

# Industrial Ethernet

Version 2023



Weidmüller 

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# Industrial Ethernet – Active components

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# Industrial Ethernet – Passive components

## Catalogue 9

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# Active components

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# Passive components

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# Passive components

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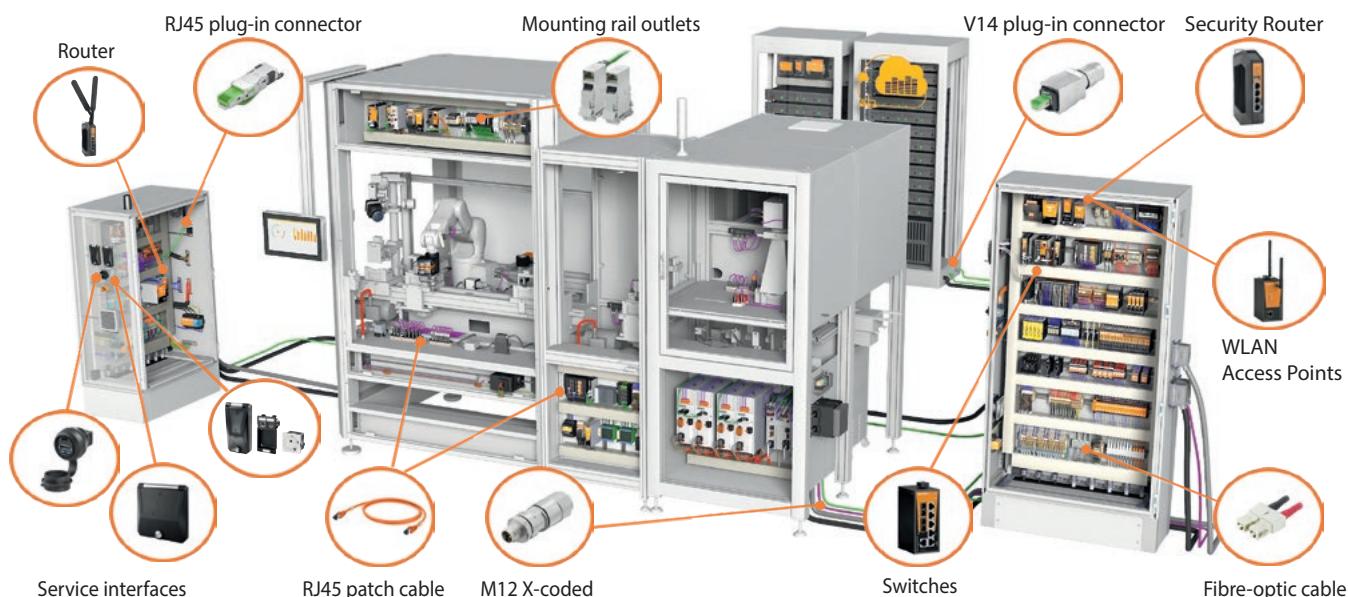
- Weidmüller eShop
- OCI interface
- EDI interface

# Intended use for Industrial Ethernet

## A complete range of products for industrial communications infrastructure

The trend to network industrial plant components using Ethernet protocols was already apparent several years ago. Ethernet communication is now well established in all market segments; including automotive, general machine construction, process industry, transportation, energy and even Maritime. The requirements of these differ in terms of protocols, environmental conditions, certifications and standards. As well as being a leading provider of industrial connection and network products, Weidmüller embraces solutions for these differing requirements with a comprehensive and highquality product range of active and passive components for Ethernet communications.

The basic requirements of these industrial markets are high reliability, availability and safeguarding against failure. These are met by extremely high MTBF times of our network components. Using Weidmüller's high-quality STEADYTEC® connector system means that maximum reliability and simple operation is ensured. Indeed, Weidmüller's network components create a complete communications infrastructure for industrial applications in machine construction, process and plant engineering and energy.





### Automotive

The automotive manufacturers of AIDA (Automation Initiative of the German Automotive Industry) are the drivers behind the use of the Industrial Ethernet in manufacturing. Extremely harsh environmental conditions place high demands on the components used: Cabling must be torsion-resistant and there are increased EMC requirements for connectors and active devices. For these areas of application, Weidmüller offers a complete product range consisting of copper and fibre optic connectors that are designed to meet the special needs of robot cabling.



### Machinery & Plant Engineering

Machinery has to stand out from the competition with special services and a stronger customer focus. This results in a dynamic change in machinery and plant construction, demanding greater economic efficiency, quality, flexibility and performance from machines. The networking of machine segments and plant parts and their connection to higher-level office networks is playing an increasingly important role in this. Our products are perfectly adapted to these requirements and offer not only robustness and reliability, but are also easy to configure.



### Ships

The shipbuilding industry is also experiencing disruptive market development in the face of rapidly advancing technological developments. Autonomous shipping, sustainability, networking, digitalisation concepts and advanced data analytics are the key topics in this respect. To meet the requirements of this industry, the various products in our portfolio include variants with a marine approval according to DNV.



### Transmission & Distribution

The energy market is booming – especially in the field of renewable energies. The products used here must often be able to withstand harsh environmental conditions. To ensure that power grids function reliably and stably, intelligent solutions are being integrated more and more in order to minimise downtimes and to reduce maintenance work. This requires uninterrupted communication. We support the energy sector with reliable components that are approved according to IEC 61850-3 and IEEE 1613 standards.



### Process industry

In large-scale process plants, fibre optic media are often used for communication over long distances. However, for reliable data transmission in the field, the components used must be protected from harmful environmental influences. These include high temperature fluctuations, vibrations, dust exposure and electromagnetic influences. Our active and passive Ethernet components have ATEX approval and can reliably withstand these influences.



# Active components

## Introduction

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Active components

Introduction - Active components

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# Transfer data between devices in the network flexibly and reliably

## Active Industrial Ethernet – the perfect solution for countless applications

A

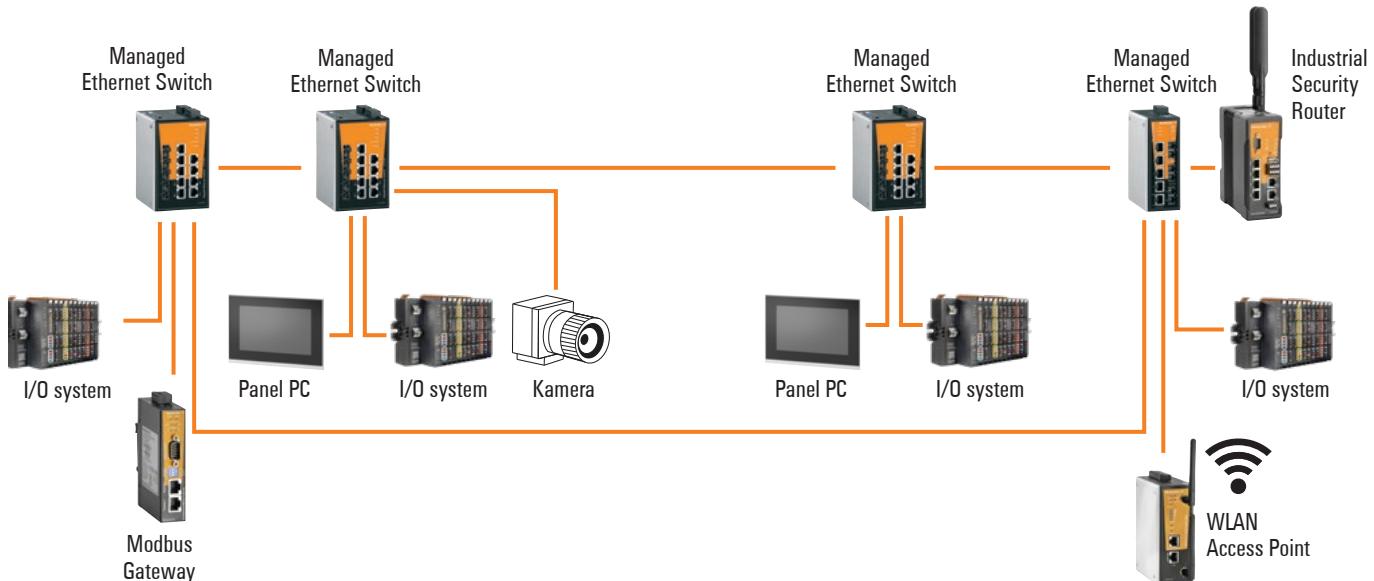
The Industrial Ethernet has proved itself in many areas of automation. With its high performance and flexibility, it opens up a multitude of design options for the network infrastructure. Our Industrial Ethernet components are the perfect connection solution for data communication between Ethernet-capable devices in industrial automation. They have various features and approvals, which is why they are ideally suited to many industrial applications.

As a complete supplier of industrial network infrastructures, we are active in machinery and plant engineering, shipbuilding, the process industry and energy, including traditional/renewable power generation, as well as transmission and distribution.

Our broad product range includes a variety of products with a wide range of approvals for individual requirements. These include Fast/Gigabit switches (unmanaged/managed including Power over Ethernet variants), routers, WLAN devices, IoT gateways, media converters and protocol gateways, as well as u-link, our remote maintenance solution. All our Ethernet components meet the highest demands and enable reliable, flexible Ethernet communication.

Thanks to the highly differentiated Eco, Basic, Value, Advanced, Premium and SubstationLine product lines, our switches are suitable for meeting a wide range of requirements. This allows us to guarantee optimal data transmission at all times – from simple communication structures to the complex data meshes of extensive systems.

As an ideal complement to this, we offer you a comprehensive passive product portfolio of RJ45 and fibre optic connectors and cables. This makes Weidmüller your perfect partner for Industrial Ethernet solutions.





# Always the best choice for your requirements

## Our switch product lines for all-round application-oriented solutions

A

Ethernet networks must allow the exchange of data packets between specific participants. For this purpose, the participants are connected to each other via Ethernet switches. Ethernet switches thus collect all data streams and distribute them to the respective participants to enable communication to take place. Since Ethernet switches have to meet very different requirements depending on the area of application, we offer a variety of product lines. They differ in terms of their properties, special features and technical highlights.



### **EcoLine:**

Our unmanaged EcoLine switches are characterised by a rich variety of different models and high economic efficiency. They can be used in a uniquely wide temperature range of -40 to +75 °C, which enables them to be operated both inside production plants and in the field. The robust devices have 5 to 24 ports as well as a redundant voltage input. Their SFP ports allow especially flexible use, regardless of the available communication media and/or the required distance. Power over Ethernet switches are also available within the EcoLine in order to reduce the required cabling work.



### **BasicLine:**

The BasicLine series consists of an extensive range of unmanaged plug and play switches. All devices were developed for use in harsh industrial environments and have numerous international approvals, such as cULus, Class I, Div. 2, ATEX and DNV. This makes them ideal for use in many different industries. The devices are available with Fast Ethernet and Gigabit Ethernet ports. In addition, the series also includes individual variants with Power over Ethernet ports.



### **ValueLine:**

Our ValueLine series features unmanaged and managed switches available with Fast Ethernet and Gigabit Ethernet ports. Our ValueLine managed switches support various industrial communication protocols, e.g. MODBUS/TCP, PROFINET/RT and ETHERNET/IP. This enables optimal integration into the most common automation networks. They also support a variety of helpful management functions, such as port mirroring and error messaging via e-mail or relay. All of these functions can be set up with ease via the web-based management interface. ValueLine switches also have numerous international approvals to ensure proper operation in a variety of industries (cULus, Class I Div. 2 / ATEX Zone 2, DNV).



#### **AdvancedLine:**

The managed switches of our AdvancedLine are characterised by a wide assortment of variants and economic efficiency. The different model variants designed for Fast Ethernet and Gigabit as well as integrating 5 to 24 ports and SFP slots ensure a high degree of flexibility. Their especially wide temperature range of -40 to +75 °C allows them to be used both in production plants and in the field. All switches in the series can be intuitively configured via a browser-based web interface. The comprehensive management tool can be used to set up various redundancy, monitoring, traffic filtering and security functions. The AdvancedLine ranges from full-managed switches for demanding applications to lite-managed switches for simpler requirements within a network and offers an excellent price-performance ratio. Power over Ethernet switches are also available in the AdvancedLine in order to reduce cabling work.



