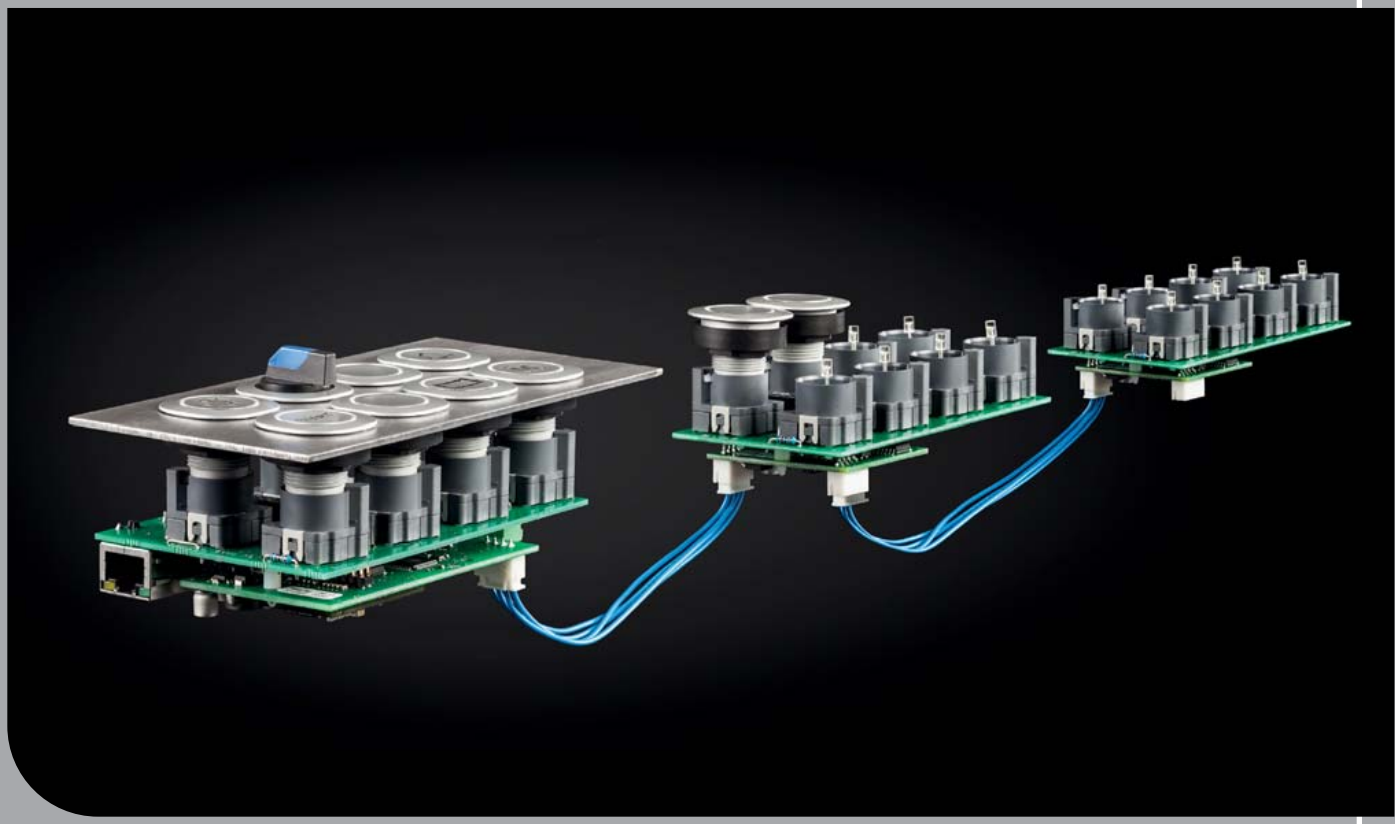
MADE IN GERMANY

SCHLEGEL®
ELEKTROKONTAKT
Fascinating Electrotechnics



Industrial Networks

3-4-5 | simple flexible functional


POWERLINK
EtherNet/IP
H3
H4
H1+H5
X13
S1
S2
S4

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Industrial networks MBS - the modular bus system of SCHLEGEL

For detailed information, please refer to **www.schlegel biz**

Note:
The technical data is only intended as guiding information and may vary depending on the product.
For the exact technical data, please refer to the relevant product data sheet.

