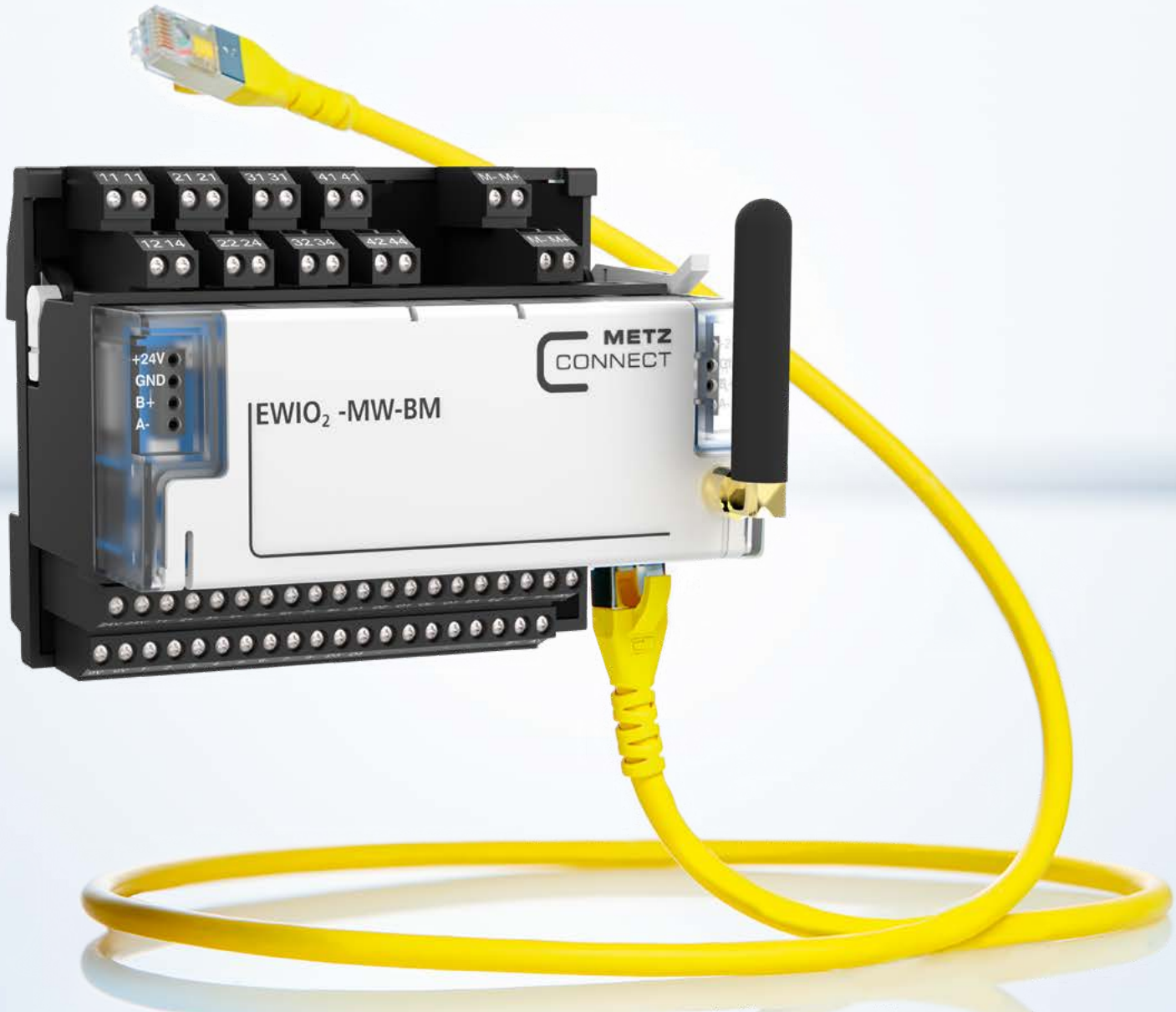
METZ CONNECT

We realize ideas

Intelligent components for systems and switch cabinets



C | Logline

Contents

C | Logline

Intelligent components for systems and switch cabinets

Christian and Jochen Metz in the local Blumberg

We are continuing where history left off and will still rely on optimal connections in the future!

Dear business partners, dear customers,

The family-owned company METZ CONNECT has stood for precision, reliability and ingenuity for more than four decades. Virtues that we put into practice every day at all of our worldwide production and distribution sites.

As pioneers in the communication between people and equipment, it goes without saying that we also pass on our experience and knowledge across generations. And grow steadily in the process!

The METZ CONNECT range is divided into three core areas and offers a wide range of solutions for the most demanding needs:

P|Cabling	Copper and glass fiber components as well as automated infrastructure management for structured network cabling
U|Contact	PCB connection technology for the connection of devices and controls in building and industrial automation
C|Logline	Intelligent system and switch cabinet components for building and process automation.

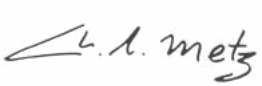
You will encounter products from METZ CONNECT several times a day, often without seeing them: whether PCB components or connection terminals in control elements, copper and fiber optic components for network cabling or intelligent I/O components in the control cabinet for building automation. Many areas of everyday life, including complex industrial supply and production chains, require the intelligent networking of the involved devices and components. For all these application situations, METZ CONNECT offers full service, from the printed circuit board to the Internet.

As a partner of numerous international companies, we offer expertise resulting from 40 years of experience in standardised and, above all, customer-specific system solutions for a variety of applications in connection technology. We see ourselves as a problem solver and do not settle for the second-best solution. The search for perfection may seem expensive, but it is worth it.

Join us in mutual projects concerning equipment and plant construction as well as the structured cabling of buildings and industrial sites. We are looking forward to working with you!

Best regards

Jochen Metz
Managing Partner



Christian Metz
Managing Partner

and the entire team from METZ CONNECT.

Innovation and consistency – from the printed circuit board to the end device.

Our high-quality, user-friendly and internationally standardised components and systems are divided into three clear ranges:

P | Cabling

Copper and Fiber Optics solutions for networks

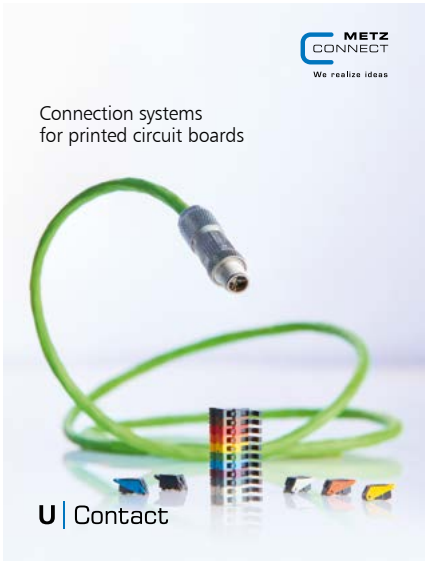
Highly specialised, internationally standardised and high-performance network solutions in copper and fiber optic technology are impressive due to their comfortable installation, maximum quality and highest system capability across all relevant performance classes. They are used in structured building and industrial cabling as well as in data centres.

Connectors

Wall outlets, distributors

patch cables, lines

The increasing demand for data transmission volumes requires the ever greater performance and consistency of the data networks. IT technologies can be found in many applications in buildings, data centres and industrial plants.



U | Contact

Connection systems for printed circuit boards

Innovative products, solutions and systems for the connection technology of printed circuit boards and devices. Products that are compatible with market standards as well as customised product solutions, including for industrial control and building automation, reflect our core competence in this area.

Terminal blocks, pin headers

Connectors

Board-to-board

C | Logline

Intelligent components for systems and switch cabinets

Intelligent system components for highly communicative and decentralised control in the areas of building and process control, relay technology and telecommunications

Bus modules

Inteface modules

Timer-, process- and monitoring relays

Uniform automation – central engineering

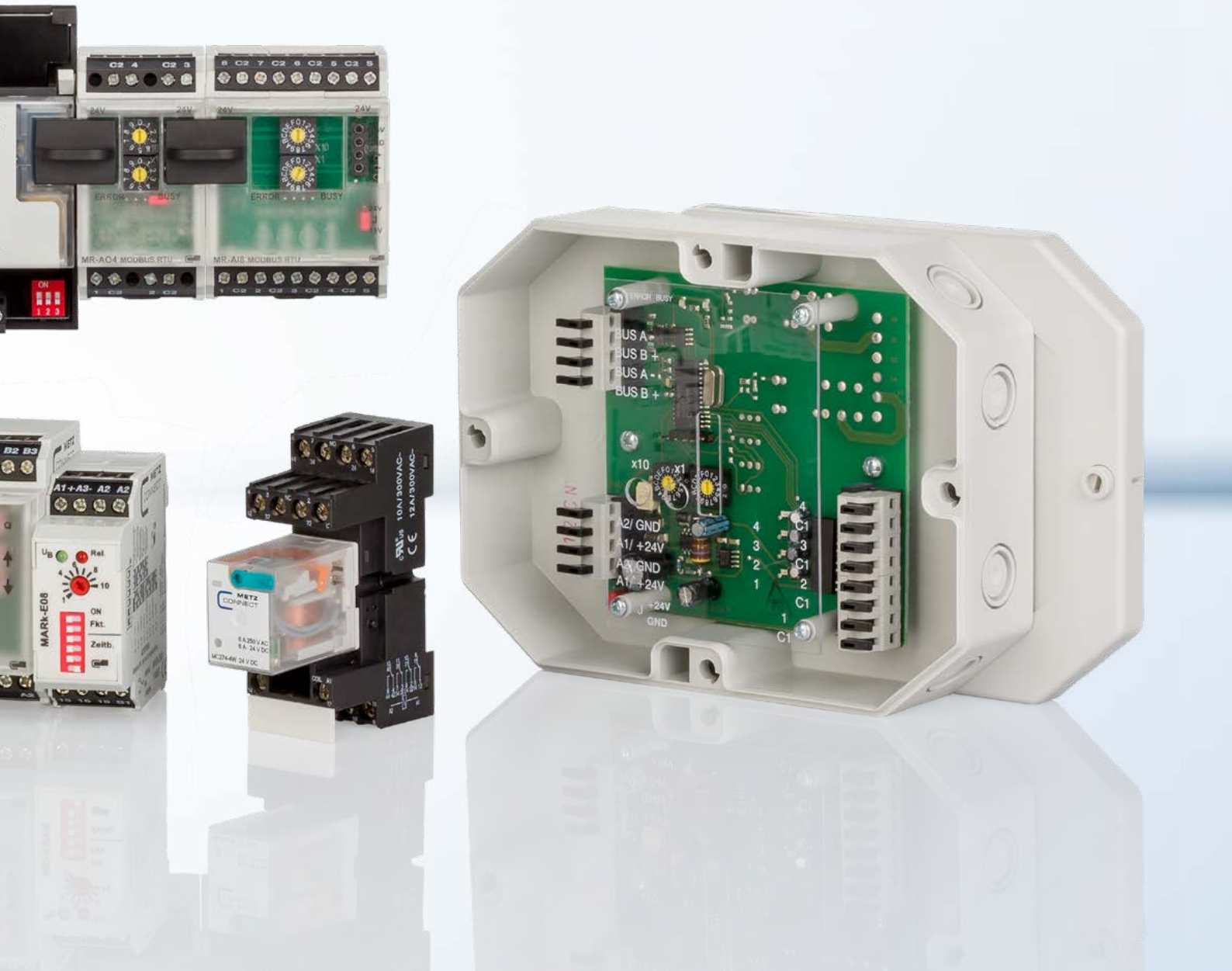
Building automation, Process engineering

C | Logline

high performance components for integrated control tasks

METZ CONNECT

We realize ideas



Technical networks and safety solutions in buildings and industrial plants are becoming increasing more intelligent. They offer the possibility of integrating internal and external processes so they can be controlled and monitored efficiently. METZ CONNECT has the perfect solutions for this.

With the C|Logline product group, METZ CONNECT provides consistent, system-capable and intelligent network components for sustainable building automation, maximum protection, optimum process control and efficient energy controlling. Advantages: High performance components shorten assembly time, reduce energy consumption, create transparency or make it possible to resolve several tasks with just one device, for example.

METZ CONNECT

We realize ideas

Energy Controlling

Simple energy consumption data acquisition

The market for energy management is currently growing rapidly. As a result of the trend towards digitisation and government support programmes, such as special equalisation schemes and peak balancing, more and more small and medium-sized enterprises (SMEs) in Germany are becoming involved in energy management. The solution approaches range from a simple visualization of the energy consumption to automation, and all the way up to a certified energy management system. The consistent energy data collection is a prerequisite, in order to introduce an effective energy management in the company. The collection of all relevant energy data plays an important role for the improvement of energy consumption. The collection and analysis of the energy data can be submitted for the so-called peak balancing in accordance with § 55 Energy Tax Act and § 10 Electricity Tax Act. This allows companies to benefit from tax advantages and also save electricity tax.

Contents | Energy Controlling

Energy Controlling

Only three steps are necessary to take advantage of tax savings:

Step 1: Energy data acquisition - acquisition of energy flows and energy sources

Step 2: Analysis of the energy data and determination of important characteristic values

Step 3: Documentation of the energy consumed in the plants, machinery and equipment

The application for peak balancing must be submitted to an environmental verifier or an accredited certification body as proof of the introduction of an energy management system in accordance with DIN ISO 50001.

With the new $EWIO_2$-M data logger and a large number of expansion modules, METZ CONNECT offers the optimum solution for a simple energy consumption data acquisition, and makes it easier for companies to introduce energy management.

