Active components

Active components

Industrial Ethernet – active components

Although originally exclusively active in the field of electrical connections technology, Weidmüller has in the meantime gained more than 20 years of experience with electronic devices for industrial applications.

In the realm of Industrial Ethernet, Weidmüller can take advantage of many years of expertise in the development, production and marketing of devices for industrial network infrastructures.

Whether you're looking for an inexpensive plug&play switch, a complex managed switch or a real-time-compatible media converter, Weidmüller can provide reliable and well-conceived solutions for your industrial network.

Overview

Unmanaged switches

IE-SW5-ECO

IE-SW5-ECO-FLAT

IE-SW8-ECO

IE-SW22/2ST

IE-SW-8-IP67

Unmanaged switches

IE-SW3-WAVE

IE-SW8-WAVE

Managed switches

IE-SW8-M

IE-SW14/2SC-M

IE-SW22/2ST-M

IE-SW8-M-IP67

Routers

IE-ARM-E

IE-ARM-U

IE-AR-10T

GPRS

IE-GPRS-I/O

Media converters

IE-MC-SC

IE-MC-ST

Decentralised I/O remotes

SAI-AU

Unmanaged switches

Switches are the heart of an Industrial Ethernet network infrastructure

Lack of predictability of the timing behaviour was for a long time used as an argument against the use of Ethernet in industrial applications. However, this reasoning was in most cases based on experience with early network topologies in which the network users were interconnected via so-called hubs. A hub forwards all the packets received at one port to all the other ports. Such networks use the CSMA/CD method (Carrier Sense Multiple Access with Collision Detect) to specify who may transmit and when.
In the CSMA method the station wishing to transmit listens to the channel (carrier sensing) before it transmits data. A station may transmit only when the transmission medium is not already being used by another station. If the transmission medium is in use, the station waits until it is free before sending its data. Owing to the signal propagation delays, it can nevertheless happen that two devices transmit simultaneously. In order to avoid a loss of data in a collision case, both transmitters must be able to detect the collision (collision detect) and retransmit their data packets after an arbitrarily selected delay. CSMA/CD is the customary standard for 10-Mbit networks with hubs.
Early Ethernet network topologies, some of which are still in use today, use hubs as standard because the complex switches produced in the 1980s and early 1990s were very expensive.

Plug&play switches – ECO Line and WAVE Line

The ECO Line and WAVE Line from Weidmüller are cost-effective ways of gaining a foothold in the world of Industrial Ethernet. Ongoing adap-tation of our products to new technologies and the needs of our customers, enables users to set up network infrastructures for industrial applications simply and quickly. The ECO Line products require absolutely no configuration and for many products even the pin assignment of the connecting cables is flexible thanks to their auto-crossover functionality (Auto-MDI/X). This means that they can use straight-through cables for connections between switches and terminal devices and also for connections between switches, making crossover cables no longer obligatory.
The new WAVE Line is a success thanks to its uniform housing concept in which up to eight copper ports and one optional FO connection can be integrated.

Plug&play switches – Advanced Line

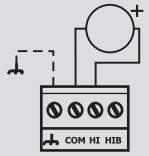
When the demands are even greater, then we recommend Weidmüller's Advanced Line. In addition to the new features of the WAVE Line, the switches of the Advanced Line provide further benefits for applications in tough conditions:

- Many of the Advanced Line products can be used over a wider operating temperature range so that applications in non-air-conditioned rooms outside temperate climate zones should not present any problems
- Separate routes for signal and power cables are not always possible in industrial applications. The optional FO ports ensure trouble-free operation even over long distances through strong electromagnetic fields and are available in multimode or singlemode versions.
- When upgrading networks, the uniform component width enables existing units to be exchanged for new ones with more ports without having to shift all the other components on the rail or having to extend the switching cabinet
- The products of the Advanced Line provide users with 6 to 24 ports and two optional FO ports in a compact aluminium housing.
- The extremely wide voltage supply range guarantees stable operation even if the majority of terminal devices connected may have already shut down
- The plug-in power supply connections, which also include a redundant power supply option, enable quick connection and disconnection of the power supply when working on the network
- An MTBF time in excess of 60 years makes these switches ideal for robust and reliable Industrial Ethernet networks

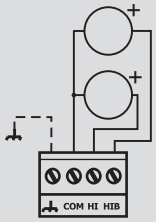
Redundant power supply connection options for IE-SW8-ECO

1. DC supply

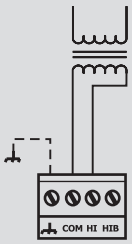
The connection of the chassis terminal to the functional earth is optional in all circuits.



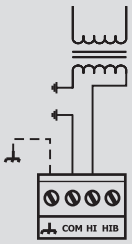
2. Redundant DC supply



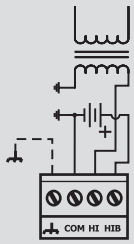
3. AC supply (secondary not earthed)



4. AC supply (secondary earthed)

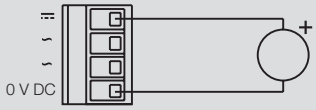


5. AC supply with backup battery

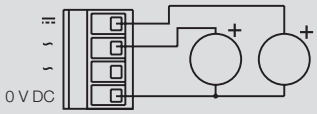


Redundant power supply connection options for IE-SW8, IE-SW4/2SC and IE-SW4/2ST

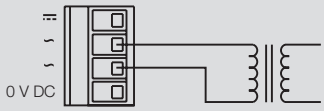
1. DC supply



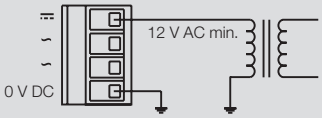
2. Redundant DC supply



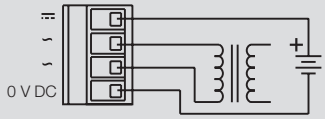
3. AC supply (secondary not earthed)



4. AC supply (secondary earthed)



5. AC supply with backup battery



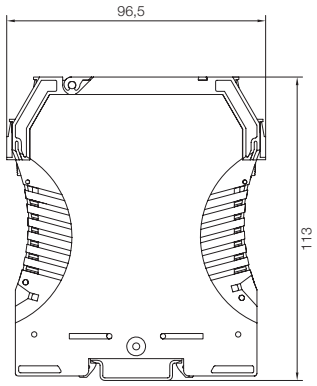
For the connection options of other Advanced Line switches, see “Switches with management functions” (B.15)

Ordering overview for unmanaged switches

Type	No. of ports 10/100Base-T via RJ-45	No. of multimode ports with SC plugs	No. of multimode ports with ST plugs	No. of singlemode ports with SC plugs	Temperature range	Order No.
ECO-Line						
IE-SW5-ECO	5	-	-	-	0 °C … +60 °C	**8808230000**
IE-SW5-ECO-FLAT	5	-	-	-	0 °C … +60 °C	**8833790000**
IE-SW8-ECO	8	-	-	-	0 °C … +60 °C	**8829430000**
WAVE-Line						
IE-SW3-WAVE	3	-	-	-	0 °C … +60 °C	**8897710000**
IE-SW3/1SC-WAVE	3	1	-	-	0 °C … +60 °C	**8896920000**
IE-SW3/1ST-WAVE	3	-	1	-	0 °C … +60 °C	**8896930000**
IE-SW5-WAVE	5	-	-	-	0 °C … +60 °C	**8896940000**
IE-SW6/1SC-WAVE	6	1	-	-	0 °C … +60 °C	**8896950000**
IE-SW6/1ST-WAVE	6	-	1	-	0 °C … +60 °C	**8896960000**
IE-SW8-WAVE	8	-	-	-	0 °C … +60 °C	**8896970000**
Standard Line						
IE-SW8	8	-	-	-	0 °C … +60 °C	**8808240000**
IE-SW4/2SC	4	2	-	-	0 °C … +60 °C	**8808250000**
IE-SW4/2ST	4	-	2	-	0 °C … +60 °C	**8808260000**
Advanced Line						
IE-SW14/2SC	14	2	-	-	–40 °C … +75 °C	**8808280000**
IE-SW14/2SCS	14	-	-	2	–40 °C … +75 °C	**8851880000**
IE-SW14/2ST	14	-	2	-	–40 °C … +75 °C	**8808290000**
IE-SW16	16	-	-	-	–40 °C … +75 °C	**8808270000**
IE-SW22/2SC	22	2	-	-	–40 °C … +75 °C	**8808310000**
IE-SW22/2SCS	22	-	-	2	–40 °C … +75 °C	**8851890000**
IE-SW22/2ST	22	-	2	-	–40 °C … +75 °C	**8808320000**
IE-SW24	24	-	-	-	–40 °C … +75 °C	**8808300000**

Unmanaged switch, WAVE-Line, 3-5 ports

- compact plastic housing



Unmanaged switch, WAVE-Line, 3-5 ports

The WAVE-Line products integrate 3, 4 or 5 ports in confined spaces in a compact plastic housing. With integral features such as Autonegotiation and Autocrossing, and an operating temperature range of 0°C to 60°C, the Wave Line is ideal for setting up Industrial Ethernet wherever you require a simple link between your terminal equipment and your Ethernet system.

Technical data

Housing	plastic
Length/Width/Height	108 mm/22.5 mm/127.8 mm
AC input voltage, min.-max.	12-24 V AC
DC input voltage, min.-max.	10-35 V DC
AC input power/DC	4 VA AC/4 W DC
Input frequency	47 - 63 Hz
Operating temperature, min.-max.	0 °C ... 60 °C
Storage temperature, min.-max.	-40 °C ... 85 °C
Installation	TS 35
Ingress protection class	IP 20
Standard	802.3, 802.3u, 802.3x; 10BaseT, 100BaseTX, 100BaseFX
Data rate	10 Base-T/100 Base-TX (copper) 100 Base-FX (fibre)
Segment length	Copper, 100 m: fibre (multimode), 2 km
Functionality	Autonegotiation and Autocrossing (RJ45), redundant voltage supply
Flow control	HD (backpressure) / FD (pause)
Status indication	Power;Data rate;Connection/Activity
Approvals	cULus, CE, EN 55024, EN 55022
Optical budget	8 dB for 62.5/125 µm multimode cable 4 dB for 50/125 µm multimode cable
Aging	300 s

Ordering data

Ports	Type	Order No.
3xRJ45	IE-SW3-WAVE	**8897710000**
3xRJ45; 1xSC	IE-SW3/1SC-WAVE	**8896920000**
3xRJ45; 1xST	IE-SW3/1ST-WAVE	**8896930000**
5xRJ45	IE-SW5-WAVE	**8896940000**

Note

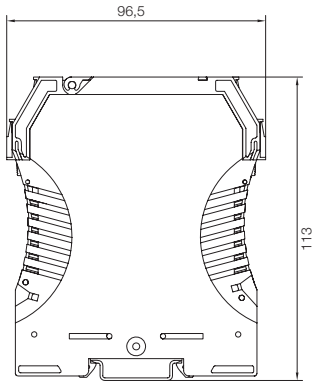
Accessories

	Type	Order No.
RJ45 dust protection plug	IE-DPC	**8813490000**

Note

Unmanaged switch, WAVE-Line, 6-8 ports

- compact plastic housing



Unmanaged switch, WAVE-Line, 6-8 ports

The WAVE-Line products integrate 7 to 8 ports in confined spaces in a compact plastic housing. With integral features such as Autonegotiation and Autocrossing, and an operating temperature range of 0°C to 60°C, the Wave Line is ideal for setting up Industrial Ethernet wherever you require a simple link between your terminal equipment and your Ethernet system.