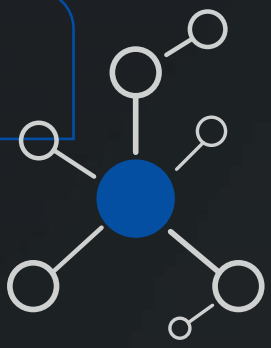
MBS - THE MODULAR BUS SYSTEM OF SCHLEGEL

Industrial networks

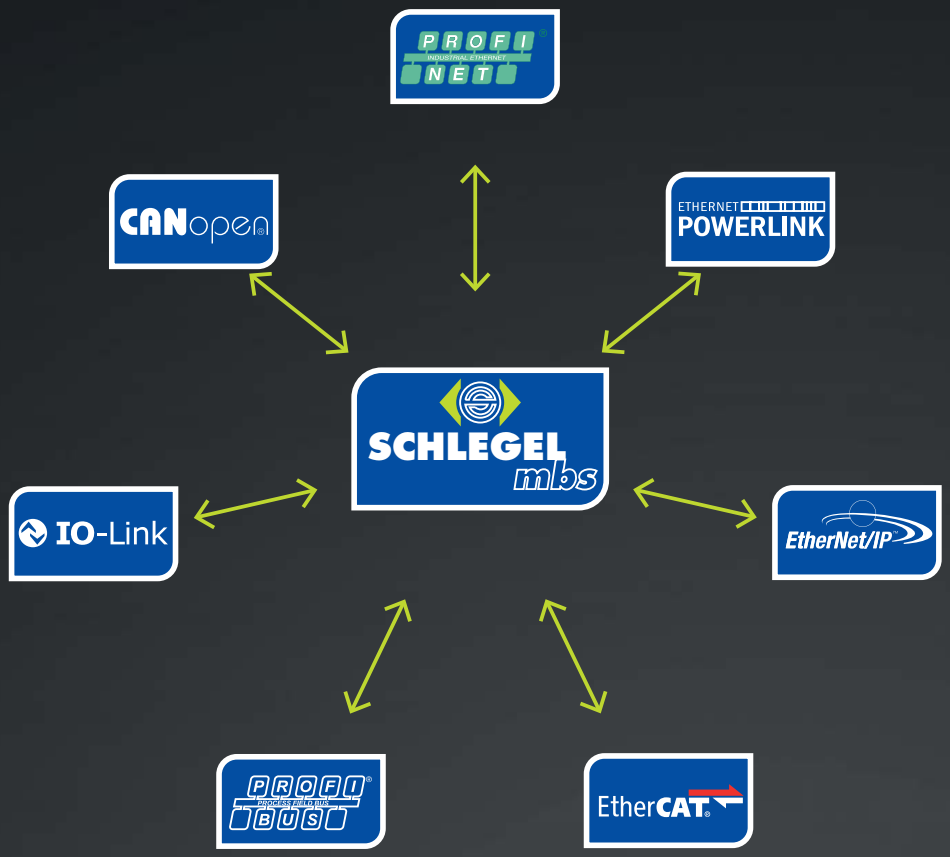
- **Only one connection for up to 128 pushbuttons, pilot lights and switches**

- **Low wiring effort - saving time and money**

- **Direct integration of pushbuttons, pilot lights and switches in industrial networks**



The easy way to connect individual pushbuttons, pilot lights and switches or complete operating units to industrial networks.



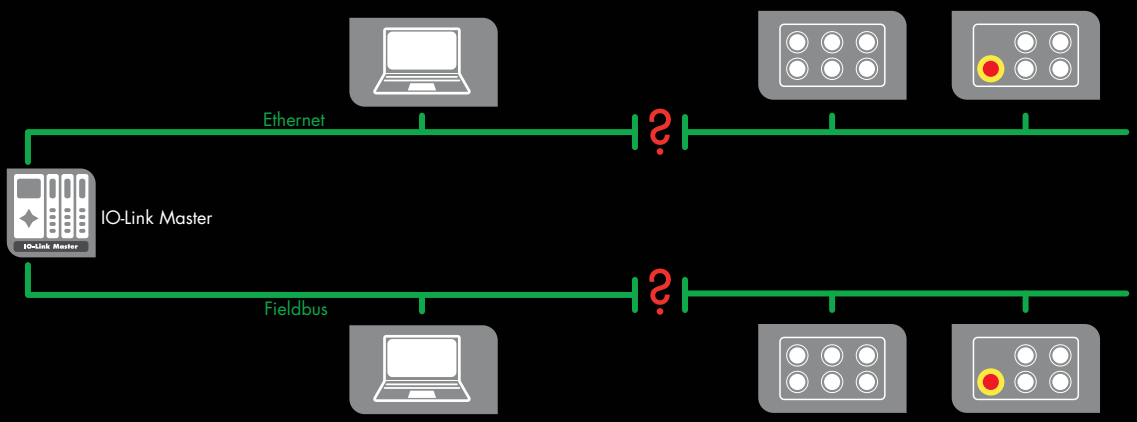
MBS - THE MODULAR BUS SYSTEM OF SCHLEGEL