Matching accessory for EWIO$_2$-M / EWIO$_2$-M-BM

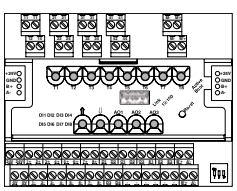
EWIO$_2$-M

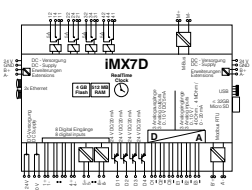
(M-Bus)

The EWIO$_2$-M is a powerful data logger for the energy consumption monitoring and energy monitoring in buildings, on machines, plants and systems. Two Ethernet ports with a Daisy Chain function are available for the chain further Data logger and connection to the LAN network. The system is parameterised, configured and commissioned through a platform-independent web browser. The M-Bus and Modbus RTU interfaces enable to read different meters: e.g. electricity, water, gas and heat. Optionally, the measured values can either be sent from the data base (push) or read out (pull) via mail (SSL) or FTP (SFTP). Simple functions and control tasks in building and industrial automation can be realized via the webinterface with the integrated digital and analog I/Os. An integrated µSD memory card expands the range of functions of the EWIO$_2$-M for save settings, data and applications.

Operating voltage	24 V DC +/- 10 %
Power consumption (max.)	550 mA
Operating temperature	-5 °C to +55 °C
Network	2 x RJ45 LAN 10/100BaseT (Daisy Chain)
Protocol	TCP/IP
Controller	NXP i.MX7D Dual Core ARM-A7, 1 GHz RAM 512 MB / Flash max. 32 GB / ext. 2 GB µSD
Operating system	Linux embedded, Kernel 4.14, 32 Bit
Interfaces	Extension bus, max. 6 MR-I/O bus modules Modbus RTU, max. 32 participants M-Bus (DIN EN 13757-T1,2,3), max. 80 M-Bus charges
I/Os	8 x digital inputs 3 x analog universal inputs 8 x digital outputs 3 x analog outputs

Wiring/Principle diagram





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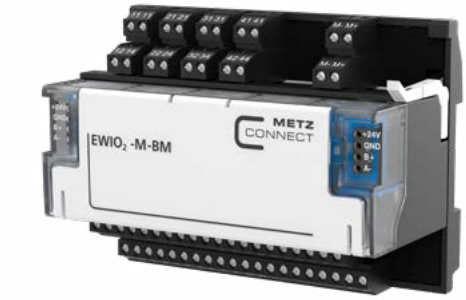


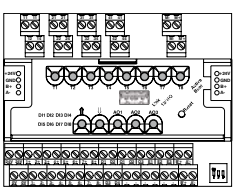
EWIO$_2$-M-BM

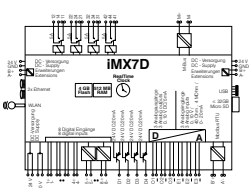
(M-Bus/BACnet/Modbus)

Das EWIO$_2$-M-BM is a powerful data logger for the energy consumption monitoring and energy monitoring in buildings, on machines, plants and systems. Two Ethernet ports with a Daisy Chain function are available for the chain furhter Data logger and connection to a LAN network. The EWIO$_2$-M-BM can be integrated into a Modbus TCP or BACnet/IP network to perform control tasks. The system is parameterised, configured and commissioned through a platform-independent web browser. The M-Bus and Modbus RTU interfaces enable to read different meters: e.g. electricity, water, gas and heat. Optionally, the measured values can either be sent from the data base (push) or read out (pull) via mail (SSL) or FTP (SFTP), from a BACnet or Modbus controller. The integrated digital and analog I/Os allow to realize different tasks in the building automation or industrial automation via a BACnet/Modbus control or the web interface. An integrated µSD memory card expands the range of functions of the EWIO$_2$-M-BM for save settings, data and applications.

Operating voltage	24 V DC +/- 10 %
Power consumption (max.)	550 mA
Operating temperature	-5 °C to +55 °C
Network	2 x RJ45 LAN 10/100BaseT (Daisy Chain)
Protocol	TCP/IP, BACnet/IP, Modbus TCP
Controller	NXP i.MX7D Dual Core ARM-A7, 1 GHz RAM 512 MB / Flash max. 32 GB / ext. 2 GB µSD
Operating system	Linux embedded, Kernel 4.14, 32 Bit
Interfaces	Extension bus, max. 6 MR-I/O bus modules Modbus RTU, max. 32 participants M-Bus (DIN EN 13757-T1,2,3), max. 80 M-Bus charges
I/Os	8 x digital inputs 3 x analog universal inputs 8 x digital outputs 3 x analog outputs

Wiring/Principle diagram





P/N	Color	Feature 1	Feature 2
110935	black		

Matching accessory for EWIO$_2$-MW / EWIO$_2$-MW-BM

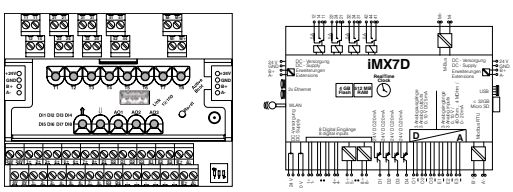
EWIO$_2$-MW

(M-Bus/WLAN)

The EWIO$_2$-MW is a powerful data logger for the energy consumption monitoring and energy monitoring in buildings, on machines, plants and systems. Two Ethernet ports with a Daisy Chain function for the chain further Data logger and a WLAN interface are available for the connection to the LAN or WLAN network. In addition, the WLAN interface can be used as an access point for the configuration with a mobile device (e.g. smartphone, tablet, notebook). The system is parameterised, configured and commissioned through a platform-independent web browser. The M-Bus and Modbus RTU interfaces enable to read different meters: e.g. electricity, water, gas and heat. Optionally, the measured values can either be sent from the data base (push) or read out (pull) via mail (SSL) or FTP (SFTP). The integrated digital and analog I/Os allow to realize different tasks in the building automation or industrial automation via the web interface. An integrated μSD memory card expands the range of functions of the EWIO$_2$-MW for save settings, data and applications.

Operating voltage	24 V DC +/- 10 %
Power consumption (max.)	550 mA
Operating temperature	-5 °C to +55 °C
Network	2 x RJ45 LAN 10/100BaseT (Daisy Chain) WLAN, b/g/n, 2,4 GHz
Protocol	TCP/IP
Controller	NXP i.MX7D Dual Core ARM-A7, 1 GHz RAM 512 MB / Flash max. 32 GB / ext. 2 GB μSD
Operating system	Linux embedded, Kernel 4.14, 32 Bit
Interfaces	Extension bus, max. 6 MR-I/O bus modules Modbus RTU, max. 32 participants M-Bus (DIN EN 13757-T1,2,3), max. 80 M-Bus charges
I/Os	8 x digital inputs 3 x analog universal inputs 8 x digital outputs 3 x analog outputs

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
110931	black		

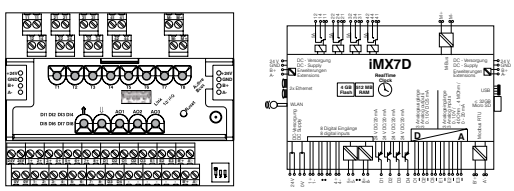
EWIO$_2$-MW-BM

(M-Bus/WLAN/BACnet/Modbus)

The EWIO$_2$-MW-BM is a powerful data logger for the energy consumption monitoring and energy monitoring in buildings, on machines, plants and systems. Two Ethernet ports with a Daisy Chain function for the further Data logger and a WLAN interface are available for the connection to the LAN oder WLAN network. In addition, the WLAN interface can be used as an access point for the configuration with a mobile device (e.g. smartphone, tablet, notebook). The EWIO$_2$-MW-BM can be integrated into a Modbus TCP or BACnet/IP network to perform control tasks. The system is paramterised, configured ad commissioned through a platform-independent web browser. The M-Bus and Modbus RTU interfaces enable to read different meters: e.g. electricity, water, gas and heat. Optionally, the measured values can either be sent from the data base (push) or read out (pull) via mail (SSL) or FTP (SFTP), from a BACnet or Modbus controller. The integrated digital and analog I/Os allow to realize different tasks in the building automation or industrial automation via a BACnet/Modbus control or the web interface. An integrated μSD memory card expands the range of functions of the EWIO$_2$-MW-BM for save settings, data and applications.

Operating voltage	24 V DC +/- 10 %
Power consumption (max.)	550 mA
Operating temperature	-5 °C to +55 °C
Network	2 x RJ45 LAN 10/100BaseT (Daisy Chain) WLAN, b/g/n, 2,4 GHz
Protocol	TCP/IP, BACnet/IP, Modbus TCP
Controller	NXP i.MX7D Dual Core ARM-A7, 1 GHz RAM 512 MB / Flash max. 32 GB / ext. 2 GB μSD
Operating system	Linux embedded, Kernel 4.14, 32 Bit
Interfaces	Extension bus, max. 6 MR-I/O bus modules Modbus RTU, max. 32 participants M-Bus (DIN EN 13757-T1,2,3), max. 80 M-Bus charges
I/Os	8 x digital inputs 3 x analog universal inputs 8 x digital outputs 3 x analog outputs

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
110934	black		

WLAN / UMTS antenna is matching accessory for

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EWIO$_2$-MW	13
EWIO$_2$-MW-BM	13
EWIO$_2$-MW	25
EWIO$_2$-W-BM	25

WLAN / UMTS antenna

Antenna with cable for the Ethernet-I/O (EWIO$_2$) and Datenlogger (EWIO$_2$-M).

- SMA plug
- Antenna with magnetic base
- Diameter magnetic base approx. 29.0 mm
- Cable length including connection 2 m
- Cable diameter approx. 2.7 mm

P/N	Color	Feature 1	Feature 2
11094830			

Matching accessory for S0/M converter 4 fold and S0/M converter double-rate

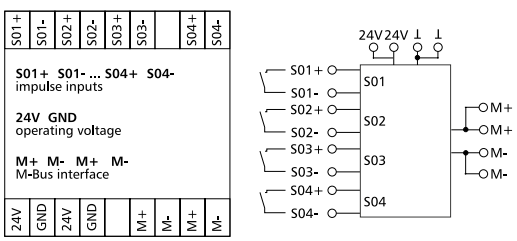
	Page
Power supply NG4 gray	20

S0/M converter 4 fold

4-channel impulse counter for counting impulses that are generated by energy counters via reed contacts or passive transistor outputs (open collectors) in proportion to the energy measured. Impulses of any potential-free contacts can be recorded for counting, for example, events up to a frequency of 15 Hz.
The impulses generated by the energy counters are recorded by means of a standardized current interface to DIN EN 62053-31 class A. The 4-channel impulse counter occupies a clear M-Bus address specified by the manufacturer.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	M-Bus
Bus interface	Two-wire bus
Transmission rate	300 to 9600 bit/s
Operating voltage	24 V DC +/- 10 % (SELV)
Current consumption	50 mA DC
Inputs	4 x S0 according to DIN EN 62053-31 Class A
Display	green LED flashes at incoming pulse
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	approx. 70 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram



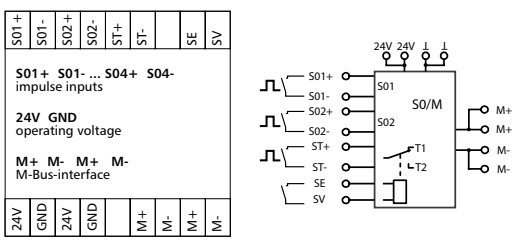
P/N	Color	Feature 1	Feature 2
110556	gray		

S0/M converter double-rate

Pulse counter to count pulses that are generated by energy counters via reed contacts or passive transistor outputs (open collector) in proportion to the measured energy. The device has 2 single S0 inputs and a third switchable S0 pulse input to record for example double rate meters. It is also possible to collect pulses from any potential-free contact to count for example events up to a frequency of 15 Hz. The pulses generated by the energy counters are recorded by means of a standardized current interface to DIN EN 62053-3. The pulse counter is feeding the pulse generator that works like a passive two-pole with a direct voltage of 24 V and with a current between 10 and 27 mA for the switching state ON (active) and with 0 to 2 mA for the switching state OFF (passive). The input ST+/ST- is a double rate meter input that stores the S0 pulses of a counter in the counter register T1 or T2 depending on the wiring of input SE/SV.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	M-Bus
Transmission rate	1200 to 19200 bit/s
Operating voltage	24 V DC
Current consumption	50 mA
Inputs	3 x S0 according to DIN EN 62053-31 Class A
Display	LED
Dimensions (W x H x D)	50 x 68 x 65 mm
Weight	about 70 g
Operating temperature range	-10 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
11055601	gray		

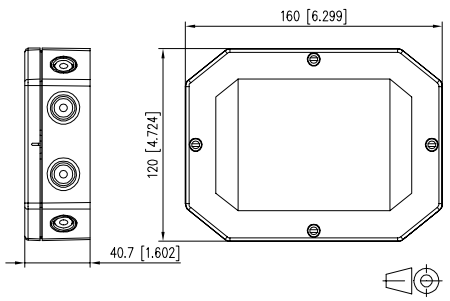
Matching accessory for S0/M converter-IP65 and T/M converter

S0/M converter-IP65

Pulse counter to count pulses that are generated by energy counters via reed contacts or passive transistor outputs (open collector) in proportion to the measured energy. The device in an IP65 housing has 2 single S0 inputs and a third switchable S0 pulse input to collect for example double rate meters. It is also possible to collect pulses from any potential-free contact to count for example events up to a frequency of 15 Hz. The pulses generated by the energy counters are recorded by means of a standardized current interface to DIN EN 62053-3. The pulse counter is feeding the pulse generator that works like a passive two-pole with a direct voltage of 24 V and with a current between 10 and 27 mA for the switching state ON (active) and with 0 to 2 mA for the switching state OFF (passive). The input ST+/ST- is a double rate meter input that stores the S0 pulses of a counter in the counter register T1 or T2 depending on the wiring of input SE/SV.