#### **PremiumLine:**

The managed switches of our PremiumLine are true high-end products. They are especially suitable for ambitious network solutions with high data volumes. The devices are available in a wide variety of versions. For example, customers can select the number of ports, transmission rate (Fast/Gigabit Ethernet) and connection variant. PremiumLine switches support various industrial application protocols, e.g. MODBUS/TCP, PROFINET RT and ETHERNET / IP. They also have numerous international approvals, such as cULus, Class I Div.2 / ATEX Zone 2 and DNV, making them a perfect choice for many different industries and applications.



#### **SubstationLine:**

The SubstationLine comprises managed Ethernet switches that comply with the IEC 61850-3 standard, making them robust enough for operation in harsh environments. All switches include a redundant power supply, and the series also includes variants with Fast Ethernet, Gigabit, all the way up to 10 Gigabit Ethernet, as well as sophisticated features like PTPv2 time synchronisation. All devices were designed for use in substations and other energy (T&D) systems, where electromagnetic interference is higher than in other industries. To cope with the complexity of larger networks, the SubstationLine also offers switches with Layer 3 functionality.

**PoE+ Gigabit Ethernet Injector**

- IEEE 802.3af/at compliant PoE ports
- Compact design
- Wide temperature range

**IE-INJ-EL02-2GTPoE****Technical data****Technology**

Standard

IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X), IEEE 802.3ab for 1000Base-T, IEEE 802.3at/af for Power-over-Ethernet

**Interfaces**

RJ45 ports

10/100/1000BaseT(X), auto negotiation, Full-/half-duplex mode, MDIX

Number of ports

2x RJ45 10/100/1000BaseT(X), 2x RJ45 10/100/1000 BaseT(X) PoE+

**Power supply**

Voltage supply

12/24/48 V DC, 1 single input

Voltage supply range

12...57VDC

Connection type

1 removable 4-pin terminal block

Current consumption

3.12A @ 12V DC; 2.81A @ 24V DC; 1.3A @ 48V DC

Overload current protection

Yes

Reverse polarity protection

Yes

**Power over Ethernet (PoE)**

PoE pin assignment

Mode A: Pin 1, 2 (V+); Pin 3, 6 (V-); Alternative A; MDI-X

Total PoE power budget

30W @ 12...23.9V DC; 60W @ 24...57V DC

**Physical characteristics**

Housing main material

Metal

Protection degree

IP30

Type of mounting

DIN rail

Dimensions H x W x D

70 / 41 / 95 mm (2.7559 / 1.6142 / 3.7402 inch)

Net weight

400 GRM

**Environmental conditions**

Operating temperature

-40 °C...75 °C

Humidity

5 to 95 % (non-condensing)

Operating altitude

2000m in acc. with UL

**EMC conformity and approvals**

EMC standards

EN 55032, EN 55024, FCC Part 15 Subpart B Class A, IEC 61000-4-2

ESD: Contact: 4 kV; Air: 8 kV, IEC 61000-4-3 RS: 80 MHz bis 1

GHz: 3 V/m, IEC 61000-4-4 EFT: Power: 0.5 kV; Signal: 0.5 kV, IEC

61000-4-5 Surge: Power: 0.5 kV; Signal: 1 kV, IEC 61000-4-6 CS: 3

Vrms

Safety standard

UL 61010-1, UL 61010-2-201

Shock

according to IEC 60068-2-27

Vibration

according to IEC 60068-2-6

**MTBF**

Operating time (hours), min.

3165390 hrs

According to Standard

Telcordia SR-332

**Approvals**

Approvals

CE; CULUS

**Note****Ordering data****Note**

Type	Qty.	Order No.
IE-INJ-EL02-2GTPoE	1	2682440000

# Managed Switches

## Overview

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Managed Switches, IEC 61850-3, 19" rack mounting Fast/Gigabit Ethernet	C.32	
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# Increased productivity through uninterrupted operation

## Managed switches – for optimal control and effective redundancy

In order to coordinate the different requirements of communication participants within an industrial network, managed switches feature extensive control mechanisms for data distribution and bandwidth management. Different configuration options are supported, e.g. web-based configuration, SNMP, Telnet console, command-line interface (CLI) and serial console connection.

**C** In the industrial Ethernet infrastructures of today, system availability must be ensured through network redundancy. This prevents machine downtimes and production losses due to connection errors in the highly integrated systems. Weidmüller managed switches feature high-performance redundancy mechanisms in order to increase the availability of managed Ethernet networks.

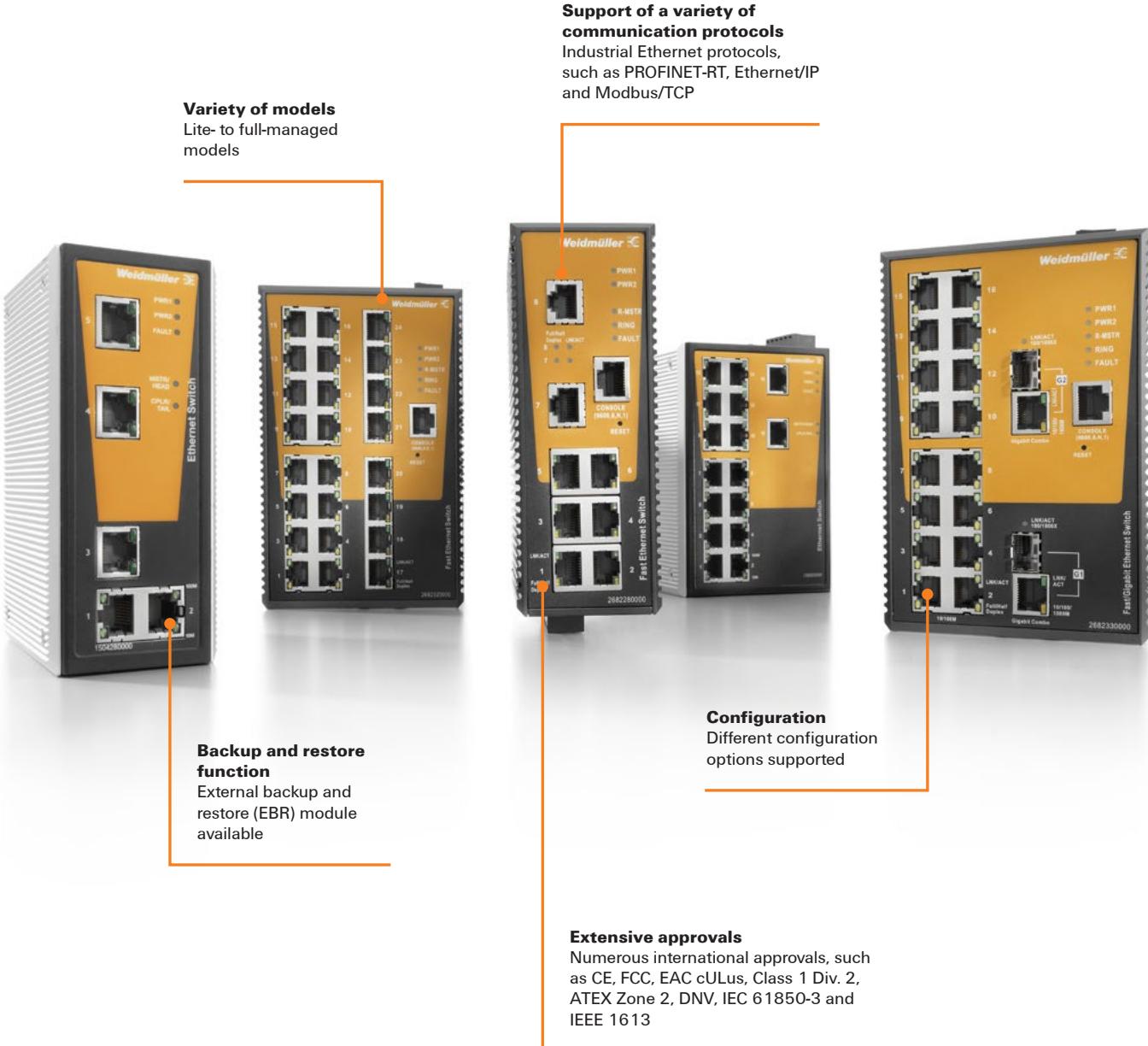
In order to satisfy all the requirements of industrial networks, our managed switches are available in four different lines: ValueLine, AdvancedLine, PremiumLine and SubstationLine. This selection ensures the availability of the right product regardless of application-specific and industrial requirements. The lines offer both DIN rail and 19" rack models, Fast, Gigabit and up to 10 Gigabit interfaces, a broad selection of port numbers and types, Power over Ethernet variants, support for the most important industrial automation protocols and the necessary approvals for use in such demanding sectors as the process industry, transmission and distribution, and shipbuilding.

### Your special advantage:

- Wide variety of ports in terms of number and features to meet individual requirements
- Models available with Fast Ethernet, Gigabit and up to 10 Gigabit interfaces
- Lite- to full-managed models, including Power over Ethernet variants
- Support of industrial protocols for optimal integration into the most common automation networks



See  
chapter A for  
details about  
the product  
lines



**5-Port lite managed Fast Ethernet Switch**

- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40 °C up to 75 °C

**Technical data**

Technology	
Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X), IEEE 802.3x for flow control, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1AB for Link Layer Discovery protocol (LLDP)
Data switching	Store and Forward
Flow control	IEEE 802.3x flow control
Switch characteristics	
MAC table size	2 K
Packet buffer size	1 Mbit
Management features	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Command Line Interface (CLI), Upload of a configuration file via web-interface or TFTP-Server
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Syslog, Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), O-Ring (recovery time <10 ms), O-Chain (recovery time <10 ms), Fast recovery
Network traffic filter	Port based VLAN
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay
Security functions	VLAN segmentation, Enable/disable ports, Loop protection, TACACS+ Authentication, Management access security via secure IP-list and configuration of allowed access methods (web-interface, telnet, SSH)
Time synchronization management	NTP server, SNTP client
Industrial protocol support	Modbus/TCP slave
Interfaces	
RJ45 ports	10/100BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Number of ports	5x RJ45
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function DIP switch	1x for enabling/disabling power fault alarm via relay, 3x for ring redundancy settings
Function reset button	<5 sec: System reboot, >5 sec: Factory default
Power supply	
Connection type	1 removable 6-pin terminal block
Voltage supply range	10.8...52.8VDC
Voltage supply	12/24/48 V DC, 2 redundant inputs
Current consumption	0.5A @ 12V DC; 0.25A @ 24V DC; 0.12A @ 48V DC
Overload current protection	Yes
Reverse polarity protection	Yes
Note	

**Physical characteristics**

Housing main material	Metal
Protection degree	IP30
Type of mounting	DIN rail
Dimensions H x W x D	144.3 / 26.1 / 95 mm (5.6811 / 1.0276 / 3.7402 inch)
Net weight	396 GRM

**Environmental conditions**

Operating temperature	-40 °C...75 °C
Humidity	5 to 95 % (non-condensing)
Operating altitude	2000m in acc. with UL

**EMC conformity and approvals**

EMC standards	EN 55032, EN 55024, FCC Part 15 Subpart B Class A, IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV, IEC 61000-4-3 RS: 80 MHz bis 1 Ghz: 3 V/m, IEC 61000-4-4 EFT: Power: 0.5 kV; Signal: 0.5 kV, IEC 61000-4-5 Surge: Power: 0.5 kV; Signal: 1 kV, IEC 61000-4-6 CS: 3 Vrms
Safety standard	UL 61010-1, UL 61010-2-201
Shock	according to IEC 60068-2-27
Vibration	according to IEC 60068-2-6
Free fall	According to IEC 60068-2-31
<b>MTBF</b>	
Operating time (hours), min.	1796601 hrs
According to Standard	Telcordia SR-332
<b>Approvals</b>	
Approvals	CE; CULUS; EAC; KOREANCERT