Industrial networks

Fieldbus systems, Industrial Ethernet and also IO-Link are already part of the industrial field and simplify the structure of automation systems essentially. The main advantages of modern network technology compared to the previously common parallel wiring are the high flexibility and reliability as well as the significantly lower cabling effort. Real-time capability, industry 4.0 and thus networked automation have only become possible thanks to modern fieldbus systems or Industrial Ethernet. However, there is also a decisive disadvantage - the different systems on the market cannot communicate directly with each other or, in other words there is no protocol compatibility.

What problems arise from the diversity of industrial networks?

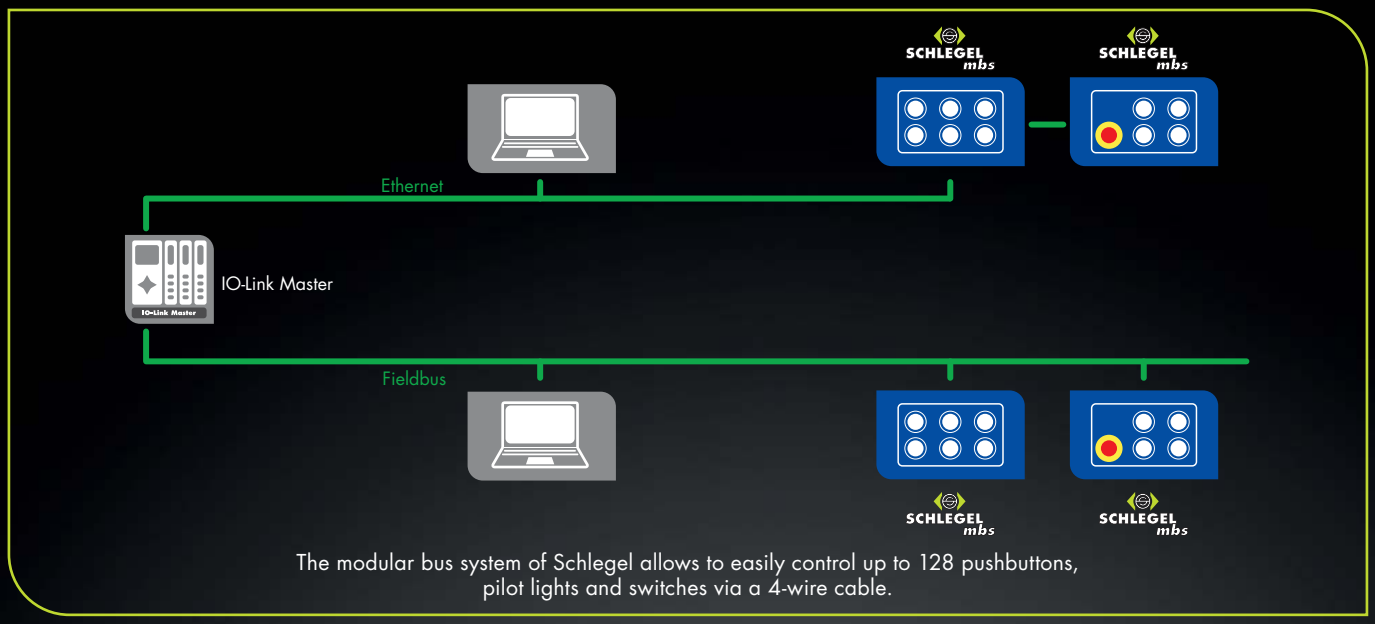
Communication is only possible and the device can only be used if field devices that are to be integrated into a network support the protocol of the system used. This problem also occurs when using pushbuttons, pilot lights or switches: Without a corresponding interface, the pushbuttons, pilot lights and switches must be wired conventionally. This not only requires additional time and corresponding costs but also reduces the advantages of industrial networks.