Protocol	M-Bus
Transmission rate	300 to 9600 bit/s
Operating voltage	24 V DC
Current consumption	50 mA
Inputs	3 x S0 according to DIN EN 62053-31 Class A
Display	LED
Dimensions (W x H x D)	159 x 41.5 x 12 mm
Weight	about 294 g
Operating temperature range	-10 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP65 / IP20

Dimensional drawing



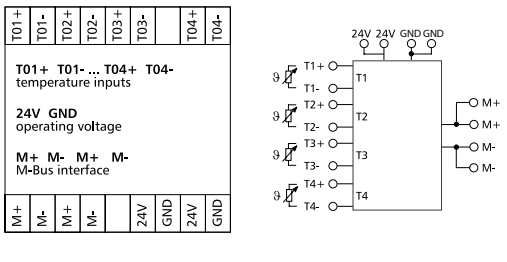
P/N	Color	Feature 1	Feature 2
11055601IP	gray		

T/M converter

Temperature converter to connect up to four different resistance temperature sensors in dual cable technology with a resolution in 0.1 K. The addressing of the four temperature sensors is done via four M-Bus addresses according to M-Bus standard DIN EN-1434-3. The temperature is directly converted in the device. The temperature converter occupies four clear M-Bus addresses specified by the manufacturer. It is possible to set for each channel one of eleven stored temperature sensor characteristics with the M-Bus configuration tool (www.metz-connect.com) or to transmit the resistance value directly.
The cable length compensation is done with the push-button assigned to the respective temperature input.
The factory setting is: -30 °C to +130 °C / PT1000.

Selectable characteristics sensor	
-30 °C to +130 °C	PT100, PT500, PT1000, Ni100, Ni1000, NTC1k8, NTC10k, NTC20k, KTY10
0 °C to +400 °C	PT100, PT1000
Resistance value	index = 1 (all sensors)
Protocol	M-Bus
Bus interface	two-wire bus
Transmission rate	300 to 9600 bit/s
Operating voltage	24 V DC (SELV)
Current consumption	50 mA DC
Inputs	4 x temperature input (see selectable characteristics or resistance input 40 to 4 MOhm)
Display	LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	approx. 70 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
110562	gray		

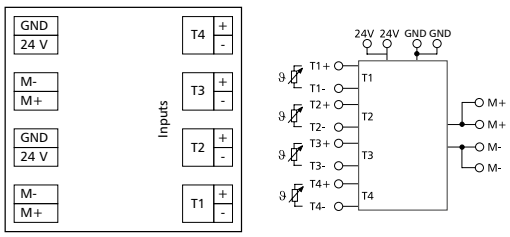
Matching accessory for T/M converter-IP65

T/M converter-IP65

Temperature converter with an IP65 housing to connect up to four different resistance temperature sensors in dual cable technology with a resolution in 0.1 K. The addressing of the four temperature sensors is done via four M-Bus addresses according to M-Bus standard DIN EN-1434-3. The temperature is directly converted in the device. The temperature converter occupies four clear M-Bus addresses specified by the manufacturer. It is possible to set for each channel one of eleven stored temperature sensor characteristics with the M-Bus configuration tool (www.metz-connect.com) or to transmit the resistance value directly. The cable length compensation is done with the push-button assigned to the respective temperature input. The factory setting is: -30 °C to 130 °C / PT1000. Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Selectable characteristics	sensor
-30 °C to +130 °C	PT100, PT500, PT1000, Ni100, Ni1000, NTC1k8, NTC10k, NTC20k, KTY10
0 °C to +400 °C	PT100, PT1000
Resistance value	index = 1 (all sensors)
Protocol	M-Bus
Bus interface	Two-wire bus
Transmission rate	300 to 9600 bit/s
Operating voltage	24 V DC (SELV)
Current consumption	50 mA DC
Inputs	4 x temperature input (see selectable characteristics or resistance input 40 to 4 MOhm)
Display	LED
Dimensions (W x H x D)	159 x 41.5 x 120 mm
Weight	approx. 350 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP65

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
110562IP	gray		

MYD IP65

The M-Bus distributor in a flush-mount IP65 housing is used in structured M-Bus cabling as well as in servicing and maintaining the operation of M-Bus structures.

- Detachable spring clamp terminal blocks with printed contact designation
- Color of contact housing same as wire color of the M-Bus cable J-Y(St)Y
- Voltage supply possible at the spring clamp terminal blocks
- Uninterrupted M-Bus current measurement possible
- Sealable cover with quick release fasteners

Protocol	M-Bus, free topology
Bus interface	MYD (free-topology bus)
Transmission rate	300 to 38400 bit/s
Rated voltage	24 V
Rated current	10 A
M-Bus voltage	36 V
M-Bus current	500 mA
Cable cross section	1.5 mm²
Wire cross section	0.321 - 1.29 mm² AWG 28 - 16
Outputs	4 x M-Bus 4 x voltage supply
Dimensions (W x H x D)	160 x 40.7 x 120 mm
Weight	330 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP65 / IP20

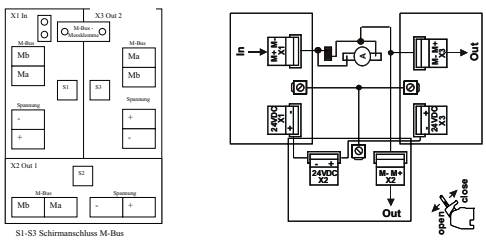
MYD-1M1V

The M-Bus distributor is used in structured M-Bus cabling as well as in servicing and maintaining the operation of M-Bus structures. Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

- Detachable spring clamp terminal blocks with printed contact designation
- Color of contact housing same as wire color of the M-Bus cable J-Y(St)Y
- Voltage supply possible at the spring clamp terminal blocks
- Uninterrupted M-Bus current measurement possible

Protocol	M-Bus, free topology
Bus interface	MYD (free-topology bus)
Transmission rate	300 to 38400 bit/s
Rated voltage	24 V
M-Bus voltage	36 V
M-Bus current	500 mA
Cable cross section	1.5 mm²
Wire cross section	0.321 - 1.29 mm² AWG 28 - 16
Outputs	2 x M-Bus 2 x voltage supply
Dimensions (W x H x D)	45 x 82.4 x 47 mm
Weight	53 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP20 / IP20

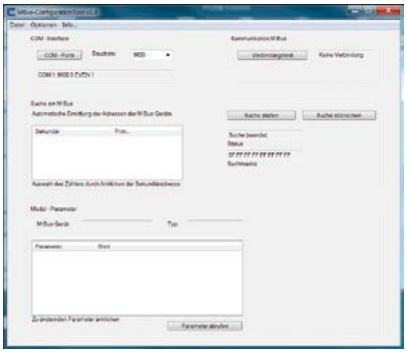
Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11056301	grau		
11056302	grau		

P/N	Color	Feature 1	Feature 2
11056303	green		

M-Bus CT software is matching accessory for



M-Bus CT software

The MBus-CT software is used for the simple and uncomplicated commissioning of M-Bus devices. The functional scope of this configuration and parameterisation software also includes the specification of primary addresses, baud rates and temperature characteristics. Thereby, it doesn't matter whether there are one or more M-Bus stations on the bus. Through the scan function, the software can also be used as a diagnostics tool.

The software does not require any installation. It can be copied to any location on the PC or a removable drive (e.g. USB stick) and started from there. An M-Bus master (level converter), which is connected to an interface of the PC (COM, USB), is required to physically reach the M-Bus participants.

Minimum system requirements: WinXP (32/64 bit), Win7 (32/64 bit), M-Bus master (level converter).

P/N	Color	Feature 1	Feature 2
www.metz-connect.com			

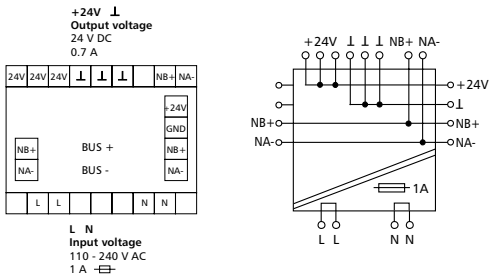
Matching accessory for NG4

NG4

The NG4 HS power supply supplies a regulated direct voltage of 24 V DC / 16 W for supplying power to the respective devices of the product family of I/O components. The secondary voltage can only be tapped at the right side of the device front at a pluggable terminal block and at the screw-type terminal blocks. The bus communication can be tapped on both sides of the device front. A parallel operation of various power supply units is not allowed. Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Field of application	LON-Bus (LF-xxx) BACnet (BMT-xxx), Modbus (MR-xxx)
Input voltage range	110 - 240 V AC, 50 / 60 Hz
Internal fuse, soldered fuse	T 1,0 A/250 V
Output / power	16 W
Output / voltage	+24 V DC (SELV)
Output / current	700 mA
Load and control accuracy	+/-3 %
Mains failure backup	smaller than 40 ms
Display	green LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	108 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20
Terminal blocks	
Wire cross section solid wire	max. 4 mm²
Wire cross section stranded wire	max. 2,5 mm²
Wire diameter	0.3 mm up to max. 2.7 mm

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
110561	gray		with jumper plug

Notes

METZ CONNECT

We realize ideas

I/O components

I/O components with BACnet/IP, Modbus TCP, BACnet MS/TP-, Modbus RTU, M-Bus, LON®- and CAN technologies

Automation of buildings, machines and systems

In order to safely and efficiently operate today not only large but also small buildings, it has become indispensable to automate the most important service functions such as monitoring, air conditioning and lighting systems. This, however, leads to rising demands in terms of building installation, which in general can no longer be met by conventional techniques.

This is the reason why building automation relies ever more on serial bus systems controlling the transmission of information between sensors and actuators, switches and higher control systems.

Contents | I/O components

I/O components

These bus systems offer different advantages:

- ease of planning and installing of building functions
- strong flexibility in the use of buildings since functions can be programmed freely and can thus be re-configured at any time.

Thanks to the availability of microcontrollers and to the reduction of the sizes and prices of the installed electronic components, automation has now also found its way into areas, which due to the implied costs were not suited for field bus solutions before. In particular in the linking of sensors, actuators and control units within machines and of devices used for measuring, control and monitoring systems, serial bus systems offer strong advantages.

Matching accessory for EWIO$_2$ / EWIO$_2$-BM

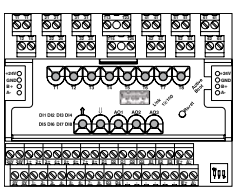
EWIO$_2$

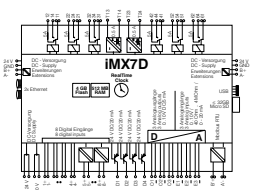
(Ethernet-I/O)

The EWIO$_2$ is a compact Ethernet I/O controller based on Linux, which connects digital and analouge signals from the sensor and actuator level with an IP network. Simple tasks in building and industrial automation can be implemented with logic functions integrated onto the webserver. Immediately executable applications can also be created via the web interface in a displayed Linux Shell. Two Ethernet-Ports with a Daisy Chain function are available for the connection to the LAN network. The system is parameterised, configured and commissioned through a platform-independent web browser. For the upgrade of the sensor/actuator level, MR-I/O upgrade modules can be connected using plug & play jumper plugs and wiring to a second interface of EWIO$_2$, Modbus RTU devices. An integrated µSD memory card expands the range of functions of the EWIO$_2$ for save settings, data and applications.

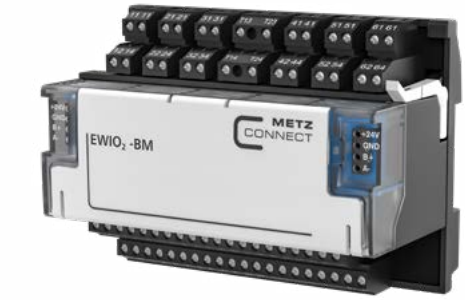
Operating voltage	24 V DC +/- 10 %
Power consumption (max.)	400 mA
Operating temperature	-5 °C to +55 °C
Network	2 x RJ45 LAN 10/100BaseT (Daisy Chain)
Protocol	TCP/IP
Controller	NXP i.MX7D Dual Core ARM-A7, 1 GHz RAM 512 MB / Flash max. 32 GB / ext. 2 GB µSD
Operating system	Linux embedded, Kernel 4.14, 32 Bit
Interfaces	Extension bus, max. 6 MR-I/O bus modules Modbus RTU, max. 32 participants
I/Os	8 x digital inputs 3 x analog universal inputs 10 x digital outputs 3 x analog outputs

Wiring/Principle diagram





P/N	Color	Feature 1	Feature 2
110905	black		



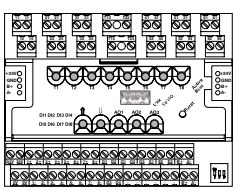
EWIO$_2$-BM

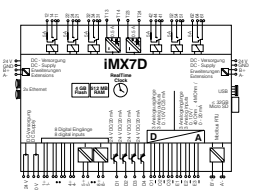
(Ethernet-I/O/BACnet/Modbus)

Depending on the configuration, the EWIO$_2$-BM is a compact Modbus and/or BACnet Server, which connects digital and analouge signals from the sensor and actuator level with a Modbus TCP and/or BACnet IP network. With a Modbus or BACnet Client, various tasks can be realised in building and industrial automation. Simple automation tasks can be implemented with an integrated logic function. Two Ethernet Ports with a Daisy Chain function are available for the connection to the LAN network and the chain further Ethernet I/O devices. The system is parameterised, configured and commissioned through a platform-independent web browser. For the upgrade of the sensor/actuator level, MR-I/O upgrade modules can be connected using plug & play jumper plugs and wiring to a second interface of EWIO$_2$-BM, Modbus RTU devices. An integrated µSD memory card expands the range of functions of the EWIO$_2$-BM for save settings, data and applications.

