace area

Optical Transmission
Fiber optic technology between carrier
and customer networks

Industrial Solutions
Fiber optic technology for use
in harsh environments

Industrial Solutions

Network technology has long since become indispensable in rail transportation, traffic control technology, and in industrial environments. Robust and reliable products from MICROSENS guarantee the secure transmission of data even under adverse conditions. The company has also developed patented Ethernet ring technology that enables the construction of redundant, fail-safe ring structures. With its Profi Line series, MICROSENS bundles certified solutions for applications that are prone to failure. The Entry Line is characterised by its cost-efficient products.

Optical Transmission

MICROSENS optical platforms transmit information fast and reliably, even to distant destinations. This is warranted by optical multiplexing systems that expand existing network capacities. That enables telecommunications providers and large companies to get a future-oriented foundation for their steadily growing bandwidth requirements. With fail-safe and redundant solutions, they can optimally align their IT infrastructure to their individual needs. If sites are to be coupled with one another, the Access Platform offers a wide range of function modules.

Enterprise Networks

Using fiber optic technology combined with copper connection technology in enterprise networks brings together a multitude of advantages. MICROSENS recognised this early on and developed the future-proof concept „Fiber To The Office". This results in powerful networks which flexibly and cost-effectively transmit data, telephony, and video. Moreover, users of "basic fiber optic products" are provided with a wealth of compact and inexpensive products to connect terminal devices to fiber optic networks easily.

03 Fiber optic technology – Matched to the requirements of numerous industries

Automation technology

Productivity, as a key factor for corporate success, requires a robust, dependable network infrastructure. For years, MICROSENS industrial solutions have proven themselves in critical applications through a high degree of dependability and efficiency and guarantee minimal recovery times, even in case of system failure, thanks to automatic reconfiguration.

Security technology

How many failures can a security technology system afford? Ideally none. Security experts put their trust in the proven reliability of MICROSENS solutions. Tried and tested redundancy concepts ensure that security-sensitive facilities remain accessible and supply the connected end devices with power via the data line.

As a leading supplier of fiber optic products, MICROSENS understands the markets and demands of its customers. Customers value our industry-specific expertise and our individual support in demanding projects. They benefit from the continuous communication and the exchange of experiences just as much as we do.

At the same time, the MICROSENS range of services is constantly expanding, creating efficient networks at the highest level. For efficient advice and support, our specialists are analysing today the markets of tomorrow, in order to create secure connections in the future as well.

Energy supply

More than ever, our world depends on a well-functioning energy supply. Due to increasingly decentralised energy generation, distribution networks are becoming more intelligent. The innovative solutions from MICROSENS offer energy suppliers the certainty they need - with robust solutions, redundancies, and innovative mechanisms for maintaining operation even under adverse conditions.

Transportation and traffic

Transportation and traffic systems have changed drastically in recent years. Formerly autarkic applications are merging to form a common network based on the IP protocol. Fail-safe performance and a high degree of reliability place equally high demands on the technology used as harsh environments and large distances. MICROSENS offers fail- safe, redundant product solutions for the maximum availability.

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Fiber optic technology for use in harsh environments

Industrial Ethernet components are characterised by their robust design for use in harsh environments.

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Profi Line Modular

Powerful, future-proof and expandable
to meet new requirements

The Profi Line Modular series from MICROSENS offers top performance and flexibility in the most confined spaces. With its modular design, it allows for demand-driven expansions and keeps initial investments to a necessary minimum. Only that which is actually needed is installed and only once it really is needed - „pay as you grow" in the true sense.

The hardware of the Profi Line Modular switches is already designed today to be ready for future functions that are easy to activate by means of firmware upgrades. High-perfor- mance switching chipsets combined with a powerful ARM processor offer significant investment protection.

The innovative approach of saving the switch operating system, the firmware, and the configuration data on one SD card in the basic switch module is leading the way. If the module is replaced, the SD card is simply reinserted. No complex reconfigurations, no installing of software images, just the shortest possible recovery time.

Profi Line Modular is the first choice for Industrial Ethernet – wherever performance, network security, and productivity matter, for example in critical manufacturing areas, in energy supply, gas and oil extraction, for monitoring pipelines, in mining, and in transportation

PROFI LINE MODULAR

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Industrial Solutions _ Profi Line Modular

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Profi Line Modular
Product overview

Profi Line Modular Basic Switch
13 Port GBE Switch with ring redundancy and PoE/PoE+.

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Profi Line Modular GBE Expansion modules
6 and 12 Port GBE module with ring redundancy and PoE/ PoE+.

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13-port GBE Switch with Railway Certification
13-port GBE switch certified to EN50121-4:2006.

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13-port GBE switch for power distribution systems
13-port GBE switch certified to IEC 61850-3:2013.

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Power supplies 48..56 VDC for PoE/PoE+ applications
In different power classes.
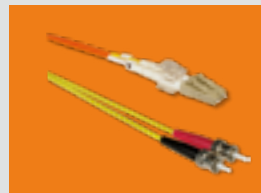
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SFP Transceivers with extended Temperature Range
Specially matched transceivers for industrial use.

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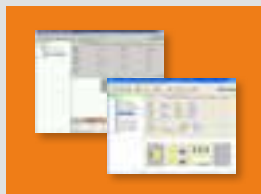### WDM SFP Transceiver simplex with extended Temperature Range

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Patch Cables
Multimode, single mode, angled polish and couplers.

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NMP - Network Management Platform, universal Management for all MICROSENS Device Families

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13-port GBE Basic Switch

Profi Line Modular Basic Switch 13 Port GBE Switch with Ring Redundancy and PoE/PoE+

Features

▌ Gigabit performance with energy-efficient Ethernet

▌ 8x Power-over-Ethernet+ (802.3at) max. 30 W per port, optional version with 69 W per port

▌ Extended temperature range -40..+75°C

▌ Fanless design in robust stainless steel housing

▌ Modularly expandable

▌ Exchangeable SD card for firmware and configuration

▌ I/O contacts with 2x inputs/outputs each

▌ Fail-safe performance due to ring structures with recovery times < 50 ms

Description

The Profi Line Modular switches from MICROSENS offer top performance and flexibility in confined spaces. The modular design of the Profi Line Modular switches allows for demand-oriented expansions, which limits the initial investment to the minimum necessary.

The switch basic module already offers thirteen gigabit ports, four of which, as combo ports, can be expanded to fiber optic connections with SFP transceivers.

Despite its space-saving design, it has two alarm inputs/outputs, for example for cabinet monitoring or integrating a sensor/actuator. Eight of the copper ports offer PoE/ PoE+ to supply connected end devices cost-effectively and without additional cabling effort with power. The switch itself can also work without its own power supply, operating over PoE/PoE+ as powered devices.

Expansion modules with six or twelve Gigabit Ethernet ports as well as an optional eight-port module with 2x 10G uplinks ensure maximum scalability. These modules can simply be connected to the side of the basic module based on demand. The GBE expansion modules also have gigabit combo ports, making it possible to achieve an impressive number of fiber optic connections.

Basic switch with 12-port expansion module

Description	Art. no.
Profi Line Modular 13-port 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, serial port, USB port, SD memory card slot, I/O: 2x inputs, 2x outputs, 2x power supply connections 24..57 VDC	**MS652119PM-V2**
Profi Line Modular 13-port Gigabit Ethernet Basic Switch, 1x 10/100/1000T PoE+ (PD), 4x 10/100/1000T high-power 60 W PoE+ (PSE), 4x 10/100/1000T, 4x dual media ports: 100/1000X SFP slot or 10/100/1000T, serial port, USB port, SD memory card slot, I/O: 2x inputs, 2x outputs, 2x power supply connections 24..57 VDC	**MS652129PM**

Suitable SFP transceivers on page 21et seqq.

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Profi Line Modular Expansion Module, 6- / 12-Port GBE Switch with Ring Redundancy and PoE/PoE+

12-port Expansion Module

Features

▌ Need-based port expansion to max. 25 GBE ports

▌ 6- or 12-port modules

▌ Gigabit performance with energy-efficient Ethernet

▌ 4x or 8x Power-over-Ethernet+ (802.3at), max. 30 W per port

▌ 2x or 4x 100/1000X SFP slots

▌ Robust design, compact stainless steel housing

Description

The switch basic module from the Profi Line Modular series can be expanded exactly as needed based on the customer's individual requirements. Expansion modules with 6 or 12 Gigabit Ethernet ports are simply connected to the side of the basic module. The 6-port expansion module has 4x 10/100/1000Base-T ports with PoE/PoE+ functionality, two further connections are designed as Gigabit combo ports and can either be used as 10/100/1000Base-T or optionally as 100/1000X SFP slots. The 12-port expansion module has 8x 10/100/1000Base-T ports with PoE/PoE+ functionality, four further connections are designed as Gigabit combo ports and can either be used as 10/100/1000Base-T or optionally as 100/1000X SFP slots.

The maximum expansion level of the Profi Line Modular switches is 25 Gigabit Ethernet ports. Due to the modular design no valuable space is wasted with oversized backplanes in wiring cabinets. The mechanical stability of the overall construction is maintained - this is ensured with an elaborate mechanism that locks into place solidly and can be unlocked again centrally.

Another expansion module with 6x 10/100/1000Base-T ports and 2x 10GBASE-X uplink ports is available optionally.

Industrial Solutions

6-port Expansion Module

Description	Art. no.
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

Suitable SFP transceivers on page 21et seqq.

MICROSENS

13-port GBE Switch with Railway Certification

13-port GBE Switch for Railway Applications

Features

▌ Railway certified to EN50121 – 4:2006 and EN50125-2003

▌ Gigabit performance with energy-efficient Ethernet

▌ 8x Power-over-Ethernet+ (802.3at) max 30 W per port

▌ Extended temperature range -40..+75 °C

▌ Fan-less design in a robust stainless steel housing

▌ Redundant power connections

▌ Replaceable SD card for firmware and configuration

▌ I/O contacts, 2x In-/Outputs each

▌ Fail-safety though the construction of ring structures with recovery-times < 50ms

Description

This GBE switch from the Profi Line Modular series by MICROSENS is certified specifically for the application in the railway transport sector. Certified to EN50121-4:2006 (for stricter EMC requirements for electromagnetic immunity) and EN20125-3:2003 (temperature-, climate-, vibration-, and shock-resistance), the device can be deployed just 1m away from the tracks.

The switch offers thirteen Gigabit ports, four of which, as Combo ports, can be upgraded to fiber optic ports using SFP modules. Despite its space-saving design, it has two alarm inputs/outputs each, for example to monitor the cabinet or to integrate sensors/actuators. Eight of the copper ports offer PoE/PoE+, so that connected end devices can be supplied with power cost-efficiently and without additional cabling efforts. The switch itself can also operate without a dedicated power supply and be supplied over Poe/PoE+ as a powered device.