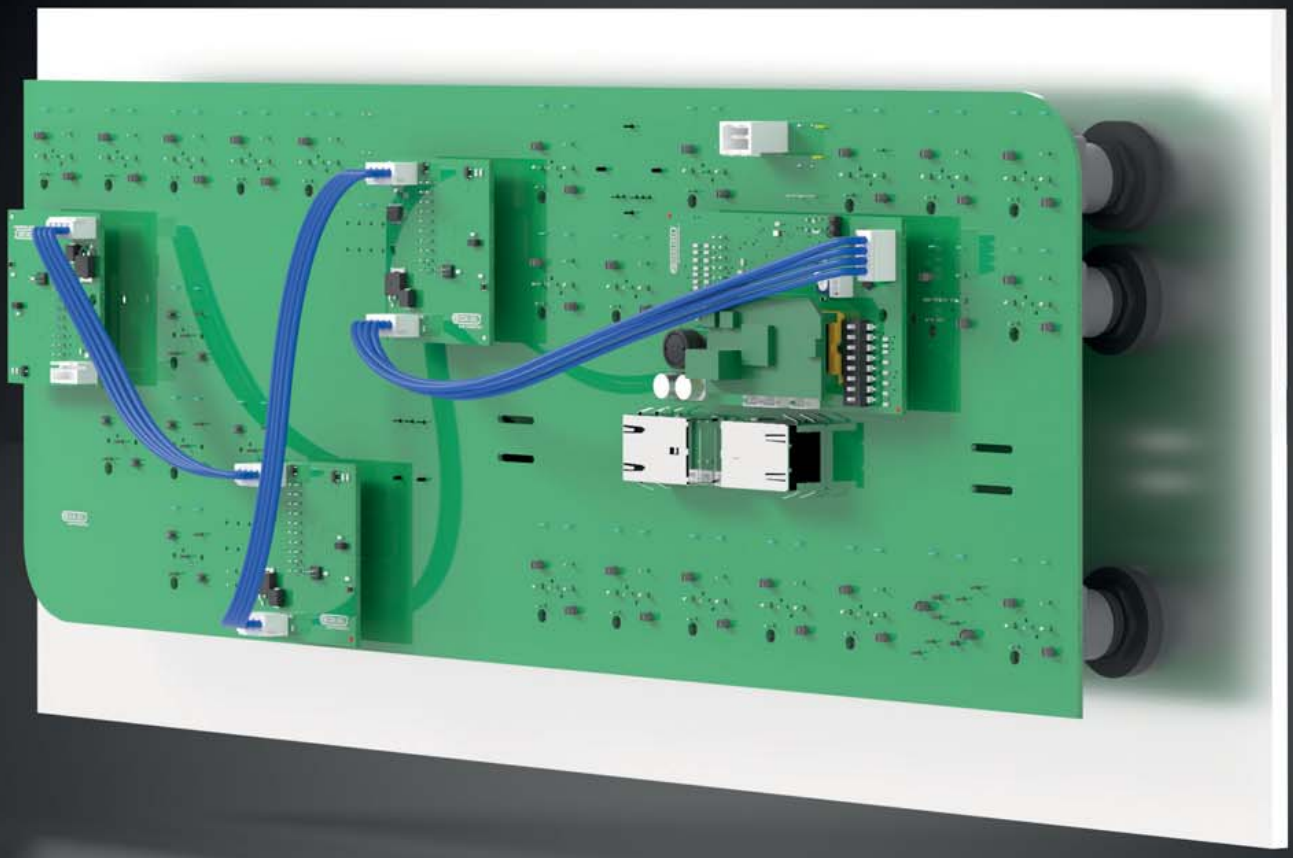
How can the pushbuttons, pilot lights and switches be controlled? Here the modular bus system of Schlegel comes in handy.

How does SCHLEGEL solve this problem?