Operating voltage	24 V DC +/- 10 %
Power consumption (max.)	400 mA
Operating temperature	-5 °C to +55 °C
Network	2 x RJ45 LAN 10/100BaseT (Daisy Chain)
Protocol	TCP/IP, BACnet/IP, Modbus TCP
Controller	NXP i.MX7D Dual Core ARM-A7, 1 GHz RAM 512 MB / Flash max. 32 GB / ext. 2 GB µSD
Operating system	Linux embedded, Kernel 4.14, 32 Bit
Interfaces	Extension Bus, max. 6 MR-I/O bus modules Modbus RTU, max. 32 participants
I/Os	8 x digital inputs 3 x analog universal inputs 10 x digital outputs 3 x analog outputs

Wiring/Principle diagram





P/N	Color	Feature 1	Feature 2
110904	black		

Matching accessory for EWIO$_2$-W / EWIO$_2$-W-BM

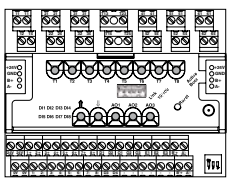
EWIO$_2$-W

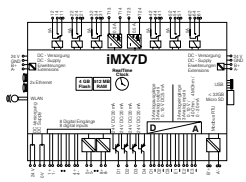
(Ethernet-I/O/WLAN)

The EWIO$_2$-W is a compact Ethernet I/O controller based on Linux, which connects digital and analouge signals from the sensor and actuator level with an IP network. Simple tasks in building and indutrial automation can be implemented with logic functions integrated onto the webserver. Immediately executable applications can also be created via the web interface in a displayed Linux Shell. Two Ethernet-Ports with a Daisy Chain function for the chain further Ethernet I/O devices and a WLAN interface are available for the connection to the LAN or WLAN network. In addition, the WLAN interface can be used as an access point for the configuration with a mobile device (e.g. smartphone, tablet, notebook). The system is parameterised, configured and commissioned through a platform-independent web browser. For the upgrade modules can be connected using plug & play jumper plugs and wiring to a second interface of EWIO$_2$-W, Modbus RTU devices.
An integrated µSD memory card expands the range of functions of the EWIO$_2$-W for save settings, data and applications.

Operating voltage	24 V DC +/- 10 %
Power consumption (max.)	400 mA
Operating temperature	-5 °C to +55 °C
Network	2 x RJ45 LAN 10/100BaseT (Daisy Chain) WLAN, b/g/n, 2,4 GHz
Protocol	TCP/IP
Controller	NXP i.MX7D Dual Core ARM-A7, 1 GHz RAM 512 MB / Flash max. 32 GB / ext. 2 GB µSD
Operating system	Linux embedded, Kernel 4.14, 32 Bit
Interfaces	Extension bus, max. 6 MR-I/O bus modules Modbus RTU, max. 32 participants
I/Os	8 x digital inputs 3 x analog universal inputs 10 x digital outputs 3 x analog outputs

Wiring/Principle diagram





P/N	Color	Feature 1	Feature 2
110906	black		

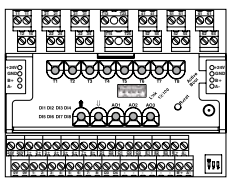
EWIO$_2$-W-BM

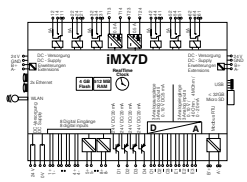
(Ethernet-I/O/WLAN/BACnet/Modbus)

Depending on the configuration, the EWIO$_2$-W-BM is a compact Modbus and/or BACnet/IP network. With a Modbus or BACnet Client, various tasks can be realised in building and industrial automation. Simple automation tasks can be implemented with an integrated logic function. Two Ethernet-Ports with a Daisy Chain function are available for the connection to the LAN or WLAN network. In addition, the WLAN interface can be used as an access point for the configuration with a mobile device (e.g. smartphone, tablet, notebook). The system is parameterised, configured and commissioned through a platform-independent web browser. For the upgrade of the sensor/actuator level, MR-I/O upgrade modules can be connected using plug & play jumper plugs and wiring to a second interface of EWIO$_2$-W-BM, Modbus RTU devices.
An integrated µSD memory card expands the range of functions of the EWIO$_2$-W-BM for save settings, data and applications.

Operating voltage	24 V DC +/- 10 %
Power consumption (max.)	400 mA
Operating temperature	-5 °C to +55 °C
Network	2 x RJ45 LAN 10/100BaseT (Daisy Chain) WLAN, b/g/n, 2,4 GHz
Protocol	TCP/IP, BACnet/IP, Modbus TCP
Controller	NXP i.MX7D Dual Core ARM-A7, 1 GHz RAM 512 MB / Flash max. 32 GB / ext. 2 GB µSD
Operating system	Linux embedded, Kernel 4.14, 32 Bit
Interfaces	Extension bus, max. 6 MR-I/O bus modules Modbus RTU, max. 32 participants
I/Os	8 x digital inputs 3 x analog universal inputs 10 x digital outputs 3 x analog outputs

Wiring/Principle diagram





P/N	Color	Feature 1	Feature 2
110909	black		

Matching accessory for MR-DI4

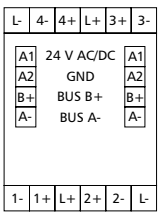
Matching accessory for MR-DI4-IP65

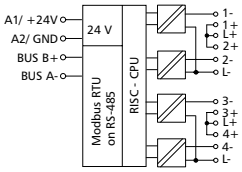
MR-DI4

The Modbus module with 4 digital inputs was developed for decentralized switching tasks. It is suitable for detecting potential-free switch states, for example electrical limit switches on vent valves or auxiliary contacts of power contactors. The inputs can be operated by means of potential-free switches or contacts or used as voltage inputs. The inputs can be scanned by means of standard registers via a Modbus master. Module address, bit rate and parity are set with two rotary switches on the front or by software.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

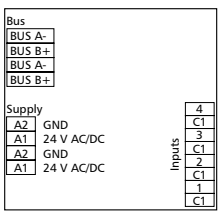
Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	50 mA (AC) / 20 mA (DC)
Relative duty cycle	100 %
Inputs	4 x digital
Input / voltage	30 V AC/DC
Input / high signal	more than 7 V AC/DC
Display	Green, red and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	95 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

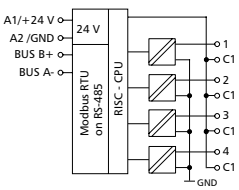
Wiring/Principle diagram





P/N	Color	Feature 1	Feature 2
1108341319	gray	4x IN (U or contact)	





MR-DI4-IP65

The Modbus module in an IP65 housing with 4 digital inputs was developed for decentralized switching tasks. It is suitable for detecting potential-free switch states from electrical limit switches and their external status display such as fire dampers or vent valves. The inputs can be operated by means of potential-free switches or contacts or used as voltage inputs. The inputs can be scanned by means of standard registers via a Modbus master. Module address, bit rate and parity are set with two rotary switches or by software.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	50 mA (AC) / 20 mA (DC)
Relative duty cycle	100 %
Inputs	4 x digital
Input / voltage	30 V AC/DC
Input / high signal	more than 7 V AC/DC
Display	Green, red and yellow LED
Dimensions (W x H x D)	160 x 40.7 x 120 mm
Weight	300 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP65 / IP20

Wiring/Principle diagram

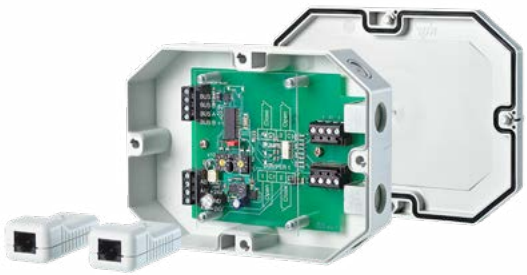
P/N	Color	Feature 1	Feature 2
1108341319IP	gray	4x IN (U or contact)	

Matching accessory for MR-DI4-IP65 with external display

	Page
Power supply NG4 gray	20

Matching accessory for MR-DI10

	Page
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

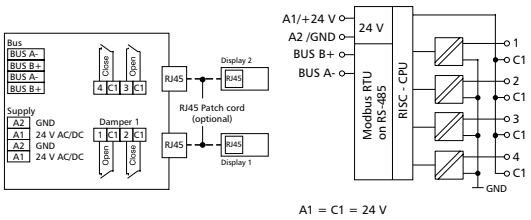


MR-DI4-IP65 with external display

The Modbus module in a surface mounting housing with 4 digital inputs was developed for decentralized switching tasks. It is suitable for detecting potential-free switch states from electrical limit switches and their external status display such as fire dampers or vent valves. The inputs can be operated by means of potential-free switches or contacts or used as voltage inputs. The inputs can be scanned by means of standard registers via a Modbus master. Module address, bit rate and parity are set with two rotary switches or by software.
The device has two externally connectable display modules.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	50 mA (AC) / 20 mA (DC)
Relative duty cycle	100 %
Inputs	4 x digital
Input / voltage	30 V DC
Input / high signal	more than 7 V AC/DC
Display (internal)	Green, red and yellow LED
Display (external)	multi color LED
Dimensions (W x H x D)	160 x 40.7 x 120 mm
Weight	300 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP20 / IP20

Wiring/Principle diagram



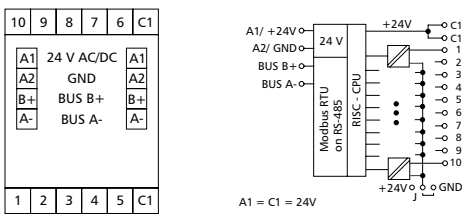
P/N	Color	Feature 1	Feature 2
1108341319O1IP	gray	4x IN (U or contact)	

MR-DI10

The Modbus module with 10 digital inputs was developed for decentralized switching tasks. It is suitable for detecting potential-free switch states, for example electrical limit switches on vent valves or auxiliary contacts of power contactors. The inputs can be used as contact or voltage inputs. The inputs can be scanned by means of standard registers via a Modbus master. Module address, bit rate and parity are set with two rotary switches on the front or by software.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 Bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	200 mA (AC) / 75 mA (DC)
Relative duty cycle	100 %
Inputs	10 x digital
Input / voltage	30 V DC
Input / high signal	more than 7 V AC/DC
Display	Green, red and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	83 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
1108311319	gray	10x IN (U or contact)	

Matching accessory for MR-SI4

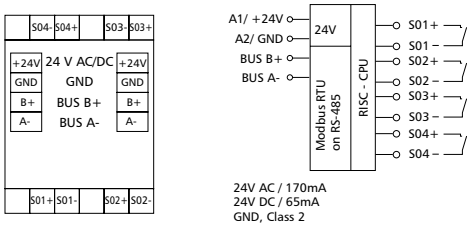
	Page
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

MR-SI4

The Modbus module with 4 S0 inputs to DIN EN 62053-31 class A was developed for decentralized switching tasks. It is suitable for counting S0 counter pulses. This allows very good integration of the module into an energy controlling system. In case of a power failure, the last counter readings are saved. The inputs can be scanned by means of standard registers via a Modbus master. Module address, bit rate and parity are set with two rotary switches on the front or by software. Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 Bit/s
Operating voltage	20 V to 28 V AC/DC (SELV)
Current consumption	170 mA (AC) / 65 mA (DC)
Relative duty cycle	100 %
Inputs	4 x S0 input, class A
Input / acc. to standard	DIN EN 62053-31
Display	Green, red and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	83 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
11083913	gray	4x IN (S0 impulse)	

Matching accessory for MR-AI8

	Page
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

Matching accessory for MR-CI4

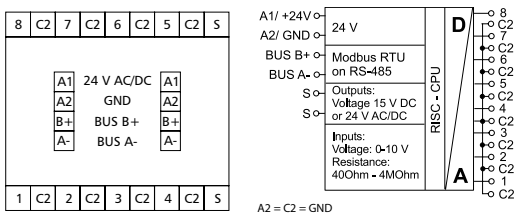
	Page
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

MR-AI8

The Modbus module with 8 individually configurable resistance or voltage inputs was developed for decentralized switching tasks. It is suitable for detecting resistances and voltages of, for example, passive and active temperature sensors, electrical vent and mixing valves, valve positions, etc. The inputs can be configured universally by means of standard registers via a Modbus master. Module address, bit rate and parity are set with two rotary switches on the front or by software.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	65 mA (AC) / 25 mA (DC)
Relative duty cycle	100 %
Inputs	8 x individually configurable
Input / resistance	40 Ohm to 4 MOhm
Input / voltage	0 to 10 V DC
Input / resolution	10 mV (0 to 100 %)
Input / error	approx. +/- 100 mV
Display	Green and red LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	104 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram



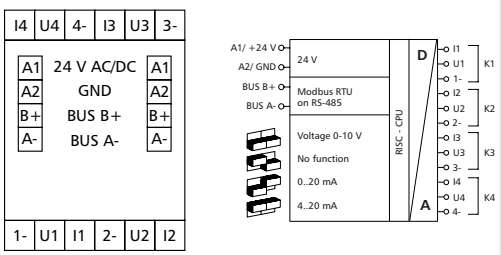
P/N	Color	Feature 1	Feature 2
11083213	gray	8x IN (U or R)	