Technical data

Housing	plastic
Length/Width/Height	108 mm/45 mm/127.8 mm
AC input voltage, min.-max.	12-24 V AC
DC input voltage, min.-max.	10-35 V DC
AC input power/DC	5 VA AC/5 W DC
Input frequency	47 - 63 Hz
Operating temperature, min.-max.	0 °C ... 60 °C
Storage temperature, min.-max.	-40 °C ... 85 °C
Installation	TS 35
Ingress protection class	IP 20
Standard	802.3, 802.3u, 802.3x; 10BaseT, 100BaseTX, 100BaseFX
Data rate	10 Base-T/100 Base-TX (copper) 100 Base-FX (fibre)
Segment length	Copper, 100 m: fibre (multimode), 2 km
Functionality	Autonegotiation and Autocrossing (RJ45), redundant voltage supply
Flow control	HD (backpressure) / FD (pause)
Status indication	Power;Data rate;Connection/Activity
Approvals	cULus, CE, EN 55024, EN 55022
Optical budget	8 dB for 62.5/125 µm multimode cable 4 dB for 50/125 µm multimode cable
Aging	300 s

Ordering data

Ports	Type	Order No.
6xRJ45; 1xSC	IE-SW6/1SC-WAVE	**8896950000**
6xRJ45; 1xST	IE-SW6/1ST-WAVE	**8896960000**
8xRJ45	IE-SW8-WAVE	**8896970000**

Note

Accessories

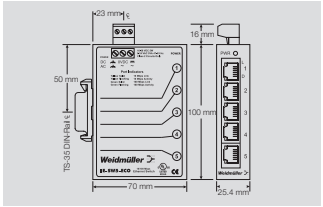
	Type	Order No.
RJ45 dust protection plug	IE-DPC	**8813490000**

Note

Unmanaged switch ECO-Line 5 - 8 ports

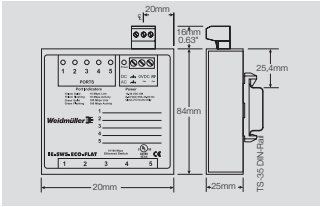
IE-SW5-ECO

5 Ports



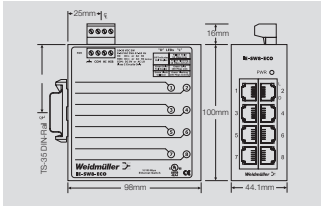
IE-SW5-ECO-FLAT

5 ports



IE-SW8-ECO

8 ports



Technical data

	IE-SW5-ECO	IE-SW5-ECO-FLAT	IE-SW8-ECO
Housing	Aluminium	Aluminium	Aluminium
Length/Width/Height	70 mm/25.5 mm/100 mm	34 mm/89 mm/84 mm	104 mm/41 mm/105 mm
Ports	5xRJ45	5xRJ45	8 No. RJ45
AC input voltage, min.-max.	8-24 V AC	8-24 V AC	8-24 V AC
DC input voltage, min.-max.	10-36 V DC	10-36 V DC	10-36 V DC
AC input power/DC	5 VA AC/5 Watt DC	5 VA AC/5 Watt DC	6 VA AC/6 Watt DC
Input frequency	47 - 63 Hz	47 - 63 Hz	47 - 63 Hz
Operating temperature, min.-max.	0 °C ... 60 °C	0 °C ... 60 °C	0 °C ... 60 °C
Storage temperature, min.-max.	-40 °C ... 85 °C	-40 °C ... 85 °C	-40 °C ... 85 °C
Installation	DIN Rail Mount TS 35	DIN Rail Mount TS 35	DIN Rail Mount TS 35
Ingress protection class	IP 20	IP 20	IP 20
Standard	ANSI / IEEE 802.3	ANSI / IEEE 802.3	ANSI / IEEE 802.3
Data rate	10BASE-T or 100BASE-TX	10BASE-T or 100BASE-TX	10BASE-T or 100BASE-TX
Segment length	Copper Cable 100m max.	Copper Cable 100m max.	Copper Cable 100m max.
Functionality	Autonegotiation, Autocrossing*	Autonegotiation, Autocrossing	Autonegotiation, Autocrossing, redundant power supply
Flow control	half-duplex/full duplex	half-duplex/full duplex	half-duplex/full duplex
Status indication	Power;Connection/Activity	Power;Connection/Activity	Power;Connection/Activity
Approvals	UL508/CE/EN 55024 and EN 55022	UL508/CE/EN 55024 and EN 55022	UL508/CE/EN 55024 and EN 55022
Aging	300 s	300 s	300 s

Ordering data

Type	Order No.	Type	Order No.	Type	Order No.
IE-SW5-ECO	**8808230000**	IE-SW5-ECO-FLAT	**8833790000**	IE-SW8-ECO	**8829430000**

Note

Accessories

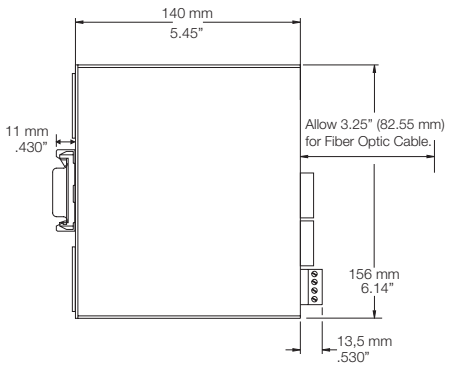
Type	Order No.	Type	Order No.	Type	Order No.
IE-DPC	**8813490000**	IE-DPC	**8813490000**	IE-DPC	**8813490000**

RJ45 dust protection plug

Note

Unmanaged switch, Standard Line, 6 and 8 ports

- multimode



Unmanaged switch, Standard Line, 6 and 8 ports

The Standard Line includes variations with 4 copper and 2 fibre-optic ports with SC or ST connectors, plus an 8-port copper variation.

Thanks to their compact aluminium enclosure, a temperature range of 0°C to 60°C and the inclusion of functions such as Autonegotiation and Autocrossing, these switches are ideal for industrial applications.

Technical data

Housing	Aluminium
Length/Width/Height	140 mm/45 mm/156 mm
AC input voltage, min.-max.	8-24 V AC
DC input voltage, min.-max.	10-36 V DC
AC input power/DC	5 VA AC/5 Watt DC
Input frequency	47 - 63 Hz
Operating temperature, min.-max.	0 °C ... 60 °C
Storage temperature, min.-max.	-40 °C ... 85 °C
Installation	TS35 DIN Rail or Wall Mount
Ingress protection class	IP 20
Standard	ANSI / IEEE 802.x
Data rate	10BASE-T/100BASE-TX
Segment length	Copper, 100 m: fibre (mutlimode), 2 km
Functionality	Autonegotiation redundant voltage supply
Flow control	half-duplex/full duplex
Status indication	Data rate;Power;Connection/Activity
Buffer memory	256 Kbyte per 8 ports
Address memory	4 K MAC addresses per 8 ports
Approvals	cULus;CE
Optical budget	8 dB for 62.5/125 µm multimode cable 4 dB for 50/125 µm multimode cable
Aging	300 s

Ordering data

Ports	Type	Order No.
4xRJ45; 2xST	IE-SW4/2ST	**8808260000**
4xRJ45; 2xSC	IE-SW4/2SC	**8808250000**
8xRJ45	IE-SW8	**8808240000**

Note

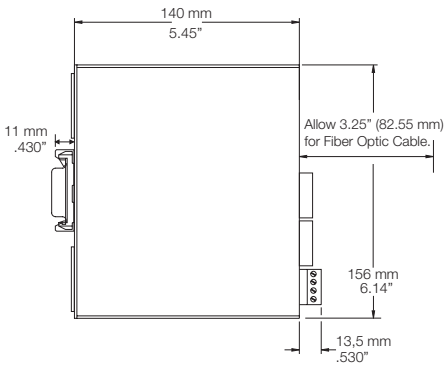
Accessories

	Type	Order No.
RJ45 dust protection plug	IE-DPC	**8813490000**

Note

Unmanaged switch, Advanced Line, 16-24 ports

- Multimode or singlemode



Unmanaged switch, Advanced Line, 16-24 ports

The Advanced Line in its robust aluminium housing is just 45 mm wide and has between 16 and 24 ports for your Industrial Ethernet network. With their IP 20 class of protection and operating temperature range of -40°C to 75°C, these switches are ideal for industrial applications.

The optional multimode FO ports with SC or ST connectors ensure interference-free transmission over distances of up to 2 km, or up to 22 km in the singlemode variation with SC connectors.

Full support for functions such as Autonegotiation and Autocrossing. In addition, the Weidmüller Advanced Line has a redundant voltage supply.

Technical data

Housing	Aluminium
Length/Width/Height	140 mm/45 mm/156 mm
AC input voltage, min.-max.	8-24 V AC
DC input voltage, min.-max.	10-36 V DC
AC input power/DC	20 VA AC/20 Watt DC
Input frequency	47 - 63 Hz
Operating temperature, min.-max.	-40 °C ... 75 °C
Storage temperature, min.-max.	-40 °C ... 85 °C
Installation	TS35 DIN Rail or Wall Mount
Ingress protection class	IP 20
Standard	ANSI / IEEE 802.x
Data rate	10BASE-T/100BASE-TX
Segment length	Copper, 100 m: fibre (mutlimode), 2 km
Functionality	Autonegotiation, Autocrossing, redundant voltage supply, fault relay
Flow control	half-duplex/full duplex
Status indication	Data rate;Power;Connection/Activity
Buffer memory	256 Kbyte per 8 ports
Address memory	4 K MAC addresses per 8 ports
Approvals	CE, UL508, c-UL (GL in progress)
Optical budget	8 dB for 62.5/125 µm multimode cable 4 dB for 50/125 µm multimode cable
Aging	300 s

Ordering data

Ports	Type	Order No.
22xRJ45, 2xST	IE-SW22/2ST	**8808320000**
14xRJ45; 2xSC	IE-SW14/2SC	**8808280000**
14xRJ45; 2xST	IE-SW14/2ST	**8808290000**
16xRJ45	IE-SW16	**8808270000**
22xRJ45; 2xSC	IE-SW22/2SC	**8808310000**
24xRJ45	IE-SW24	**8808300000**
14xRJ45; 2xSC	IE-SW14/2SCS	**8851880000**
22xRJ45; 2xSC	IE-SW22/2SCS	**8851890000**

Note

Accessories

	Type	Order No.
RJ45 dust protection plug	IE-DPC	**8813490000**

Note

Introduction Managed switches

The decentralised structure of industrial networks means that many applications require a central switch in the switching cabinet. A Weidmüller IE-SWxx-M high-performance Industrial Ethernet managed switch is ideal for such applications.