Description	Art. no.
Profi Line Modular 13-port Gigabit Ethernet switch for railway applications, 8x 10/100/1000T PoE+ (PSE), 1x 10/100/1000T PoE+ (PD), 4x Dual Media	**MS652119PM-B**

MICROSENS

13-port GBE switch for power substations

13-port GBE switch for power substations

Features

▌ Power substation certified to IEC 61850-3:2013, IEC 61000-6-5Ed.1.0:2015-08, IEEE 1613:2009 (Class 1)

▌ Railway certified to EN50121-4:2006

▌ Gigabit performance with energy-efficient Ethernet

▌ 8x Power-over-Ethernet+ (802.3at) max 30 W per port

▌ Extended temperature range -40..+75 °C

▌ Fan-less design in a robust stainless steel housing

▌ Redundant power connections

▌ Replaceable SD card for firmware and configuration

▌ I/O contacts, 2x In-/Outputs each

▌ Fail-safety though the construction of ring structures

Description

The harsh environmental conditions in power substations expose communications components to increased loads: Strong electromagnetic fields across high-voltage lines and switching operations, vibration, humidity, and enormous temperature fluctuations call for especially robust devices. The switches from the Profi Line Modular series by MICROSENS are ideally suited for adverse environmental conditions.

This GBE switch was developed specifically for the application in the sector of power substations. Certified to IEC 61850-3: 2013, IEC 61000-6-5Ed.1.0:2015-08, IEEE 1613: 2009 (Class 1), it can be used directly in the environment of power substations. Additionally, it meets the standard EN50121-4:2006 for railway transport.

The switch offers thirteen Gigabit ports, four of which, as Combo ports, can be upgraded to fiber optic ports using SFP modules. Despite its space-saving design, it has two alarm inputs/outputs each, for example to monitor the cabinet or to integrate sensors/actuators. Eight of the copper ports offer PoE/PoE+, so that connected end devices can be supplied with power cost-efficiently and without additional cabling efforts. The switch itself can also operate without a dedicated power supply and be supplied over Poe/PoE+ as a powered device.

Industrial Solutions

Designation	Art. no.
Profi Line Modular 13-port Gigabit Ethernet switch for power substations, 8x 10/100/1000T PoE+ (PSE), 1x 10/100/1000T PoE+ (PD), 4x Dual Media Ports: 100/1000X SFP slot or 10/100/1000T, serial port, USB port, I/O: 2x inputs, 2x outputs, 2x power supply connection 24..57 VDC	MS652119PM-BS

120 W Power Supply Unit

Power Supplies 48..56 VDC for PoE/PoE+ Applications

Features

▌ Top reliability and availability

▌ High efficiency

▌ Wide-range input 90..264 VAC or 90..132 / 180..264 VAC

▌ Adjustable output voltage 48..56 VDC or 45..55 VDC

▌ Power classes 50 W / 120 W / 240 W / 480 W

▌ Effective overvoltage and overload protection

▌ Parallel operation of up to 3 power supply units (only MS700456, MS700457, and MS700458)

▌ Compact dimensions, low tare weight

▌ Extended temperature range

▌ -10..+70°C (MS700455), -35..+70°C (MS700456), -40..+70°C (MS700457/MS700458)

Description

Active network components that feature Power-over-Ethernet or Power-over-Ethernet+ usually require an external high-performance 48 VDC power supply. MICROSENS offers special power supply units for this extremely demanding application.

The main feature of this power supply unit is the insensitivity towards electrical interference, which is crucial, especially for applications prone to failure. Further important properties are the high efficiency, extended temperature range, the compact dimensions, and simple installation (snap-on) on DIN rails.

The robust power supply units are offered in the power classes 50, 120, 240, and 480 W. The output voltage of 48 VDC can be set to up to 56 VDC directly on the power supply unit, which is of particular significance for PoE+ (according to IEEE 802.3at with up to 30 W per port). All devices also include effective overvoltage and overload protection.

50 W Power Supply Unit

Power	Output	Input	Art. no.
Compact power supplies			
50 Watt	48..56 VDC / 1.0 A	85..264 VAC	**MS700455**
120 Watt	45..55 VDC / 2.5 A	90..132 / 180..264 VAC	**MS700456**
240 Watt	47..56 VDC / 5.0 A	90..132 / 180..264 VAC	**MS700457**
480 Watt	47..56 VDC / 10 A	90..264 / 120..370 VAC	**MS700458**

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SFP Transceivers with
extended Temperature Range

SFP Transceivers with extended Temperature Range

Features

▌ Extended temperature range -
40..+85°C

▌ Installable during operation
(hot swap)

▌ Versions for Fast Ethernet and
Gigabit Ethernet

▌ Graded optical budget for distances
up to 120 km

Description

A majority of all active network components is equipped with modular optical interfaces in the form of SFP ports. For the user, this means the greatest possible flexibility in terms of network configuration. Particularly for the use of network components designed for operation under harsh conditions, MICROSENS offers a series of SFP transceivers with an extended temperature range.

The permissible temperature range for operation extends from -40..+85°C. These SFP transceivers usually have an integrated digital diagnostic function and are designed for Fast Ethernet (100Base-FX) or Gigabit Ethernet (1000Base-SX/LX), depending on the version. For this purpose, multimode and single mode versions with adapted optical budget are available for selection. The SFPs are optionally available for the transmission over a simplex fiber (see following page). In this case, the transmission and reception channels are transmitted over different wavelengths.

Industrial Solutions

Designation	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**
1000Base-LX SFP, single mode 1310 nm 25 km, LC duplex	**MS100211DX**
1000Base-LX SFP, single mode 1310 nm 40 km, LC duplex	**MS100212DX**
1000Base-LX SFP, single mode 1550 nm 50 km, LC duplex	**MS100213DX**
1000Base-LX SFP, single mode 1550 nm 80 km, LC duplex	**MS100214DX**
1000Base-LX SFP, single mode 1550 nm 120 km, LC duplex	**MS100215DX**

Further versions on request

MICROSENS

WDM SFP Transceivers Simplex with extended Temperature Range

WDM SFP transceivers simplex with extended temperature range

Features

▌ Doubling of transmission capacity through WDM technology

▌ Versions for Fast Ethernet and Gigabit Ethernet

▌ Graded versions for up to 80 km

▌ Extended temperature range -40..+85°C

Description

In addition to the standard SFP transceivers, MICROSENS also offers special versions for the bidirectional optical data transmission via one single mode optical fiber (simplex). This is made possible by using different wavelengths for the two transmission directions (WDM method - Wavelength Division Multiplexing) and by implementing a wavelength-sensitive filter on the receiving side. This way, the transmission capacity of a duplex fiber can be doubled in a simple manner. The transceivers are always used in pairs and typically work with wavelengths of 1310/1550 nm or 1310/1490 nm. Graded transceiver versions enable direct coupling over distances of up to 80 km.

The SFP transceivers are designed for the extended temperature range of -40..+85°C. They generally include an integrated digital diagnostics function and are designed for Fast Ethernet (100Base-FX) or Gigabit Ethernet (1000Base-SX/ LX), depending on the version.

Designation	Art. no.	Art. no.
Fast Ethernet WDM simplex	**A-side: Tx:1310 nm, Rx:1550 nm**	**B-side: Tx:1550 nm, Rx:1310 nm**
100FX SFP, single mode 20 km, LC simplex	**MS100191DXA**	**MS100191DXB**
Gigabit Ethernet WDM simplex	**A-side: Tx:1310 nm, Rx:1550 nm**	**B-side: Tx:1510 nm, Rx:1310 nm**
1000BX SFP, single mode 10 km, LC simplex	**MS100221DXA**	**MS100221DXB**
1000BX SFP, single mode 40 km, LC simplex	**MS100224DXA**	**MS100224DXB**
1000BX SFP, single mode 60 km, LC simplex	**MS100225DXA**	**MS100225DXB**
Gigabit Ethernet WDM simplex	**A-side: Tx:1310 nm, Rx:1490 nm**	**B-side: Tx:1490 nm, Rx:1310 nm**
1000BX SFP, single mode 10 km, LC simplex	**MS100222DXA**	**MS100222DXB**
1000BX SFP, single mode 20 km, LC simplex	**MS100223DXA**	**MS100223DXB**
Gigabit Ethernet WDM simplex	**A-side: Tx:1490 nm, Rx:1570 nm**	**B-side: Tx:1570 nm, Rx:1490 nm**
1000BX SFP, single mode 80 km, LC simplex	**MS100228DXA**	**MS100228DXB**

Further versions on request.
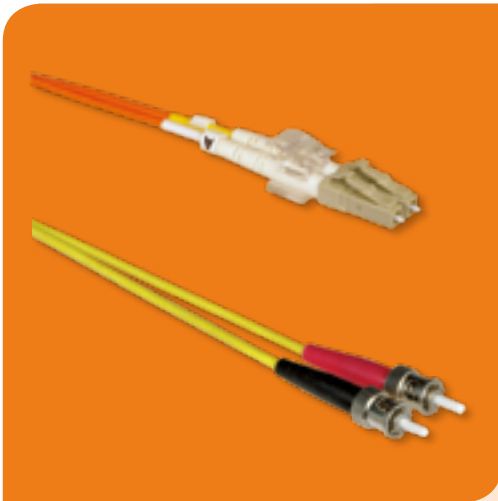
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FO Patch Cables

Features

▌ Combination of common connector types

▌ Different lengths

▌ Readily available (standard lengths)

▌ Mechanically polished connector contacts

Description

To round off the range, MICROSENS offers a wide assortment of fiber optic patch cables. For multimode and single mode applications, all combinations of connector types and lengths are possible.

The connectors for single mode optical fibers are further divided into standard angled polish (PC = Physical Contact) and 8° angled polish (APC = Angled Physical Contact). Using standard colours, the connectors are easily recognisable: standard (PC = blue) and angled polish (APC = green).

The standard patch cables are designed as a duplex cable (2 fibers for two-way sending / receiving) and the standard lengths are 1, 2, 3 and 5m. Other lengths and simplex versions are available on request.

MICROSENS also offers suitable feed-through coupling. Depending on the version these are designed either for a snap-in mounting or a screw sleeve. The versions for multimode (beige), multimode (blue), and single mode angled (green) differ in colour and quality (Materials: plastic, metal, or ceramic).