MR-CI4

The Modbus module with 4 analog inputs was developed for decentralized switching tasks. It is suitable for detecting currents and voltages of, for example, active temperature sensors, electrical vent and mixing valves, valve positions, etc. Each input can be set as current or voltage input by DIP switches on the front. The inputs can be scanned with standard registers via a Modbus master. The module address, the baud rate and the parity are set with two rotary switches on the front or by software.
Suitable for decentralized mounting on TH35 rails according to IEC 60715 in electrical distribution cabinets.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 Bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	25 mA (AC) / 10 mA (DC)
Relative duty cycle	100 %
Inputs	4 x analog
Input / voltage (U1-U4)	0 V to 10 V DC
Input / resolution	1 mV (0 to 100 %)
Input / error	10 mV
Input / current (I1-I4)	0 (4) to 20 mA DC
Input / resolution	2 µA
Input / error	20 µA
Display	Green, red LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	84 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
1108401332	gray	4x IN (U or I) activ	

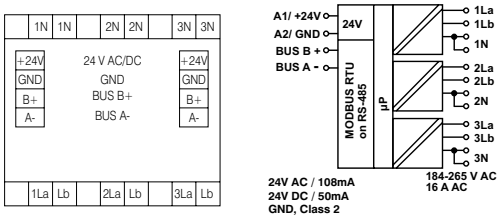
Matching accessory for MR-SM3

MR-SM3

The module MR-SM3 is a smart meter component for building automation. Current, voltage, power and many other values can be captured by three 230 Volt current circuits. In addition, the device provides monitoring functions of for example asymmetry, phase failure, phase sequence, overvoltage and undervoltage. These values can be queried via a Modbus-Master. Module address, bit rate and parity are set with two rotary switches on the front or by software.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	108 mA (AC) / 50 mA (DC)
Relative duty cycle	100 %
Inputs	3 x analog
Input / voltage	230 V AC -20 to +15 %
Input / voltage range	184 to 265 V AC
Input / current	0 to 16 A AC
Display	LED green, red
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	110 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
11084113	gray		

Matching accessory for MR-DO4

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Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

Matching accessory for MR-DOA4

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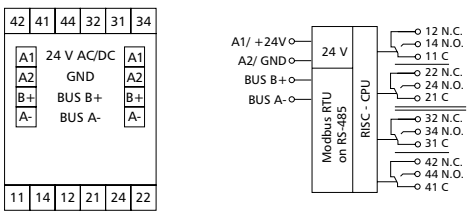
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

MR-DO4

The Modbus module with 4 digital outputs was developed for decentralized switching tasks. It is suitable for switching electrical components, such as motors, contactors, lamps, louvers, etc. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The module is provided with a manual control for manually switching the relays. The outputs can be switched by means of standard registers via a Modbus master. Module address, bit rate and parity are set with two rotary switches on the front or by software.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	200 mA (AC) / 70 mA (DC)
Relative duty cycle	100 %
Output / contacts	4 changeover contacts (4PDT)
Output / switching voltage	250 V AC
Output / continuous current	5 A / output
Output / switching frequency	360 cycles/h
Display	Green, red and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	95 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram



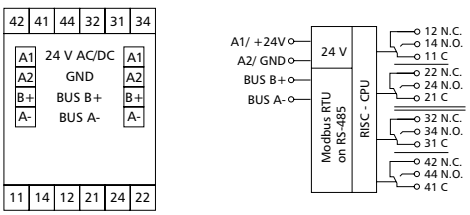
P/N	Color	Feature 1	Feature 2
1108361321	gray	4x OUT (relay CO)	manual/ automatic

MR-DOA4

The Modbus module with 4 digital outputs was developed for decentralized switching tasks. It is suitable for switching electrical components, such as motors, contactors, lamps, louvers, etc. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The outputs can be switched by means of standard registers via a Modbus master. Module address, bit rate and parity are set with two rotary switches on the front or by software.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 Bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	200 mA (AC) / 70 mA (DC)
Relative duty cycle	100 %
Output / contacts	4 changeover contacts (4PST)
Output / switching voltage	250 V AC
Output / continuous current	5 A / output
Output / switching frequency	360 cycles/h
Display	Green, red and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	95 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
110836132101	gray	4x OUT (relay CO)	

Matching accessory for MR-TO4

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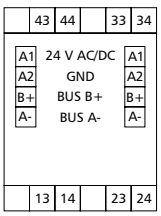
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

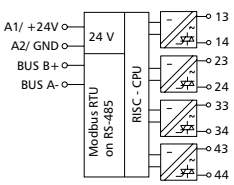
MR-TO4

The Modbus module with 4 digital triac outputs was developed for decentralized switching tasks. It is suitable for switching electrical components, such as relays, contactors, HVAC valves, etc.
The outputs can be switched by means of standard registers via a Modbus master. In addition, the outputs can be overridden manually by means of switches on the device. Module address, bit rate and parity are set with two rotary switches on the front or by software.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	100 mA (AC) / 40 mA (DC)
Relative duty cycle	100 %
Output / contacts	4 digital outputs (triac)
Output / switching voltage	24 V AC up to max. 250 V AC
Output / continuous current	0.5 A / output
Output / switching current	0.8 A (less than 30 s)
Output / switch-on current	10 A (less than 20 ms)
Display	Green, red and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	95 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram





P/N	Color	Feature 1	Feature 2
11083013	gray	4x OUT (triac)	

Matching accessory for MR-AOP4

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Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

Matching accessory for MR-AO4

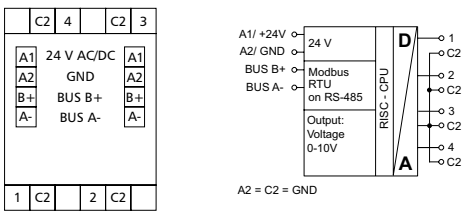
	Page
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

MR-AOP4

The Modbus module with 4 analog outputs was developed for decentralized switching tasks. It is suitable as encoder for control variables, for example for electrical vent and mixing valves, valve positions, etc.
The outputs can be output by means of standard registers via a Modbus master. Each output can be set for automatic or manual operation by means of 4 potentiometers at the front.
Module address, bit rate and parity are set with two rotary switches on the front or by software.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	50 mA (AC) / 20 mA (AC)
Relative duty cycle	100 %
Outputs	4 x analog
Output / voltage	0 V to 10 V DC
Output / current	5 mA at 10 V DC
Output / resolution	10 mV / digit
Display	Green and red LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	72 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram



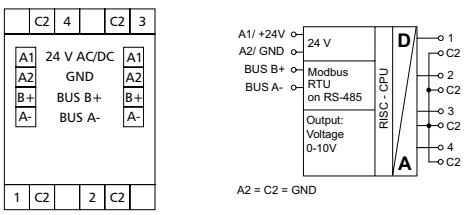
P/N	Color	Feature 1	Feature 2
1108371302	gray	4x OUT (U)	manual/ automatic

MR-AO4

The Modbus module with 4 analog outputs was developed for decentralized switching tasks. It is suitable as encoder for control variables, for example for electrical vent and mixing valves, valve positions, etc.
The outputs can be output by means of standard registers via a Modbus master. Module address, bit rate and parity are set with two rotary switches on the front or by software.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	50 mA (AC) / 20 mA (AC)
Relative duty cycle	100 %
Outputs	4 x analog
Output / voltage	0 V to 10 V DC
Output / current	5 mA to 10 V DC
Output / resolution	10 mV / Digit
Display	Green and red LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	72 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
1108351302	gray	4x OUT (relay CO)	

I/O components

C | Logline

Matching accessory for MR-Multi-I/O

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Power supply NG4 gray	20
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Jumper plug for I/O components	71

Matching accessory for MR-AIO4/2-IP65

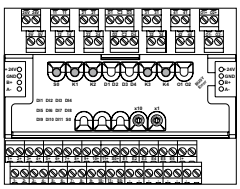
	Page
Power supply NG4 gray	20

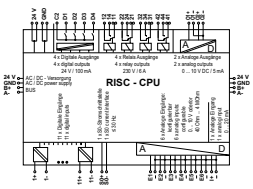
MR-Multi-I/O

The Modbus module MR-Multi I/0 is a compact and rapidly to install solution to connect digital and analog signals from the actor and sensor level directly to a control unit in building automation via Modbus RTU protocol. 29 I/Os, some of them are configurable, are available for different tasks. With strong inductive loads, we recommend protecting the relay contacts with an RC element. The inputs and outputs can be switched and scanned by means of standard registers via a Modbus master. Module address, bit rate and parity are set with two rotary switches on the front or by software.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

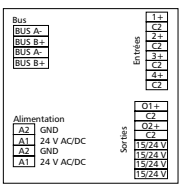
Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 bis 115200 Bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	220 mA (AC) / 110 mA (DC)
Relative duty cycle	100 %
Inputs / digital	11 x Optocoupler, galvanically isolated
Input / S0	1 x per DIN EN 62053-31, Class A
Inputs analog	configurable
for resistance or	6 x 40 Ohm to 4 MOhm
for voltage	6 x 0 to 10 V DC
Input / current	1 x analog 0 to 20 mA DC
Dimensions (W x H x D)	125 x 93 x 60.81 mm, 7 TE, TH35
Weight	385 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Protection class	IP20

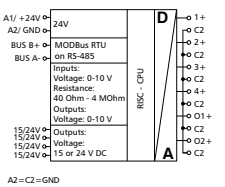
Wiring/Principle diagram





P/N	Color	Feature 1	Feature 2
11084313	gray		





P/N	Color	Feature 1	Feature 2
11084213IP	gray	4x IN (U or R)	

MR-AIO4/2-IP65

The Modbus module in an IP65 housing with 4 individually configurable resistance or voltage inputs and 2 analog outputs was developed for decentralized tasks. The inputs are suitable for detecting resistances and voltages of for example, passive and active temperature sensors, electrical vent and mixing valves, valve positions, etc.
The outputs are suitable as encoder for control variables for example for electrical vent and mixing valves, valve positions, etc. Via a Modbus master the inputs can be configured universally by standard registers and the outputs can be set.
The module address, the bit rate and the parity are set with two rotary switches or by software.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire-bus)
Transmission rate	1200 to 115200 Bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	90 mA (AC) / 35 mA (DC)
Relative duty cycle	100 %
Inputs	4 x individually configurable
Input / resistance	40 Ohm to 4 MOhm
Input / voltage	0 to 10 V DC
Outputs	2 x analog
Output / voltage	0 V to 10 V DC
Output / current	5 mA at 10 V DC
Display	LED green, red, yellow
Dimensions (W x H x D)	160 x 40.7 x 120 mm
Weight	104 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP65 / IP20

Wiring/Principle diagram

Matching accessory for MR-DIO4/2

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Matching accessory for MR-AIO4/2-IP65

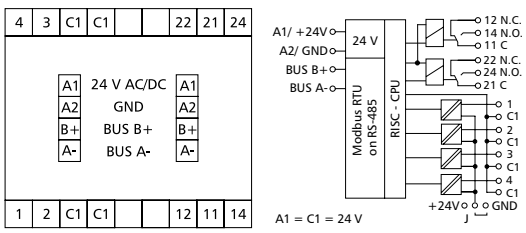
	Page
Power supply NG4 gray	20

MR-DIO4/2

The Modbus module with 4 digital inputs and 2 relay outputs with manual control was developed for decentralized switching tasks. It is suitable for accommodating, for example, light switches and window contacts in a room, switching two light strips or controlling louvers. It can also be used to control 2 motorized fire dampers. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The inputs can be used as contact or voltage inputs. The inputs and outputs can be switched and scanned by means of standard registers via a Modbus master. Module address, bit rate and parity are set with two rotary switches on the front or by software.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	200 mA (AC) / 75 mA (DC)
Relative duty cycle	100 %
Inputs	4 x digital
Input / voltage	30 V DC
Input / high signal	more than 8 V AC/DC
Output / contacts	2 changeover contacts (DPDT)
Output / switching voltage	250 V AC
Output / continuous current	16 A / output
Output / switch-on current	80 A (less than 20 ms)
Display	Green, red and yellow LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	126 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram



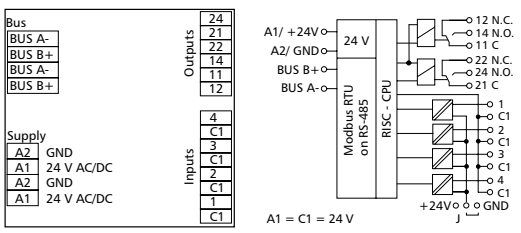
P/N	Color	Feature 1	Feature 2
1108331326	gray	4x IN (U or contact)	2x OUT (relay CO)
110833132601	gray	4x IN (U or contact)	2x OUT (relay NO)

MR-DIO4/2-IP65

The Modbus module in an IP65 housing with 4 digital inputs and 2 relay outputs was developed for decentralized switching tasks. It is suitable for accommodating, for example, light switches and window contacts in a room, switching two light strips or controlling louvers. It can also be used to control 2 motorized fire dampers. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The inputs can be used as contact or voltage inputs. The inputs and outputs can be switched and scanned by means of standard registers via a Modbus master. Module address, bit rate and parity are set by means of two address switches.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	200 mA (AC) / 75 mA (DC)
Relative duty cycle	100 %
Inputs	4 x digital
Input / voltage	30 V DC
Input / high signal	more than 8 V AC/DC
Output / contacts	2 changeover contacts (DPDT)
Output / contacts	250 V AC
Output / continuous current (UL)	8 A / output
Output / continuous current (VDE)	10 A / output
Output / switch-on current	80 A (less than 20 ms)
Display	Green, red and yellow LED
Dimensions (W x H x D)	160 x 40 x 120 mm
Weight	350 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP65 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
1108331326IP	gray	4x IN (U or contact)	2x OUT (relay CO)