The IE-SWxx-M switches are surrounded by a stable aluminium enclosure. Connections are provided for supply voltage and relay or signalling contacts. Furthermore, these switches can be fitted with 8, 16 or 24 Ethernet ports as required, one or two of these for singlemode or multimode glass fibre cables.

LEDs on the front provide the necessary optical indications. The port LEDs remain permanently on to indicate a connection and flash during data transmissions. Furthermore, they change colour to indicate the data rate: green indicates 100 Mbps and yellow 10 Mbps. The green “Power” LED remains on permanently to indicate a constant power supply. The green “Status” LED is normally permanently green, but switches to red to signal a fault, provided the “Link monitoring” function is active.

The Weidmüller IE-SWxx-M switches can be used to set up industrial networks in such a way that transport paths and transport times for network traffic are optimised. The individual network components are interconnected in a hierarchical, physical star-type network. The main distributor, in this case a high-performance IE-SWxx-M Industrial Ethernet switch, represents the central switching point in this network.

All switches from Weidmüller are protocol-transparent. Every port forms its own network segment, its own collision domain. The entire network bandwidth is available to each one of these segments. This increases not only the network performance across the entire network, but also in every individual segment. The switch examines every incoming packet for the MAC address of the destination segment and can then forward it directly to its destination.

The great advantage of Weidmüller switches is their ability to interconnect their ports directly.

The following functions are among those provided by managed switches from Weidmüller:

- Port trunking
- Port mirroring
- VLAN
- “Filtering and forwarding table” with fixed entries
- Selective multicast control
- Quality of Service (QoS)
- Relay functions
- “Address table” viewing rights
- Configuration via Web interface or terminal program
- SNMP V.1 compatibility
- RSTP and RapidRing™
- IGMP snooping with querier functions

Port-Trunking

Port-Trunking enables users to combine two or more ports on two Ethernet devices to form a group. This group then behaves like a “single logical link”, but with a correspondingly higher data rate. Furthermore, port trunking provides redundancies with a very fast recovery time. If a link in the trunk group fails, the remaining links take over immediately in order to maintain the data exchange between the two switches.

Port-Mirroring

Port mirroring enables users to mirror – in other words copy – at one port all the data transmitted or received at one or more, other ports of the IE-SWxx-M. The messages sent to the mirrored port can be filtered, e.g. by way of MAC addresses.

VLAN

The abbreviation VLAN stands for “Virtual Local Area Network”. This is a network structure with all the properties of a conventional LAN, but without any physical connections. VLANs are generally switched networks that can link more remote nodes to form a virtual local network. The VLAN function enables a network to be split into various segments. It is possible to combine servers and workstations into dynamic workgroups according to their function. VLANs can be set up transparently and without any physical changes to the network and can be configured like multiple virtual local networks.

VLANs are broadcast domains that can also extend over several switches. The broadcast traffic is then only visible in the respective VLAN. This possibility of completely isolating VLANs from one another helps to increase the security of data transmissions. Consequently, the data is sent only to the Ethernet devices within one VLAN group. Once the VLAN function has been activated, a VLAN frame can be sent only to one port belonging to this VLAN within the VLAN. If the destination port belongs to a different VLAN, the frame is deleted. It is also possible to assign a port to several VLANs simultaneously. This type of structure enables networks to share one router or server.

VLANs combine the advantages of bridges and routers. Consequently, it is easy to add, delete or modify a station. Furthermore, the network can have any structure. For example, it is possible to set up virtual user groups. It is no longer necessary to assign users to various subnetworks just because of the great physical distances between them. Servers housed in central locations can be assigned to distant workgroups.

IE-SWxx-M switches support two types of VLAN:

- Port-VLAN
- 802.1q VLAN

IE-SWxx-M switches also permit static entries in addition to the "learning" of addresses in the forwarding table or the address table. These entries remain in the table permanently and are not subject to the ageing process.

Quality of Service

The Quality of Service (QoS) function permits a QoS priority to be used in every Ethernet frame. The priority depends on the port from which the frame originates.

Differential relay

In addition, IE-SWxx-M switches have a relay connection. This is used for monitoring the individual processes in the network. The relay signals the failure of the presence of a link to one or more ports.

Browse Address Table

The "browse address table" function enables the display of the entire address table or the localisation of a MAC address. Select the type of search (sequence or MAC address) and afterwards the "find" function. This function is useful for obtaining an overview of all MAC addresses. The ports belonging to the MAC addresses are also displayed.

Configuration

IE-SWxx-M managed switches can be configured with a terminal program but also via a Web interface at the integral, interactive Web server. Every Internet-compatible PC in the local network can have access to this Web server. The Web server is compatible with the latest versions of Internet Explorer (5.0 or higher) and Netscape Navigator (7.1 or higher). This method of configuration enables remote switches to be configured.

The following settings are possible:

- port status: enabled or disabled
- data rate and duplex transmission: fixed or auto-negotiation
- specification of transmission medium (Auto-MDI/X): enabled or disabled
- the IE-SWxx-M can also be managed via the SNMP function SNMP traps are messages that are transmitted when a “trap event” occurs. Up to four trap receivers can be specified. The IE-SWxx-M switches support traps for the link-up, link-down, confirmation error, cold restart and warm restart functions.

The IE-SWxx-M managed switches can be monitored via SNMP and console menus. The following are just some of the functions available:

- display port traffic
- search address table
- display switching history
- display switch temperature

Port error packets statistics can be generated for every port. This contains information regarding:

- dropped packets
- oversize packets
- undersize packets
- fragments
- jabbers
- collisions
- deferred transmission

Features of
IE-SWxx-M Industrial Ethernet managed switches

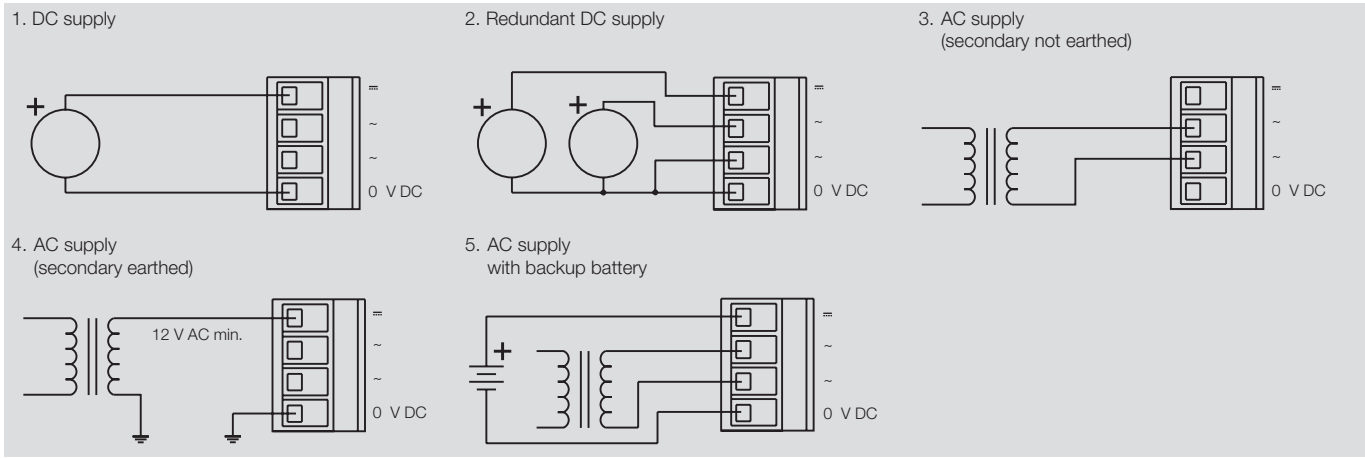
- 10BaseT, 100BaseTX
- RJ45 ports / segment length 100 m
- temperature range: –40 °C to +75 °C
- stable aluminium enclosure / top-hat rail TS35, optional wall mounting
- IEEE 802.3x; IEEE 802.3; IEEE 802.3u
- CE, UL508
- redundant power supply (10 … 36 V DC, 8 ... 24 V AC)
- semi-duplex (backpressure) / full duplex (pause)
- LEDs for: power, data rate, temperature monitoring, link/activity
- auto-negotiation and flow control
- Autocrossing
- broadcast storm control
- configured via terminal program or Web interface
- auto-negotiated or static data rate, duplex and flow control
- trunking for high-speed backbone
- quality of Service (QoS) 802.1p
- port virtual LAN Support 802.1q
- programmable error relay
- MAC-based trunking with link failover
- SNMP management
- configuration via Web browser or RS232 port
- port mirroring
- IGMP snooping
- Spanning Tree IEEE 802.1s
- Rapid Spanning tree IEEE 802.1w

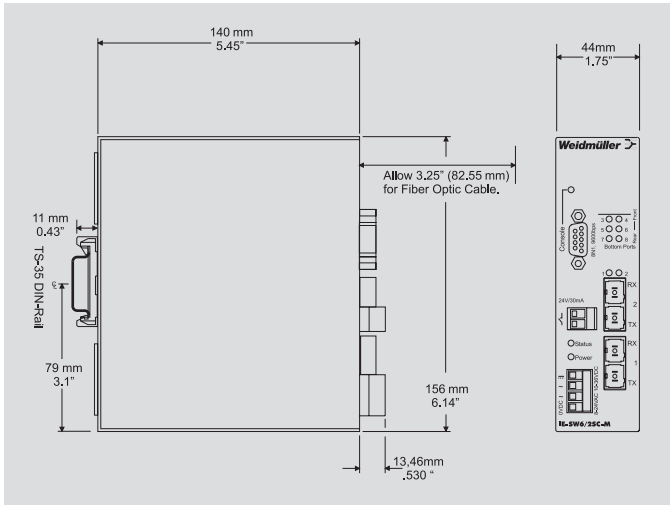
And of course these managed switches also include the features that make Weidmüller plug&play switches ideal for industrial applications:

- Robust metal enclosure for high EMC compatibility and a high-quality appearance
- Exceptional operating temperature range from –40 °C to +75 °C
- 2 optional FO ports for very long transmission distances and/or environments with strong electromagnetic fields
- Uniform component width for trouble-free network expansion
- Plug-in power supply connections with option for connecting redundant supply voltage
- MTBF time > 60 years

Scope of supply:
- **RS232 programming cable**
- **Manual on CD-ROM**

Connection options for redundant power supplies for managed switches (also applicable for Advanced Line components with more than 8 ports)





Ordering overview for unmanaged switches

Type	No. of ports 10/100Base-T via RJ-45	No. of multimode ports with SC plugs	No. of multimode ports with ST plugs	No. of singlemode ports with SC plugs	Suitable for SNMP management	Order No.
IE-SW6/2SC-M	6	2	-	-	x	**8845840000**
IE-SW6/2SCS-M	6	-	-	2	x	**8845850000**
IE-SW6/2ST-M	6	-	2	-	x	**8845850000**
IE-SW8-M	8	-	-	-	x	**8845740000**
IE-SW14/2SC-M	14	2	-	-	x	**8845780000**
IE-SW14/2SCS-M	14	-	-	2	x	**8851860000**
IE-SW14/2ST-M	14	-	2	-	x	**8845790000**
IE-SW16-M	16	-	-	-	x	**8845800000**
IE-SW22/2SC-M	22	2	-	-	x	**8845810000**
IE-SW22/2SCS-M	22	-	-	2	x	**8851870000**
IE-SW22/2ST-M	22	-	2	-	x	**8845820000**
IE-SW24-M	24	-	-	-	x	**8845830000**

Redundancy in the Industrial Ethernet

Two schemes have become established for achieving network redundancy in Industrial Ethernet applications.

Ring topology is the simplest and quickest way of achieving network redundancy. The lack of a standard led to the development of RapidRing™ technology. This provides industrial automation engineers with a simple and effective way of achieving redundancy. RapidRing™ provides redundancy against a single fault. The devices combined to form a ring are wired like a real logical ring. As the ring structure would lead to a loop in the network, one link is logically deactivated (backup link).

The IEEE standard “Rapid Spanning Tree Protocol” (RSTP, IEEE 802.3w) is the other option for achieving redundancy in a network. RSTP renders possible a net-like structure which enables multiple redundancy to be achieved. RSTP is not as easy to use as RapidRing™, but RSTP does offer many interesting options.

Both systems have their advantages in particular applications. In industrial automation it is often very simple to wire ring structures. Operating RSTP in a ring of 15 or more switches will lead to unsatisfactory data rates. But the use of RapidRing™ in such an installation results in switching times < 300 ms, and larger rings are also possible.

RapidRing™ is easy to use. Firstly, one switch is selected to be the master and is configured as such. The other switches in the network are configured as slaves. Ports 1 and 2 are always used to connect the ring. Port 1 of one switch is connected to port 2 of the next switch in the redundant ring. This connection scheme leads to a logical ring. After switching on the network, the network is ready for operation.

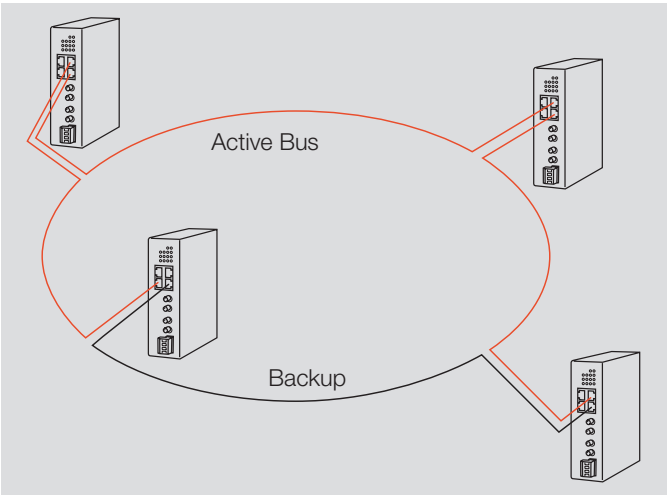
The backup link is always connected to port 2 of the master switch, which allows the backup links to be predefined. The master can therefore be chosen to optimise the network throughput. If a connection in the ring is interrupted, the backup link takes over its function and so communications are not subjected to long interruptions. Once the defective link has been restored, the backup link is automatically deactivated.

The status of the ring can be interrogated via the Web server of every switch involved. MIB data is made available via the SNMP for remote interrogation and automatic processing in a dedicated section.

The RSTP standard is a further development of the Spanning Tree Protocol (STP, IEEE 802.1D). The RSTP configures the network in such a way that there are no loops. Various redundant connections (backup links) offer multiple redundancy. The switches connected to the RSTP exchange information via the network in Bridge Protocol Data Units (BPDU). An interrupted link is therefore quickly replaced. Modifications within the network are detected automatically.

RSTP is ideal for complex networks with more than one connection. As several possible paths exist in the network, RSTP must always analyse the network fully. That leads to switchover times > 300 ms. Indeed, in large and complex networks the switchover time can run into several seconds.

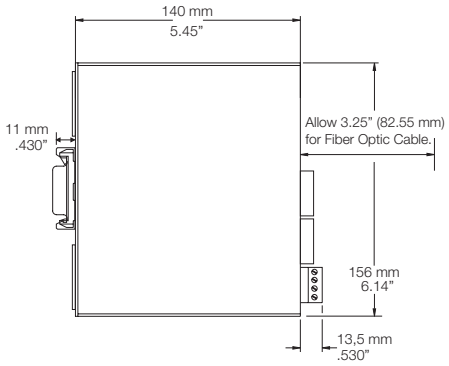
A network with RSTP should be very carefully planned and conceived, otherwise unexpected behaviour could be the result.



RapidRing™:
connection reactivated in less than 300 ms Network

Managed switch with 8 - 24 ports

- Robust IP20 aluminium enclosure
- For mounting on TS35 rail or wall
- IEEE 802.3x / 802.3 / 802.4 standard
- Multimode or singlemode



Managed switch with 8 - 24 ports

The Managed Line in its robust aluminium housing is just 45 mm wide and has between 8 and 24 ports for your Industrial Ethernet network. With their IP 20 class of protection and operating temperature range of -40°C to 75°C, these switches are ideal for industrial applications.

The optional multimode FO ports with SC or ST connectors ensure interference-free transmission over distances of up to 2 km, or up to 22 km in the singlemode variation with SC connectors.

The Managed Line supports numerous features:

- Autonegotiation
- Redundant voltage supply
- Programmable error relay for PLC support
- SNMP V1
- Rapid Ring™
- RSTP 802.3w
- IGMP snooping
- Querier
- Port mirroring
- Port filtering
- Port setup functionality
- VLAN
- QoS
- TOS
- Diffverv
- MAC-based trunking
- Autocrossover
- Autopolarity
- Filtering and forwarding table
- Function earthing
- Configuration via control panel (RS232) or integral webserver

The Weidmüller Managed Line Switches are available as multimode or singlemode variations.

Technical data

Length/Width/Height	140 mm/45 mm/155 mm
AC input voltage, min.-max.	8-24 V AC
DC input voltage, min.-max.	10-36 V DC
Input power AC / DC	up to 20 W
Input frequency	47 - 63 Hz
Operating temperature, min.-max.	-40 °C ... 75 °C
Storage temperature, min.-max.	-40 °C ... 85 °C
Data rate	10 Base-T/100 Base-TX (copper) 100 Base-FX (fibre)
Segment length	Copper 100 m; fibre (multimode) 2 km; fibre (single mode) 20 km*
Flow control	HD (backpressure) / FD (pause)
Status indication	Data rate;Power;Temperature monitoring;Connection/Activity
Buffer memory	2 x 256 Kbyte per 8 ports
Address memory	4 K MAC addresses per 8 ports
Approvals	CE, UL508, c-UL (GL in progress)
Aging	300 s
Optical budget	8 dB for 62.5/125 µm multimode 4 dB for 50/125 µm multimode 13 dB for 9/125 µm singlemode cable

Ordering data

Ports	Type	Order No.
6xRJ45; 2xSC ;1xRS-232	IE-SW6/2SC-M	**8845840000**
6xRJ45; 2xSC; 1xRS-232	IE-SW6/2SCS-M	**8851850000**
6xRJ45; 2xST; 1xRS-232	IE-SW6/2ST-M	**8845850000**
8xRJ45; 1xRS-232	IE-SW8-M	**8845740000**
14xRJ45; 2xSC; 1xRS-232	IE-SW14/2SC-M	**8845780000**
14xRJ45; 2xSC; 1xRS-232	IE-SW14/2SCS-M	**8851860000**
14xRJ45; 2xST; 1xRS-232	IE-SW14/2ST-M	**8845790000**
16xRJ45; 1xRS-232	IE-SW16-M	**8845800000**
22xRJ45; 2xSC; 1xRS-232	IE-SW22/2SC-M	**8845810000**
22xRJ45; 2xSC; 1xRS-232	IE-SW22/2SCS-M	**8851870000**
22xRJ45; 2xST; 1xRS-232	IE-SW22/2ST-M	**8845820000**
24xRJ45; 1xRS-232	IE-SW24-M	**8845830000**