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Kupplungen (schraubbar)
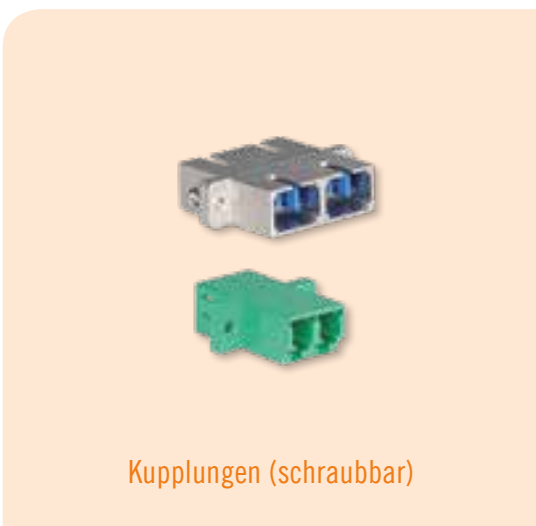
Durchführungskupplungen (Clip)

	SC/SC duplex	SC/SC simplex	SC/ST simplex	ST/ST simplex	LC/LC duplex	E-2000 simplex
Multimode	MS121100	MS121600	MS121601	–	MS121122	–
Single mode (PC)	MS121000	MS121500	MS121501	–	MS121022	–
Single mode (APC)	MS121077	MS121577	–	–	MS121088	–
Feed-through couplers (screwable)						
Multimode	MS122100	MS122600	MS122601	MS122611	MS122122	MS122655
Single mode (PC)	MS122000	MS122500	MS122501	MS122511	MS122022	MS122555
Single mode (APC)	MS122077	MS122577	–	–	MS122088	MS122599

	SC	ST	LC	MT-RJ	VF-45	E-2000
SC	MS123100-L	MS123101-L	MS123102-L	MS123103-L	MS123104-L	MS123105-L
ST	MS123101-L	MS123111-L	MS123112-L	MS123113-L	MS123114-L	MS123115-L
LC	MS123102-L	MS123112-L	MS123122-L	MS123123-L	MS123124-L	MS123125-L
MT-RJ	MS123103-L	MS123113-L	MS123123-L	MS123133-L	MS123134-L	MS123135-L
VF-45	MS123104-L	MS123114-L	MS123124-L	MS123134-L	MS123144-L	MS123145-L
E-2000	MS123105-L	MS123115-L	MS123125-L	MS123135-L	MS123145-L	MS123155-L

OM3 Multimode 50/125 µm Duplex Patch Cables

	SC	ST	LC	MT-RJ	VF-45	E-2000
SC	MS123300-L	MS123301-L	MS123302-L	MS123303-L	–	MS123305-L
ST	MS123301-L	MS123311-L	MS123312-L	MS123313-L	–	MS123315-L
LC	MS123302-L	MS123312-L	MS123322-L	MS123323-L	–	MS123325-L
MT-RJ	MS123303-L	MS123313-L	MS123323-L	MS123333-L	–	MS123335-L
E-2000	MS123305-L	MS123315-L	MS123325-L	MS123335-L	–	MS123355-L

Multimode 62.5/125 µm Duplex Patch Cables

	SC	ST	LC	MT-RJ	VF-45	E-2000
SC	MS123200-L	MS123201-L	MS123202-L	MS123203-L	–	MS123205-L
ST	MS123201-L	MS123211-L	MS123212-L	MS123213-L	–	MS123215-L
LC	MS123202-L	MS123212-L	MS123222-L	MS123223-L	–	MS123225-L
MT-RJ	MS123203-L	MS123213-L	MS123223-L	MS123233-L	–	MS123235-L
E-2000	MS123205-L	MS123215-L	MS123225-L	MS123235-L	–	MS123255-L

Single mode 9/125 µm Duplex Patch Cables

	SC	ST	LC	MT-RJ	VF-45	E-2000
SC	MS123000-L	MS123001-L	MS123002-L	MS123003-L	MS123004-L	MS123005-L
ST	MS123001-L	MS123011-L	MS123012-L	MS123013-L	MS123014-L	MS123015-L
LC	MS123002-L	MS123012-L	MS123022-L	MS123023-L	MS123024-L	MS123025-L
MT-RJ	MS123003-L	MS123013-L	MS123023-L	MS123033-L	MS123034-L	MS123035-L
VF-45	MS123004-L	MS123014-L	MS123024-L	MS123034-L	MS123044-L	MS123045-L
E-2000	MS123005-L	MS123015-L	MS123025-L	MS123035-L	MS123045-L	MS123055-L

Single mode 9/125 µm Duplex Patch Cables with 8° angled polish

	SC/PC	SC/APC 8°	LC/PC	LC/APC 8°	E-2000/PC	E-2000/APC 8°
SC/APC 8°	MS123007-L	MS123077-L	MS123027-L	MS123078-L	MS123057-L	MS123079-L
LC/APC 8°	MS123008-L	MS123078-L	MS123028-L	MS123088-L	MS123058-L	MS123089-L
E-2000/APC 8°	MS123009-L	MS123079-L	MS123029-L	MS123089-L	MS123059-L	MS123099-L

L = length in metres, standard lengths: 1 m, 2 m, 3 m (e.g.: MS123001-01,5 for a 1.5 m length cable). Further plug combinations and lengths on request.

Industrial Solutions

MICROSENS

NMP – Network Management Platform, universal Management for all MICROSENS Device Families

Features

▌ Graphic display of the device status and detailed status information at a glance

▌ Automated recognition of manageable MICROSENS components within the network

▌ Logical structuring of the network by defining device groups

▌ Integrated SNMP trap receiver for active monitoring of devices

▌ Simultaneous configuration of complete device groups or all devices

▌ Automatic firmware update of device groups

Beschreibung

The Profi Line and Profi Line Modular devices are supported by the network management software (NMP). Furthermore, the NMP also allows all MICROSENS network components to be configured and monitored.

The network management tool works with device lists that allow the grouping of network components based on a tree structure. With ring topology in place, groups are automatically generated on the basis of the rings and global settings are assigned simultaneously.

The Professional version of NMP has an integrated Topology Manager which makes a transparent administration of the rings, in particular, possible. Thus, alongside the general operating parameters, ring connections and their interconnections can also be monitored specifically.

The Server version of NMP is run on a central server, the client accesses it via a web interface. Up to 30 parallel accesses can be administrated. For increased requirements, the NMP server is operated redundantly in a network.
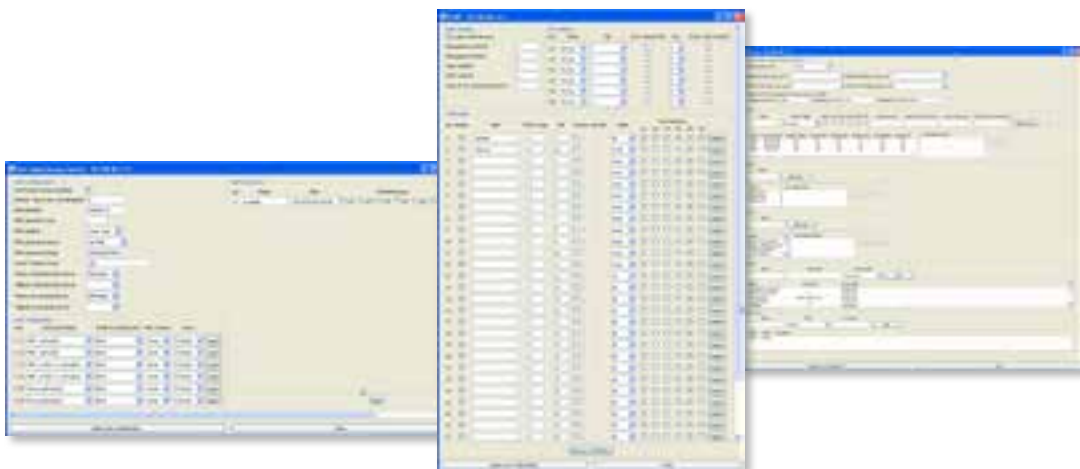
Industrial Solutions

Designation	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

Standard

Professional

Server
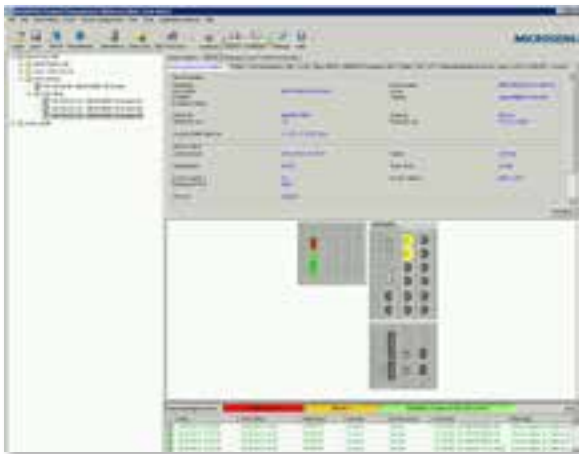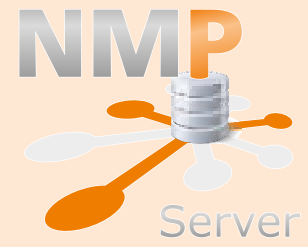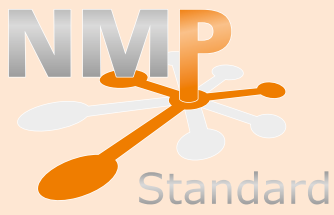
Element Manager

Topology Manager

Port Access Control

VLAN Configuration

Management Access Settings

Industrial Solutions

Industrial Solutions

Profi Line Rack

Robust, reliable, efficient

Besides the extensive industrial product portfolio for the installation on DIN rails, MICROSENS also offers robust switches in a 19" design. The Profi Line Rack series was developed for the use in harsh industrial environments and sets new standards in terms of reliability and performance.

In industrial environments, performance and cost-effectiveness count. Depending on the industry, companies work around the clock. The Profi Line Rack switch by MICROSENS was designed for exactly this demanding environment. Dependable Gigabit performance in continuous operation, energy-efficient Ethernet, PoE/PoE+ for the power supply of the end devices, combo ports for the need-based expansion of fiber optic connections, setup of a ring structure for higher fail safety, extensive security features to protect from unauthorized access – all this in only one height unit.

Industrial Ethernet is both the pioneer and the indispensable basis for Industry 4.0. Plants, devices, and more and more individual components such as sensors and actuators are equipped with IP-connections. The harsh environment and long operating periods pose a particular challenge for IP devices.

Reliable solutions are called for – such as the compact, robust Profi Line Rack switch by MICROSENS, designed for the continuous operation in demanding environments.

MICROSENS

PROFI LINE RACK

Industrial Solutions _ # Profi Line Rack

MICROSENS

Profi Line Rack
Produktübersicht

**12/24-port GBE 19"
Switch with PoE and 4x
10GBase-X SFP+ slots**
10G uplink.

31

**25-port GBE 19" Switch
with PoE+**
16x GBE TP PoE+, 1x GBE PD,
8x TP/SFP combo ports.

32

**25-port GBE 19" Switch
for power substations and
railway applications**
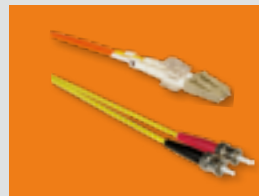IEC 61850-3:2013, EN50121-4:2006.

33

**SFP Transceivers with extended
temperature range**
Specially matched transceivers
for industrial use.

21

**WDM SFP Transceivers simplex
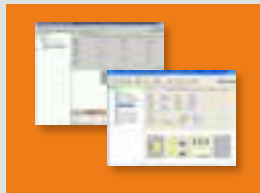with extended temperature
range**

22

Patch Cables
Multimode, Single Mode, angled
polish and couplers.

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**NMP - Network
Management Platform,
universal Management for all
MICROSENS Device Families**

25

MICROSENS

12/24-port Gigabit Ethernet 19" Switch with PoE+ and 4x 10GBase-X SFP+ Slots

12/24-port Gigabit Ethernet 19" Switch with PoE+ and 4x 10GBase-X SFP+ Slots

Features

- Highest switch performance in industrial model

- 4x 10 Gbps SFP+ fiber optic ports

- 24x or 12x Gigabit copper ports

- Power-over-Ethernet+ (802.3at) max. 30 W per port

- Up to 480 W PoE+ (PSE) budget

- Optional layer 3 features such as NAT, VLAN bridging

- Fan-less design

- Extended temperature range -40..+75°C

- Redundant power connections

- I/O contacts, 2x inputs/outputs each

Description

Industrial switches from MICROSENS have proven their worth in harsh practice for years. The newest flagship in the Profi Line Rack series also offers numerous proven features such as port density for a cost-effective network expansion, high-performance Gigabit Ethernet over copper ports, fast 10G uplinks over fiber optic lines, as well as highest fail-safety by means of redundant power supply and circular cabling structures.