**Ordering data**

Type	Qty.	Order No.
IE-SW-AL05LM-5TX	1	2682250000

**6-Port lite managed Fast Ethernet Switch**

- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40 °C up to 75 °C

**Technical data**

Technology	
Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X) and 100BaseFX, IEEE 802.3x for flow control, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1AB for Link Layer Discovery protocol (LLDP)
Data switching	Store and Forward
Flow control	IEEE 802.3x flow control
Switch characteristics	
MAC table size	2 K
Packet buffer size	1 Mbit
Management features	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Command Line Interface (CLI), Upload of a configuration file via web-interface or TFTP-Server
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Syslog, Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), O-Ring (recovery time <10 ms), O-Chain (recovery time <10 ms), Fast recovery
Network traffic filter	Port based VLAN
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay
Security functions	VLAN segmentation, Enable/disable ports, Loop protection, TACACS+ Authentication, Management access security via secure IP-list and configuration of allowed access methods (web-interface, telnet, SSH)
Time synchronization management	NTP server, SNTP client
Industrial protocol support	Modbus/TCP slave
Interfaces	
RJ45 ports	10/100BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Number of ports	4 x RJ45, 2 * SC Multi-mode
Fibre-optic ports	100BaseFX ports (SC connector), Multimode
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function reset button	<5 sec: System reboot, >5 sec: Factory default
Fibre optic transceiver characteristics	
Transmission rate	100 MBit/s
Connector type	SC-Duplex
Transceiver type	Multimode
Transmission distance, typ.	2 km
Wavelength	1310nm
Receive power	-31...-0dBm
Transmission power	-23.5...-14dBm
Link-budget	7.5 dB
Power supply	
Connection type	1 removable 7-pin terminal block
Voltage supply range	10.8...52.8VDC
Voltage supply	12/24/48 V DC, 2 redundant inputs
Current consumption	0.47A @ 12V DC; 0.24A @ 24V DC; 0.12A @ 48V DC
Overload current protection	Yes
Reverse polarity protection	Yes
Note	

Physical characteristics	
Housing main material	Metal
Protection degree	IP30
Type of mounting	DIN rail
Dimensions H x W x D	145.4 / 54.2 / 107.1 mm (5.7244 / 2.1339 / 4.2165 inch)
Net weight	799 GRM
Environmental conditions	
Operating temperature	-40 °C...75 °C
Humidity	5 to 95 % (non-condensing)
Operating altitude	2000m in acc. with UL
EMC conformity and approvals	
EMC standards	EN 55032, EN 55024, FCC Part 15 Subpart B Class A, IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV, IEC 61000-4-3 RS: 80 MHz bis 1 Ghz: 3 V/m, IEC 61000-4-4 EFT: Power: 0.5 kV; Signal: 0.5 kV, IEC 61000-4-5 Surge: Power: 1 kV; Signal: 1 kV, IEC 61000-4-6 CS: 3 Vrms
Safety standard	SELV according to EN 62368-1, UL 61010-1, UL 61010-2-201
Shock	according to IEC 60068-2-27
Vibration	according to IEC 60068-2-6
Free fall	According to IEC 60068-2-31
MTBF	
Operating time (hours), min.	595597 hrs
According to Standard	Telcordia SR-332
Approvals	
Approvals	CE; CULUS; EAC

**Ordering data**

Type	Qty.	Order No.
IE-SW-AL06LM-4TX-2SC	1	2682260000

**6-Port lite managed Fast Ethernet Switch**

- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40 °C up to 75 °C

**Technical data**

Technology		Physical characteristics
Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X), IEEE 802.3x for flow control, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1AB for Link Layer Discovery protocol (LLDP)	Housing main material Metal Protection degree IP30 Type of mounting DIN rail Dimensions H x W x D 145.4 / 54.2 / 107.1 mm (5.7244 / 2.1339 / 4.2165 inch) Net weight 799 GRM
Data switching	Store and Forward	
Flow control	IEEE 802.3x flow control	
Switch characteristics		Environmental conditions
MAC table size	2 K	Operating temperature -40 °C...75 °C
Packet buffer size	1 Mbit	Humidity 5 to 95 % (non-condensing)
Management features		Operating altitude 2000m in acc. with UL
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Command Line Interface (CLI), Upload of a configuration file via web-interface or TFTP-Server	<b>EMC conformity and approvals</b>
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Syslog, Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap	EMC standards EN 55032, EN 55024, FCC Part 15 Subpart B Class A, IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV, IEC 61000-4-3 RS: 80 MHz bis 1 Ghz: 3 V/m, IEC 61000-4-4 EFT: Power: 0.5 kV; Signal: 0.5 kV, IEC 61000-4-5 Surge: Power: 1 kV; Signal: 1 kV, IEC 61000-4-6 CS: 3 Vrms
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), O-Ring (recovery time <10 ms), O-Chain (recovery time <10 ms), Fast recovery	Safety standard SELV according to EN 62368-1, UL 61010-1, UL 61010-2-201
Network traffic filter	Port based VLAN	Shock according to IEC 60068-2-27
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay	Vibration according to IEC 60068-2-6
Security functions	VLAN segmentation, Enable/disable ports, Loop protection, TACACS+ Authentication, Management access security via secure IP-list and configuration of allowed access methods (web-interface, telnet, SSH)	Free fall According to IEC 60068-2-31
Time synchronization management	NTP server, SNTP client	<b>MTBF</b>
Industrial protocol support	Modbus/TCP slave	Operating time (hours), min. 609551 hrs
<b>Interfaces</b>		According to Standard Telcordia SR-332
RJ45 ports	10/100BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port	<b>Approvals</b>
Number of ports	4 x RJ45, 2 * SC Single-mode	Approvals CE; CULUS; EAC
Fibre-optic ports	100BaseFX ports (SC connector), Singlemode	
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC	
Function reset button	<5 sec: System reboot, >5 sec: Factory default	
<b>Fibre optic transceiver characteristics</b>		<b>Ordering data</b>
Transmission rate	100 MBit/s	Type
Connector type	SC-Duplex	IE-SW-AL06LM-4TX-2SCS Qty. 1 Order No. 2682270000
Transceiver type	Singlemode	
Transmission distance, typ.	30 km	
Wavelength	1310nm	
Receive power	-34...-0dBm	
Transmission power	-15...-8dBm	
Link-budget	19 dB	
<b>Power supply</b>		
Connection type	1 removable 7-pin terminal block	
Voltage supply range	10.8...52.8VDC	
Voltage supply	12/24/48 V DC, 2 redundant inputs	
Current consumption	0.47A @ 12V DC; 0.24A @ 24V DC; 0.12A @ 48V DC	
Overload current protection	Yes	
Reverse polarity protection	Yes	
<b>Note</b>		

**8-Port managed Fast Ethernet Switch**

- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40 °C up to 75 °C

**Technical data**

Technology	
Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X), IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP)
Data switching	Store and Forward
<b>Switch characteristics</b>	
MAC table size	8 K
Packet buffer size	1 Mbit
Priority queues	4
Max. number of available VLANs	4095
IGMP-Groups	1024
<b>Management features</b>	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Command Line Interface (CLI), Local serial console port (RS-232 via RJ45 port), Upload of a configuration file via web-interface or TFTP-Server
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <10 ms), O-Chain (recovery time <10 ms), Link Aggregation Control Protocol (LACP), Fast recovery
Network traffic filter	Quality of Service (QoS), Class of Service (CoS), Type of Service (ToS), Differentiated Services Code Point (DSCP), Port based VLAN, Tag based VLAN, IGMP v2/v3, Multicast VLAN Registration (MVR), Traffic Rate Limiting
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, Access control (port based via IEEE 802.1X), Access control list (IP-based), Access control list (MAC-based), Management access security via secure IP-list and configuration of allowed access methods (web-interface, telnet, SSH), Loop protection
Time synchronization management	NTP server, SNTP client
Industrial protocol support	Modbus/TCP slave, PROFINET device acc. to conformance class A
<b>Interfaces</b>	
RJ45 ports	10/100BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Number of ports	8x RJ45
Console port interface	RS-232 (RJ45 connector)
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function reset button	<5 sec: System reboot, >5 sec: Factory default
<b>Note</b>	

**16-Port managed Fast Ethernet Switch**

- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40 °C up to 75 °C

**Technical data**

Technology	
Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X), IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP)
Data switching	Store and Forward
Flow control	IEEE 802.3x flow control
Switch characteristics	
MAC table size	8 K
Packet buffer size	1 Mbit
Priority queues	4
Max. number of available VLANs	4095
Number of IGMP-Groups per VLAN	256
Management features	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Command Line Interface (CLI), Local serial console port (RS-232 via RJ45 port), Upload of a configuration file via web-interface or TFTP-Server
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <10 ms), O-Chain (recovery time <10 ms), Link Aggregation Control Protocol (LACP), Fast recovery
Network traffic filter	Quality of Service (QoS), Class of Service (CoS), Type of Service (ToS), Differentiated Services Code Point (DSCP), Port based VLAN, Tag based VLAN, IGMP v2/v3, Multicast VLAN Registration (MVR), Traffic Rate Limiting
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, Access control (port based via IEEE 802.1X), Access control list (IP-based), Access control list (MAC-based), Management access security via secure IP-list and configuration of allowed access methods (web-interface, telnet, SSH), Loop protection
Time synchronization management	NTP server, SNTP client
Industrial protocol support	Modbus/TCP slave, PROFINET device acc. to conformance class A
Interfaces	
RJ45 ports	10/100BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Number of ports	16x RJ45
Console port interface	RS-232 (RJ45 connector)
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function reset button	<5 sec: System reboot, >5 sec: Factory default
Note	

**24-Port managed Fast Ethernet Switch**

- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40 °C up to 75 °C

**Technical data**

Technology	
Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X), IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP)
Data switching	Store and Forward
<b>Switch characteristics</b>	
MAC table size	8 K
Packet buffer size	1 Mbit
Priority queues	4
Max. number of available VLANs	4095
Number of IGMP-Groups per VLAN	256
<b>Management features</b>	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Command Line Interface (CLI), Local serial console port (RS-232 via RJ45 port), Upload of a configuration file via web-interface or TFTP-Server
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <10 ms), O-Chain (recovery time <10 ms), Link Aggregation Control Protocol (LACP), Fast recovery
Network traffic filter	Quality of Service (QoS), Class of Service (CoS), Type of Service (ToS), Differentiated Services Code Point (DSCP), Port based VLAN, Tag based VLAN, IGMP v2/v3, Multicast VLAN Registration (MVR), Traffic Rate Limiting
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, Access control (port based via IEEE 802.1X), Access control list (IP-based), Access control list (MAC-based), Management access security via secure IP-list and configuration of allowed access methods (web-interface, telnet, SSH), Loop protection
Time synchronization management	NTP server, SNTP client
Industrial protocol support	Modbus/TCP slave, PROFINET device acc. to conformance class A
<b>Interfaces</b>	
RJ45 ports	10/100BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Number of ports	24x RJ45
Console port interface	RS-232 (RJ45 connector)
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function reset button	<5 sec: System reboot, >5 sec: Factory default
<b>Note</b>	

**5-Port managed Fast Ethernet Switches**

- Supports the automation protocols Modbus/TCP, PROFINET RT and EtherNet/IP
- Turbo Ring and Turbo Chain with fast recovery time (<20 ms for up to 250 switches)
- IGMP snooping, QoS, port- and tag-based VLAN
- Configurable error messages via SNMP trap, e-mail or relay output
- User-friendly, web-based configuration and management


**ModbusTCP**
**Technical data****Technology**

Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X), IEEE 802.3x for flow control, IEEE 802.1D-2004 for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging
Data switching	Store and Forward
Flow control	IEEE 802.3x flow control, Back pressure flow control
MIB	MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9

**Switch characteristics**

MAC table size	2 K
Packet buffer size	1 Mbit
Priority queues	4
Max. number of available VLANs	64
IGMP-Groups	256