With the modular bus system MBS developed by SCHLEGEL individual pushbuttons, pilot lights and switches or complete operating units can be easily and conveniently integrated into various industrial networks.
Communication with the fieldbus system or the Industrial Ethernet is performed via the basic module in which the incoming data is processed and passed on to the MBS to control the pushbuttons, pilot lights and switches.
Advantage: Only the basic module and not every individual pushbutton or pilot light needs to be connected to the respective industrial network. Everything else is controlled by the MBS.
This not only saves time but also space and costs.



The modular bus system of Schlegel allows to easily control up to 128 pushbuttons, pilot lights and switches via a 4-wire cable.



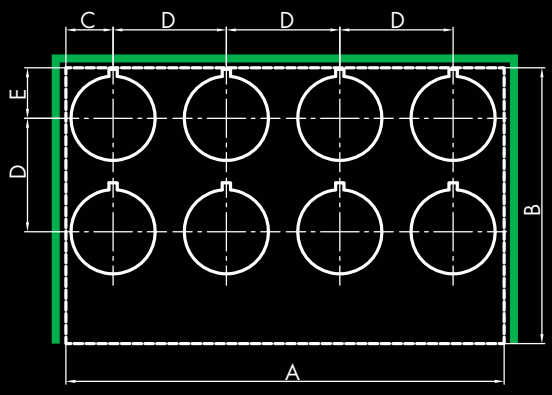
MBS - THE MODULAR BUS SYSTEM OF SCHLEGEL
Industrial networks

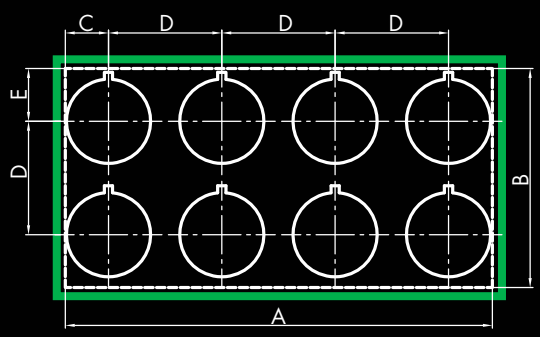
How is the modular bus system structured?

The MBS consists of two components:

- The basic module with 8 inputs and outputs which regulates the communication with the connected system and the MBS
- The extension module to expand the MBS with additional 8 inputs and outputs

The flexible structure of the system has many advantages: The extension modules can be combined with any of the various fieldbus, Ethernet or IO-Link basic modules. Depending on the intended use and customer's requirement up to 15 extension modules can be added in a row to just one basic module. This allows to vary the number of pushbuttons, pilot lights and switches to be controlled which can be increased to up to 128. The internal addressing of the extension modules is done by the basic module automatically and in the order of the connected extension modules. This addressing process occurs with every restart so that the customer can add or remove additional participants at any time. All he has to do is to adapt the assignment of the I/Os in the software.