Note

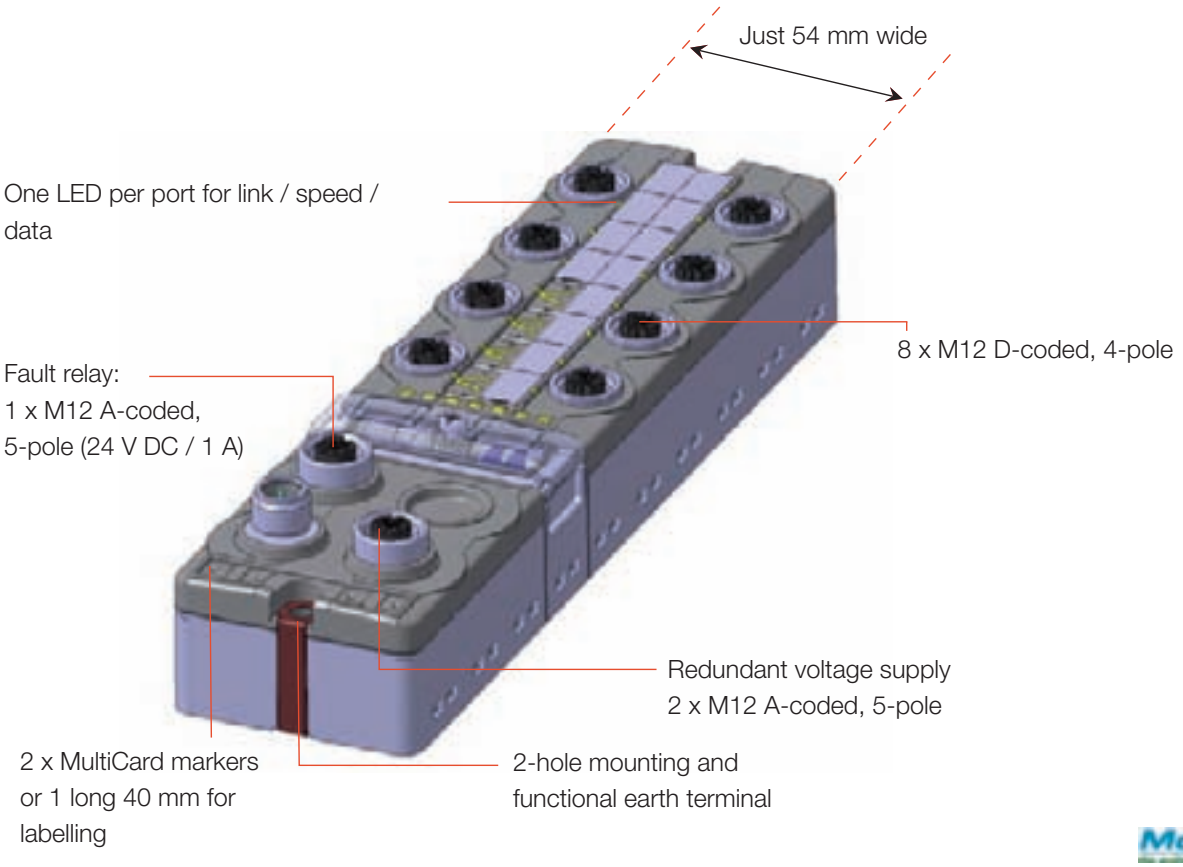
*Singlemode design up to 120 km on request

Accessories

	Type	Order No.
RJ45 dust protection plug	IE-DPC	**8813490000**

Note

8-port unmanaged switch in IP67



Switches are the central components of a network. They prevent data collision, allow rapid packet switching and enhance data throughput. Not only do Weidmüller switches meet the demands placed on the Fast Ethernet with its transmission rate of up to 100 Mbit/s, but they are also downward compatible with the older networks that have a transmission rate of 10 Mbit/s (IEEE 802.3). They recognise the speed automatically.

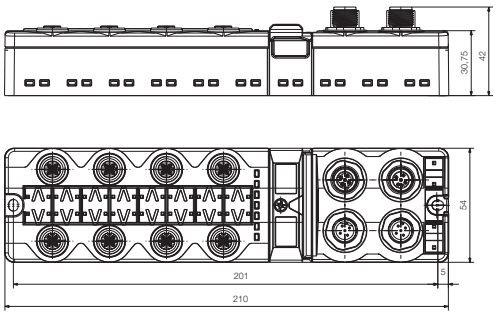
Weidmüller's unmanaged switches are Plug & Play devices for easy installation of Ethernet networks. They do not need to be either configured or parameterised.

For direct connection to the network in the field, Weidmüller now offers an IP 67 switch with eight Ethernet ports for use in tough environments.

- Robust plastic housing (IP67 ingress protection class) for use in the field, complying with UL94 flammability rating V0
- Strip markers – wide range of marking systems and products
- Eight Ethernet ports with M12-D-coded plug-in connectors
- Temperature range from –40 °C to +60 °C

IP 67 unmanaged switch

- IP 67 housing
- M12 D-coded plug-in connector



IP 67 unmanaged switch

Industrial Ethernet on the machine itself with simple and secure M12 plug-in connectors.

With their IP 67 class of protection and operating temperature range of -40°C to +60°C, these switches are ideal for use in the field.

In addition, the following functions are supported:

- Autonegotiation
- Redundant voltage supply
- Error relay PLC support

Technical data

Housing	Plastic
Length/Width/Height	210 mm/54 mm/31 mm
AC input voltage, min.-max.	8-24
DC input voltage, min.-max.	10-36 V DC
Input power AC / DC	max. 5 W
Input frequency	47 - 63 Hz
Operating temperature, min.-max.	-40 °C ... 60 °C
Storage temperature, min.-max.	-40 °C ... 85 °C
Installation	Wall
Ingress protection class	IP 67
Standard	IEEE 802.3, 802.3u, 802.3x
Data rate	10BASE-T/100BASE-TX
Segment length	Cooper 100 m
Functionality	Autonegotiation, redundant voltage supply, error relay for PLC support
Flow control	half-duplex/full duplex
Status indication	Power;Link;Status;Run
Buffer memory	256 KByte per 8 ports
Address memory	4 K MAC addresses per 8 ports
Approvals	CE
Aging	300 s

Ordering data

Ports	Type	Order No.
8x M12	IE-SW8-IP67	8877190000

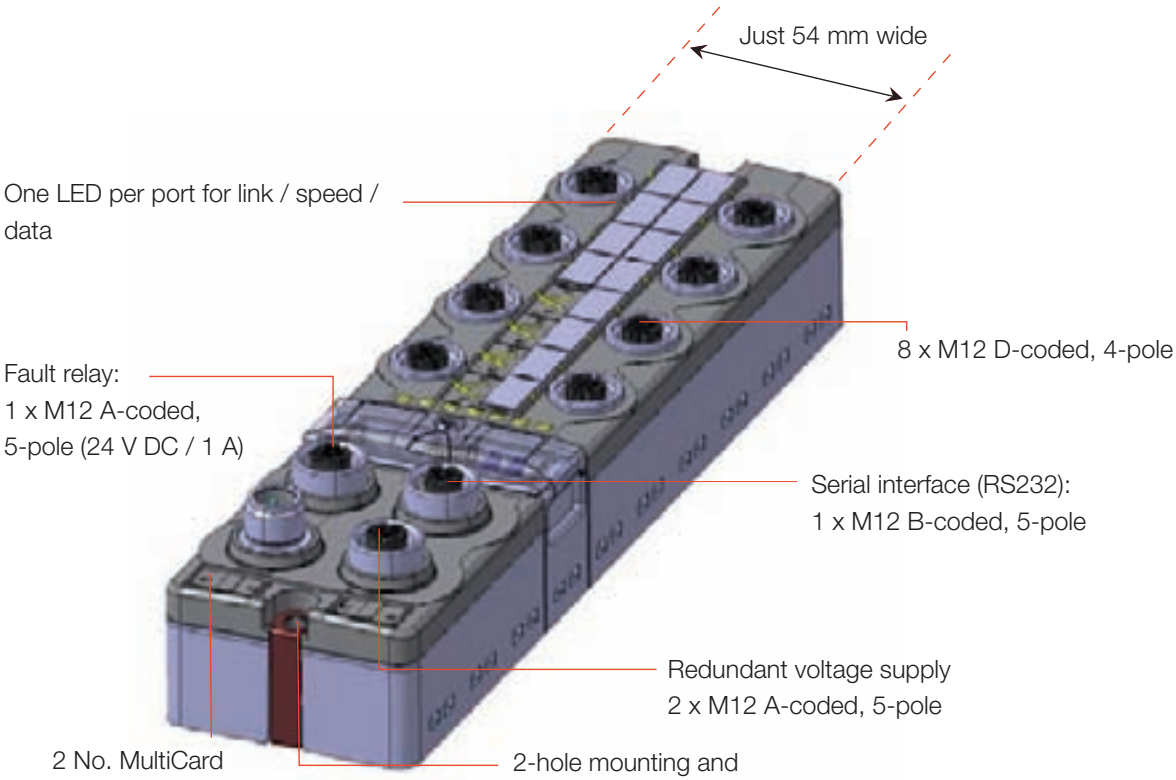
Note

Accessories

	Type	Order No.
M12 protective cap	SAI-SK-M12-UNI	2330260000

Note

8-port managed switch in IP67



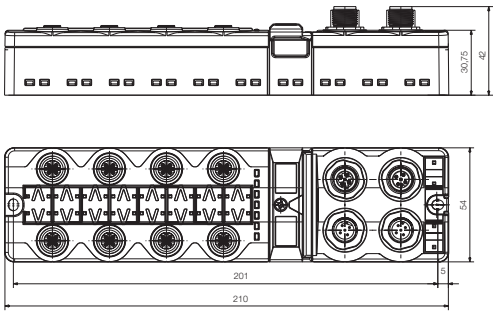
For decentralised development of industry networks, many applications require a central switch. Weidmüller's managed switches enable industry networks to be structured in order to optimise transport routes and times for network traffic. The various network components are cabled together hierarchically in a physical star. The main distributor in the field, in this case the Industrial Ethernet switch IE-SW-8-M-IP67, is the central switching point. All Weidmüller switches are protocol transparent. Each port forms both a network segment and a collision domain that are intrinsic to the port itself. The entire network bandwidth is available to each of these segments. This results in enhanced network performance not only over the network as a whole, but also in each individual segment. The switch examines each packet passing through for the MAC address of the target segment and is able to forward it directly there.

The features of the managed IP67 switch from Weidmüller include the following:

- Port trunking
- Port mirroring
- VLAN IEEE 802.1Q
- Filtering and forwarding table with fixed entries
- Selective multicast control
- Quality of service
- Configurable relay functions
- Access to the address table
- Configuration via Web interface or terminal program
- SNMP V.1-capability
- RSTP and RapidRing™
- IGMP snooping with querier functions
- Auto-crossing, auto-negotiation, auto-polarity
- Broadcast limitation
- Flow control IEEE 802.3x
- DHCP
- RMON (statistics, history, alarms, occurrences)

IP 67 managed switch

- IP 67 housing
- M12 D-coded plug-in connector



IP 67 managed switch

Industrial Ethernet on the machine itself with simple and secure M12 plug-in connectors.

With their IP 67 class of protection and operating temperature range of -40°C to +60°C, these switches are ideal for use in the field.