**Management features**

Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Local serial console port (RS-232 via RJ-45 port), Windows tool
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Turbo-Ring (recovery time <20 ms), Turbo-Chain (recovery time <20 ms)
Network traffic filter	Quality of Service (QoS), Tag based VLAN, Port based VLAN, IGMP v1/v2, GMRP, Traffic Rate Limiting
IP-address management	Static, BootP, RARP, DHCP-Client, DHCP-Server (port based), DHCP Option 82 (Relay Agent)
Security functions	VLAN segmentation, Enable/disable ports, Loop protection
Time synchronization management	SNTP client, NTP client
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave

**Interfaces**

RJ45 ports	10/100BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Number of ports	5x RJ45
Console port interface	RS-232
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function DIP switch	Turbo-Ring, Master, Coupler, Reserve

**Power supply**

Connection type	1 removable 6-pin terminal block
Voltage supply range	9.6...60VDC
Voltage supply	12/24/48 V DC, 2 redundant inputs
Current consumption	0.29A @ 24V DC
Overload current protection	Yes
Reverse polarity protection	Yes

**Note****Ordering data**

Type	Qty.	Order No.
IE-SW-VL05M-5TX	1	1504280000
IE-SW-VL05MT-5TX	1	1504310000

## 8-Port managed Fast Ethernet Switch

- Supports the automation protocols Modbus/TCP, PROFINET RT and EtherNet/IP
- Turbo Ring and Turbo Chain with fast recovery time (<20 ms for up to 250 switches)
- IGMP snooping, QoS, port- and tag-based VLAN
- Configurable error messages via SNMP trap, e-mail or relay output
- User-friendly, web-based configuration and management



EtherNet/IP™



Modbus TCP

### Technical data

#### Technology

Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X), IEEE 802.3x for flow control, IEEE 802.1D-2004 for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging
Data switching	Store and Forward
Flow control	IEEE 802.3x flow control, Back pressure flow control
MIB	MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9

#### Switch characteristics

MAC table size	8 K
Packet buffer size	1 Mbit
Priority queues	4
Max. number of available VLANs	64
IGMP-Groups	256

#### Management features

Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Local serial console port (RS-232 via RJ-45 port), Windows tool
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Turbo-Ring (recovery time <20 ms), Turbo-Chain (recovery time <20 ms)
Network traffic filter	Quality of Service (QoS), Tag based VLAN, Port based VLAN, IGMP v1/v2, GMRP, Traffic Rate Limiting
IP-address management	Static, BootP, RARP, DHCP-Client, DHCP-Server (port based), DHCP Option 82 (Relay Agent)
Security functions	VLAN segmentation, Enable/disable ports, Loop protection
Time synchronization management	SNTP client, NTP client
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave

#### Interfaces

RJ45 ports	10/100BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Number of ports	8x RJ45
Console port interface	RS-232
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function DIP switch	Turbo-Ring, Master, Coupler, Reserve
Power supply	
Connection type	1 removable 6-pin terminal block
Voltage supply range	9.6...60VDC
Voltage supply	12/24/48 V DC, 2 redundant inputs
Current consumption	0.26A @ 24V DC
Overload current protection	Yes
Reverse polarity protection	Yes

#### Note

## Managed Switches Fast Ethernet – ValueLine

### 8-Port managed Fast Ethernet Switch

- Supports the automation protocols Modbus/TCP, PROFINET RT and EtherNet/IP
- Turbo Ring and Turbo Chain with fast recovery time (<20 ms for up to 250 switches)
- IGMP snooping, QoS, port- and tag-based VLAN
- Configurable error messages via SNMP trap, e-mail or relay output
- User-friendly, web-based configuration and management



### Technical data

Technology	
Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X) and 100BaseFX, IEEE 802.3x for flow control, IEEE 802.1D-2004 for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging
Data switching	Store and Forward
Flow control	IEEE 802.3x flow control, Back pressure flow control
Switch characteristics	
MAC table size	8 K
Packet buffer size	1 Mbit
Priority queues	4
Max. number of available VLANs	64
IGMP-Groups	256
Management features	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Local serial console port (RS-232 via RJ-45 port), Windows tool
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Turbo-Ring (recovery time <20 ms), Turbo-Chain (recovery time <20 ms)
Network traffic filter	Quality of Service (QoS), Tag based VLAN, Port based VLAN, IGMP v1/v2, GMRP, Traffic Rate Limiting
IP-address management	Static, BootP, RARP, DHCP-Client, DHCP-Server (port based), DHCP Option 82 (Relay Agent)
Security functions	VLAN segmentation, Enable/disable ports, Loop protection
Time synchronization management	SNTP client, NTP client
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave
Interfaces	
RJ45 ports	10/100BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Number of ports	6x RJ45, 2 * SC Multi-mode
Console port interface	RS-232
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function DIP switch	Turbo-Ring, Master, Coupler, Reserve
Fibre optic transceiver characteristics	
Transmission rate	100 Mbps
Connector type	SC-Duplex
Transceiver type	Multimode
Transmission distance, typ.	5 km
Wavelength	1300nm
Receive power	-32...-3dBm
Transmission power	-20...-10dBm
Power supply	
Connection type	1 removable 6-pin terminal block
Voltage supply range	9.6...60VDC
Voltage supply	12/24/48 V DC, 2 redundant inputs
Current consumption	0.35A @ 24V DC
Overload current protection	Yes
Reverse polarity protection	Yes
Note	

**8-Port managed Fast Ethernet Switch**

- Supports the automation protocols Modbus/TCP, PROFINET RT and EtherNet/IP
- Turbo Ring and Turbo Chain with fast recovery time (<20 ms for up to 250 switches)
- IGMP snooping, QoS, port- and tag-based VLAN
- Configurable error messages via SNMP trap, e-mail or relay output
- User-friendly, web-based configuration and management



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Modbus TCP

**Technical data****Technology**

Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X) and 100BaseFX, IEEE 802.3x for flow control, IEEE 802.1D-2004 for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging
Data switching	Store and Forward
Flow control	IEEE 802.3x flow control, Back pressure flow control
<b>Switch characteristics</b>	
MAC table size	8 K
Packet buffer size	1 Mbit
Priority queues	4
Max. number of available VLANs	64
IGMP-Groups	256

**Management features**

Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Local serial console port (RS-232 via RJ-45 port), Windows tool
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Turbo-Ring (recovery time <20 ms), Turbo-Chain (recovery time <20 ms)
Network traffic filter	Quality of Service (QoS), Tag based VLAN, Port based VLAN, IGMP v1/v2, GMRP, Traffic Rate Limiting
IP-address management	Static, BootP, RARP, DHCP-Client, DHCP-Server (port based), DHCP Option 82 (Relay Agent)
Security functions	VLAN segmentation, Enable/disable ports, Loop protection
Time synchronization management	SNTP client, NTP client
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave

**Interfaces**

RJ45 ports	10/100BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Number of ports	6x RJ45, 2 * ST Multi-mode
Console port interface	RS-232
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function DIP switch	Turbo-Ring, Master, Coupler, Reserve

**Fibre optic transceiver characteristics**

Transmission rate	100 Mbps
Connector type	ST-Duplex
Transceiver type	Multimode
Transmission distance, typ.	5 km
Wavelength	1300nm
Receive power	-32...-3dBm
Transmission power	-20...-10dBm

**Power supply**

Connection type	1 removable 6-pin terminal block
Voltage supply range	9.6...60VDC
Voltage supply	12/24/48 V DC, 2 redundant inputs
Current consumption	0.35A @ 24V DC
Overload current protection	Yes
Reverse polarity protection	Yes

**Note**

## Managed Switches Fast Ethernet – ValueLine

### 8-Port managed Fast Ethernet Switch

- Supports the automation protocols Modbus/TCP, PROFINET RT and EtherNet/IP
- Turbo Ring and Turbo Chain with fast recovery time (<20 ms for up to 250 switches)
- IGMP snooping, QoS, port- and tag-based VLAN
- Configurable error messages via SNMP trap, e-mail or relay output
- User-friendly, web-based configuration and management



EtherNet/IP™

**PROFIBER**  
INDUSTRIAL ETHERNET

ModbusTCP

### Technical data

#### Technology

Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X) and 100BaseFX, IEEE 802.3x for flow control, IEEE 802.1D-2004 for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging
Data switching	Store and Forward
Flow control	IEEE 802.3x flow control, Back pressure flow control

#### Switch characteristics

MAC table size	8 K
Packet buffer size	1 Mbit
Priority queues	4
Max. number of available VLANs	64
IGMP-Groups	256

#### Management features

Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Local serial console port (RS-232 via RJ-45 port), Windows tool
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Turbo-Ring (recovery time <20 ms), Turbo-Chain (recovery time <20 ms)
Network traffic filter	Quality of Service (QoS), Tag based VLAN, Port based VLAN, IGMP v1/v2, GMRP, Traffic Rate Limiting
IP-address management	Static, BootP, RARP, DHCP-Client, DHCP-Server (port based), DHCP Option 82 (Relay Agent)
Security functions	VLAN segmentation, Enable/disable ports, Loop protection
Time synchronization management	SNTP client, NTP client
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave

#### Interfaces

RJ45 ports	10/100BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Number of ports	6x RJ45, 2 * SC Single-mode
Console port interface	RS-232
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function DIP switch	Turbo-Ring, Master, Coupler, Reserve

#### Fibre optic transceiver characteristics

Transmission rate	100 Mbps
Connector type	SC-Duplex
Transceiver type	Singlemode
Transmission distance, typ.	40 km
Wavelength	1310nm
Receive power	-34...-3dBm
Transmission power	-5...0dBm

#### Power supply

Connection type	1 removable 6-pin terminal block
Voltage supply range	9.6...60VDC
Voltage supply	12/24/48 V DC, 2 redundant inputs
Current consumption	0.35A @ 24V DC
Overload current protection	Yes
Reverse polarity protection	Yes

#### Note

### Ordering data

Type	Qty.	Order No.
IE-SW-VL08MT-6TX-2SCS	1	1241020000

## 8-Port managed Fast Ethernet Switch

- Supports the automation protocols Modbus/TCP, PROFINET RT and EtherNet/IP
- Turbo Ring and Turbo Chain with fast recovery time (<20 ms for up to 250 switches)
- IGMP snooping, QoS, port- and tag-based VLAN
- Configurable error messages via SNMP trap, e-mail or relay output
- User-friendly, web-based configuration and management



### Technical data

#### Technology

Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X) and 100BaseFX, IEEE 802.3x for flow control, IEEE 802.1D-2004 for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging
Data switching	Store and Forward
Flow control	IEEE 802.3x flow control, Back pressure flow control

#### Switch characteristics

MAC table size	8 K
Packet buffer size	1 Mbit
Priority queues	4
Max. number of available VLANs	64
IGMP-Groups	256

#### Management features

Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Local serial console port (RS-232 via RJ-45 port), Windows tool
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Turbo-Ring (recovery time <20 ms), Turbo-Chain (recovery time <20 ms)
Network traffic filter	Quality of Service (QoS), Tag based VLAN, Port based VLAN, IGMP v1/v2, GMRP, Traffic Rate Limiting
IP-address management	Static, BootP, RARP, DHCP-Client, DHCP-Server (port based), DHCP Option 82 (Relay Agent)
Security functions	VLAN segmentation, Enable/disable ports, Loop protection
Time synchronization management	SNTP client, NTP client
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave

#### Interfaces

RJ45 ports	10/100BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Number of ports	5x RJ45, 1 * SC Multi-mode, 2 * SC Single-mode
Console port interface	RS-232
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function DIP switch	Turbo-Ring, Master, Coupler, Reserve

#### Fibre optic transceiver characteristics

Transmission rate	100 Mbps
Connector type	SC-Duplex
Transceiver type	Multimode, Singlemode
Power supply	
Connection type	1 removable 6-pin terminal block
Voltage supply range	9.6...60VDC
Voltage supply	12/24/48 V DC, 2 redundant inputs
Current consumption	0.32A @ 24V DC
Overload current protection	Yes
Reverse polarity protection	Yes