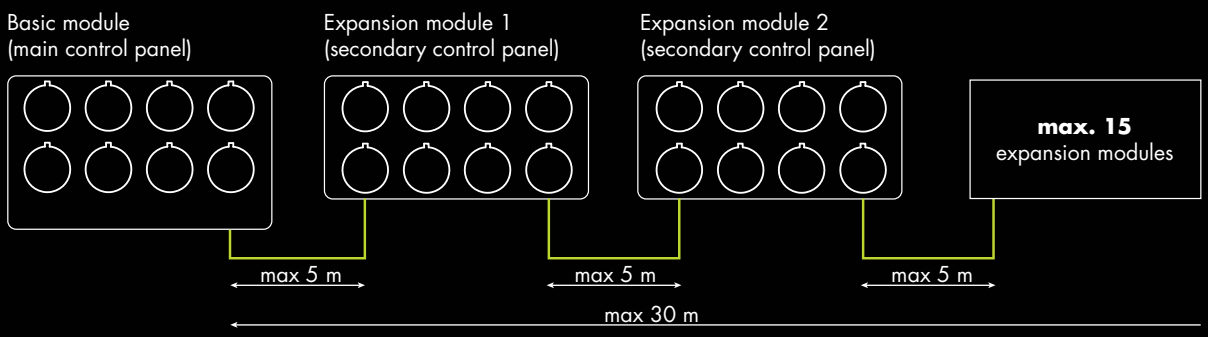
Basic module

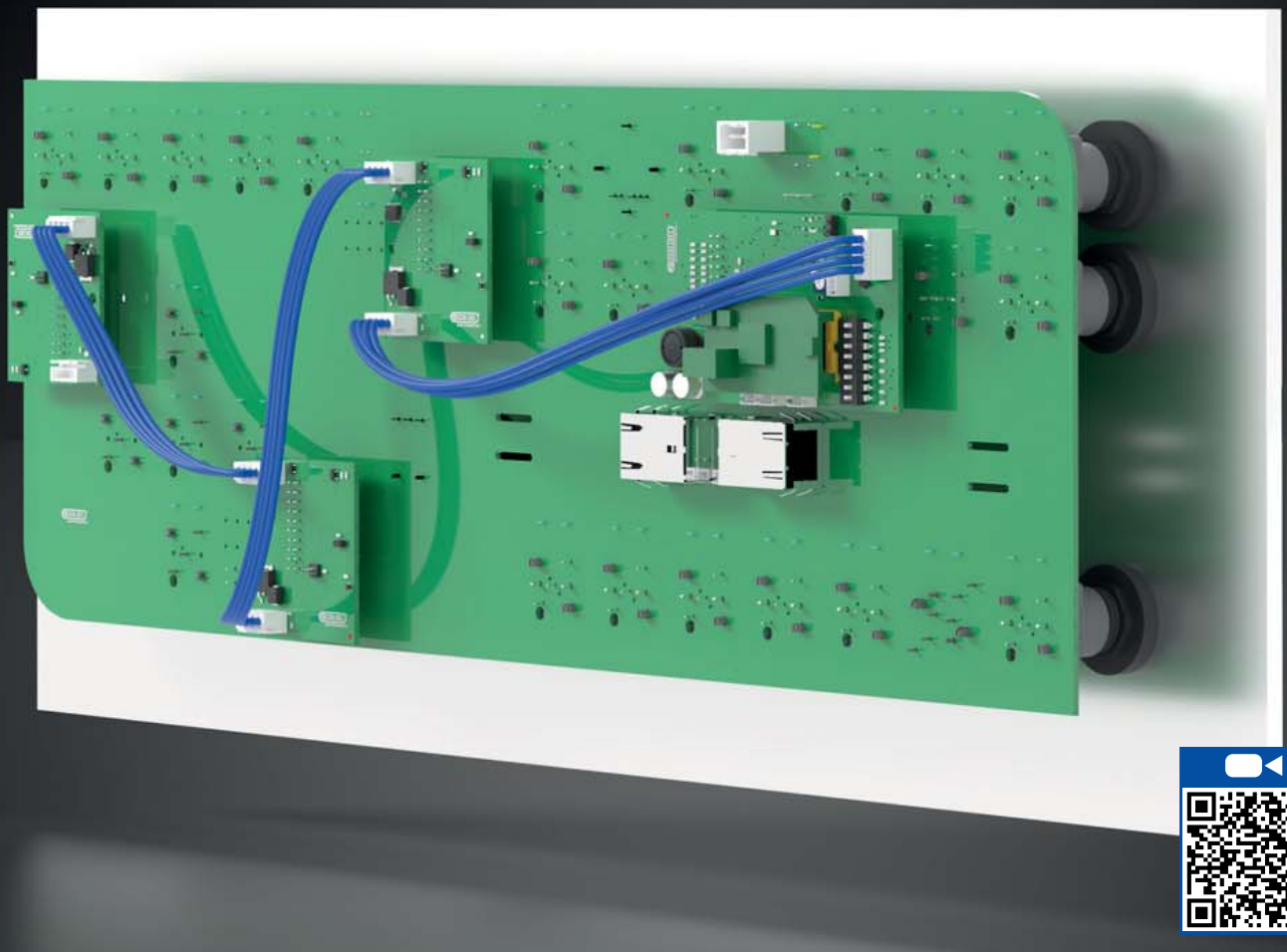
spacing	25x25	27x27	30x30
A	98,0 mm	105,0 mm	116,0 mm
B	65,0 mm	70,0 mm	73,0 mm
C	11,5 mm	10,8 mm	12,5 mm
D	25,0 mm	27,0 mm	30,0 mm
E	11,5 mm	13,4 mm	13,4 mm

Expansion module

spacing	25x25	27x27	30x30
A	97,0 mm	104,0 mm	113,0 mm
B	47,0 mm	53,0 mm	58,0 mm
C	11,5 mm	10,8 mm	11,0 mm
D	25,0 mm	27,0 mm	30,0 mm
E	11,5 mm	13,3 mm	14,0 mm

Further expansion modules can be arranged in the same spacing at the three outer edges of the basic module.