The switch is available in two versions. On the copper side, there are either 24 or 12 Gigabit ports available. These connections offer PoE/PoE+ functionality to power connected end devices cost effectively and without additional cabling effort.

As an uplink to the central switch, four 10G technology SFP+ ports are available. The fiber optic connection is made via special 10G SFP+ transceivers with extended temperature range.

The fan-less switch is operated with a DC voltage in the range of 44.57 VDC and is used in the extended operating temperature range of -40..+75 °C. Despite its compact size of 1 U, it is equipped with two alarm inputs and outputs each, for cabinet monitoring or sensor/actuator integration, for example.

Designation	Art. no.
24-port Gigabit Ethernet switch, 19" 1 U, 24x 10/100/1000T PoE+ (PSE), 4x 10GBE SFP+ slots, serial port, USB port, SD memory card slot, I/O: 2x inputs, 2x outputs, 2x power supply connections 24..57 VDC	MS653410MX
SFP+ pluggable transceiver 10GBE, 10G SONET/SDH, multimode 850nm, extended temperature range -40..+85°C, 300m/OM3, LC	MS100700DX
SFP+ pluggable transceiver 10GBE, 10G SONET/SDH, single mode 1310nm, extended temperature range -40..+85°C, 10km/OS2 G.652, LC	MS100702DX

Industrial Solutions

MICROSENS

Profi Line Rack
25-port Gigabit Ethernet 19"
Switch with PoE+ and SFP Uplinks

25 Port GBE 19"-Switch
mit PoE+ und SFPs

Features

▌ Full Gigabit performance with energy-efficient Ethernet

▌ Up to 8 Gigabit fiber optic ports

▌ Construction of ring structures

▌ Power-over-Ethernet+ (802.3at) max. 30 W per port

▌ Compact stainless steel housing with 1 U

▌ Fan-less design

▌ Extended temperature range -40..+75°C

▌ I/O contacts, 2x inputs/outputs each

▌ Exchangeable SD card for firmware and configuration

Description

Besides the extensive industrial product portfolio for installation on DIN rails, MICROSENS offers a 25-port Gigabit Ethernet switch in 19" design. This Profi Line Rack switch was developed for use in harsh industrial environments and sets new standards in reliability and performance.

The switch offers a total of 25 Gigabit Ethernet ports, eight of which can be expanded to fiber optic connections as combo ports with SFP modules. A total of 16 copper ports offer PoE/PoE+ functionality to supply connected terminal devices with electricity economically and without additional cabling effort. The standard version offers a PoE total power output of 180 W and an advanced version delivers PoE power of up to 480 W.

The fan-less switch is operated with a voltage in the range 24..57 VDC and is used in the extended operating temperature range of -40..+75°C. With its compact size of 1 U, it also has two alarm inputs and outputs each, for example for cabinet monitoring or integrating a sensor/actuator.

The Profi Line Rack switch was designed for the greatest availability and shortest recovery times. Industrial ring structures can be established both via SFP ports and via copper connections. In the event of failure, a special mechanism detects a malfunction of a network node or the interruption of the line and ensures automatic re- configuration of the network.

Designation	Art. no.
25-port Gigabit Ethernet switch, 19" 1 U, 16x 10/100/1000T PoE+ (PSE), 1x 10/100/1000T PoE+ (PD), 8x dual media ports: 100/1000X SFP slot or 10/100/1000T, serial port, USB port, SD memory card slot, I/O: 2x inputs, 2x outputs, 2x power supply connections 24..57 VDC	**MS400890MX-V2**
25-port Gigabit Ethernet switch, 19" 1 U, 16x 10/100/1000T PoE+ (PSE) High Power Version max 480 W, 1x 10/100/1000T PoE+ (PD), 8x dual media ports: 100/1000X SFP slot or 10/100/1000T, serial port, USB port, SD memory card slot, I/O: 2x inputs, 2x outputs, 2x power supply connections 24..57 VDC	**MS400895MX**

MICROSENS

Profi Line Rack
25-port Gigabit Ethernet 19" Switch
for Power Substations and Railway

25-port GBE Switch Power
Substations / Railway

Features

▌ Power substation certified to IEC 61850-3:2013, IEC 61000-6-5Ed.1.0:2015-08, IEEE 1613:2009 (Class 1)

▌ Railway certified to EN50121-4:2006

▌ Full Gigabit performance with energy-efficient Ethernet

▌ 8x Power-over-Ethernet+ (802.3at) max 30 W per port

▌ Extended temperature range -40..+85 °C

▌ Fan-less design in a robust stainless steel housing

▌ Redundant power connections

▌ Replaceable SD card for firmware and configuration

▌ I/O contacts, 2x In-/Outputs each

▌ Fail-safety though the construction of ring structures

Description

Communications components in the area of power substations are exposed to elevated loads: Strong electromagnetic fields across high-voltage lines and switching operations, vibration, humidity, and enormous temperature fluctuations call for especially robust devices. The switches from the Profi Line Rack series by MICROSENS are ideally suited for adverse environmental conditions.

This GBE switch was developed specifically for the application in the sector of power substations. Certified to IEC 61850-3: 2013, IEC 61000-6-5Ed.1.0:2015-08, IEEE 1613: 2009 (Class 1), it can be used directly in the environment of power substations. Additionally, it meets the standard EN50121-4:2006 for railway transport.

The switch offers 25 Gigabit ports, four of which, as Combo ports, can be upgraded to fiber optic ports using SFP modules. Despite its space-saving design, it has two alarm inputs/outputs each, for example to monitor the cabinet or to integrate sensors/actuators. Eight of the copper ports offer PoE/PoE+, so that connected end devices can be supplied with power cost-efficiently and without additional cabling efforts. The switch itself can also operate without a dedicated power supply and be supplied over Poe/PoE+ as a powered device.

Industrial Solutions

Designation	Art. no.
25-port Gigabit Ethernet switch for power substations & railway, 19" 1 U, 16x 10/100/1000T PoE+ (PSE), 1x 10/100/1000T PoE+ (PD), 8x dual media ports: 100/1000X SFP slot or 10/100/1000T, serial port, USB port, SD memory card slot, I/O: 2x inputs, 2x outputs, 2x power supply connections 24..57 VDC	MS400890MX-BS

MICROSENS

Industrial Solutions

Profi Line / Profi Line +

Robust, reliable and flexible

For years now, the Profi Line series products have proven their worth in thousands of different applications. Demanding applications in railway and energy technology as well as the deployment in harsh, potentially explosive areas underground prove the reliability of the devices impressively.

The product portfolio encompasses switches for Gigabit and Fast Ethernet, media converters for Fast Ethernet and serial interfaces, as well as an extensive range of accessories.

The Profi Line switches are equipped with the MICROSENS patented protective mechanism for constructing fault-tolerant fiber optic rings with reconfiguration times of less than 20 ms, which ensures continuous availability for the application. The new Profi Line + builds upon these successes and offers full Gigabit performance and maximum security despite extremely compact dimensions. With Power-over-Ethernet+ according to IEEE 802.3at with up to 30 W per port, end devices can be supplied with electricity via the data line.

Products from the Profi Line and Profi Line + series are the ideal solution for high availability areas like industrial automation, traffic information/control systems, energy technology, Wireless LAN, and IP video surveillance.

Industrial Solutions

PROFI LINE

MICROSENS

Industrial Solutions – Profi Line / Profi Line +

MICROSENS

Profi Line / Profi Line +
Product overview

Industrial Solutions

**7-port GBE
Switch with PoE+**

Profi Line +
7-port GBE Switch with Ring Redundancy and PoE/PoE+

Features

▌ Gigabit performance with energy-efficient Ethernet

▌ Power-over-Ethernet+ (802.3at) max. 30 W per port

▌ Extended temperature range -40..+75°C

▌ Fan-less design in a robust stainless steel housing

▌ Robust design, open for extension modules

▌ Redundant power connections

▌ Exchangeable SD card for firmware and configuration

▌ Fail-safety with recovery times < 50 ms

▌ I/O contacts, 2x inputs/outputs each

Description

As an addition to the successful Profi Line series, the new Profi Line + offers seven Gigabit ports with extremely compact dimensions at an attractive price. Performance and security are top priorities for this new switch; in network and access security, as well as the various switch functions themselves. This makes it eminently suited for high availability areas, such as industrial automation, traffic information and control systems, as well as energy technology. Applications such as Wireless LAN and IP video surveillance profit from the integrated power supply of end devices via PoE+ according to the IEEE 803.3at standard with up to 30 W per port, which the Switch provides on four 10/100/1000Base-T connections.

The switch has two GBE combo ports with 10/100/1000T or 100/1000X SFP slot. These allow for the construction of a redundant uplink either via copper cables or fiber optic lines. In the event of a line break, the ring protocol ensures continuing availability. The switch itself can be supplied with Power over Ethernet via the RJ-45 uplink port as a powered device, thus ensuring enhanced switch availability if the conventional power supply fails.

Sensors and actuators can be integrated via the two I/O ports of the switch, or it can be connected to an existing alarm solution. The switch operating system, firmware, and configuration data are saved on an SD card. Should a switch ever need to be replaced, the new device automatically adopts the configuration stored on the card as soon as it is plugged in, reducing recovery times to a minimum.

Designation	Art. no.
7-port Gigabit Ethernet industrial switch, 4x 10/100/1000T PoE+ (PSE), 1x 10/100/1000T PoE+ (PD), 2x dual media ports: 100/1000X SFP slot or 10/100/1000T, serial port, USB port, slot for SD storage card, I/O: 2x inputs, 2x outputs, 2x power supply connections 24..57 VDC	**MS650919PM**

Suitable SFP transceivers on page 21et seqq.

MICROSENS

Vertical version

Ruggedized Micro Switch

6-port GBE Switch with PoE/PoE+ with FO Uplink

Features

▌ Economical alternative to Industrial Ethernet

▌ Optionally with one or two SFP uplinks (100/1000Base-X)

▌ Fail-safety through the construction of ring structures via TP/FO ports

▌ Extended temperature range for operation -25..+65°C

▌ Extremely compact construction

▌ Adapted DIN rail mounting bracket for direct installation in switch cabinets

Description

Applications that demand a high level of robustness and reliability, such as large-scale WLAN coverage, building automation or IP video, do not always require cost-intensive industrial Ethernet components. With the Ruggedized Micro Switch, MICROSENS offers an extremely economical alternative.

The Micro Switch is characterised by its compact design and is used wherever there is limited space available, such as in small enclosures or electric switchgear. With its 45 mm package, the Micro Switch fits precisely in standard cut-outs and a supplied bracket allows for direct mounting on DIN rails. Two mechanical designs are also available for selection - vertical and horizontal.

However, the size is not achieved at the expense of functionality or performance. With dimensions of only 90x45x58 mm, a total of 6 Gigabit ports are available: five 10/100/1000Base-T ports with Power-over-Ethernet+ (PoE+) according to IEEE 802.3at to connect terminal devices and one fiber optic uplink port. The extended switch version with two fiber optic uplinks can be used to realise a redundant fiber optic ring structure or a redundant end device connection for enhanced availability. The Micro Switch offers an extended temperature range from -25..+65°C and offers all safety and management features from the current MICROSENS industrial Ethernet device generation.