#### Note

**16-Port managed Fast Ethernet Switches**

- Supports the automation protocols Modbus/TCP, PROFINET RT and EtherNet/IP
- Plug-n-play Turbo Ring and Turbo Chain (<20 ms for up to 250 switches)
- IEEE 1588 PTP, Modbus/TCP, LLDP, SNMP Inform, QoS, IGMP snooping, VLAN, IEEE 802.1X, HTTPS, SNMPv3, and SSH supported



EtherNet/IP™ PROFIBUS®  
PNET ModbusTCP

**Technical data****Technology**

Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X), IEEE 802.3x for flow control, IEEE 802.1D-2004 for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1Q for VLAN tagging, IEEE 802.1p for Class of Service, IEEE 802.1X for authentication, IEEE 802.3ad for port trunk with LACP
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**Data switching**

Data switching	Store and Forward
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**Flow control**

Flow control	IEEE 802.3x flow control, Back pressure flow control
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**MIB**

MIB	MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9
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Switch characteristics	
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Priority queues	4
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Max. number of available VLANs	64
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IGMP-Groups	256
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MAC table size	8 K
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Packet buffer size	2 Mbit
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Management features	
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Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Local serial console port (RS-232 via RJ-45 port), Windows tool
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Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
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Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Turbo-Ring (recovery time <20 ms), Turbo-Chain (recovery time <20 ms), Link Aggregation Control Protocol (LACP)
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Network traffic filter	Quality of Service (QoS), Tag based VLAN, Port based VLAN, IGMP v1/v2, GMRP, Traffic Rate Limiting
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IP-address management	Static, BootP, RARP, DHCP-Client, DHCP-Server (port based), DHCP Option 82 (Relay Agent)
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Security functions	VLAN segmentation, Enable/disable ports, Access control (port based via IEEE 802.1X), Access control list (MAC-based), Loop protection, TACACS+ and IEEE 802.1X User Authentication
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Time synchronization management	SNTP client, NTP client, PTPv1
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Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave
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Interfaces	
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RJ45 ports	10/100BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
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Number of ports	16x RJ45
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Console port interface	RS-232
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Alarm contact	2 relay outputs with a current capacity of 1 A at 24 V DC
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Digital inputs	2 inputs with the same ground, isolated +13 To +30 V for logic "1"
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	-30 To +3 V for logic "0"
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	- Max. input current: 8 mA
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Note	
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**Ordering data**

Type	Qty.	Order No.
IE-SW-PL16M-16TX	1	1241100000
IE-SW-PL16MT-16TX	1	1286820000

**8-Port managed Fast/Gigabit Ethernet Switch**

- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40°C up to 75°C

**Technical data**

Technology	
Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X), IEEE 802.3ab for 1000BaseT(X), IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP)
Switch characteristics	
Priority queues	4
Max. number of available VLANs	4095
IGMP-Groups	1024
MAC table size	8 K
Packet buffer size	1 Mbit
Management features	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Command Line Interface (CLI), Local serial console port (RS-232 via RJ-45 port), Upload of a configuration file via web-interface or TFTP-Server
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <10/30 ms at Fast/Gigabit Ethernet interface), O-Chain (recovery time <10/30 ms at Fast/Gigabit Ethernet interface), Link Aggregation Control Protocol (LACP), Fast recovery
Network traffic filter	Quality of Service (QoS), Class of Service (CoS), Type of Service (ToS), Differentiated Services Code Point (DSCP), Port based VLAN, Tag based VLAN, IGMP v2/v3, Multicast VLAN Registration (MVR), Traffic Rate Limiting
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, Access control (port based via IEEE 802.1X), Access control list (IP-based), Access control list (MAC-based), Management access security via secure IP-list and configuration of allowed access methods (web-interface, telnet, SSH), Loop protection
Time synchronization management	NTP server, SNTP client
Industrial protocol support	Modbus/TCP slave, PROFINET device acc. to conformance class A
Interfaces	
RJ45 ports	10/100BaseT(X) or 10/100/1000BaseT(X), auto negotiation, Full/half-duplex mode, Auto MDI/MDI-X port
Number of ports	6x RJ45 10/100BaseT(X), 2x RJ45 10/100/1000BaseT(X)
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Console port interface	RS-232 (RJ45 connector)
Function reset button	<5 sec: System reboot, >5 sec: Factory default
Note	

**10-Port managed Fast/Gigabit Ethernet Switch**

- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40°C up to 75°C
- SFP-ports for fiber optic transmission over long distances

**Technical data**

Technology	
Standard	IEEE 802.3 for 10BASE-T, IEEE 802.3u for 100BASE-TX and 100BASE-FX, IEEE 802.3ab for 1000BASE-T, IEEE 802.3z for 1000BASE-X, IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP)
Data switching	Store and Forward
Flow control	IEEE 802.3x flow control
Switch characteristics	
Priority queues	4
Max. number of available VLANs	4095
IGMP-Groups	1024
MAC table size	8 K
Packet buffer size	1 Mbit
Management features	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Command Line Interface (CLI), Local serial console port (RS-232 via RJ45 port), Upload of a configuration file via web-interface or TFTP-Server
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <10/30 ms at Fast/Gigabit Ethernet interface), O-Chain (recovery time <10/30 ms at Fast/Gigabit Ethernet interface), Link Aggregation Control Protocol (LACP), Fast recovery
Network traffic filter	Quality of Service (QoS), Class of Service (CoS), Type of Service (ToS), Differentiated Services Code Point (DSCP), Port based VLAN, Tag based VLAN, IGMP v2/v3, Multicast VLAN Registration (MVR), Traffic Rate Limiting
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, Access control (port based via IEEE 802.1X), Access control list (IP-based), Access control list (MAC-based), Management access security via secure IP-list and configuration of allowed access methods (web-interface, telnet, SSH), Loop protection
Time synchronization management	NTP server, SNTP client
Industrial protocol support	Modbus/TCP slave, PROFINET device acc. to conformance class A
Interfaces	
RJ45 ports	10/100BaseT(X) or 10/100/1000BaseT(X), auto negotiation, Full/half duplex mode, Auto MDI/MDI-X port
Number of ports	8x RJ45 10/100BaseT(X), 2x combo-ports (10/100/1000BaseT(X) or 100/1000BaseSFP)
Fibre-optic ports	100/1000Base SFP Slot
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Console port interface	RS-232 (RJ45 connector)
Function reset button	<5 sec: System reboot, >5 sec: Factory default
Note	
Type	Qty.
IE-SW-AL10M-8TX-2GC	1
Order No.	
2740420000	

## 18-Port managed Fast/Gigabit Ethernet Switch

- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40°C up to 75°C
- SFP-ports for fiber optic transmission over long distances



### Technical data

Technology	
Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X) and 100BaseFX, IEEE 802.3ab for 1000BaseT(X), IEEE 802.3z for 1000BaseX, IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP)
Data switching	Store and Forward
Switch characteristics	
Priority queues	4
Max. number of available VLANs	4095
IGMP-Groups	1024
MAC table size	8 K
Packet buffer size	1 Mbit
Management features	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Command Line Interface (CLI), Local serial console port (RS-232 via RJ45 port), Upload of a configuration file via web-interface or TFTP-Server
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <10/30 ms at Fast/Gigabit Ethernet interface), O-Chain (recovery time <10/30 ms at Fast/Gigabit Ethernet interface), Link Aggregation Control Protocol (LACP), Fast recovery
Network traffic filter	Quality of Service (QoS), Class of Service (CoS), Type of Service (ToS), Differentiated Services Code Point (DSCP), Port based VLAN, Tag based VLAN, IGMP v2/v3, Multicast VLAN Registration (MVR), Traffic Rate Limiting
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, Access control (port based via IEEE 802.1X), Access control list (IP-based), Access control list (MAC-based), Management access security via secure IP-list and configuration of allowed access methods (web-interface, telnet, SSH), Loop protection
Time synchronization management	NTP server, SNTP client
Industrial protocol support	Modbus/TCP slave, PROFINET device acc. to conformance class A
Interfaces	
RJ45 ports	10/100BaseT(X) or 10/100/1000BaseT(X), auto negotiation, Full/half-duplex mode, Auto MDI/MDI-X port
Number of ports	16x RJ45 10/100BaseT(X), 2x combo-ports (10/100/1000BaseT(X) or 100/1000BaseSFP)
Fibre-optic ports	100/1000Base SFP Slot
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Console port interface	RS-232 (RJ45 connector)
Function reset button	<5 sec: System reboot, >5 sec: Factory default
Note	

**10-Port managed Fast/Gigabit Ethernet Switches**

- Supports the automation protocols Modbus/TCP, PROFINET RT and EtherNet/IP
- 2 Gigabit Ethernet ports for redundant ring and 1 Gigabit Ethernet port for uplink solution
- Ring redundancy with fast recovery time (< 20 ms for up to 250 switches)
- IEEE 1588 PTP, LLDP, SNMP Inform, QoS, IGMP snooping, VLAN, IEEE 802.1X, HTTPS, SNMPv3, and SSH supported

**Technical data****Technology**

Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X), IEEE 802.3ab for 1000BaseT(X), IEEE 802.3x for flow control, IEEE 802.1D-2004 for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1Q for VLAN tagging, IEEE 802.1p for Class of Service, IEEE 802.1X for authentication, IEEE 802.3ad for port trunk with LACP
Data switching	Store and Forward
Flow control	IEEE 802.3x flow control, Back pressure flow control
MIB	MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9

**Switch characteristics**

Priority queues	4
Max. number of available VLANs	64
IGMP-Groups	256
MAC table size	8 K
Packet buffer size	1 MBit
<b>Management features</b>	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Local serial console port (RS-232 via RJ-45 port), Windows tool
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Turbo-Ring (recovery time <20/50 ms at Fast/Gigabit Ethernet interface), Turbo-Chain (recovery time <20/50 ms at Fast/Gigabit Ethernet interface), Link Aggregation Control Protocol (LACP)
Network traffic filter	Quality of Service (QoS), Tag based VLAN, Port based VLAN, IGMP v1/v2, GMRP, Traffic Rate Limiting
IP-address management	Static, BootP, RARP, DHCP-Client, DHCP-Server (port based), DHCP Option 82 (Relay Agent)
Security functions	VLAN segmentation, Enable/disable ports, Access control (port based via IEEE 802.1X), Access control list (MAC-based), Loop protection, TACACS+ and IEEE 802.1X User Authentication
Time synchronization management	SNTP client, NTP client, PTPV1
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave

**Interfaces**

RJ45 ports	10/100BaseT(X), 10/100/1000BaseT(X), auto negotiation
Number of ports	3 * RJ45 10/100/1000BaseT(X), 7 * RJ45 10/100BaseT(X)
Alarm contact	2 relay outputs with a current capacity of 1 A at 24 V DC
Digital inputs	2 inputs with the same ground, isolated +13 To +30 V for logic "1" -30 To +3 V for logic "0" - Max. input current: 8 mA
Console port interface	RS-232

**Note**

Power supply	
Connection type	2 removable 6-pin terminal blocks
Voltage supply range	12...45VDC
Voltage supply	24 V DC, 2 redundant inputs
Current consumption	0.65A @ 24V DC
Overload current protection	Existing
Reverse polarity protection	Available
Physical characteristics	
Housing main material	metal
Protection degree	IP30
Type of mounting	DIN rail, Panel (with optional mounting kit)
Dimensions H x W x D	135 / 80.2 / 107 mm (5.315 / 3.1575 / 4.2126 inch)
Net weight	1170 GRM
Environmental conditions	
Operating temperature	IE-SW-PL10M-3GT-7TX: -10 °C...60 °C IE-SW-PL10MT-3GT-7TX: -40 °C...75 °C
Humidity	5 to 95 % (non-condensing)
EMC conformity and approvals	
EMC standards	EN 55032, EN 55024, CISPR 32, FCC Part 15 Subpart B Class A, IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV, IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m, IEC 61000-4-4 EFT: Power: 2 kV, Signal: 2 kV, IEC 61000-4-5 Surge: Power: 2 kV, Signal: 2 kV, IEC 61000-4-6 CS: 10 V, EN 61000-4-8
Safety standard	UL508, UL 60950-1, EN 60950-1
Shock	according to IEC 60068-2-27
Vibration	according to IEC 60068-2-6
Free fall	According to IEC 60068-2-32
MTBF	
Operating time (hours), min.	911314 hrs
According to Standard	Telcordia (Bellcore), GB
Approvals	
Approvals	CE; CULUS; CULUSE; DEMKOATEX; EAC