The following features are supported:

- Autonegotiation
- Redundant voltage supply
- Error relay for PLC support
- SNMP V1
- Rapid Ring™
- RSTP 802.3w
- IGMP snooping
- Querier
- Port mirroring
- Port filtering
- Port setup functionality
- VLAN
- QoS
- TOS
- Diffverv
- MAC-based trunking
- Autocrossover
- Autopolarity
- Filtering and forwarding table

Technical data

Housing	Plastic
Length/Width/Height	210 mm/54 mm/31 mm
AC input voltage, min.-max.	8-24 V AC
DC input voltage, min.-max.	10-36 V DC
Input power AC / DC	max. 5 W
Input frequency	47 - 63 Hz
Operating temperature, min.-max.	-40 °C ... 60 °C
Storage temperature, min.-max.	-40 °C ... 85 °C
Installation	Wall
Ingress protection class	IP 67
Standard	IEEE 802.3, 802.3u, 802.3x
Data rate	10BASE-T/100BASE-TX
Segment length	Cooper 100 m
Functionality	Autonegotiation, redundant voltage supply, ring structure, error relay for PLC support
Flow control	half-duplex/full duplex
Status indication	Power;Link;Status;Run
Buffer memory	256 KByte per 8 ports
Address memory	4 K MAC adress
Approvals	CE
Aging	300 s

Ordering data

Ports	Type	Order No.
8x M12	IE-SW8-M-IP67	8877200000

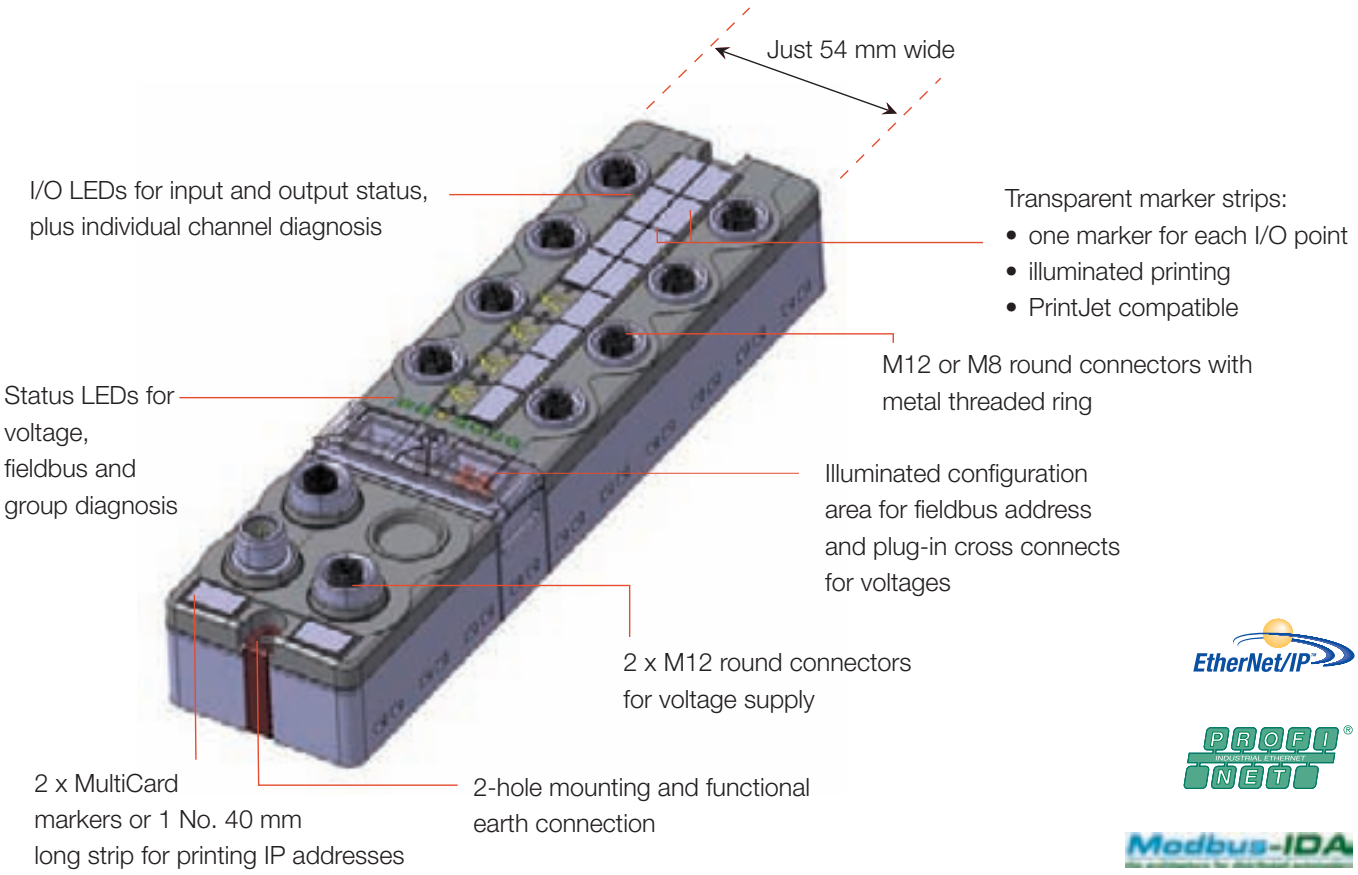
Note

Accessories

	Type	Order No.
M12 protective cap	SAI-SK-M12-UNI	2330260000
Communication cable	IE-C-RS232-M12	8874290000

Note

SAI Active Universal



One module – three Ethernet dialects

The new SAI-Activ universal modules for Industrial Ethernet have integrated three Ethernet dialects. **PROFINET IO**, **EtherNet/IP** and **Modbus TCP** are selected by the module itself by means of automatic port recognition.

PROFINET is the PROFIBUS user organisation's (PNO) automation standard for the realisation of an integrated and manufacturer-independent automation concept based on the Industrial Ethernet.

EtherNet/IP (Ethernet Industrial Protocol) is an open standard provided by Rockwell Automation, Inc. and the user organisation Open DeviceNet Vendor Association (ODVA) for industrial networks. EtherNet/IP is geared towards the Ethernet TCP/IP protocol standard and the Common Industrial Protocol (CIP) communication protocol.

Modbus TCP, based on Ethernet-TCP/IP, is a fieldbus system for automation technology. Adopted by the Internet Engineering Task Force (IETF) as a draft RFC standard, it has been made freely available by Schneider Automation, Inc. Modbus TCP is based on the long-established industrial application protocol Modbus.The object models of Modbus are to be retained unchanged.

The distributors come in three I/O combinations:
1. As a purely digital input module with 16 connections.
2. As a module with 16 channels, of which eight can be used as either inputs or outputs, with the remaining eight channels usable as either digital inputs or diagnostics inputs.
3. As a combination module with four analog and four digital inputs as well as two analog outputs.

A choice of M8 and M12 connection technology is available. The distributors feature four different voltage potentials, arrow-shaped light-conducting elements, two outputs with 2 A, single-channel diagnostics, illumination of address space and strip markers.

Active Universal

SAI-AU

M8

SAI-AU

M12

Ordering data

Plug-on type	Type	Qty.	Order No.
16 digital inputs	SAI-AU M8 IE 16DI	1	**1906880000**
16 digital inputs / 8 digital outputs	SAI-AU M8 IE 16DI/8DO	1	**1906890000**
4 analogue inputs / 2 analogue outputs / 4 digital inputs			

Type	Qty.	Order No.
SAI-AU M12 IE 16DI	1	**1906850000**
SAI-AU M12 IE 16DI/8DO	1	**1906860000**
SAI-AU M12 IE AI/AO/DI	1	**1906870000**

Information

Technical data bus system

Bus sharing unit	Server
Transmission rate	10 / 100 Mbps
Diagnostic display	red
Fieldbus interface	IEEE 802.3
Potential isolation	yes
Station address rotary switch	1-125
bps rate	automatic

Technical data

General data	
Insulation material of housing	PBT
Flammability class UL 94	V-0
Operation temperature	0 °C ... 55 °C
Storage temperature	-25 °C ... 70 °C
Ingress protection class	IP 67
Electrical data electronics-module	
Operating voltage	24 V DC (20,4…28.8 V)
Max. current carrying capacity per output signal	0.5 A;2.0 A
Output levels	Short-circuit-protected
Total current. max.	8 A
Digital inputs	TYPE 1 to EN 61131-2
Analogue outputs	-10…+10 V;0…+10 V;0…20 mA;4…20 mA
Analogue inputs	-10…+10 V;0…+10 V;0…20 mA;4…20 mA
Resolution	12 Bit
Accuracy	< 0.2 %

Information

Information UL certification in preparation

Accessories

Plug	Type	Qty.	Order No.
Metal plug Ethernet, socket M12, D-coded, straight	SAISM-4/8S-M12-4P D-COD	1	**1892120000**
Metal plug Ethernet, pin M12, D-coded, straight	SAIBM-4/8S-M12-4P D-COD	1	**1892130000**
Accessories			
Protective cap, M12, black	SAI-SK-M12-UNI	20	**2330260000**
Marker, transparent	ESG 8/13.5/43.3 SAI AU	5	**1912130000**

Voltage supply with standard M12 plug-in connectors (see chap. D)

Routers – the gateways between Ethernet worlds

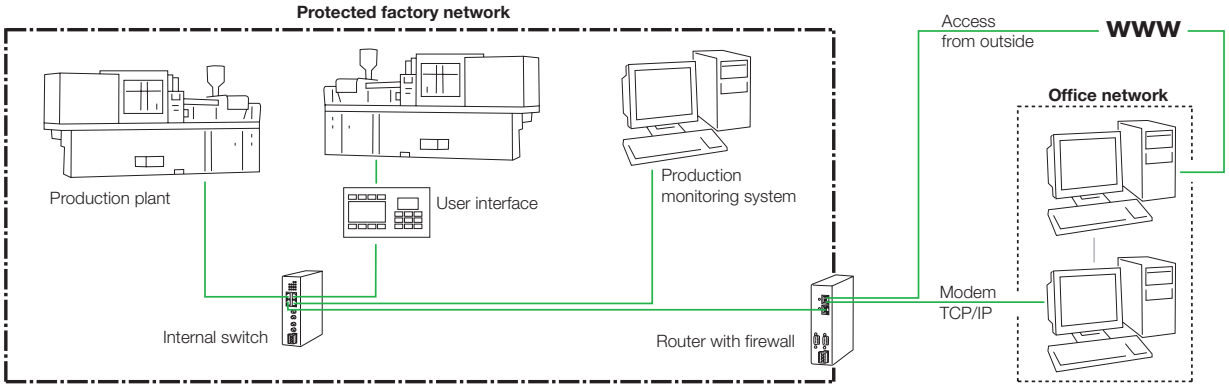
The two typical applications for routers are:
- to separate Ethernet networks for data security reasons or to simplify configuration
- to enable an Internet link

Separation of Ethernet networks in the factory

An industrial manufacturing network or an industrial machine network and a typical office network use the same Ethernet standard but are nevertheless totally different. Whereas in the office network larger volumes of data and the associated sluggishness of the network is completely acceptable, an excessively long response time in an industrial network can lead to downtimes and malfunctions. Complete isolation of the two networks is inadvisable, and for the first time there is the chance of using the same network for all procedures in the company. Procedures become more transparent, the management and technical workloads can be reduced. The exchange of data is considerably simplified and decidedly more efficient.
There are many options for isolating and prioritising network data, e.g. VLAN, QoS for layer 2, etc. A router can provide an option for filtering the data on the IP layer (layer 3).
Features such as integral firewall, Network Address Translation (NAT), Port Address Translation (PAT) and remote access via a modem turn such a router into an efficient aid for achieving separation between networks.
Only authorised users can access the protected network from outside and only certain, enabled devices can transmit data out of the protected network. The NAT/PAT feature enables a machine with its own IP subnetwork and several network users to remain concealed from the outside world behind a unique IP address. Access routines to the IP address from outside are automatically forwarded to a predefined IP address in the network behind the router. In this way the device can remain accessible from outside but only as required. The option of concealing a complete machine behind an IP address reduces the installation and management workloads for the machine user.
In addition, the router can be selected via an external modem, thus enabling access to the router and the machine beyond, without compromising the corporate network. Such access routines are carried out via PPP and PAP or Callback with Virtual Private Network (VPN). This means that a high security level can always be guaranteed.