Industrial Solutions

Horizontal version

Description	Art. no. Horizontal version	Art. no. Vertical version
Ruggedized Micro Switch -25..+65°C pre-assembled with DIN rail mounting bracket		
1x SFP uplink (100/1000Base-X) 5x TP ports (10/100/1000Base-T) with PoE+	**MS440209PMXH-48G6**	**MS440219PMXH-48G6**
2x SFP uplink (100/1000Base-X) 4x TP ports (10/100/1000Base-T) with PoE+	**MS440207PMXH-48G6**	**MS440217PMXH-48G6**
Memory card for Ruggedized Micro Switch		
microSD memory card 4 GB for MICROSENS G6 switches, extended temperature range -25..+85°C standard	**MS140894X-4G**	

MICROSENS

Ruggedized Micro Switch 6-port GBE Switch with PoE/ PoE+ with TP Uplink

Horizontal version

Features

▮ Economical alternative to Industrial Ethernet

▮ Optionally as vertical or horizontal version

▮ Optionally available with fiber optic uplink

▮ Fail-safety through the construction of ring structures via TP/FO ports

▮ Extended temperature range for operation -25..+65°C

▮ Extremely compact construction

▮ Adapted DIN rail mounting bracket for direct installation in switch cabinets

Beschreibung

The ruggedized Micro Switch is characterised by its compact design and is used wherever there is limited space available, such as in small enclosures or electric switchgear. With its 45 mm package, the Micro Switch fits precisely in standard cut-outs and a supplied bracket allows for direct mounting on DIN rails. Two mechanical designs are also available for selection - vertical and horizontal.

However, the size is not achieved at the expense of functionality or performance. With dimensions of only 90x45x58 mm, a total of 6 Gigabit ports are available: four TP-ports, accessible from the front, as well as the TP downlink port, installed in the duct support Power over Ethernet+ (PSE) according to IEEE 802.3at to supply end devices with power over the data line. The device can also be supplied with power via PoE/PoE+ PD using the TP uplink port, which is mounted laterally in the duct. It can then manage without a decentralized power supply.

For enhanced availability, the Micro Switch supports the construction of a redundant ring structure or a redundant connection of terminal devices. The Micro Switch offers an extended temperature range from -25..+65°C and offers all safety and management features from the current MICROSENS industrial Ethernet device generation. Optionally, versions with one or two fiber optic uplinks are available.

Description	Art. no. Horizontal version	Art. no. Vertical version
Ruggedized Micro Switch -25..+65°C pre-assembled with DIN rail mounting bracket		
1x TP uplink (100/1000Base-T) PoE+ PD 5x TP ports (10/100/1000Base-T) PoE+ PSE	**MS450186PMXH-48G6+**	**MS450187PMXH-48G6+**
Storage card for Ruggedized Micro Switch		
microSD storage card 4 GB for MICROSENS G6 switches, extended temperature range -25..+85°C standard	**MS140894X-4G**	

Industrial Solutions

MICROSENS

10 Port Gigabit Ethernet Ring Switches

Gigabit Ethernet
Industrial Switch 10 Port

Features

▮ Fault-tolerant fiber optic ring with reconfiguration < 20 ms

▮ Versions with SC/ST or SFP ports

▮ Power-over-Ethernet versions

▮ Extensive functions such as VLAN, QoS, IGMP Snooping, RSTP

▮ Management by Web/SNMP/CLI

▮ Optionally with SD card

▮ Operating temperature range -20..+60°C,

▮ extended -40..+75°C

Description

The 10-port Gigabit Ethernet switch has a total of 8 copper ports, one of which supports Gigabit Ethernet (10/100/1000T) and 7 are designed for Fast Ethernet (10/100TX). Two Gigabit Ethernet fiber optic ports allow the interconnection to a fault-tolerant fiber optic ring. A version with 3 fiber optic ports is optionally available; the third FO connection is designed as a dual media port together with the Gigabit copper connection.

A MICROSENS patented mechanism offers automatic reconfiguration within less than 20 ms in the event of failure. This feature can be realised on both the fiber optic and the copper ports.

The switches are optionally equipped with Power-over-Ethernet functionality. In addition, a service-friendly version with an exchangeable memory card is available.

Industrial Solutions

Designation	Art. no. Version with 24 VDC	Art. no. PoE version 48 VDC
Gigabit Ethernet Industrial Switch with 2x FO 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 SFP uplink		
10-port Gigabit Ethernet switch, 8x RJ-45 (1x 10/100/1000T + 7x 10/100TX), 3x 100/1000X dual-speed SFP slot (without SFPs)	MS650869M-V2	MS650869PM-48-V2
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-V2	MS650869PMX-48-V2
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-V2	MS650869PMSMC-48-V2

Suitable SFP transceivers on page 21et seqq. Further versions on request.

Gigabit Ethernet
Switch for Railway / Power
Substation Certification

10-port Gigabit Ethernet Ring Switches with Railway and Power Substation Certification

Features

▌ Railway Certification to EN50121-4:2006 and EN50125-3:2003

▌ Power Substation Certification to IEC 61850-3 and IEEE 1613

▌ Fault-tolerant fiber optic ring with reconfiguration < 20 ms

▌ Extensive functions such as VLAN, QoS, IGMP Snooping, STP/RSTP etc.

▌ Flexibility by use of SFP version with dual-speed 100/1000 Mbps

▌ Opt. Power-over-Ethernet version

▌ Operating temperature range -40..+75°C

▌ Suitable power supplies with railway certification in 24 VDC or 48 VDC / 60 W versions available

Description

This Switch is specially approved for use in the field of rail transport. Certified to the EN50121-4:2006 standard (for stricter EMC requirements for electromagnetic immunity) and EN50125-3:2003 (temperature-, climate-, vibration-, and shock-resistance) the device can be deployed just 1m away from the tracks.

With additional certifications to IEC 61850-3 and IEEE 1613, this switch can be used for constructing data networks in the electricity industry, such as power stations, transformer stations and substations, as well as energy transport.

The accredited Gigabit Switch has 3x 100/1000Base-X fiber optic connections that allow the construction of a fiber optic ring (fast redundancy). The fast redundancy is made possible with a MICROSENS patented mechanism, which, in the event of failure, performs millisecond-fast reconfiguration of the Ethernet network.

Another version offers Power-over-Ethernet (PoE) functionality. The switches are designed to operate in extreme environmental conditions and ensure stable operation.

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 in accordance with 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**

Suitable SFP transceivers on page 21et seqq.

Railway Certified 60 W Power Supply

Industrial Solutions

System Catalog Industrial Solutions 0319

MICROSENS

6-port Fast Ethernet Ring Switches optionally with Power-over-Ethernet

6-port Fast Ethernet Switch with Ring Function

Features

▌ Fault-tolerant fiber optic ring with reconfiguration < 100 ms

▌ Extensive functions such as VLAN, QoS, RSTP

▌ Convenient administration via web interface / SNMP / Telnet or NMP software

▌ Versions with Power-over-Ethernet

▌ Power supply connection, redundant design

▌ Effective overvoltage protection

▌ Robust construction in an industrial design

Description

Applications in an industrial environment demand permanent network availability. Fault-tolerant network components are increasingly used to avoid failures and production downtimes.

The 6-port Fast Ethernet switch has two 100Base-FX fiber optic connections that allow the interconnection to a fault-tolerant fiber optic ring. A MICROSENS patented mechanism enables reconfiguration within less than 100 ms (milliseconds) in the event of failure.

The devices are generally equipped with an integrated network management. Extensive switch functions can be configured conveniently via web interface/ SNMP/Telnet or NMP software.

An optional version supports full IEEE standard 802.3af Power-over-Ethernet functionality on all four RJ45 subscriber ports. An intelligent power management system monitors the current power requirement of the connected terminal devices.

Industrial Solutions

Description	Art. no. Ver. with 24 VDC	Art. no. PoE version 48 VDC
Fast Ethernet Industrie Switch für Multimode-Anwendungen		
6-port Fast Ethernet switch, 4x 10/100Base-TX, 2x 100Base-FX, multimode 1310 nm ST duplex 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 duplex 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 duplex 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.

MICROSENS

5-port Fast Ethernet Switch

5-port Fast Ethernet Switches optionally with Power-over-Ethernet

Features

▌ Extensive functions such as VLAN, QoS, RSTP

▌ Convenient administration via web interface/SNMP/ Telnet or NMP software

▌ Optional versions available with Power-over-Ethernet

▌ Power supply connection, redundant design

▌ Effective overvoltage protection

▌ Robust construction in an industrial design

Description

The MICROSENS Industrial Switch allows for the implementation of high performance Ethernet network structures in accordance with IEEE802.3u especially in the field of manufacturing and automation. With the help of the switches, production systems equipped with Ethernet interfaces, such as controllers, robots, or CNC machines can be coupled. Using switching technology, the connection is collision free. All the operating parameters of industrial installations, such as robustness, high availability, and fail-safe performance are ensured with these high quality components.

The switch allows the connection of up to four devices via 10/100Base-TX. The copper ports automatically adapt to the respective speed of the connected device (10/100 Auto Negotiation). The auto crossing function allows the switch to automatically recognise the TX port allocation so that standard patch cables are always used.

A 100Base-FX uplink is available for connecting to the central distributor. Depending on the requirement, it can be operated in half or full duplex mode. Another version with two fiber optic ports enables device cascading via the fiber optic connection.

Description	Art. no. Ver. 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 duplex 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 Industrie Switch für Monomode-Anwendungen		
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.

MICROSENS

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

Fast Ethernet Industrial Media Converter

Features

▌ Robust media converter for Fast Ethernet (100 Mbps) and Ethernet (10 Mbps)

▌ Transparent data conversion with extremely short latency

▌ External alarm contact

▌ Redundant power supply

▌ Effective overvoltage protection

Description

For extremely demanding applications, MICROSENS offers special media converters in the Profi Line industrial design. For the communication standards 104 and 101 defined according to DIN EN / IEC 60870-5, the product range includes not only Ethernet (10Base- FL/10Base-T) and Fast Ethernet (100Base-FX/100Base-TX), but also converters for serial interfaces. Therefore, RS-232/V.24, RS-422/V.11, and RS-485 copper / fiber optic converters are available for selection.

The media converters are characterised by their extremely short latency times and transparent data conversion. The devices are always used in pairs for transporting the respective serial protocol over a fiber optic line. Beside the connection versions with ST and SC duplex FO interfaces, multimode and single mode designs corresponding with the cable type are also available for all media converters.

Ethernet Industrial Converters

RS-232 Industrial Converters

Description	Art. no. ST connector	Art. no. SC connector
Fast Ethernet Converters		
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 Converters		
10Base-T/FL, multimode 850 nm, max. 2 km	MS650400-T	–
Serial Converters		
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, single mode 1310 nm, max. 2 km	MS650342	MS650343
RS-485, single mode 1310 nm, max. 15 km	MS650345	MS650347

Further versions up to 80 km on request.

Industrial Solutions

System Catalog Industrial Solutions 0319

Industrial Power Supplies

Power Supplies 24 VDC

Features

▌ Extremely compact housing, IP20

▌ High efficiency

▌ Integrated overvoltage protection

▌ Snap-on installation on 35 mm top-hat rails

▌ Wide-range input 85..264 VAC or 85..375 VDC

Description

The industrial power supplies are designed for extremely demanding applications under harsh environmental conditions and specifically designed for the operation with MICROSENS industrial components.