Matching accessory for MR-DIO4/2-IP65 230 V

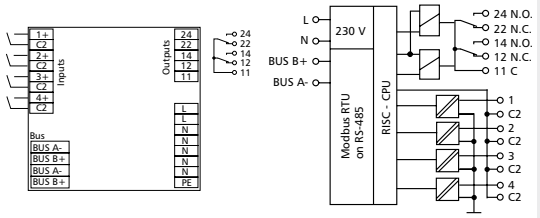
Matching accessory for MR-TP

MR-DIO4/2-IP65 230 V

The Modbus module inan IP65 housing with 4 digital inputs and 2 relay outputs with manual control was developed for decentralized switching tasks. It is suitable for accommodating, for example, light switches and window contacts in a room, switching two light strips or controlling louvers. It can also be used to control 2 motorized fire dampers. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The inputs have to be connected to potentialfree contacts. The inputs and outputs can be switched and scanned by means of standard registers via a Modbus master. Module address, bit rate and parity are set with two rotary switches. Bit rate and parity are also set by software.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 two wire bus with potential equalization in bus or line topology terminate with 120 Ohm
Transmission rate	1200 to 115200 bit/s, Factory setting 19200 bit/s Even
Operating voltage	230 V +/- 10 %
Current consumption	12 mA
Relative duty cycle	100 %
Inputs Digital inputs	4
Voltage input	30 V AC/DC
High signal recognition	>8 V AC/DC
Outputs Output contacts	2 changeover contacts (DPST)
Switching voltage max.	250 V AC
Continuous current max.	10 A per relay (65 A for 20 ms) max. current via terminal „11“ 10 A)
Housing Dimensions W x H x D	160 x 40.7 x 120 mm
Weight	350 g
Mounting position	any
Mounting	directly on a flat surface 8 knock-out openings for M12 and M16 cable glands

Wiring/Principle diagram



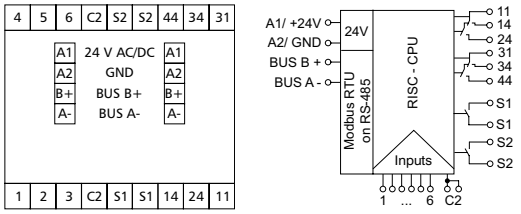
P/N	Color	Feature 1	Feature 2
1108330526IP	gray		

MR-TP

The Modbus three-point module with 6 digital inputs, 2 two-level relay outputs and 2 digital outputs was developed for decentralized switching tasks. It is suitable for switching, for example, multi-level pumps and fans or louvers. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The inputs and outputs can be switched and scanned by means of standard registers via a Modbus master. The input terminals 1 to 6 are wired with the C2 terminals on two poles to potential-free switches or contacts. The module has a manual control for the outputs. Module address, bit rate and parity are set with two rotary switches on the front or by software.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	100 mA (AC) / 40 mA (DC)
Relative duty cycle	100 %
Inputs	6 x digital contacts
Input / Voltage	30 V DC
Input / switching threshold	4,5 V DC
Outputs (relay)	2 x two-level
Output / switching voltage	250 V AC
Output / current	6 A / output
Outputs (digital)	2 NO contacts (DPST-NO) (photoMOS)
Output / switching voltage	40 V AC/DC
Output / current	100 mA
Display	Green, red and yellow LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	125 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
11083813	gray	6x IN (contact)	2x OUT (relay CO), 2x OUT (opto NO)

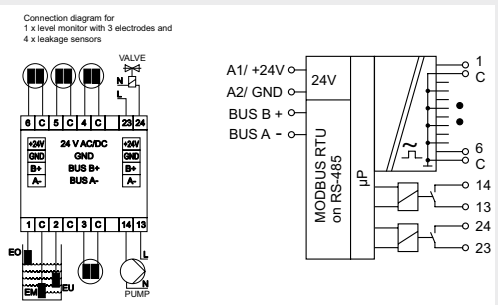
Matching accessory for MR-LD6

MR-LD6

The Modbus module with 6 analog inputs and 2 relay outputs was developed for decentralized switching tasks. Suitable to monitor electrodes of leakage sensors or the fill level of fluid containers and to switch pumps or magnetic valves. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The resistance of the conductive fluid is measured when the electrodes are immersed. It is also possible to signal a cable break (requires sensor LKS-ZD). The module can be operated independently or via a Modbus master. Inputs and outputs can be switched and scanned via standard registers. Module address, bit rate and parity are set with two rotary switches on the front or by software.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	Modbus RTU
Address range	00 to 99
Bus interface	RS485 (two-wire bus)
Transmission rate	1200 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	80 mA (AC) / 43 mA (DC)
Relative duty cycle	100 %
Input / contacts 1 to 6	connection of the electrodes
Input / contacts C	common reference potential
Internal resistance	20 kOhm
Sinus voltage	3 Veff, 70 Hz at resistance measurement
Measuring accuracy	+/-10 % with sensor resistance 4 to 40 kOhm +/- 20 % with sensor resistance 2 to 100 kOhm
Pulse voltage	+/-16 V at wire break monitoring
Zener diodes	6.2 to 10 V can be used as line termination
Lines capacity	40 nF max. equates 400 m at 100 nF/km
Measuring interval	1.5 s
Output / contacts	2 NO contacts (SPST-NO)
Output / switching voltage	250 V AC
Output / continuous current	6 A / output

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
11084413	gray		

Submersible Electrode TE1 and Leakage sensor LKS1, LKS-ZD is matching accessory for

	Page
MR-LD6	37
ENW-E12	119

Submersible Electrode TE1

One-pole submersible electrode made of stainless steel in plastic housing. To monitor filling levels of conductive liquids. To be connected to the level sensor ENW-E12 P/N 110308xx. Contents of the packaging: 1 submersible electrode, 1 sleeve, 1 strain relief

Connecting cable	H 07 RN-F 1.5 mm²
Submersible electrode	High-alloy steel Material number 1.4104 (C12CrMoS12)
Dimensions (diameter x length)	23 mm x 130 mm

P/N	Color	Feature 1	Feature 2
110324	silver		

Leakage sensor LKS1, LKS-ZD

Leakage sensors are connected to level monitors such as ENW-E12 (P/N 110308xx) and MR-LD6 (11084413) to detect conductive liquids, e.g. in the event of a pipe break. If an electrically conductive liquid (e.g. water) enters the area between the two electrodes, an electrical connection will be created which triggers the alarm on the connected level monitor ENW-E12 or MR-LD6. The leakage sensor LKS-ZD also includes the feature for wire breakage monitoring on the leakage monitoring device MR-LD6. Variants: Color grey

Variants:
- LKS1, without wire break monitoring
- LKS-ZD, with wire break monitoring

Wire breakage monitoring unit	no
Connecting cable	2 x 0.75 mm²
Cable length	2 m
Electrode	Stainless steel
Dimensions (W x H x D)	44 x 16 x 29 mm
Mounting	Mounting with 1 screw

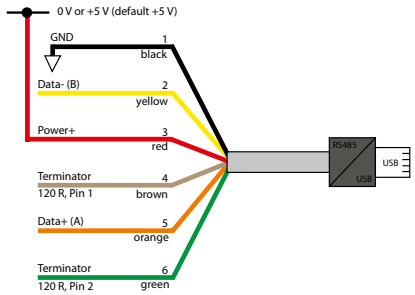
P/N	Color	Feature 1	Feature 2
110329	gray/black	LKS1	
11032902	gray/black	LKS-ZD	wire break monitoring

USB/RS485 converter

The USB to RS485 converter allows to connect devices with serial UART interface quickly and easily to USB. The transparent USB plug includes LEDs to view the Tx and Rx traffic on the cable. The other end of the cable consists of bare, tinned wires. Combined with our configuration software, the Modbus devices of the MR series can be connected and configured directly. The converter is USB and USB 2.0 full speed compatible and supports a data transfer rate up to 3 Mbps. The required USB-RS485 drivers are available to download for free from http://www.ftdichip.com.

Cable end 1	USB plug, transparent
Cable end 2	bare wires, tinned
USB performance	2.0, full speed compatible
RS485 acc.	EIA/TIA 485
Cable length	1.8 m
Data transfer rates	300 bit/s to 3 mbit/s
Handshake	X-On / X-Off (software)
Visual indication Tx and Rx	LED integrated in USB plug
Weight	80 g
Operating temperature range	-40 °C to +85 °C

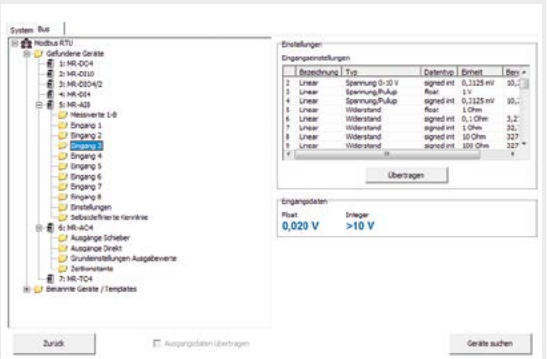
Principle diagram



P/N	Color	Feature 1	Feature 2
11080101	gray		

Modbus configuration tool is matching accessory for

	Page
MR I/O-Module	ab 26
USB/RS485 converter	39



Modbus configuration tool

Simple configuration and test program for the METZ CONNECT Modbus RTU I/O-Module.

- Search all connected devices (no special addresses)
- Selected search (specific address range)
- Templates for METZ CONNECT Modbus RTU MR I/O-Module
- Setting the transmission rate and parity
- Readout of input signals and control of Outputs on METZ CONNECT Modbus RTU I/O-Modulen

P/N	Color	Feature 1	Feature 2
www.metz-connect.com			

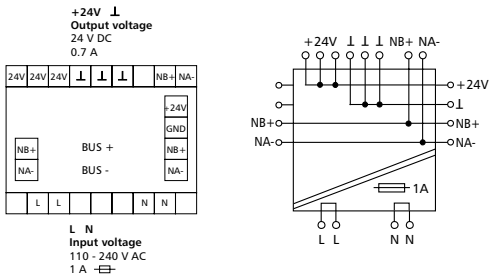
Matching accessory for NG4

NG4

The NG4 HS power supply supplies a regulated direct voltage of 24 V DC / 16 W for supplying power to the respective devices of the product family of I/O components. The secondary voltage can only be tapped at the right side of the device front at a pluggable terminal block and at the screw-type terminal blocks. The bus communication can be tapped on both sides of the device front. A parallel operation of various power supply units is not allowed. Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Field of application	LON-Bus (LF-xxx) BACnet (BMT-xxx), Modbus (MR-xxx)
Input voltage range	110 - 240 V AC, 50 / 60 Hz
Internal fuse, soldered fuse	T 1,0 A/250 V
Output / power	16 W
Output / voltage	+24 V DC (SELV)
Output / current	700 mA
Load and control accuracy	+/-3 %
Mains failure backup	smaller than 40 ms
Display	green LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	108 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20
Terminal blocks	
Wire cross section solid wire	max. 4 mm²
Wire cross section stranded wire	max. 2.5 mm²
Wire diameter	0.3 mm up to max. 2.7 mm

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
110561	gray		with jumper plug

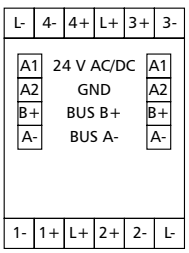
Matching accessory for BMT-DI4

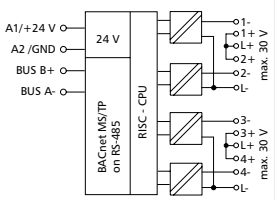
BMT-DI4

The BACnet MS/TP module with 4 digital inputs was developed for decentralized switching tasks. It is suitable for detecting potential-free switch states, for example electrical limit switches on vent valves or auxiliary contacts of power contactors. The inputs can be operated by means of potential-free switches or contacts or used as voltage inputs. The inputs can be scanned by means of standard objects via a BACnet client. The module is addressed and the baud rate is set by means of two address switches on the front.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	BACnet MS/TP
Address range	00 to F9
Bus interface	RS485 (two-wire bus)
Transmission rate	9600 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	50 mA (AC) / 20 mA (DC)
Relative duty cycle	100 %
Inputs	4 x digital
Input / voltage	30 V AC/DC
Input / high signal	more than 7 V AC/DC
Display	Green, red and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	95 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram





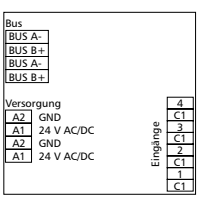
P/N	Color	Feature 1	Feature 2
1108841319	gray	4x IN (U or contact)	

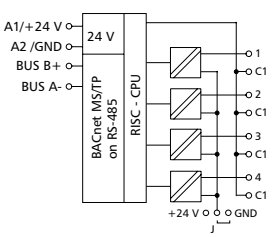
BMT-DI4-IP65

The BACnet MS/TP module in IP65 housing with 4 digital inputs was developed for decentralized switching tasks. It is suitable for detecting potential-free switch states, for example electrical limit switches on vent valves or auxiliary contacts of power contactors. The inputs can be operated by means of potential-free switches or contacts or used as voltage inputs. The inputs can be scanned by means of standard objects via a BACnet client. The module address and the baud rate are set by means of two address switches.