**Ordering data**

Type	Qty.	Order No.
IE-SW-PL10M-3GT-7TX	1	1241290000
IE-SW-PL10MT-3GT-7TX	1	1286930000

## 18-Port managed Fast/Gigabit Ethernet Switches

- Supports the automation protocols Modbus/TCP, PROFINET RT and EtherNet/IP
- 2 Gigabit Ethernet ports plus 16 Fast Ethernet ports for copper and fibre
- Ring redundancy with rapid recovery time (<20 ms for up to 250 switches)
- IEEE 1588 PTP, LLDP, SNMP Inform, QoS, IGMP snooping, VLAN, IEEE 802.1X, HTTPS, SNMPv3, and SSH supported



EtherNet/IP™



ModbusTCP

### Technical data

#### Technology

Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X), IEEE 802.3ab for 1000BaseT(X), IEEE 802.3z for 1000BaseX, IEEE 802.3x for flow control, IEEE 802.1D-2004 for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1Q for VLAN tagging, IEEE 802.1p for Class of Service, IEEE 802.1X for authentication, IEEE 802.3ad for port trunk with LACP
Data switching	Store and Forward
Flow control	IEEE 802.3x flow control, Back pressure flow control
MIB	MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9

#### Switch characteristics

Priority queues	4
Max. number of available VLANs	64
IGMP-Groups	256
MAC table size	8 K
Packet buffer size	2 Mbit

#### Management features

Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Local serial console port (RS-232 via RJ-45 port), Windows tool
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Turbo-Ring (recovery time <20/50 ms at Fast/Gigabit Ethernet interface), Turbo-Chain (recovery time <20/50 ms at Fast/Gigabit Ethernet interface), Link Aggregation Control Protocol (LACP)
Network traffic filter	Quality of Service (QoS), Tag based VLAN, Port based VLAN, IGMP v1/v2, GMRP, Traffic Rate Limiting
IP-address management	Static, BootP, RARP, DHCP-Client, DHCP-Server (port based), DHCP Option 82 (Relay Agent)
Security functions	VLAN segmentation, Enable/disable ports, Access control (port based via IEEE 802.1X), Access control list (MAC-based), Loop protection, TACACS+ and IEEE 802.1X User Authentication
Time synchronization management	SNTP client, NTP client, PTPV1
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave

#### Interfaces

RJ45 ports	10/100BaseT(X) or 10/100/1000BaseT(X), auto negotiation
Number of ports	16 * RJ45 10/100BaseT(X), 2 * combo-ports (10/100/1000BaseT(X) or 1000BaseSFP)
Fibre-optic ports	1000BaseSFP-Slot
Alarm contact	2 relay outputs with a current capacity of 1 A at 24 V DC
Digital inputs	2 inputs with the same ground, isolated +13 To +30 V for logic "1" -30 To +3 V for logic "0" - Max. input current: 8 mA

Console port interface	RS-232
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#### Note

**8-Port managed Gigabit Ethernet Switch**

- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40°C up to 75°C

**Technical data**

Technology	
Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X), IEEE 802.3ab for 1000BaseT(X), IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP)
Switch characteristics	
Priority queues	8
Max. number of available VLANs	4096
Number of IGMP-Groups per VLAN	256
MAC table size	8 K
Packet buffer size	4 Mbit
Jumbo frame support	up to 9.6 KB
Management features	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Command Line Interface (Telnet/SSH), Local serial console port (RS-232 via RJ-45 port), Upload of a configuration file via web-interface, TFTP-Server or external backup module
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap, Ethernet cable diagnostics on RJ-45 ports
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <30 ms), O-Chain (recovery time <30 ms), Link Aggregation Control Protocol (LACP), Fast recovery, Media Redundancy Protocol (MRP-client)
Network traffic filter	Quality of Service (QoS), Tag based VLAN, IGMP v2/v3, Traffic Rate Limiting
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, DoS/DDoS auto prevention, Access Control List, DHCP snooping, Loop protection, Management access security via privilege level configuration for different user roles
Time synchronization management	SNTP server, SNTP client
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave
Interfaces	
RJ45 ports	10/100/1000BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Number of ports	8x RJ45
Console port interface	RS-232 (RJ45 connector)
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function reset button	<5 sec: System reboot and set LAN IP to factory Default, >5 sec: Factory default, Note: behavior of reset button can be configured via web interface
Note	
Type	Qty.
IE-SW-AL08M-8GT	1
Order No.	
2682350000	

## 12-Port managed Gigabit Ethernet Switch

- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40°C up to 75°C
- SFP-ports for fiber optic transmission over long distances



### Technical data

Technology	
Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X) and 100BaseFX, IEEE 802.3ab for 1000BaseT(X), IEEE 802.3z for 1000BaseX, IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP)
Data switching	Store and Forward
Switch characteristics	
Priority queues	8
Max. number of available VLANs	4096
Number of IGMP-Groups per VLAN	256
MAC table size	8 K
Packet buffer size	4 Mbit
Jumbo frame support	up to 9.6 KB
Management features	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Command Line Interface (Telnet/SSH), Local serial console port (RS-232 via RJ-45 port), Upload of a configuration file via web-interface, TFTP-Server or external backup module
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap, Ethernet cable diagnostics on RJ-45 ports
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <30 ms), O-Chain (recovery time <30 ms), Link Aggregation Control Protocol (LACP), Fast recovery, Media Redundancy Protocol (MRP-client)
Network traffic filter	Quality of Service (QoS), Tag based VLAN, IGMP v2/v3, Traffic Rate Limiting
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, DoS/DDoS auto prevention, Access Control List, DHCP snooping, Loop protection, Management access security via privilege level configuration for different user roles
Time synchronization management	SNTP server, SNTP client
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave
Interfaces	
RJ45 ports	10/100/1000BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Number of ports	8x RJ45, 4x 100/1000BaseSFP Slot
Console port interface	RS-232 (RJ45 connector)
Fibre-optic ports	100/1000Base SFP Slot
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function reset button	<5 sec: System reboot and set LAN IP to factory Default, >5 sec: Factory default, Note: behavior of reset button can be configured via web interface
Note	

**14-Port managed Gigabit Ethernet Switch**

- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40°C up to 75°C
- SFP-ports for fiber optic transmission over long distances

**Technical data**

Technology	
Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X) and 100BaseFX, IEEE 802.3ab for 1000BaseT(X), IEEE 802.3z for 1000BaseX, IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP), IEEE 1588 PTPv2 for time synchronization
Data switching	Store and Forward
<b>Switch characteristics</b>	
Priority queues	8
Max. number of available VLANs	4096
Number of IGMP-Groups per VLAN	256
MAC table size	8 K
Packet buffer size	4 Mbit
Jumbo frame support	up to 9.6 KB
<b>Management features</b>	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Command Line Interface (Telnet/SSH), Local serial console port (RS-232 via RJ-45 port), Upload of a configuration file via web-interface, TFTP-Server or external backup module
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap, Ethernet cable diagnostics on RJ-45 ports
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <30 ms), O-Chain (recovery time <30 ms), Link Aggregation Control Protocol (LACP), Fast recovery, Media Redundancy Protocol (MRP-client)
Network traffic filter	Quality of Service (QoS), Tag based VLAN, IGMP v2/v3, Traffic Rate Limiting
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, DoS/DDoS auto prevention, Access Control List, DHCP snooping, Loop protection, Management access security via privilege level configuration for different user roles
Time synchronization management	SNTP server, SNTP client, PTPv2
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave
<b>Interfaces</b>	
RJ45 ports	10/100/1000BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Number of ports	12x RJ45, 2 * Slots 100/1000BaseSFP
Console port interface	RS-232 (RJ45 connector)
Fibre-optic ports	100/1000Base SFP Slot
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function reset button	<5 sec: System reboot and set LAN IP to factory Default, >5 sec: Factory default, Note: behavior of reset button can be configured via web interface
<b>Note</b>	

## 24-Port managed Gigabit Ethernet Switch

- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40°C up to 75°C
- SFP-ports for fiber optic transmission over long distances



### Technical data

Technology	
Standard	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X) and 100BaseFX, IEEE 802.3ab for 1000BaseT(X), IEEE 802.3z for 1000BaseX, IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP), IEEE 1588 PTPv2 for time synchronization
Data switching	Store and Forward
<b>Switch characteristics</b>	
Priority queues	8
Max. number of available VLANs	4096
Number of IGMP-Groups per VLAN	256
MAC table size	8 K
Packet buffer size	4 Mbit
Jumbo frame support	up to 9.6 KB
<b>Management features</b>	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Command Line Interface (Telnet/SSH), Local serial console port (RS-232 via RJ-45 port), Upload of a configuration file via web-interface, TFTP-Server or external backup module
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap, Ethernet cable diagnostics on RJ-45 ports
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <30 ms), O-Chain (recovery time <30 ms), Link Aggregation Control Protocol (LACP), Fast recovery, Media Redundancy Protocol (MRP-client)
Network traffic filter	Quality of Service (QoS), Tag based VLAN, IGMP v2/v3, Traffic Rate Limiting
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, DoS/DDoS auto prevention, Access Control List, DHCP snooping, Loop protection, Management access security via privilege level configuration for different user roles
Time synchronization management	SNTP server, SNTP client, PTPv2
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave
<b>Interfaces</b>	
RJ45 ports	10/100/1000BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Number of ports	16x RJ45, 8x 100/1000BaseSFP Slot
Console port interface	RS-232 (RJ45 connector)
Fibre-optic ports	100/1000Base SFP Slot
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function reset button	<5 sec: System reboot and set LAN IP to factory Default, >5 sec: Factory default, Note: behavior of reset button can be configured via web interface
<b>Note</b>	

**6-Port managed PoE+ Gigabit Ethernet Switch**

- IEEE 802.3af/at compliant PoE ports
- Integrated DC/DC converter for powering PoE devices over the entire PSE input voltage range of 12 to 57 V DC
- Advanced PoE management features, including PD Alive Check with auto reboot function and PoE scheduling
- SFP-ports for fiber optic transmission over long distances

**Technical data**

Technology	
Standard	IEEE 802.3 for 10BASE-T, IEEE 802.3u for 100BASE-TX and 100BASE-FX, IEEE 802.3ab for 1000BASE-T, IEEE 802.3z for 1000BASE-X, IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.3at/af for Power-over-Ethernet, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service / Quality of Service (CoS/QoS), IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP)
Data switching	Store and Forward
<b>Switch characteristics</b>	
Priority queues	8
Max. number of available VLANs	4096
Number of IGMP-Groups per VLAN	256
MAC table size	8 K
Packet buffer size	4 Mbit
Jumbo frame support	up to 9.6 KB
<b>Management features</b>	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Command Line Interface (Telnet/SSH), Local serial console port (RS-232 via RJ-45 port), Upload of a configuration file via web-interface, TFTP-Server or external backup module
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap, Ethernet cable diagnostics on RJ-45 ports
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <30 ms), O-Chain (recovery time <30 ms), Link Aggregation Control Protocol (LACP), Fast recovery, Media Redundancy Protocol (MRP-client)
Network traffic filter	Quality of Service (QoS), Tag based VLAN, IGMP v2/v3, Traffic Rate Limiting
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, DoS/DDoS auto prevention, Access Control List, DHCP snooping, Loop protection, Management access security via privilege level configuration for different user roles
Time synchronization management	SNTP server, SNTP client
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave

**Note**

**8-Port managed PoE+ Gigabit Ethernet Switch**

- IEEE 802.3af/at compliant PoE ports
- Integrated DC/DC converter for powering PoE devices over the entire PSE input voltage range of 12 to 57 V DC
- Advanced PoE management features, including PD Alive Check with auto reboot function and PoE scheduling