In addition to the usual features such as effective overvoltage protection or wide-range input for worldwide use, these power supplies offer additional technical optimisations. The design of the housing enlarges the heat-emitting surface and, in combination with the high efficiency, leads to a long service life and high reliability of the devices.
The power supplies are offered in the power classes 24, 60, and 120 W. In addition to the standard versions for alternating current input (AC), a DC/DC converter is available with 24 W output power.

The compact power supplies can be directly latched onto DIN rails or mounted on the wall using the brackets included in the delivery.

DC/DC Converters

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 Solutions

MICROSENS

Power Supplies 48 VDC for PoE Applications

Industrie-Stromversorgung 600 W

Features

▌ High performance industrial power supplies with high efficiency

▌ Operating mode configurable for normal, battery, or parallel operation

▌ Power supply status with 2-colour LED display

▌ Wide-range input 85..264 VAC, adjustable output voltage 48..56 VDC

▌ Parallel operation of up to 5 power supply units possible

▌ Pluggable and multiple screw terminals for quick wiring

Description

Active network components that feature Power-over-Ethernet require an external high-performance 48 VDC power supply. For this extremely demanding application, MICROSENS offers special power supplies.

The key feature of these power supplies is their insensitivity towards electrical interference, particularly significant for use in failure-sensitive applications, such as VoIP telephony. Additional important features include the high efficiency, compact dimensions, and simple installation (snap-on) on DIN rails.

The power supply units are offered in the power classes 60, 96, 192, 300, and 600 W. The output voltage of 48 VDC can be increased in a range up to 56 VDC to counteract any voltage drops along the power supply line. All devices also include an effective overvoltage and overload protection.

Industrial Solutions

Power Supplies 96..360 VDC

Power	Output	Input	Art. no.
Compact power supply			
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**

MICROSENS

Railway Certified 60 W Power Supply

Power Supplies for Industrial Use and Railway Certification

Features

▋ Top reliability and availability

▋ Certified to the railway (EMC) standard EN50121-4 Industrial safety and standard approvals

▋ Wide-range input 90..264 VAC or 80..200 VDC

▋ High efficiency of typ. 83%

▋ Operating temperature -40..+70°C

▋ Adjustable output voltage
21..29 VDC (MS700482-24B)
41..58 VDC (MS700482-48B)

▋ Effective overload protection

▋ Compact dimensions, low tare weight

▋ Simple mounting on DIN top-hat rail

Description

For the extremely demanding use in railway and general industrial applications under harsh environmental conditions, MICROSENS offers special compact power supplies.

The key feature of these power supplies is their insensitivity towards electrical interference, crucial especially for the use in failure-sensitive applications such as in railway, industrial, and manufacturing environments.

This power supply is certified for railway applications according to the relevant EMC standard EN50121-4. Further important properties are its high efficiency, compact dimensions, low tare weight, and simple installation (snap-on) on DIN rails. The power supply units have a wide-range input for AC and DC voltages. Output voltages of 24 VDC and 48 VDC with a power of 60 W are available. The output voltage can be set within a defined range. All devices are also equipped with effective overload protection.

Power	Output	Input	Art. no.
AC/DC Power Supply			
60 Watt	24 VDC / 2,5 A	90..264 VAC or 85..200 VDC	**MS700482-24B**
60 Watt	48 VDC / 1,25 A	90..264 VAC or 85..200 VDC	**MS700482-48B**
DC/DC Power Supply			
60 Watt	48 VDC / 1,25 A	60..130 VDC	**MS700482-48B-2**

MICROSENS

19" Profile with 35 mm DIN Rail
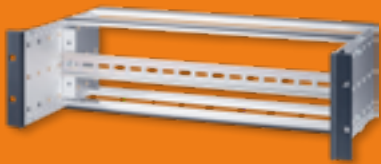
19" Aluminium Profile with
4 U rack height

Features

▌ Installation of industrial technology
with 35 mm DIN rail bracket in
19" cabinets

▌ Solid aluminium profile with
a height of 4 U

▌ DIN rail displaced to the rear
ensures space for the connection
technology

Description

Robust solutions for industrial technology, such as switches, converters, and power supplies are usually installed on 35 mm DIN rails and for this reason they have an appropriate snap-in holding device. Many applications require the reliable systems to be installed in 19" cabinets.

Specifically for this purpose, MICROSENS offers the corresponding 19" aluminium profiles with an integrated 35 mm DIN rail. This makes it easy to install industrial components in 19" cabinets without the need for provisional measures. The solid aluminium profile has a rack height of 4 U and offers sufficient space for the front-facing device connection technology thanks to DIN rail located at the rear. An optional version with a height of 3 U is very cost-effective due to its sheet metal construction.

Industrial Solutions

19" Profile with 3 U

Description	Art. no.
High-grade 19" aluminium profile with integrated 35 mm DIN rail for installation of industrial components in 19" cabinets, 4 U rack height	**MS140819**
Cost-effective 19" aluminium profile with integrated 35 mm DIN rail for installation of industrial components in 19" cabinets, 3 U rack height, lacquered RAL 7035	**MS140819-V2**

System Catalog Industrial Solutions 0319

Installation Accessories

Installation Accessories

Features

▌ Cable sets for the connection to the power supply pre-assembled with wire end ferrules

▌ Cable ducts and cable fixing plates for strain relief of patches

▌ Mounting adapter for ‚Modular Technology 45' installation depth to cover cabinets

Description

Industrial solutions are usually mounted on DIN rails. For a suitable installation, MICROSENS offers functional accessories. The products are most commonly combined with the appropriate power supplies. For this purpose, MICROSENS offers corresponding cable sets in various lengths.

In the field of cable routing, MICROSENS offers two levels of tried and tested strain relief systems that are snapped onto the DIN rail. Metal cable fixing plates are available for higher levels of traction. Other assembly accessories, such as end clamps and brackets for ‚Modular Technology 45' complete the Industrial Solutions range.

Do you need other accessories? Then please contact us!

Device Supply Cable

Cable Fixing Plate

Locking Block for DIN Rail

Mounting for Micro Switch

Description	Art. no.
Cable Sets	
Device supply cable sleeves, 2x 1.5 mm², 10 cm long, cord red/black, ends open	**MS190120-0,1**
Device supply cable sleeves, 2x 1.5 mm², 20 cm long, cord red/black, ends open	**MS190120-0,2**
Device supply cable sleeves, 2x 1.5 mm², 50 cm long, cord red/black, ends open	**MS190120-0,5**
Cable Guides or Cable Fixing Plates	
1x strain relief for DIN rail plastic black	**MS140820-1**
4x strain relief for DIN rail plastic black	**MS140820-4**
2x cable fixing plate for DIN rail, metal	**MS140821-2**
4x cable fixing plate for DIN rail, metal	**MS140821-4**
Other Accessories	
Locking block for DIN rail, screwable, aluminium	**MS140806**
DIN rail bracket for 45x45 Micro switches	**MS140805-G6**
DIN rail bracket for Module 45, 1x module 45, plastic	**MS140804**
SD storage card 256 MB for MS650869MSMC series switches	**MS140890X-256**
SD storage card 4 GB for Profi Line Modular and Profi Line + MS652119PM / MS650919PM series switches	**MS140890X-4G**

MICROSENS

Industrie Switches

Profi Line   Gigabit Ethernet

	Gigabit Ethernet Switch with Ring Function and PoE+	Gigabit Ethernet Switch with Ring Function	Gigabit Ethernet Switch with Ring Function (SFP)
Interfaces			
Number of ports 10/100Base-TX		7	7
Number of ports 10/100Base-T	7	1	1
Number of ports with PoE	4		
PoE mode	30 W PSE / 1x PD		
100Base-X ports			
1000Base-X ports		2 or 3	
Number of ports SFP	2 (combo)		3
Rated input voltage	24..57 VDC	18..36 VDC	18..36 VDC
Power consumption (typ.)	7 W (130 W mit PoE)	8 W	8 W
Working temperature range	-40..+75 °C	-20..+60 °C	-20..+60 °C
Extended working temperature range*			-40..+75 °C
Dimensions (W x D x H) mm	60 x 121 x 101	50 x 108 x 116	50 x 108 x 116
Features			
NMP management software	•	•	•
Telnet / SNMP / Web	• / • / •	• / • / •	• / • / •
VLAN / QoS / Authentication	• / • / •	• / • / •	• / • / •
Power-over-Ethernet (PoE)	•	–	–
Ring redundancy	•	•	•
IGMP Snooping	•	•	•
RSTP	•	•	•
Ordering information			
Multimode 850 nm, 4x ST		MS650850M	
Multimode 850 nm, 4x SC		MS650851M	
Multimode 850 nm, 6x SC		MS650861M	
Multimode 1310 nm, 4x ST			
Multimode 1310 nm, 4x SC			
Multimode 1310 nm, 2x ST			
Multimode 1310 nm, 2x SC			
Single mode 1310 nm, 4x SC			
Single mode 1310 nm, 4x ST			
Single mode 1310 nm, 10 km, 4x SC		MS650852M	
Single mode 1310 nm, 10 km, 6x SC		MS650862M	
Single mode 1310 nm, 15 km, 2x SC			
Single mode 1310 nm, 15 km, 2x ST			
Single mode 1310 nm, 40 km, 2x SC			
Single mode 1310 nm, 40 km, 2x ST			
Single mode 1310 nm, 40 km, 4x SC			
Single mode 1310 nm, 40 km, 4x ST			
Single mode 1310 nm, 15/40 km, 4x SC			
SFP version	MS650919PM		MS650869M-V2
SFP version for railway applications			MS650869M-B
Catalog page	**40**	**44**	**44/45**

Versions available for the extended working temperature range, article numbers MS650869MX and MS650869PMX-48

Fast
Ethernet

Gigabit Ethernet Switch with Ring Function and PoE (SFP)	Gigabit Ethernet Switch with Ring Function and PoE	Fast Ethernet Switch		Fast Ethernet Switch with Ring Function
7	7	4		4
1	1			
8	8			
15,4 W PSE	15,4 W PSE			
		1		2
	2 or 3			
3				
18..36 VDC	48 VDC	18..36 VDC		18..36 VDC
70 W (62 W with PoE)	70 W (62 W with PoE)	6 W		6 W
-20..+60 °C	-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	
•	•		•	•
• / • / •	• / • / •		• / • / •	• / • / •
• / • / •	• / • / •		• / • / •	• / • / •
–	•		–	–
•	•		–	•
•	•		–	•
•	•		•	•
	MS650850PM-48			
	MS650851PM-48			
	MS650861PM-48			
				MS650501M
				MS650502M
		MS650461M	MS650461M	
		MS650462M	MS650462M	
	MS650852PM-48			
	MS650862PM-48			
		MS650464M	MS650464M	
		MS650465M	MS650465M	
		MS650467M	MS650467M	
		MS650468M	MS650468M	
				MS650506M
				MS650507M
				MS650508M
MS650869PM-48-V2				
MS650869PM-48-B				
44/45	**44**	**47**		**46**

Industrial Solutions

Entry Line

Robust, economical and efficient

Many applications require simple, robust, and yet cost-effective product solutions. Straightforward installation and easy handling thanks to plug-and-play, space-saving design and an extended temperature range distinguish the cost-efficient Entry Line series from MICROSENS.