Protocol	BACnet MS/TP
Address range	00 to F9
Bus interface	RS485 (two-wire bus)
Transmission rate	9600 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	64 mA (AC) / 35 mA (DC)
Relative duty cycle	100 %
Inputs	4 x digital
Input / voltage	30 V AC/DC
Input / high signal	more than 7 V AC/DC
Display	Green, red and yellow LED
Dimensions (W x H x D)	160 x 40.7 x 120 mm
Weight	350 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP65 / IP20

Wiring/Principle diagram





P/N	Color	Feature 1	Feature 2
1108841319IP	gray	4x IN (U or contact)	

Matching accessory for BMT-DI10

	Page
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

Matching accessory for BMT-SI4

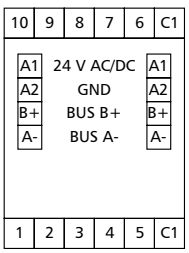
	Page
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

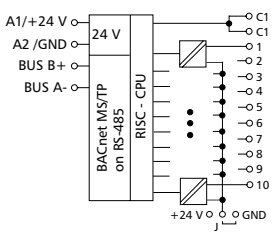
BMT-DI10

The BACnet MS/TP module with 10 digital inputs was developed for decentralized switching tasks. It is suitable for detecting potential-free switch states, for example electrical limit switches on vent valves or auxiliary contacts of power contactors. The inputs can be used as contact or voltage inputs. The inputs can be scanned by means of standard objects via a BACnet client. The module is addressed and the baud rate is set by means of two address switches on the front.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	BACnet MS/TP
Address range	00 to F9
Bus interface	RS485 (two-wire bus)
Transmission rate	9600 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	200 mA (AC) / 75 mA (DC)
Relative duty cycle	100 %
Inputs	10 x digital
Input / voltage	0 - 24 V AC/DC
Input / high signal	more than 7 V AC/DC
Display	Green, red and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	83 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram





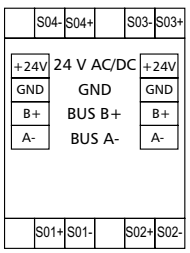
P/N	Color	Feature 1	Feature 2
1108811319	gray	10x IN (U or contact)	

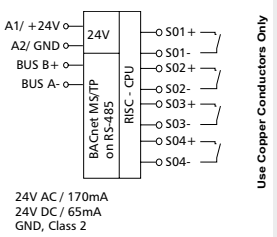
BMT-SI4

The BACnet MS/TP module with 4 S0 inputs to DIN EN 62053-31 class A was developed for decentralized switching tasks. It is suitable for counting S0 counter pulses. This allows very good integration of the module into an energy controlling system. In case of a power failure, the last counter readings are saved. The inputs can be scanned by means of standard objects via a BACnet client. The module is addressed and the baud rate is set by means of two address switches on the front.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	BACnet MS/TP
Address range	00 to F9
Bus interface	RS485 (two-wire bus)
Transmission rate	9600 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	170 mA (AC) / 65 mA (DC)
Relative duty cycle	100 %
Inputs	4 x S0 input, class A
Input / acc. to standard	DIN EN 62053-31
Display	Green, red and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	83 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram





P/N	Color	Feature 1	Feature 2
11088913	gray	4x IN (S0 impulse)	

I/O components

C | Logline

Matching accessory for BMT-AI8

	Page
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

Matching accessory for BMT-CI4

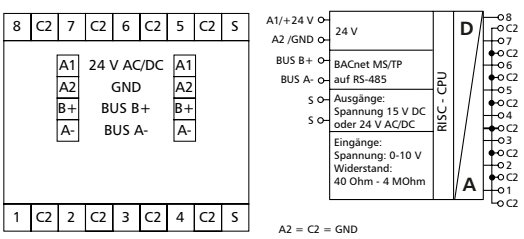
	Page
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

BMT-AI8

The BACnet MS/TP module with 8 individually configurable resistance or voltage inputs was developed for decentralized switching tasks. It is suitable for detecting resistances and voltages of, for example, passive and active temperature sensors, electrical vent and mixing valves, valve positions, etc.
The inputs can be configured universally by means of standard objects via a BACnet client. The module is addressed and the baud rate is set by means of two address switches on the front.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	BACnet MS/TP
Address range	00 to F9
Bus interface	RS485 (two-wire bus)
Transmission rate	9600 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	65 mA (AC) / 25 mA (DC)
Relative duty cycle	100 %
Inputs	8 x individually configurable
Input / resistance	40 Ohm to 4 MOhm
Input / voltage	0 to 10 V DC
Input / resolution	10 mV (0 to 100 %)
Input / error	approx. +/- 100 mV
Display	Green, red and yellow LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	104 g
Operating temperature range	5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram



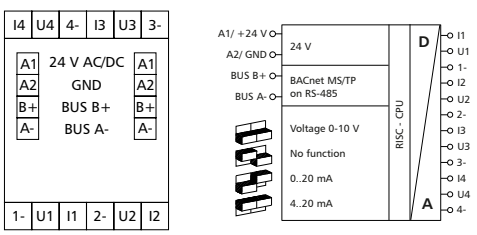
P/N	Color	Feature 1	Feature 2
11088213	gray	8x IN (U or R)	

BMT-CI4

The BACnet MS/TP with 4 analog inputs was developed for decentralized switching tasks. It is suitable for detecting currents and voltages of, for example, active temperature sensors, electrical vent and mixing valves, valve positions, etc.
Each input can be set as current or voltage input by DIP switches on the front. The inputs can be scanned with standard objects via a BACnet client. Module address and bit rate are set with the two rotary switches on the front.
Suitable for decentralized mounting on TH35 rails according to IEC 60715 in electrical distribution cabinets.

Protocol	BACnet MS/TP
Address range	00 to F9
Bus interface	RS485 (two-wire bus)
Transmission rate	9600 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	25 mA (AC) / 10 mA (DC)
Relative duty cycle	100 %
Inputs	4 x analog
Input / voltage	0 V to 10 V DC
Input / resolution	1 mV (0 to 100 %)
Input / error	10 mV
Input / current	0 (4) to 20 mA DC
Input / resolution	2 µA
Input / error	20 µA
Display	Green, red and yellow LED
Dimensions (W x H x D)	35 x 70 x 65 mm
Weight	84 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
1108901332	gray	4x IN (U or I) activ	

Matching accessory for BMT-DO4

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Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

Matching accessory for BMT-TO4

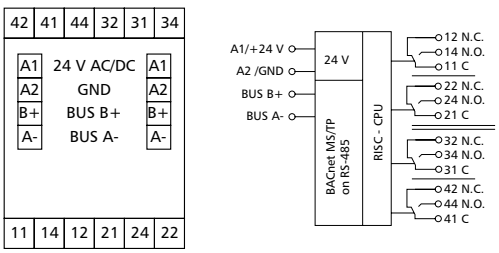
	Page
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

BMT-DO4

The BACnet MS/TP module with 4 digital outputs was developed for decentralized switching tasks. It is suitable for switching electrical components, such as motors, contactors, lamps, louvers, etc. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures.
The module is provided with a manual control for manually switching the relays. The outputs can be switched by means of standard objects via a BACnet client. The module is addressed and the baud rate is set by means of two address switches on the front.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	BACnet MS/TP
Address range	00 to F9
Bus interface	RS485 (two-wire bus)
Transmission rate	9600 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	200 mA (AC) / 70 mA (DC)
Relative duty cycle	100 %
Output / contacts	4 changeover contacts (4PST)
Output / switching voltage	250 V AC
Output / continuous current	5 A / output
Output / switching frequency	360 cycles/h
Display	Green, red and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	95 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram



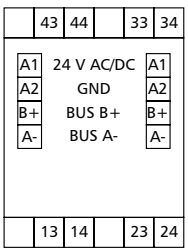
P/N	Color	Feature 1	Feature 2
1108861321	gray	4x OUT (relay CO)	

BMT-TO4

The BACnet MS/TP module with 4 digital triac outputs was developed for decentralized switching tasks. It is suitable for switching electrical components, such as relays, contactors, HLK valves, etc. The outputs can be switched by means of standard objects via a BACnet client. In addition, the outputs can be overridden manually by means of switches on the device. The module is addressed and the baud rate is set by means of two address switches on the front.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	BACnet MS/TP
Address range	00 to F9
Bus interface	RS485 (two-wire bus)
Transmission rate	9600 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	100 mA (AC) / 40 mA (DC)
Relative duty cycle	100 %
Output / contacts	4 digital outputs (triac)
Output / switching voltage	24 V AC up to max. 250 V AC
Output / continuous current	0.5 A / output
Output / switching current	0.8 A (less than 30 s)
Output / switch-on current	10 A (less than 20 ms)
Display	Green, red and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	95 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring



P/N	Color	Feature 1	Feature 2
11088013	gray	4x OUT (triac)	

Matching accessory for BMT-AOP4

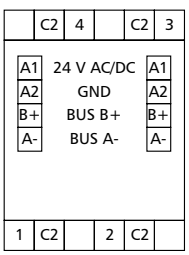
Matching accessory for BMT-AO4

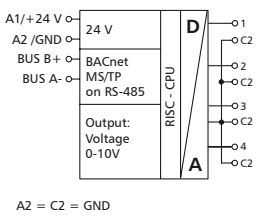
BMT-AOP4

The BACnet MS/TP module with 4 analog outputs was developed for decentralized switching tasks. It is suitable as encoder for control variables, for example for electrical vent and mixing valves, valve positions, etc.
The outputs can be output by means of standard objects via a BACnet client. Each output can be set for automatic or manual operation by means of 4 potentiometers at the front.
The module is addressed and the baud rate is set by means of two address switches on the front.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	BACnet MS/TP
Address range	00 to F9
Bus interface	RS485 (two-wire bus)
Transmission rate	9600 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	50 mA (AC) / 20 mA (DC)
Relative duty cycle	100 %
Outputs	4 x analog
Output / voltage	0 V to 10 V DC
Output / current	5 mA at 10 V DC
Output / resolution	10 mV / Digit
Display	Green and red LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	72 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram





A2 = C2 = GND

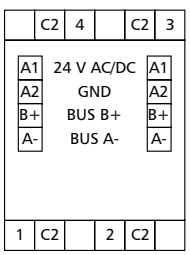
P/N	Color	Feature 1	Feature 2
1108871302	gray	4x OUT (U)	manual/ automatic

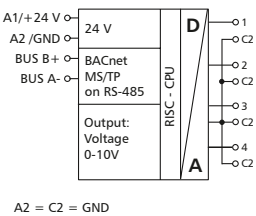
BMT-AO4

The BACnet MS/TP module with 4 analog outputs was developed for decentralized switching tasks. It is suitable as encoder for control variables, for example for electrical vent and mixing valves, valve positions, etc.
The outputs can be output by means of standard objects via a BACnet client. The module is addressed and the baud rate is set by means of two address switches on the front.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	BACnet MS/TP
Address range	00 to F9
Bus interface	RS485 (two-wire bus)
Transmission rate	9600 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	50 mA (AC) / 20 mA (DC)
Relative duty cycle	100 %
Outputs	4 x analog
Output / voltage	0 V to 10 V DC
Output / current	5 mA at 10 V DC
Output / resolution	10 mV / digit
Display	Green and red LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	72 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram





A2 = C2 = GND

P/N	Color	Feature 1	Feature 2
1108851302	gray	4x OUT (U)	

Matching accessory for BMT-Multi-I/O

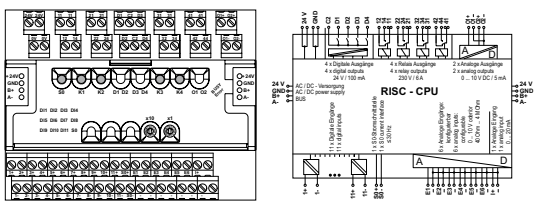
Matching accessory for BMT-DIO4/2

BMT-Multi-I/O

The BACnet module BMT-Multi I/0 is a compact and rapidly to install solution to connect digital and analog signals from the actor and sensor level directly to a control unit in building automation via BACnet MS/TP protocol. 29 I/Os, some of them are configurable, are available for different tasks. The inputs and outputs can be controlled and scanned by standard objects via a BACnet Client. Module address and bit rate are set with two rotary switches on the front or by software. The relays K1 to K4 are equipped with a manual control and allow manual intervention. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	BACnet MS/TP
Address range	00 to F9 hex
Bus interface	RS485 (two-wire bus)
Transmission rate	9600 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	220 mA (AC) / 110 mA (DC)
Relative duty cycle	100 %
Inputs / digital	11 x optocoupler, galvanically isolated
Input / S0	1 x per DIN EN 62053-31, Class A
Inputs analog	configurable
for resistance or	6 x 40 Ohm to 4 MOhm
for voltage	6 x 0 to 10 V DC
Input / current	1 x analog 0 to 20 mA DC
Outputs / Relay	4 x changeover (4PDT) / 250 V AC / 6 A
Manual control	push buttons, shift from automatic to manual operation by pressing > 1 s
Outputs / PhotoMOS	4 x 24 V AC/DC / 100 mA, galvanically isolated

Wiring/Principle diagram



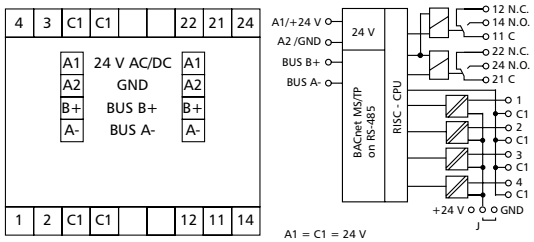
P/N	Color	Feature 1	Feature 2
11089313	gray		