Basic module
(main control panel)
Expansion module 1
(secondary control panel)
Expansion module 2
(secondary control panel)
max. 15
expansion modules
max 5 m
max 5 m
max 5 m
max 30 m



MBS - THE MODULAR BUS SYSTEM OF SCHLEGEL
Industrial networks

What are the advantages for the customer?

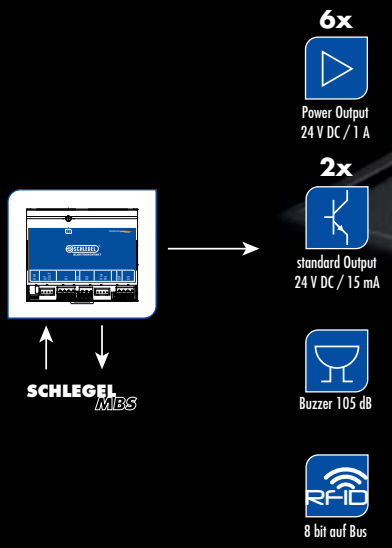
- Only one connection for up to 128 pushbuttons, pilot lights and switches
- Simple and quick planning of operating units and operating panels
- Simple and quick wiring
- Time and cost savings thanks to a low installation effort
- Flexibly adaptable according to customer's requirement
- Many extensions such as external I/Os, RFID, power outputs or A/D conversion

MBS Standard

The MBS Standard consists of one basic module and one extension module. Both modules have 8 inputs and 8 outputs each and are designed in a 25x25 mm, 27x27 mm or 30x30 mm mounting grid for installation into front panels. By using the extension modules up to 128 control devices like pushbuttons, selector/key switches, pilot lights etc. can be connected and controlled. Up to 15 extension modules are connected with just one cable each. The approved standard cable lengths are up to 5 m between modules and up to 35 m for the entire system. However, cable lengths for longer distances are possible and can be tested on request. An external energy source is required to operate the basic module. The extension modules are then supplied with energy by the basic module.

In addition to the extension modules with a fixed grid arrangement there are also extension modules without a fixed grid arrangement. In these versions the pushbuttons, switches and pilot lights can be positioned anywhere and are connected via a spring terminal. The modules also have 8 inputs and outputs. If there is need to integrate for example a user management into the operating unit it is possible to use the extension modules with integrated RFID control for the SCHLEGEL RFID systems SKS or TMS. All basic modules are certified for the respective fieldbus system, Industrial Ethernet or IO-Link.

Basic module + extension module



Extension module with RFID control

Customised MBS

When designing machines and systems an attractive and user-friendly design plays an important role. SCHLEGEL attaches importance to aesthetics since a long time already. Therefore also for the MBS we offer the opportunity to adapt the design individually to the wishes and ideas of the customer.

MBS - THE MODULAR BUS SYSTEM OF SCHLEGEL
Industrial networks

Gateways

The gateways for the Industrial Ethernet (Profinet, Ethernet/IP, EtherCAT, Powerlink) or for IO-Link are very compact and can be installed via the integrated top-hat rail, for example for the use in a switching cabinet. The connection to the external system is made via the RJ45 port of the integrated 2-port switch. The basic function of the gateway corresponds to the basic module of the MBS Standard but without inputs/outputs for pushbuttons, switches and pilot lights. Instead, the gateway has an RFID interface and an A/D converter on board. Thus, for example, a user administration or a potentiometer can be implemented decentrally to the user interface with the pushbuttons, switches and pilot lights.