The devices of the Entry Line series can be put into operation with minimal installation effort, without complex configuration work. The successful series encompasses switches and media converters for Gigabit and Fast Ethernet, with both copper and fiber optic connections. The devices are optionally available with Power-over-Ethernet functionality. The portfolio is rounded off with device servers and VDSL extenders.

Whether in industrial networking in the manufacturing sector, in plant and automation technology, or in the construction of Wireless LANs – The Entry Line series from MICROSENS is the ideal choice when it comes to implementing Industrial Ethernet reliably, efficiently, and without complex configuration work.

ENTRY LINE

Industrial Solutions _

Entry Line

MICROSENS

Entry Line
Product overview

Gigabit Ethernet Switches
6/8-port Gigabit Ethernet switches, optionally with SFP ports.

57

6 / 8 Port Gigabit Ethernet Switches mit Power-over-Ethernet+, optional mit SFP-Ports
5/8 Port Gigabit Ethernet Switches optional mit SFP-Ports.

58

Fast Ethernet Switches
5 and 8-port Fast Ethernet Switches, optionally with a fiber optic port.

59

Gigabit Ethernet Bridges, optionally with PoE
10/100/1000T to SFP, 30/60 W PoE power

61

Fast Ethernet Mini Bridge
10/100TX to 100X SFP.

62

Power over Ethernet+ Injectors
15.4/30/60/95W for harsh environments.

63

28-port Gigabit Ethernet Switch
With 24x PoE+ and 4x SFP ports.

64

Industrial Solutions

MICROSENS

6/8-port Gigabit Ethernet switches optionally with SFP Ports

6 and 8-port Gigabit
Ethernet switches

Features

▮ Gigabit performance for
Industrial Ethernet

▮ Cost-efficient and compact construction

▮ 6-port version: 4x10/100/1000T,
1x 10/100/1000T or 100/1000X SFP,
1x dual speed (100X or 1000X) SFP

▮ 8-port version: 8x10/100/1000T

▮ 12..56 VDC power supply connection,
redundant design, optional power DIN
socket

▮ Floating relay contact

▮ Extended temperature range -40..+75° C

Description

The Entry Line series stands for economical and efficient industrial Ethernet solutions. Compact Gigabit switches are available in two versions with a choice of 6 and 8 GBE ports. In addition to a copper version, a switch with a fiber optic connection (via SFP) is also available.

The 6-port version has four 10/100/1000T Gigabit copper ports, one 10/100/1000T or 100/1000X SFP combo port, and one additional Dual Speed 100/1000X SFP slot. Thus, the fifth switch port can be used as either a copper or a fiber optic connection. The sixth port is designed as an SFP port and supports both Gigabit Ethernet (100Base-X) and Fast Ethernet (100Base-FX), the setting for which is made with a DIP switch. This way, even Fast Ethernet fiber optic networks can be integrated into Gigabit structures.

The 8-port version offers the full Gigabit performance on all 10/100/1000T copper connections.

The switches are equipped with three power supply connections and are powered over an external 12..56 VDC power supply. In addition to two screw terminals, a third power supply connection is installed in form of a power DIN connector. Using a floating relay alarm contact, an external signal generator can additionally be connected to signal the failure of the power supply.

Industrial Solutions

6-port GBE Switch with SFP Ports

Designation	Art. no.
6-port industrial Gigabit Ethernet switch, 4x 10/100/1000Base-T, 1x 10/100/1000Base-T or 100/1000Base-X SFP, 1x Dual Speed (100Base-X or 1000Base-X) SFP	**MS657203X**
8-port industrial Gigabit Ethernet switch, 8x 10/100/1000Base-T	**MS657208X**

Suitable SFP transceivers on page 22et seqq.

MICROSENS

6/8-port Gigabit Ethernet switches with Power-over-Ethernet+, optionally with SFP Ports

6 and 8-port Gigabit Ethernet switches with PoE+

Features

▌ Full Gigabit performance

▌ Cost-efficient and compact construction

▌ Available as 6- or 8-port version

▌ 4 or 8x10/100/1000T PoE+ with up to 30 W per port

▌ Max. PoE output power 120 W (MS657203PX) or 240 W for MS657208PX

▌ 48..56 VDC power supply connection, redundant design, optional power DIN socket

▌ Floating relay contact

▌ Extended temperature range -40..+75° C

Description

Be it video surveillance, security technology, or WLAN access points – more and more terminal devices require ever-higher transmission performance and increasingly need data rates in the gigabit/s range. The newest Gigabit Entry Line switches with Power over Ethernet+ ideally match these increased demands. Two versions with either 6 or 8 GBE ports are available. This way, terminal devices can be supplied with up to 30 W per port via four or eight 10/100/1000Base-T ports.

The 6-port Gigabit switch has four 10/100/1000T Gigabit copper ports including PoE+, one 10/100/1000T or 100/1000X SFP combo port, and one additional Dual Speed 100/1000X SFP slot. The fifth switch port can either be used as a copper or a fiber optic connection. The sixth port is designed as an SFP port and supports both Gigabit Ethernet (100Base-X) and Fast Ethernet (100Base-FX), the setting for which is made with a DIP switch.

The 8-port version offers Power over Ethernet+ according to IEEE 802.3at with an output power of up to 30 W per port on all 10/100/1000T Gigabit copper connections.

The switches are equipped with three power supply connections and are powered over an external 48..56 VDC power supply. In addition to two screw terminals, a third power supply connection is installed in form of a power DIN connector. Using a floating relay alarm contact, an external signal generator can additionally be connected to signal the failure of the power supply.

6-port GBE Switch with SFP Ports

Designation	Art. no.
6-port industrial Gigabit Ethernet switch, 4x 10/100/1000Base-T PoE+, 1x 10/100/1000Base-T or 100/1000Base-X SFP, 1x Dual Speed (100Base-X or 1000Base-X) SFP	**MS657203PX**
8-port industrial Gigabit Ethernet switch, 8x 10/100/1000Base-T PoE+	**MS657208PX**

MICROSENS

Fast Ethernet Industrie Switches optional mit LWL-Ports

5 and 8-port Fast Ethernet switches

Features

▊ Cost-efficient and compact construction

▊ 5 or 8x 10/100TX ports

▊ Optionally with fiber optic uplinks

▊ Automatic configuration

▊ 9..56 VDC power supply connection, redundant design

▊ Effective overvoltage protection

▊ Floating relay contact reports faults in the power supply

▊ Extended temperature range -40..+75° C

Description

The Entry Line product range offers a wide range of Fast Ethernet switches. The basic devices have 5x or 8x RJ-45 copper ports. Extended switch versions are equipped with additional fiber optic ports. Thus, in addition to the 4x 10/100TX ports, the 5-port version also provides a fiber optic connection in a multimode or single mode version.

The devices are ready for operation instantly and require no configuration. The ports are set automatically by Auto Negotiation (10/100/1000Base-TX) and Auto MDI/MDI-X. The switches are equipped with two power supply connections and are supplied over an external 9..56 VDC power supply. Using a floating relay alarm contact, an external signal generator can additionally be connected to signal the failure of the power supply.

Industrial Solutions

8-port FE Switch

Designation	Art. no.
Twisted Pair Switches	
Fast Ethernet industrial switch, 5x 10/100Base-TX	**MS657100X**
Fast Ethernet industrial switch, 8x 10/100Base-TX	**MS657140X**
Switches with 1x fiber optic uplink	
Fast Ethernet industrial switch, 4x 10/100Base-TX 1x 100Base-FX multimode 1310 nm SC duplex	**MS657102X**
Fast Ethernet industrial switch, 4x 10/100Base-TX 1x 100Base-FX single mode 1310 nm SC duplex	**MS657104X**

MICROSENS

Fast Ethernet Industrial Switches with Power-over-Ethernet+, optionally with FO ports

5 Port Fast Ethernet Switches mit 4x/8x PoE+

Features

▌ Easy handling, no laborious configuration

▌ 4x 10/100TX ports with PoE/PoE+ according to IEEE 802.3af/at

▌ Versions with fiber optic connection for multimode and single mode

▌ 48..56 VDC power supply connection, redundant design

▌ Floating relay contact reports faults in the power supply

▌ Extended temperature range -40..+75° C

Description

Selected Fast Ethernet switches are available with integrated Power-over-Ethernet+ functionality. Four 10/100Base-TX ports facilitate the direct supply of end devices via the data connection according to IEEE 802.3af/at with an output power of up to 30 W per port.

The copper version of the device has a fifth 10/100Base-TX uplink port. Further versions are equipped with a fiber optic port in multimode or single mode design. The devices are generally supplied with 48..56 VDC power. The power supply ports are designed redundantly.

Dedicated LED displays provide information on the power supply status as well as the PoE function for each port. The devices are ready for operation instantly and require no configuration. The ports are set automatically by Auto Negotiation (10/100/1000Base-TX) and Auto MDI/MDI-X as well as according to PoE standard.

Designation	Art. no.
5-port Fast Ethernet PoE switch, 4x 10/100TX with PoE+, 1x 10/100TX uplink, 48..56 VDC power supply	MS657100PX
5-port Fast Ethernet PoE Switch 4x 10/100TX with PoE+, 1x 100FX multimode 1310 nm SC duplex 2 km, 48..56 VDC power supply	MS657102PX
5-port Fast Ethernet PoE Switch 4x 10/100TX with PoE+, 1x 100FX single mode 1310 nm SC duplex 30 km, 48..56 VDC power supply	MS657104PX

Suitable power supplies from page 35et seqq.

MICROSENS

Gigabit Ethernet Bridges, optionally with PoE

Gigabit Ethernet Bridge
mit SFP-Port

Features

▌ Easy handling (Plug'n'Play), without laborious configuration

▌ Segment splitting and speed matching

▌ Fiber optic connection via Dial Speed (100/1000X) SFP port

▌ Optionally with Power-over-Ethernet, PoE+ 30W or High Power PoE+ 60W

▌ 12..56 VDC (PoE versions 48.56 VDC) power supply connection, redundant design

▌ Floating relay contact reports faults in the power supply

▌ Extended temperature range -40..+75° C

Description

The Gigabit Ethernet bridges of the Industrial Ethernet Entry Line allow for the use of transmission speeds of 1 Gbps in the Industrial Ethernet environment. In addition to the media conversion from copper to fiber optic cable, the devices also offer a speed adjustment of 10/100Base-TX for Fast Ethernet or for 10/100/1000Base-T for Gigabit Ethernet to fiber optics. As a result, even terminal devices of different transmission speeds can be connected directly to centrally located switches.

The fiber optic connection is designed as an SFP port and supports both Gigabit Ethernet (1000Base-X) and Fast Ethernet (100Base-FX), so that Fast Ethernet fiber optic networks can also be integrated into Gigabit structures.

The Gigabit Bridges are optionally available with the Power over Ethernet functionality for a direct supply of terminal devices over the TP data cable. Versions with a power output of up to 30 W (according to IEEE 802.at) or with up to 60 W as a High Power PoE+ version are available.

The devices are ready for operation instantly. Power is supplied via a plug-in terminal (redundant connection); an integrated switching relay reports any faults in the power supply.

Designation	Art. no.
Gigabit Ethernet bridge 1x 10/100/1000T 1x 100/1000X, Dual Speed SFP port*	MS657099X
Gigabit Ethernet bridge1x 10/100/1000T PoE+ 30W, 1x 100/1000X Dual Speed SFP port*	MS657099PX
Gigabit Ethernet bridge 1x 10/100/1000T High Power PoE+ 60W, 1x 100/1000X Dual Speed SFP port*	MS657099PHX

Suitable SFP transceivers on page 22et seqq.