Connection to the Internet

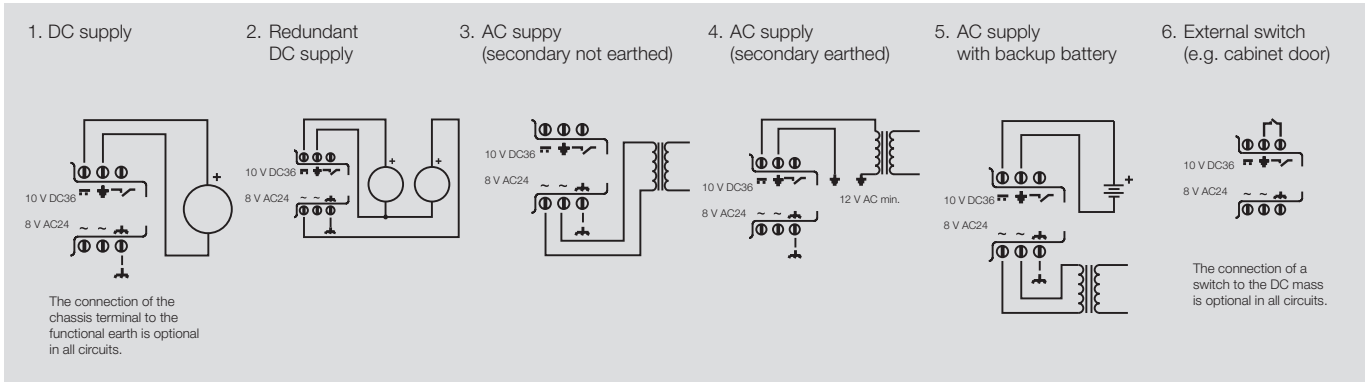
The two industrial access routers IE-AR-10T and IE-AR-10T ISDN enable users to create a simple and secure link between Industrial Ethernet networks and the worldwide Internet.
The integral analogue or ISDN modem guarantees users world-wide applicability and availability. External modems (ISDN, GSM, analogue) can be easily connected via an RS232 port.
An integral firewall provides users with maximum possible protection for their systems. Programming/configuration is carried out via a browser or text console/SSH, but notebooks or handhelds can be used as well, of course. Separate configuration software is not required because this is integrated into the device itself.
The software can be updated via teleservicing. Functions such as VPN, DynDNS and Callback are included as standard.



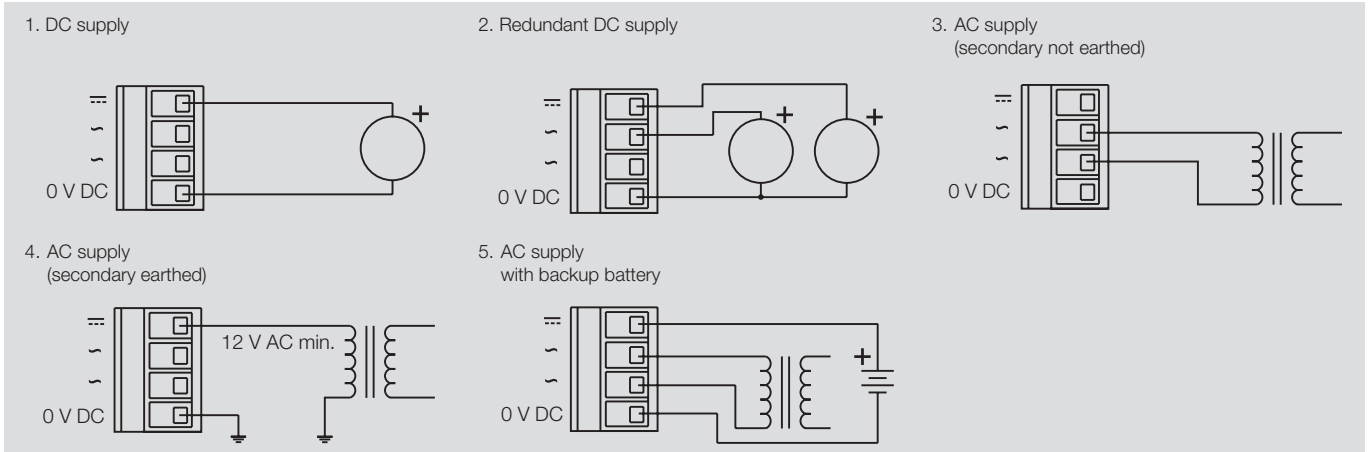
Technical parameters

- Enclosure: aluminium, IP20
- Approvals: UL508, CE, modem – see documentation
- Dimensions: h 156 x w 44 x d 140 (in mm)
- Ethernet: RJ45 10BaseT / 100BaseTX, max. 100 m segment length
- Power: 8 – 24 V AC / 10 – 36 V DC redundant
- TS35 top hat rail mounting (optional wall mounting)
- Temperature: 0 °C to 60 °C (storage: – 40 °C to + 80 °C)
- Configuration: embedded Web server, Telnet or console
- LEDs: analogue modem active, Ethernet active, power active, power malfunction
- Ports: RS232, external ISDN, GSM or analogue modem, serial
- Protocols: TCP/IP, UDP, ICMP, PPP, VPN
- VPN: tunnelled via TCP or UDP, 128-bit asymmetric Blowfish encryption, arbitrary port selection, automatic key exchange
- Functions: Dial-on-Demand, Callback, DNS incl. reverse DNS / DynDNS, VPN, system logging
- Security: firewall, IP masquerading, port forwarding, port and address filters
- Integral modem V.34 / 56 kbps

Redundant power supply connection options for IE-ARM-E and IE-ARM-U



Redundant power supply connection options for IE-AR-10T and IE-AR-10T ISDN

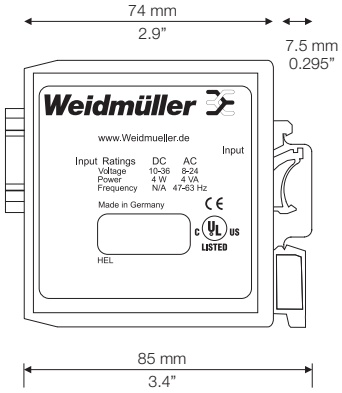


Ordering overview for routers

Type	Function	Temperature range	Order No.
IE-ARM-E	Routing Ethernet to Ethernet	0 °C ... 60 °C	**8845760000**
IE-ARM-U	Routing Ethernet to serial	0 °C ... 60 °C	**8845770000**
IE-AR-10T	Routing Ethernet to serial or telephone line with integral modem	0 °C ... 60 °C	**8845860000**
IE-AR-10T ISDN	Routing Ethernet to serial or ISDN with integral ISDN modem	0 °C ... 60 °C	**8808320000**

Mini-router

- compact and powerful



Mini-router

The Weidmüller Router Line is your gateway between the Ethernet worlds. Networks can be safely isolated and controlled with a configurable firewall.

Our router includes the following features:

- Simple parameterising and teleservicing via web browser
- RS232 connection for control panel or external modem (analogue, ISDN, GSM)
- PPPoE (DSL)*
- SSH access for command line
- VPN (IPsec*, VTUN)
- Dial-on-Demand
- Callback
- DNS/DynDNS
- Masquerading, routing without masquerading
- Virtual Mapping*
- Destination NAT
- Trusted Nets
- Port Filter
- Configuration transfer from router to router
- Redundant power supply

*available for firmware 3.3.0 or higher (Dec 2006)

Supplied complete with:

- RS232 programming cable
- Manual on CD-ROM

Technical data

Housing	Plastic
Length/Width/Height	79 mm/40 mm/85 mm
AC input voltage, min.-max.	8-24 V AC
DC input voltage, min.-max.	10-36 V DC
Input power AC / DC	4 W
Input frequency	47 - 63 Hz
Operating temperature, min.-max.	0 °C ... 60 °C
Storage temperature, min.-max.	-40 °C ... 85 °C
Installation	TS 32/35
Ingress protection class	IP 20
Standard	IEEE 802.3; IEEE 802.3u; IEEE 802.3x
Data rate	10 Base-T/100 Base-TX (copper)
Segment length	Copper Cable 100m max.
Flow control	half-duplex/full duplex
Status indication	Console;Power;Connection (Ethernet);Connection (modem)

Ordering data

Ports	Type	Order No.
1xRJ45; 2xRS 232	IE-ARM-U	**8845770000**
2xRJ45; 1xRS 232	IE-ARM-E	**8845760000**

Note

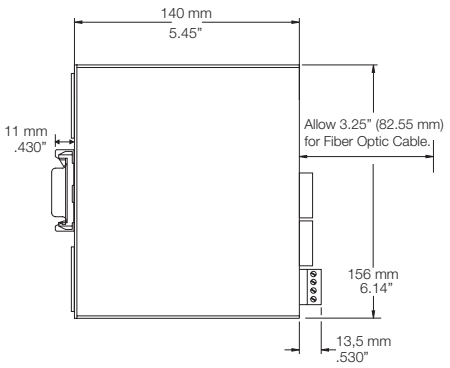
Accessories

	Type	Order No.
RJ45 dust protection plug	IE-DPC	**8813490000**

Note

Router

- compact and powerful



Router

The Weidmüller Router Line with integrated ISDN or 56k modem is your gateway between the Ethernet worlds.

Networks can be safely isolated and controlled with a configurable firewall.