**Technical data**

Technology	
Standard	IEEE 802.3 for 10BASE-T, IEEE 802.3u for 100BASE-TX, IEEE 802.3ab for 1000BASE-T, IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service / Quality of Service (CoS/DoS), IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP), IEEE 802.3at/at for Power-over-Ethernet
Data switching	Store and Forward
<b>Switch characteristics</b>	
Priority queues	8
Max. number of available VLANs	4096
Number of IGMP-Groups per VLAN	256
MAC table size	8 K
Packet buffer size	4 Mbit
Jumbo frame support	up to 9.6 KB
<b>Management features</b>	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Command Line Interface (Telnet/SSH), Local serial console port (RS-232 via RJ-45 port), Upload of a configuration file via web-interface, TFTP-Server or external backup module
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap, Ethernet cable diagnostics on RJ-45 ports
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <30 ms), O-Chain (recovery time <30 ms), Link Aggregation Control Protocol (LACP), Fast recovery, Media Redundancy Protocol (MRP-client)
Network traffic filter	Quality of Service (QoS), Tag based VLAN, IGMP v2/v3, Traffic Rate Limiting
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, DoS/DDoS auto prevention, Access Control List, DHCP snooping, Loop protection, Management access security via privilege level configuration for different user roles
Time synchronization management	SNTP server, SNTP client
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave
<b>Note</b>	

**Ordering data**

Type	Qty.	Order No.
IE-SW-AL08M-8GTPOE	1	2682420000

**10-Port managed Fast/Gigabit Ethernet Switch**

- Meets IEC 61850-3 / IEEE 1613 standards
- Redundant power supply modules
- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40°C up to 85°C
- SFP-ports for fiber optic transmission over long distances

**Technical data**

Technology		
Standard	IEEE 802.3 for 10BASE-T, IEEE 802.3u for 100BASE-TX and 100BASE-FX, IEEE 802.3ab for 1000BASE-T, IEEE 802.3z for 1000BASE-X, IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1D-2004 for RSTP-2004 (Rapid Spanning Tree Protocol 2004), IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP)	
Data switching	Store and Forward	
Flow control	IEEE 802.3x flow control	
Switch characteristics		
Priority queues	4	
Max. number of available VLANs	4095	
IGMP-Groups	1024	
MAC table size	8 K	
Packet buffer size	1 Mbit	
Management features		
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Command Line Interface (CLI), Local serial console port (RS-232 via RJ-45 port), Upload of a configuration file via web-interface or TFTP-Server	
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap	
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <10/30 ms at Fast/Gigabit Ethernet interface), O-Chain (recovery time <10/30 ms at Fast/Gigabit Ethernet interface), Link Aggregation Control Protocol (LACP), Fast recovery	
Network traffic filter	Quality of Service (QoS), Class of Service (CoS), Type of Service (ToS), Differentiated Services Code Point (DSCP), Port based VLAN, Tag based VLAN, IGMP v2/v3, Multicast VLAN Registration (MVR), Traffic Rate Limiting	
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay	
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, Access control (port based via IEEE 802.1X), Access control list (IP-based), Access control list (MAC-based), Management access security via secure IP-list and configuration of allowed access methods (web-interface, telnet, SSH), Loop protection	
Time synchronization management	NTP server, SNTP client	
Industrial protocol support	Modbus/TCP slave, PROFINET device acc. to conformance class A	
Note		
Interfaces		
RJ45 ports	10/100BaseT(X) or 10/100/1000BaseT(X), auto negotiation, Full/half-duplex mode, Auto MDI/MDI-X port	
Number of ports	7x RJ45 10/100BASE-T(X), 3x combo-ports (10/100/1000BASE-T(X) or 100/1000BaseSFP)	
Console port interface	RS-232 (RJ45 connector)	
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC	
Function reset button	<5 sec: System reboot, >5 sec: Factory default	
Fibre-optic ports	100/1000Base SFP Slot	
Power supply		
Connection type	2x 3-pin fork/ring lug connection	
Voltage supply range	88...373VDC / 85V...264VAC	
Voltage supply	110/220 V DC, 110/220 V AC, 2 redundant isolated inputs	
Current consumption	0.18A @ 110V AC	
Overload current protection	Yes	
Reverse polarity protection	Yes	
Physical characteristics		
Housing main material	Metal	
Protection degree	IP30	
Type of mounting	DIN rail	
Dimensions H x W x D	154 / 96.4 / 148.5 mm (6.063 / 3.7953 / 5.8464 inch)	
Net weight	2000 GRM	
Environmental conditions		
Operating temperature	-40 °C...85 °C	
Humidity	5 to 95 % (non-condensing)	
Operating altitude	2000m in acc. with UL	
EMC conformity and approvals		
EMC standards	EN 55032, CISPR 22, EN 61000-3-2, EN 61000-3-3, FCC Part 15 Subpart B Class A, EN 55035, IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV, IEC 61000-4-3 RS: 80 MHz to 3 GHz: 10 V/m, IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV, IEC 61000-4-6 CS: 10 V, IEC 61000-4-8, IEC 61000-4-11	
Power Transmission & Distribution Systems acc. to standard	IEEE 1613, IEC 61850-3	
Safety standard	SELV according to EN 62368-1	
Shock	IEC 60870-2-2 class Cm	
Vibration	IEC 60870-2-2 class Cm and class Bm	
Free fall	IEC 60870-2-2 class Cm	
MTBF		
Operating time (hours), min.	599113h	
According to Standard	Telcordia SR-332	
Approvals		
Approvals	CE	
Ordering data		
Type	Qty.	Order No.
IE-SW-SL10M-7TX-3GC-HV	1	2778950000

**10-Port managed Fast/Gigabit Ethernet Switch**

- Meets IEC 61850-3 / IEEE 1613 standards
- Redundant power supply modules
- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40°C up to 85°C
- SFP-ports for fiber optic transmission over long distances

**Technical data**

Technology		
Standard	IEEE 802.3 for 10BASE-T, IEEE 802.3u for 100BASE-TX and 100BASE-FX, IEEE 802.3ab for 1000BASE-T, IEEE 802.3z for 1000BASE-X, IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1D-2004 for RSTP-2004 (Rapid Spanning Tree Protocol 2004), IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP)	
Data switching	Store and Forward	
Flow control	IEEE 802.3x flow control	
Switch characteristics		
Priority queues	4	
Max. number of available VLANs	4095	
IGMP-Groups	1024	
MAC table size	8 K	
Packet buffer size	1 Mbit	
Management features		
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Command Line Interface (CLI), Local serial console port (RS-232 via RJ-45 port), Upload of a configuration file via web-interface or TFTP-Server	
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap	
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <10/30 ms at Fast/Gigabit Ethernet interface), O-Chain (recovery time <10/30 ms at Fast/Gigabit Ethernet interface), Link Aggregation Control Protocol (LACP), Fast recovery	
Network traffic filter	Quality of Service (QoS), Class of Service (CoS), Type of Service (ToS), Differentiated Services Code Point (DSCP), Port based VLAN, Tag based VLAN, IGMP v2/v3, Multicast VLAN Registration (MVR), Traffic Rate Limiting	
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay	
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, Access control (port based via IEEE 802.1X), Access control list (IP-based), Access control list (MAC-based), Management access security via secure IP-list and configuration of allowed access methods (web-interface, telnet, SSH), Loop protection	
Time synchronization management	NTP server, SNTP client	
Industrial protocol support	Modbus/TCP slave, PROFINET device acc. to conformance class A	
Note		
Interfaces		
RJ45 ports	10/100BaseT(X) or 10/100/1000BaseT(X), auto negotiation, Full/half-duplex mode, Auto MDI/MDI-X port	
Number of ports	7x RJ45 10/100BASE-T(X), 3x combo-ports (10/100/1000BASE-T(X) or 100/1000BaseSFP)	
Console port interface	RS-232 (RJ45 connector)	
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC	
Function reset button	<5 sec: System reboot, >5 sec: Factory default	
Fibre-optic ports	100/1000Base SFP Slot	
Power supply		
Connection type	2 removable 2-pin terminal blocks	
Voltage supply range	12...52VDC	
Voltage supply	48 V DC, 2 redundant inputs	
Current consumption	0.8A @ 12V DC	
Overload current protection	Yes	
Reverse polarity protection	Yes	
Physical characteristics		
Housing main material	Metal	
Protection degree	IP30	
Type of mounting	DIN rail	
Dimensions H x W x D	154 / 96.4 / 148.5 mm (6.063 / 3.7953 / 5.8464 inch)	
Net weight	1450 GRM	
Environmental conditions		
Operating temperature	-40 °C...85 °C	
Humidity	5 to 95 % (non-condensing)	
Operating altitude	2000m in acc. with UL	
EMC conformity and approvals		
EMC standards	EN 55032, CISPR 22, FCC Part 15 Subpart B Class A, EN 55035, IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV, IEC 61000-4-3 RS: 80 MHz to 3 GHz: 10 V/m, IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV, IEC 61000-4-6 CS: 10 V	
Power Transmission & Distribution Systems acc. to standard	IEEE 1613, IEC 61850-3	
Safety standard	SELV according to EN 62368-1	
Shock	IEC 60870-2-2 class Cm	
Vibration	IEC 60870-2-2 class Cm and class Bm	
Free fall	IEC 60870-2-2 class Cm	
MTBF		
Operating time (hours), min.	528570h	
According to Standard	Telcordia SR-332	
Approvals		
Approvals	CE	
Ordering data		
Type	Qty.	Order No.
IE-SW-SL10M-7TX-3GC-LV	1	2778960000

**20-Port managed Gigabit Ethernet Switch**

- Meets IEC 61850-3 / IEEE 1613 standards
- Redundant power supply modules
- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40°C up to 85°C
- SFP-ports for fiber optic transmission over long distances

**Technical data**

Technology		
Standard	IEEE 802.3 for 10BASE-T, IEEE 802.3u for 100BASE-TX and 100BASE-FX, IEEE 802.3ab for 1000BASE-T, IEEE 802.3z for 1000BASE-X, IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP), IEEE 1588 PTPv2 for time synchronization	
Data switching	Store and Forward	
<b>Switch characteristics</b>		
Priority queues	8	
Max. number of available VLANs	4095	
Number of IGMP-Groups per VLAN	256	
MAC table size	8 K	
Packet buffer size	4 Mbit	
<b>Management features</b>		
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Command Line Interface (CLI), Local serial console port (RS-232 via RJ45 port), Upload of a configuration file via web-interface, TFTP-Server or external backup module	
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap, Ethernet cable diagnostics on RJ-45 ports	
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <30 ms), O-Chain (recovery time <30 ms), Link Aggregation Control Protocol (LACP), Fast recovery, Media Redundancy Protocol (MRP-client)	
Network traffic filter	Quality of Service (QoS), Tag based VLAN, IGMP v2/v3, Traffic Rate Limiting	
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay	
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, DoS/DDoS auto prevention, Access Control List, DHCP snooping, Loop protection, Management access security via privilege level configuration for different user roles	
Time synchronization management	SNTP server, SNTP client, PTPv2	
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave	
<b>Interfaces</b>		
RJ45 ports	10/100/1000BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port	
Number of ports	8x RJ45, 12x 100/1000BaseSFP Slot	
Console port interface	RS-232 (RJ45 connector)	
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC	
Function reset button	<5 sec: System reboot and set LAN IP to factory Default, >5 sec: Factory default	
Fibre-optic ports	100/1000Base SFP Slot	
<b>Note</b>		
<b>Power supply</b>		
Connection type	2x 3-pin fork/ring lug connection	
Voltage supply range	88...373VDC / 85V...264VAC	
Voltage supply	110/220 V DC, 110/220 V AC, 2 redundant isolated inputs	
Current consumption	0.37A @ 110V AC	
Overload current protection	Yes	
Reverse polarity protection	Yes	
<b>Physical characteristics</b>		
Housing main material	Metal	
Protection degree	IP30	
Type of mounting	DIN rail	
Dimensions H x W x D	154 / 115 / 159 mm (6.063 / 4.5276 / 6.2598 inch)	
Net weight	1900 GRM	
<b>Environmental conditions</b>		
Operating temperature	-40 °C...85 °C	
Humidity	5 to 95 % (non-condensing)	
Operating altitude	2000m in acc. with UL	
<b>EMC conformity and approvals</b>		
EMC standards	EN 55032, CISPR 22, EN 61000-3-2, EN 61000-3-3, FCC Part 15 Subpart B Class A, EN 55035, IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV, IEC 61000-4-3 RS: 80 MHz to 3 GHz: 10 V/m, IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV, IEC 61000-4-6 CS: 10 V, IEC 61000-4-8, IEC 61000-4-11	
Power Transmission & Distribution Systems acc. to standard	IEEE 1613, IEC 61850-3	
Safety standard	SELV according to EN 62368-1	
Shock	IEC 60870-2-2 class Cm	
Vibration	IEC 60870-2-2 class Cm and class Bm	
Free fall	IEC 60870-2-2 class Cm	
<b>MTBF</b>		
Operating time (hours), min.	421961h	
According to Standard	Telcordia SR-332	
<b>Approvals</b>		
Approvals	CE	
<b>Ordering data</b>		
Type	Qty.	Order No.
IE-SW-SL20M-8GT-12GESFP-HV	1	2778970000