Industrial Solutions

System Catalog Industrial Solutions 0319

MICROSENS

Fast Ethernet Mini Bridge

Features

▌ Easy handling (Plug'n'Play), without laborious configuration

▌ Segment splitting and speed matching

▌ Optionally configurable as media converter

▌ Link fault pass through

▌ Fiber optic connection via 100X SFP port

▌ 12..56 VDC power supply connection

▌ Extended temperature range -40..+75° C

Description

The Fast Ethernet Bridging Converter of the industrial Entry Line facilitates, in addition to segment splitting, the media conversion from copper to fiber optic cable. The copper port supports Ethernet (10 Mbit/s) and Fast Ethernet (10/100TX).

Optionally, the device can be switched to converter mode using a DIP switch. This avoids or minimises signal delays. The DIP switch can also be used to activate the link fault pass through mode for link forwarding.

The robust device with uniquely small dimensions I ready for operation immediately after it is switched on. Power is supplied via a plug-in terminal. The device can be operated with 18-36 VAC as well as 12-60 VDC.

Designation	Art. no.
Fast Ethernet Bridging Converter 1x 10/100TX, 1x 100X SFP port*	**MS657049X**

You can find the suitable power supplies from page 22et seqq.

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MICROSENS

Power-over-Ethernet+ Injectors
15.4 / 30 / 95 W for harsh Environments, optionally with 24 VDC Step-up Converter

Features

▌ Supports 10/100/1000 Mbps

▌ IEEE 802.3af/at compatible

▌ Power level of 15.4/30/60&95W

▌ Robust metal housing

▌ Shock and vibration resistance

▌ 48..56 VDC power supply connection

▌ Optionally with step-up converter for supplying 24 VDC

▌ Extended temperature range -40..+75°C

Description

The PoE injector for top-hat rail mounting works according to the PoE+ standard and supports 10/100/1000 Mbps data transfer. The industrial PoE injector supplies PoE-compliant end devices such as switches, WLAN solutions, or IP cameras with electricity, simply via the data cable. Devices with a maximum power consumption of up to 30 Watt are supported. Preferred applications for PoE+ are outdoor access points with a heating module or motor-controlled PTZ surveillance cameras, as these devices have increased power consumption.

The MICROSENS PoE injector was specially designed for demanding industrial environments. The device is supplied with a voltage of 48-56 volts; it has an extended temperature range of -40..+75°C, extended shock and vibration resistance, and a robust metal housing according to protection class IP30.

An optional version enables the direct supply of 24 VDC using an integrated step-up converter. As a High Power PoE version, the injector fully complies with the existing PoE/PoE+ standard and supports Gigabit Ethernet with data transfer of 10/100/1000 Mbps. Beside the operating modes according to IEE 802.3af/at with 15.4 W /30 W, higher powers of 60 W and 95 W can be provided, with all four wire pairs of a twisted pair data cable being used equally for power transmission.

Description	Art. no.
Industrial PoE+ injector for 10/100/1000T networks according to IEEE802.3af/at, power level 15.4 or 30W, power input 48..56 VDC	MS657031X
Industrial PoE+ injector for 10/100/1000T networks according to IEEE802.3af/at, power level 15.4 / 30 or 60W, power input 48..56 VDC	MS657032X
Industrial PoE+ injector for 10/100/1000T networks according to IEEE802.3af/at, power level 15.4 / 30 or 60W, step-up converter - power input 24..56 VDC	MS657032X-24
Industrial PoE+ injector for 10/100/1000T networks according to IEEE802.3af/at, power level 15.4 / 30 / 60 or 90W, power input 48..56 VDC	MS657034X

MICROSENS

24-port Gigabit Ethernet Switch with PoE+ and 4x 100/1000X SFP Ports

28-port GBE PoE Switch

Features

▌ All 24 ports with Gigabit Ethernet, 24x 10/100/1000T, 4x 100/1000X dual speed SFP ports

▌ Power-over-Ethernet on all 24 TP connections with 30 W per port

▌ Extensive functions such as QoS, VLANs, RSTP, Loop Protection, IGMP Snooping etc.

▌ Network management via web browser, monitoring via SNMP (read)

▌ 19" mounting with a height 1 U

Description

The high performance 28-port Gigabit Ethernet switch is specially designed for use in networks where Power-over-Ethernet functionality is used continuously. All 24 10/100/1000Base-T copper ports offer PoE/PoE+ according to the IEEE802.3af and IEEE802.3at standards. Terminal devices connected to the network port can be supplied cost-effectively and without additional cabling effort with up to 30 W power per port. The total output power from the switch is therefore up to 370 W.

The 24-port switch also has 4x dual speed 100/1000X SFP ports. Using standard SFP transceivers, this makes it possible to establish a direct connection to a GBE fiber optic backbone or to cascade more distant switches via fiber optic cables.

The switch is equipped with an integrated smart management (via web browser). Additionally, status information can be read via SNMP. The GBE switch also supports a variety of features such as QoS, VLANs, STP / RSTP / MSTP, IEEE 802.1X authentication, loop protection, IGMP snooping, SNMP traps and many more.

All network connections are accessible from the front of the device, which considerably simplifies patching. The device is powered with a 100...230 VAC connection located at the back of the device.

Description	Art. no.
24-port Gigabit Ethernet switch, 19" 1 U, 24x 10/100/1000Base-T with PoE+ (PSE), uplink with 4x 100/1000Base-X SFP slots*, web management, integrated power supply unit with 90-240 VAC input.	MS400834M

*Suitable SFP transceivers on page 22et seqq.

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Product overview
Entry Line

	Gigabit Ethernet Switches		Fast Ethernet Switches	
	6-port Gigabit Switch with SFP	8-port Gigabit Ethernet Switch	5 and 8-port Fast Ethernet Switch	5-port Fast Ethernet Switch with FX-Uplink
Interfaces				
Number of 10/100/1000T ports	4	8	-	-
Number of 10/100TX ports	-	-	5/ 8	5
Number of PoE ports	4 (MS657203PX)	8 (MS657208PX)	5 (MS657100PX)	4 (MS657102/104PX)
SUB-D9	-	-	-	-
Uplinks				
Number of 100/100/1000T 100/1000X SFP combo ports	1	-	-	-
Number of 100/1000X SFP ports	1	-	-	-
Number of 1000X SFP ports	-	-	-	-
Number of 100FX ports	-	-	-	1
Technology				
Configuration	Plug'n'Play	Plug'n'Play	Plug'n'Play	Plug'n'Play
DIP switch	●	-	-	-
Auto negotiation	●	●	●	●
Auto MDI/MDI-X	●	●	●	●
Power supply redundant	●	●	●	●
Voltage range	12..56 VDC 44..56 VDC PoE operation	12..56 VDC 44..56 VDC PoE operation	9..56 VDC 44..56 VDC PoE operation	12..56 VDC 44..56 VDC PoE operation
Typical power consumption	5.8 W @ 48 VDC	12.7 W	3.8 W @ 48 VDC	6.8 W @ 48 VDC
Operating temperature range	-40..+75°C	-40..+75°C	-40..+75°C	-40..+75°C
Floating relay contact	●	●	●	●
Overvoltage protection	●	●	●	●
Max. dimensions in mm	36.2 x 105 x 142	36.2 x 105 x 142	36.2 x 105 x 142	36.2 x 105 x 142
Ordering information				
PoE+ 30W version	MS657203PX	MS657208PX	MS657100PX	MS657102/104PX
PoE+ 60W version	-	-	-	-
PoE+ 90W version	-	-	-	-
Version with 2x RJ-45	-	-	-	-
Version with 5x RJ-45	-	-	MS657100X	-
Version with 8x RJ-45 uplink	-	MS657208X	MS657140X	-
Version with 1x SFP uplink	-	-	-	-
Version with 2x SFP uplink	MS657203X	-	-	-
Multimode uplink 1310 nm, SC	-	-	-	MS657102X
Single mode uplink 1310nm, SC	-	-	-	MS657104X
Catalogue page	**60**	**60**	**62**	**62**

	Bridges		Power-over-Ethernet		RS-232/422/485 Device Servers	
	Gigabit Ethernet Bridge	**Fast Ethernet Bridge**	**5-port Fast Ethernet Ring Switches optionally with FX Uplink**	**Fast Ethernet Bridge**	**Twisted Pair Uplink**	**Fiber Optic Uplink**
	1	-	1	-	-	-
	-	1	-	1	2	2(1xPD)
	1(MS657099PX)	-	1	-	-	-
	-	-	-	-	1	4
	-	-	-	-	-	-
	1	-	-	-	-	-
	-	-	-	-	-	-
	-	1 (SFP)	-	-	-	-
	DIP switch	DIP switch	Plug'n'Play	DIP switch	Software/DIP	Software /DIP
	•	•	•	•	•	•
	•	•	•	•	•	-
	•	•	•	•	•	-
	-	-	•	•	•	•
	12..56 VDC 44..56 VDC PoE operation	12..60 VDC	44..56 VDC 44..56 VDC PoE operation	12..48 VDC	12..48 VDC	12..48 VDC
	2 W @ 48 VDC	1.44 W	1 W @ 48 VDC	4.8 W @ 48 VDC	1.4 W	4.3 W
	-40..+75°C	-40..+75°C	-40..+75°C	-40..+75°C	-40..+70°C	-40..+70°C
	•	-	-	•	•	•
	•	•	•	•	•	•
	32 x 81.5 x 103.5	30 x 50 x 59	32 x 81.5 x 103.5	36.6 x 95 x 140	26 x752 x 110	45 x 81 x 95
	MS657099PX	-	MS657031X	-	-	-
	MS657099PHX	-	MS657032X	-	-	-
	-	-	MS657034X	-	-	-
	-	-	-	MS655020X	MS656400X	MS656420PD
	-	-	-	-	-	-
	-	-	-	-	-	-
	MS657099X	MS657049X	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
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04 Further information

Website

In addition to the information compiled in this catalog, we provide you with further contents on our website www.microsens.com. In our CMS system, you will not only find product descriptions but also detailed data sheets, installation instructions, white papers, product and market segment brochures, exiting user reports and much more.

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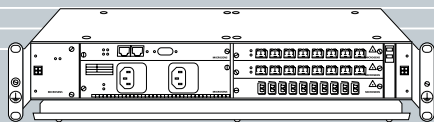MICROSENS fiber optic solutions - intelligent, reliable, high-performance
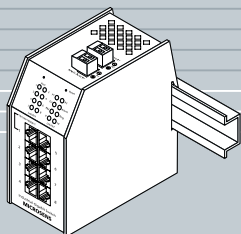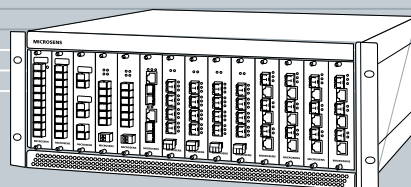
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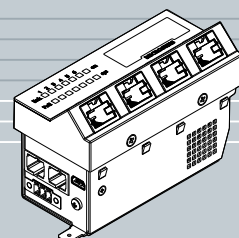euromicron group

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| Optical Transport Platform 2 U | Industrial Switch | Access Platform 4 U | Micro Switch |

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