Our router includes the following features:

- Simple parameterising and teleservicing via web browser
- RS232 connection for control panel or external modem (analogue, ISDN, GSM)
- PPPoE (DSL)*
- SSH access for command line
- VPN (IPsec*, VTUN)
- Dial-on-Demand
- Callback
- DNS/DynDNS
- Masquerading, routing without masquerading
- Virtual Mapping*
- Destination NAT
- Trusted Nets
- Port Filter
- Configuration transfer from router to router
- Redundant power supply

*available for firmware 3.3.0 or higher (December 2006)

Supplied complete with:

- RS232 programming cable
- RJ11 modem cable
- Manual on CD-ROM

Technical data

Housing	Aluminium
Length/Width/Height	140 mm/45 mm/155 mm
AC input voltage, min.-max.	8-24 V AC
DC input voltage, min.-max.	10-36 V DC
Input power AC / DC	6 W
Input frequency	47 - 63 Hz
Operating temperature, min.-max.	0 °C ... 60 °C
Storage temperature, min.-max.	-40 °C ... 85 °C
Installation	TS 35
Ingress protection class	IP 20
Standard	IEEE 802.3
Data rate	10 Base-T/100 Base-TX (copper)
Segment length	Copper Cable 100m max.
Flow control	half-duplex
Status indication	Error;Power;Connection (Ethernet);Connection (modem)

Ordering data

Ports	Type	Order No.
2xRJ45 (Ethernet/Modem); 2xRS 232	IE-AR-10T	**8845860000**
2xRJ45 (Ethernet/ISDN); 2xRS 232	IE-AR-10T-ISDN	**8845750000**

Note

Accessories

	Type	Order No.
RJ45 dust protection plug	IE-DPC	**8813490000**

Note

GPRS alarm modem

Signalling, warning, teleservicing – that is the application range of the Weidmüller IE-GPRS-I/O alarm modem. Every IE-GPRS-I/O includes a microprocessor with a GPRS/GSM transmission module. The IE-GPRS-I/O is interesting for those users who wish to have data from a plant available for mobile applications or in the Internet. For example:

- You need to be able to call up your plant data at any time, even from remote locations. You can choose to receive an SMS, a fax or an e-mail
- You need your engineers to be informed about certain plant statuses, even when there is nobody on site. The IE-GPRS-I/O can, for example, send an SMS or call one or more engineers automatically once certain plant statuses have been reached
- You need not only information about your plant, but also need to intervene in plant operations at all times from virtually any location in the world. The IE-GPRS-I/O gives you access to your plant at any time via the integral RS232 port
- You need data from a plant that is not connected via a telephone or a network. The IE-GPRS-I/O can be located anywhere where GSM mobile telephone reception is guaranteed, even at locations remote from your plant

Furthermore, the IE-GPRS-I/O provides the option of setting up a leased line for one of the inexpensive M2M rates. This makes, for example, central data loggers with Internet connection interesting, which replace expensive in situ data loggers and can be called up at any time via secure Internet access routines. The innovative GSM/GPRS technology also saves the cost of installing a telephone connection and the cost of the calls.

In modern factories it is very often the case that just a few employees are responsible for operating and monitoring a great number of machines and facilities. GPRS is a transmission technology that enables all facilities to remain online permanently. So no matter where your staff are, the machines are always accessible.

IE-GPRS-I/O is also interesting for machine and plant manufacturers. Mobile access to the machines enables them to carry out quick and efficient maintenance for their customers and makes them less dependent on the skills of the operating personnel. Indeed, it is often no longer necessary to employ an engineer on site. The cost benefits of this aspect alone pays back the cost of the IE-GPRS-I/O in just a short time, not even counting the advantages of the better service and the associated boost for customer loyalty.

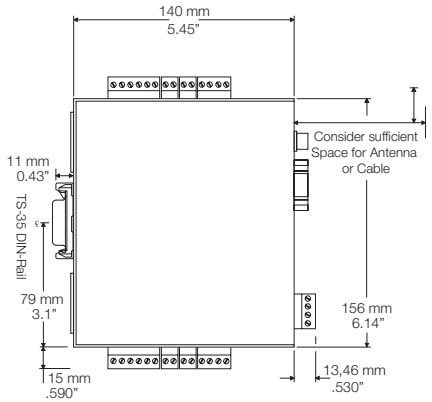
Like the majority of our active communication devices, the IE-GPRS-I/O is also supplied in a robust metal enclosure which provides not only additional protection against electromagnetic radiation, but also emphasises the high-quality appearance of your cabinet.

A brief look at the features of the IE-GPRS-I/O:

- Always online
- GSM/GPRS modem function
- Modem function with AT commands
- Web logger
- Web history
- Plug&Play telecontrol
- M2M rates
- GPRS routing
- Connection is established and maintained
- Alarm via fax, SMS, e-mail or voice call
- Direct data link

Scope of supply:
- **RS232 programming cable**
- **GSM aerial**
- **Manual on CD-ROM**

GPRS module



GPRS module

The Weidmüller GPRS I/O has an aluminium housing just 45 mm wide and the following configurable features:

- signalling and telecontrol system designed for automatic operation if required
- dual band GSM/GPRS modem (GSM 900/1800MHz, 950/1900MHz)
- permanently online
- low-cost M2M rates
- 8 digital and 4 analogue input ports, 4 digital output ports
- immediate alarm signalling via SMS, FAX, e-mail or voice message in the event of limiting values being exceeded at the input ports
- alarm via RS232 also possible
- 8-level recipient list with very flexible configuration options
- integration of port statuses in message
- integral cost monitoring
- data logger (LAN and Internet) available

Technical data

Housing	Aluminium
Length/Width/Height	137 mm/45 mm/155 mm
Ports	8 digital inputs; 4 digital outputs; 4 analogue inputs; 1xRS 232 interface
AC input voltage, min.-max.	8-24 V AC
DC input voltage, min.-max.	10-36 V DC
Input power AC / DC	max. 5 VA AC / max. 5 W DC
Input frequency	47 - 63 Hz
Operating temperature, min.-max.	-10 °C ... 55 °C
Storage temperature, min.-max.	-10 °C ... 70 °C
Installation	TS35 DIN Rail or Wall Mounted
Ingress protection class	IP 20
Data rate	max. 53.6 kbps
Functionality	SMTP; POP3; FTP; DNS; IPTCP; UDP sockets
Status indication	Power
Approvals	cULus;CE
Transmission rate	GPRS-dependent

Ordering data

Dual band GSM/GPRS modem	Type	Order No.
900/1800MHz	IE-GPRS-I/O	8850060000
950/1900MHz	IE-GPRS-I/O-NA	8903980000

Note

Accessories

Type	Order No.

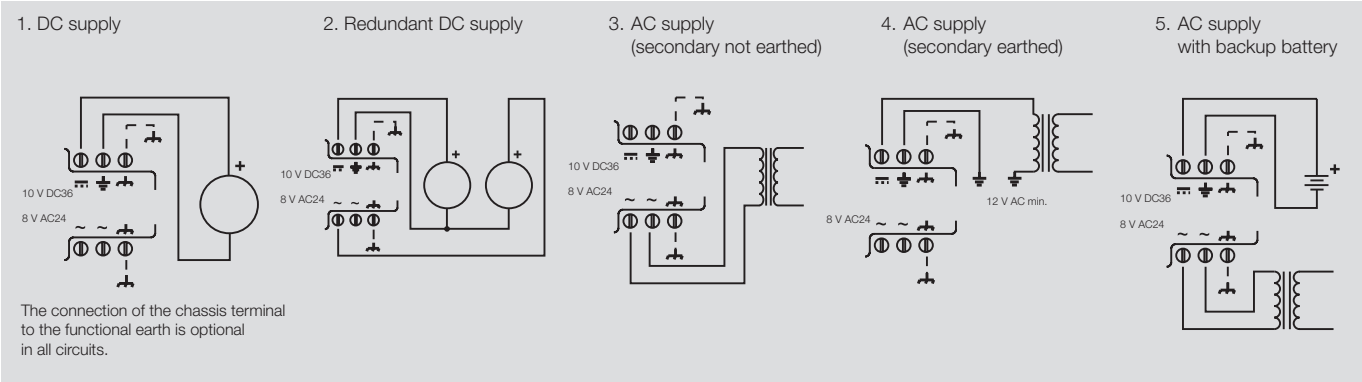
Note

Introduction Media converters

The use of fibre optics is advisable when reliability demands are high or there are long distances to cover. The two media converters IE-MC-SC and IE-MC-ST can provide a simple and cost-effective solution. Both convert an RJ45 port to an optical port, using SC or ST fibre optic connectors.
The supply voltage can be designed as a redundant system and therefore provides users with high fail-safe security. The conversion of RJ45 copper ports to SC or ST fibre optic ports can be set transparently.

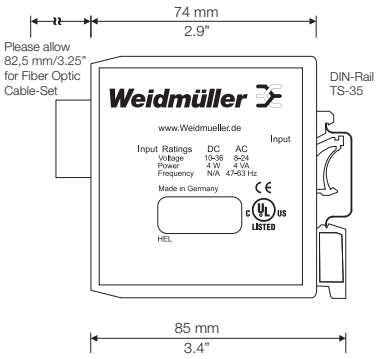
Weidmüller Industrial Ethernet media converters provide a solution for industrial applications that require a highly reliable, robust data exchange between copper and glass fibre media. Media converters are cost-effective devices and give users the option of integrating fibre optics into their networks. The Weidmüller media converters are real-time-compatible and remain transparent in the network.

Redundant power supply connection options for IE-MCxx media converters



Media converter

- IP20
- For mounting on TS32 and TS35
- Transmission distances up to 20 km
- Multimode or singlemode



Media converter

The media converters of the Weidmüller IE-MC series can be switched between half duplex and full duplex by means of a small switch. This means they can be used in demanding real-time applications. Transparency im RapidRing™ is therefore no problem!

In the multimode variation, interference-free transmission over distances of up to 2 km is possible, and up to 20 km with the singlemode variation. Longer transmission distances on request.

Technical data

Housing	Plastic
Length/Width/Height	85 mm/40 mm/79 mm
AC input voltage, min.-max.	8-24 V AC
DC input voltage, min.-max.	10-36 V DC
AC input power/DC	4 VA AC/4 Watt DC
Input frequency	DC; 47 - 63 Hz AC
Operating temperature, min.-max.	0 °C ... 60 °C
Storage temperature, min.-max.	-40 °C ... 85 °C
Installation	TS 32/35
Ingress protection class	IP 20
Standard	ANSI / IEEE 802.3
Data rate	RJ45/100m:
	10BASE-T/100BASE-TX
	SC connection for glass fibre:
	100BASE-FX (1310 nm)
	Multimode up to 2 km
	Singlemode up to 20 km
Status indication	Power/Data rate;Connection/Activity
Approvals	cULus;CE
Optical budget	8 dB for 62.5/125 µm multimode cable
	4 dB for 50/125 µm multimode cable
	13 dB for 9/125 µm singlemode cable

Ordering data

Ports	Type	Order No.
1xRJ45; 1xSC	IE-MC-SC	8808220000
1xRJ45; 1xSC	IE-MC-SC-SM	8848840000
1xRJ45; 1xST	IE-MC-ST	8808190000

Note

Accessories

	Type	Order No.
RJ45 dust protection plug	IE-DPC	8813490000

Note