## 20-Port managed Gigabit Ethernet Switch

- Meets IEC 61850-3 / IEEE 1613 standards
- Redundant power supply modules
- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40°C up to 85°C
- SFP-ports for fiber optic transmission over long distances



### Technical data

Technology	
Standard	IEEE 802.3 for 10BASE-T, IEEE 802.3u for 100BASE-TX and 100BASE-FX, IEEE 802.3ab for 1000BASE-T, IEEE 802.3z for 1000BASE-X, IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP), IEEE 1588 PTPv2 for time synchronization
Data switching	Store and Forward
<b>Switch characteristics</b>	
Priority queues	8
Max. number of available VLANs	4095
Number of IGMP-Groups per VLAN	256
MAC table size	8 K
Packet buffer size	4 Mbit
<b>Management features</b>	
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Command Line Interface (CLI), Local serial console port (RS-232 via RJ45 port), Upload of a configuration file via web-interface, TFTP-Server or external backup module
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap, Ethernet cable diagnostics on RJ-45 ports
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <30 ms), O-Chain (recovery time <30 ms), Link Aggregation Control Protocol (LACP), Fast recovery, Media Redundancy Protocol (MRP-client)
Network traffic filter	Quality of Service (QoS), Tag based VLAN, IGMP v2/v3, Traffic Rate Limiting
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, DoS/DDoS auto prevention, Access Control List, DHCP snooping, Loop protection, Management access security via privilege level configuration for different user roles
Time synchronization management	SNTP server, SNTP client, PTPv2
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave
<b>Interfaces</b>	
RJ45 ports	10/100/1000BaseT(X), auto negotiation, Full-/half-duplex mode, Auto MDI/MDI-X port
Number of ports	8x RJ45, 12x 100/1000BaseSFP Slot
Console port interface	RS-232 (RJ45 connector)
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function reset button	<5 sec: System reboot and set LAN IP to factory Default, >5 sec: Factory default
Fibre-optic ports	100/1000Base SFP Slot
<b>Note</b>	

**26-Port 19" managed Fast/Gigabit Ethernet Switch**

- Meets IEC 61850-3 / IEEE 1613 standards
- Redundant power supply modules
- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
- Suitable for use in harsh industrial environment thanks to rugged design and wide operating temperature range of -40°C up to 85°C
- SFP-ports for fiber optic transmission over long distances

**Technical data**

Technology		
Standard	IEEE 802.3 for 10BASE-T, IEEE 802.3u for 100BASE-TX and 100BASE-FX, IEEE 802.3ab for 1000BASE-T, IEEE 802.3z for 1000BASE-X, IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP), IEEE 1588 PTPv2 for time synchronization	
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Packet buffer size	4 Mbit	
<b>Management features</b>		
Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Command Line Interface (CLI), Local serial console port (RS-232 via RJ45 port), Upload of a configuration file via web-interface or TFTP-Server	
Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap, Ethernet cable diagnostics on RJ-45 ports	
Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <10/30 ms at Fast/Gigabit Ethernet interface), O-Chain (recovery time <10/30 ms at Fast/Gigabit Ethernet interface), Link Aggregation Control Protocol (LACP), Fast recovery, Media Redundancy Protocol (MRP-client)	
Network traffic filter	Quality of Service (QoS), Tag based VLAN, IGMP v2/v3, Traffic Rate Limiting	
IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay	
Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, DoS/DDoS auto prevention, Access Control List, DHCP snooping, Loop protection, Management access security via privilege level configuration for different user roles	
Time synchronization management	SNTP server, SNTP client, PTPv2	
Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave	
<b>Note</b>		
<b>Interfaces</b>		
RJ45 ports	10/100BaseT(X) or 10/100/1000BaseT(X), auto negotiation, Full/half-duplex mode, Auto MDI/MDI-X port	
Number of ports	24x RJ45 10/100BASE-T(X), 2x combo-ports (10/100/1000BaseT(X) or 100/1000BaseSFP)	
Console port interface	RS-232 (RJ45 connector)	
Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC	
Function reset button	<5 sec: System reboot and set LAN IP to factory Default, >5 sec: Factory default	
Fibre-optic ports	100/1000Base SFP Slot	
<b>Power supply</b>		
Connection type	1x 10-pin fork/ring lug connection	
Voltage supply range	100...370VDC / 100V...240VAC	
Voltage supply	110/220 V DC, 110/220 V AC, 2 redundant isolated inputs	
Current consumption	0.17A @ 110V DC	
Overload current protection	Yes	
Reverse polarity protection	Yes	
<b>Physical characteristics</b>		
Housing main material	Metal	
Protection degree	IP30	
Type of mounting	19" rack mounting	
Dimensions H x W x D	44 / 443.7 / 262.5 mm (1.7323 / 17.4685 / 10.3346 inch)	
Net weight	4070 GRM	
<b>Environmental conditions</b>		
Operating temperature	-40 °C...85 °C	
Humidity	5 to 95 % (non-condensing)	
Operating altitude	2000m in acc. with UL	
<b>EMC conformity and approvals</b>		
EMC standards	EN 55032, CISPR 22, EN 61000-3-2, EN 61000-3-3, FCC Part 15 Subpart B Class A, EN 55035, IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV, IEC 61000-4-3 RS: 80 MHz to 3 GHz: 10 V/m, IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV, IEC 61000-4-6 CS: 10 V, IEC 61000-4-8, IEC 61000-4-11	
Power Transmission & Distribution	IEEE 1613, IEC 61850-3	
Systems acc. to standard	SELV according to EN 62368-1	
Safety standard	IEC 60870-2-2 class Cm	
Shock	IEC 60870-2-2 class Cn and class Bm	
Vibration	IEC 60870-2-2 class Cn and class Bm	
Free fall	IEC 60870-2-2 class Cm	
<b>MTBF</b>		
Operating time (hours), min.	262968h	
According to Standard	Telcordia SR-332	
<b>Approvals</b>		
Approvals	CE	
<b>Ordering data</b>		
Type	Qty.	Order No.
IE-SW-SL26M-24TX-2GC-HV	1	2778990000

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- Extensive set of management features enable the set-up of various redundancy, monitoring, traffic filter and security functions
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**Technical data****Technology**

Standard	IEEE 802.3 for 10BASE-T, IEEE 802.3u for 100BASE-TX and 100BASE-FX, IEEE 802.3ab for 1000BASE-T, IEEE 802.3z for 1000BASE-X, IEEE 802.3x for flow control, IEEE 802.3ad for port trunk with LACP, IEEE 802.1D for the Spanning Tree protocol, IEEE 802.1w for Rapid STP, IEEE 802.1s for the Multiple Spanning Tree Protocol (MSTP), IEEE 802.1p for Class of Service, IEEE 802.1Q for VLAN tagging, IEEE 802.1X for authentication, IEEE 802.1AB for Link Layer Discovery protocol (LLDP), IEEE 1588 PTPv2 for time synchronization
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**Data switching**

Flow control	IEEE 802.3x flow control
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**Switch characteristics**

Priority queues	8
Max. number of available VLANs	4095
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**Management features**

Device configuration	Webbrowser (HTTP/HTTPS), SNMP v1/v2c/v3, Telnet console, Command Line Interface (CLI), Local serial console port (RS-232 via RJ45 port), Upload of a configuration file via web-interface or TFTP-Server
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**Monitoring function**

Monitoring function	SNMP v1/v2c/v3, Link Layer Discovery Protocol (LLDP), Port mirroring, Port statistics, Port monitoring, Syslog, RMON (Remote monitoring), Event based warning via E-Mail, Event based warning via relay, Event based warning via SNMP trap, Ethernet cable diagnostics on RJ-45 ports
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**Network redundancy**

Network redundancy	Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), O-Ring (recovery time <10/30 ms at Fast/Gigabit Ethernet interface), O-Chain (recovery time <10/30 ms at Fast/Gigabit Ethernet interface), Link Aggregation Control Protocol (LACP), Fast recovery, Media Redundancy Protocol (MRP-client)
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**Network traffic filter**

Network traffic filter	Quality of Service (QoS), Tag based VLAN, IGMP v2/v3, Traffic Rate Limiting
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**IP-address management**

IP-address management	Static, DHCP-Client, DHCP-Server (port based, pool-based), DHCP Option 82, DHCP-Relay
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**Security functions**

Security functions	VLAN segmentation, Enable/disable ports, TACACS+ and IEEE 802.1X User Authentication, DoS/DDoS auto prevention, Access Control List, DHCP snooping, Loop protection, Management access security via privilege level configuration for different user roles
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**Time synchronization management**

Time synchronization management	SNTP server, SNTP client, PTPv2
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**Industrial protocol support**

Industrial protocol support	PROFINET device acc. to conformance class B, EtherNet/IP, Modbus/TCP slave
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**Note****Interfaces**

RJ45 ports	10/100BaseT(X) or 10/100/1000BaseT(X), auto negotiation, Full/half-duplex mode, Auto MDI/MDI-X port
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Alarm contact	1 relay output with a current capacity of 1 A at 24 V DC
Function reset button	<5 sec: System reboot and set LAN IP to factory Default, >5 sec: Factory default
Fibre-optic ports	100/1000Base SFP Slot

**Power supply**

Connection type	1x 10-pin fork/ring lug connection
Voltage supply range	20...72VDC
Voltage supply	24 V DC, 48 V DC, 2 redundant inputs
Current consumption	0.96A @ 24 V DC
Overload current protection	Yes
Reverse polarity protection	Yes

**Physical characteristics**

Housing main material	Metal
Protection degree	IP30
Type of mounting	19" rack mounting
Dimensions H x W x D	44 / 443.7 / 262.5 mm (1.7323 / 17.4685 / 10.3346 inch)
Net weight	3600 GRM

**Environmental conditions**

Operating temperature	-40 °C...85 °C
Humidity	5 to 95 % (non-condensing)
Operating altitude	2000m in acc. with UL

**EMC conformity and approvals**

EMC standards	EN 55032, CISPR 22, FCC Part 15 Subpart B Class A, EN 55035, IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV, IEC 61000-4-3 RS: 80 MHz to 3 GHz: 10 V/m, IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV, IEC 61000-4-6 CS: 10 V
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**Power Transmission & Distribution**

Systems acc. to standard	IEEE 1613, IEC 61850-3
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**Safety standard**

Shock	IEC 60870-2-2 class Cm
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**Vibration**

Free fall	IEC 60870-2-2 class Cm
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**MTBF**

Operating time (hours), min.	297924h
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**According to Standard**

Telcordia SR-332	
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**Approvals**

Approvals	CE
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**Ordering data**

Type	Qty.	Order No.
IE-SW-SL26M-24TX-2GC-LV	1	2779000000