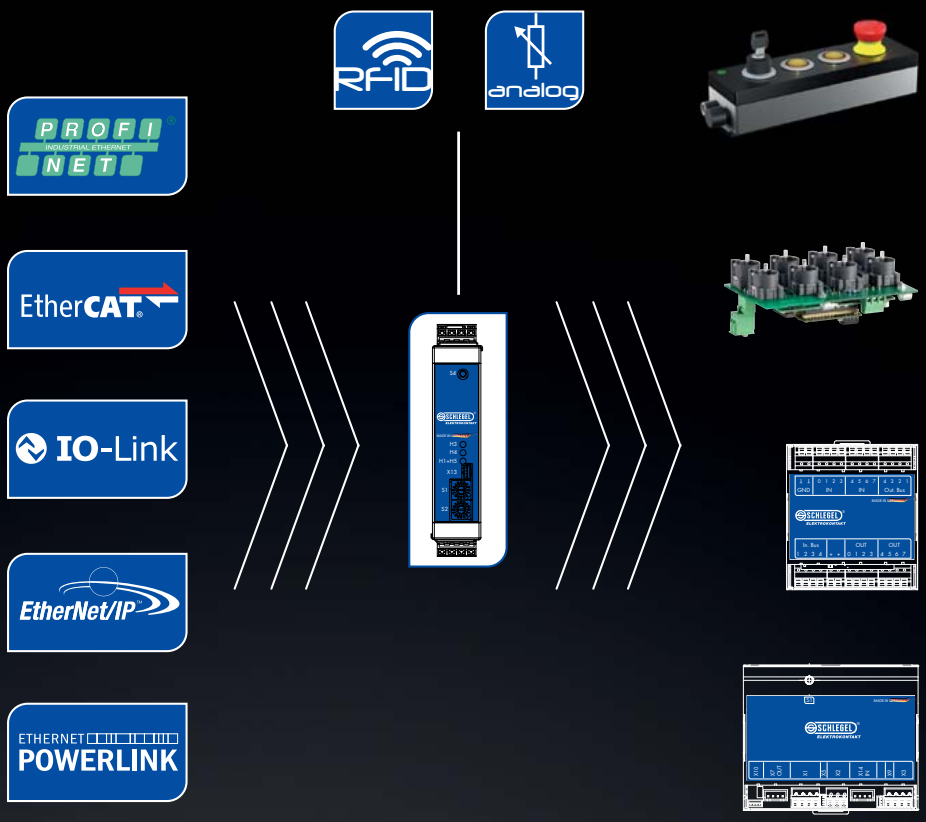
The RFID control inside the gateway is based on SCHLEGEL's TMS_TCA system. This means that the tags can be programmed on every computer and then be used immediately. All you need is the TMS management software and the appropriate RFID reader which sends the read information directly to the connected system for further processing.

As with the MBS Standard basic module the pushbuttons, switches and pilot lights or operating units are implemented via additional extension modules. The first extension module is connected either via the M12 connection or the spring terminal connection on the gateway. All subsequent extension modules are connected as with the MBS Standard.

Enclosures

It is possible to connect enclosures of the proboxx series to the modular bus system via the M12 connection of the gateways. The proboxx has an input and output so that several enclosures can be connected in series. Similar to the extension modules the enclosure is controlled entirely via the MBS. In this way, several operating units can be easily used within larger installations.

The configuration of the pushbuttons and switches in the enclosure can be determined by the customer. If this is not possible via the proboxx configurator SCHLEGEL also offers the realisation of a customer-specific solution.


RFID
analog
PROFI
INDUSTRIAL ETHERNET
NET
EtherCAT
IO-Link
EtherNet/IP
ETHERNET
POWERLINK


EtherCAT
S4
S1
S2
X13
H1+H5
H3
H4

FIELD DEVICES

Field devices

SCHLEGEL offers the direct integration of enclosure assemblies with pushbuttons and switches (proboxx, S4 stainless steel enclosure) into industrial networks for the following systems:

- AS-Interface
- IO-Link

AS-Interface

The products with AS-Interface can be integrated and addressed directly into the AS-Interface bus.
Via the second M12 connector of the proboxx the AS-Interface bus can be looped through.

Operating units can be integrated into the AS-Interface bus via contact elements or equipped enclosures.

IO-Link

Products with IO-Link can be connected directly to a free port of the IO-Link master.
If equipped with an emergency-stop, the emergency-stop is routed to the outside via the second M12 connection.

General information for enclosures:
The configuration of the enclosure can be determined as per customer's requirement. If this is not possible via the configurator SCHLEGEL also offers the realisation of a customer-specific solution.

Configure your proboxx under
proboxx.schlegel.biz

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