BMT-DIO4/2

The BACnet MS/TP module with 4 digital inputs and 2 relay outputs with manual control was developed for decentralized switching tasks. It is suitable for accommodating, for example, light switches and window contacts in a room, switching two light strips or controlling louvers. It can also be used to control 2 motorized fire dampers. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The inputs can be used as contact or voltage inputs. The inputs and outputs can be switched and scanned by means of standard objects via a BACnet client. The module address and the baud rate are set by means of two address switches on the front.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	BACnet MS/TP
Address range	00 to F9
Bus interface	RS485 (two-wire bus)
Transmission rate	9600 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	200 mA (AC) / 75 mA (DC)
Relative duty cycle	100 %
Inputs	4 x digital
Input / voltage	0 - 24 V AC/DC
Input / high signal	more than 7 V AC/DC
Output / contacts	2 changeover contacts (DPDT)
Output / switching voltage	250 V AC
Output / continuous current	16 A / output
Output / switch-on current	80 A (less than 20 ms)
Display	Green, red and yellow LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	126 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
1108831326	gray	4x IN (U or contact)	2x OUT (relay CO)

I/O components

C | Logline

Matching accessory for BMT-DIO4/2-IP65 and BMT-DIO4/2-IP 230 V

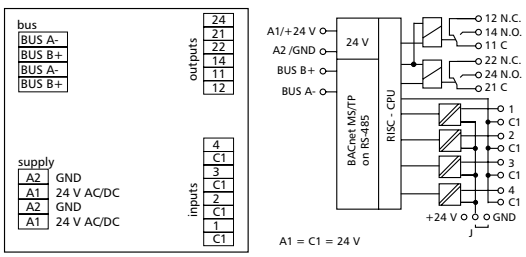
	Page
Power supply NG4 gray	20

BMT-DIO4/2-IP65

The BACnet MS/TP module in IP65 housing with 4 digital inputs and 2 relay outputs with manual control was developed for decentralized switching tasks. It is suitable for accommodating, for example, light switches and window contacts in a room, switching two light strips or controlling louvers. It can also be used to control 2 motorized fire dampers. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The inputs can be used as contact or voltage inputs. The inputs and outputs can be switched and scanned by means of standard objects via a BACnet client. The module address and the baud rate are set by means of two address switches.

Protocol	BACnet MS/TP
Address range	00 to F9
Bus interface	RS485 (two-wire bus)
Transmission rate	9600 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	200 mA (AC) / 75 mA (DC)
Relative duty cycle	100 %
Inputs	4 x digital
Input / voltage	0 - 24 V AC/DC
Input / high signal	more than 7 V AC/DC
Output / contacts	2 changeover contacts (DPDT)
Output / switching voltage	250 V AC
Output / continuous current (UL)	8 A / output
Output / continuous current (VDE)	10 A / output
Output / switch-on current	80 A (less than 20 ms)
Display	Green, red and yellow LED
Dimensions (W x H x D)	160 x 40.7 x 120 mm
Weight	350 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP65 / IP20

Wiring/Principle diagram



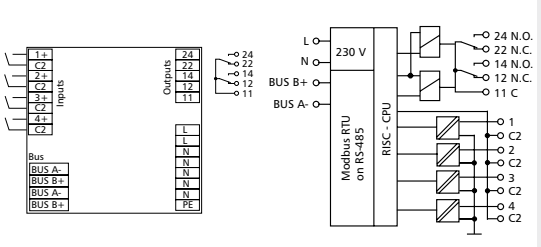
P/N	Color	Feature 1	Feature 2
1108831326IP	gray	4x IN (U or contact)	2x OUT (relay CO)

BMT-DIO4/2-IP 230 V

The BACnet MS/TP module in IP65 housing with 4 digital inputs and 2 relay outputs with manual control was developed for decentralized switching tasks. It is suitable for accommodating, for example, light switches and window contacts in a room, switching two light strips or controlling louvers. It can also be used to control 2 motorized fire dampers. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The inputs can be used as contact or voltage inputs. The inputs and outputs can be switched and scanned by means of standard objects via a BACnet client. Module address and bit rate are set with two rotary switches.

Protocol	BACnet MS/TP
Address range	00 to F9
Bus interface	RS485 (two-wire bus)
Transmission rate	9600 to 115200 bit/s
Operating voltage	230 V +/-10 %
Current consumption	200 mA (AC) / 12 mA (DC)
Relative duty cycle	100 %
Inputs	4 x digital (contact)
Output / contacts	2 changeover contacts (DPST)
Output / switching voltage	250 V AC
Output / continuous current (UL)	8 A / output
Output / continuous current (VDE)	10 A / output
Display	Green, red and yellow LED
Dimensions (W x H x D)	159 x 41.5 x 120 mm
Weight	350 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP65 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
1108830526IP	gray		

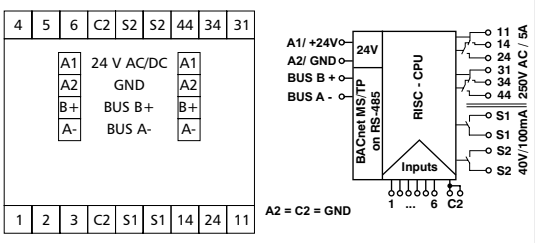
Matching accessory for BMT-TP

BMT-TP

The BACnet MS/TP three-point module with 6 digital inputs, 2 two-level relay outputs and 2 digital outputs was developed for decentralized switching tasks. It is suitable for switching, for example, multi-level pumps and fans or louvers. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The inputs and outputs can be switched and scanned by means of standard objects via a BACnet client. The input terminals 1 to 6 are wired with the C2 terminals on two poles to potential-free switches or contacts. The module has a manual control for the outputs. The module address and the baud rate are set by means of two address switches on the front.
Suitable for decentralized mounting in serial sub-distributor.

Protocol	BACnet MS/TP
Address range	00 to F9
Bus interface	RS485 (two-wire bus)
Transmission rate	9600 to 115200 bit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	100 mA (AC) / 40 mA (DC)
Relative duty cycle	100 %
Inputs	6 x digital contacts
Input / switching threshold	4.5 V DC
Outputs (relay)	2 x two-level
Output / switching voltage	250 V AC
Output / current	6 A / output
Outputs (digital)	2 NO (DPST-NO) (photoMOS)
Output / switching voltage	40 V AC/DC
Output / current	100 mA
Display	Green, red and yellow LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	125 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram



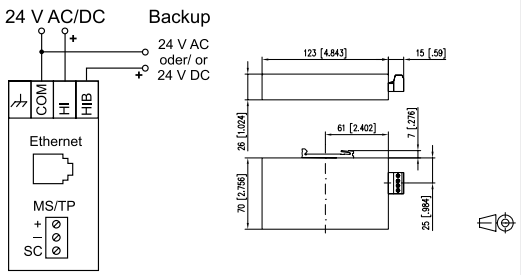
P/N	Color	Feature 1	Feature 2
11088813	gray	6x IN (contact)	2x OUT (relay CO), 2x OUT (opto NO)

BACnet IP / BACnet MS/TP Router

The BACnet IP / BACnet MS/TP Router provides stand-alone routing between BACnet networks such as BACnet/IP, BACnet Ethernet, and BACnet MS/TP - thereby allowing the system integrator to mix BACnet network technologies within a single BACnet internetwork. One 10/100 Mbps Ethernet port and an MS/TP port are used as communication interface to the respective BACnet networks. An integrated web server allows the configuration, status monitoring, and troubleshooting.

Operating voltage	24 V AC/DC +/- 10 %
Power consumption	4 VA (AC) or 2 W (DC)
Ethernet communications	IEEE 802.3, 10/100 Mbps, 10BASE-T, 100BASE-TX
MS/TP communications	ANSI/ASHRAE 135, ISO16484-5, EIA/TIA 485 9600, 19200, 38400 and 76800 bit/s
Display	
(Power)	LED, green
Ethernet	100 Mbps = LED, green 10 Mbps = LED, yellow Activity = LED, flashing
MS/TP	Activity = LED, green flashing
Montage	TH35 acc. IEC60715
Weight	220 g
Operating temperature range	0 °C to +60 °C
Storage temperature range	-40 °C to +85 °C
Relative humidity	10 to 95 %, non condensing
Ingress protection	IP30

Wiring/Dimensional drawing



P/N	Color	Feature 1	Feature 2
11080001	black	6x IN (contact)	2x OUT (relay CO), 2x OUT (opto NO)

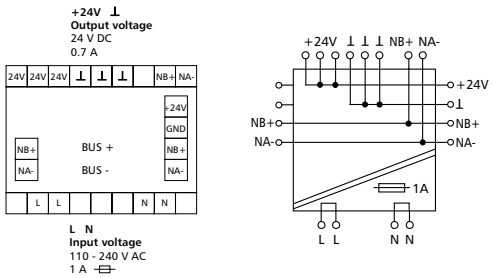
Matching accessory for NG4

NG4

The NG4 HS power supply supplies a regulated direct voltage of 24 V DC / 16 W for supplying power to the respective devices of the product family of I/O components. The secondary voltage can only be tapped at the right side of the device front at a pluggable terminal block and at the screw-type terminal blocks. The bus communication can be tapped on both sides of the device front. A parallel operation of various power supply units is not allowed. Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Field of application	LON-Bus (LF-xxx) BACnet (BMT-xxx), Modbus (MR-xxx)
Input voltage range	110 - 240 V AC, 50 / 60 Hz
Internal fuse, soldered fuse	T 1,0 A/250 V
Output / power	16 W
Output / voltage	+24 V DC (SELV)
Output / current	700 mA
Load and control accuracy	+/-3 %
Mains failure backup	smaller than 40 ms
Display	green LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	108 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20
Terminal blocks	
Wire cross section solid wire	max. 4 mm²
Wire cross section stranded wire	max. 2.5 mm²
Wire diameter	0.3 mm up to max. 2.7 mm

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
110561	gray		with jumper plug

Matching accessory for LF-DI4

	Page
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

Matching accessory for LF-DI10

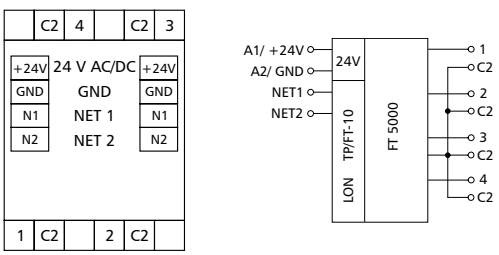
	Page
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

LF-DI4

The LON module with 4 digital inputs was developed for decentralized switching tasks. It is suitable for detecting potential-free switch states, for example electrical limit switches on vent valves or auxiliary contacts of power contactors. The input terminals 1 to 4 are wired with the C2 terminals to potential-free switches or contacts. The inputs can be scanned individually or simultaneously by SNVT network variables.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	63 mA (AC) / 24 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Inputs	4 contact inputs
Input / switching threshold	4,5 V DC
Display	Green and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	72 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram



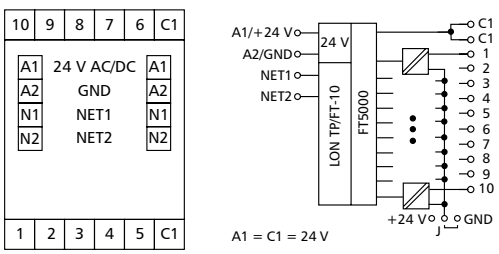
P/N	Color	Feature 1	Feature 2
1108501319	gray	4x IN (U or contact)	

LF-DI10

The LON module with 10 digital inputs was developed for decentralized switching tasks. It is suitable for detecting potential-free switch states, for example electrical limit switches on vent valves or auxiliary contacts of power contactors. The inputs can be used as contact or voltage inputs and scanned individually or simultaneously by SNVT network variables.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	63 mA (AC) / 21 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Inputs	10 x contact or voltage
Input / voltage	24 V AC/DC
Input / high signal	more than 8 V AC/DC
Display	Green and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	83 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
1108511319	gray	10x IN (U or contact)	

Matching accessory for LF-DI10-IP65

	Page
Power supply NG4 gray	20

Matching accessory for LF-DI230

	Page
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

LF-DI10-IP65

The LON module in an IP65 housing with 10 digital inputs was developed for decentralized switching tasks. It is suitable for detecting potential-free switch states, for example electrical limit switches on vent valves or auxiliary contacts of power contactors. The inputs can be used as contact or voltage inputs and scanned individually or simultaneously by SNVT network variables. Suitable for decentralized mounting in serial sub-distributor.

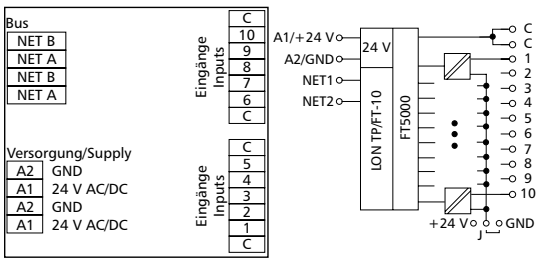
Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	63 mA (AC) / 21 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Inputs	10 x contact or voltage
Input / voltage	24 V AC/DC
Input / high signal	more than 8 V AC/DC
Display	Green and yellow LED
Dimensions (W x H x D)	160 x 40.7 x 120 mm
Weight	300 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP65 / IP20

LF-DI230

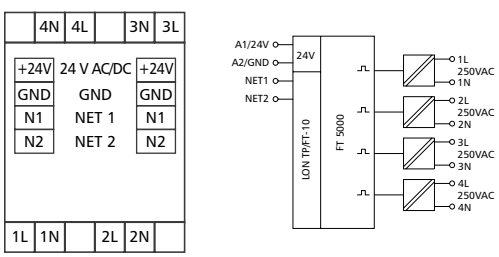
The LON module with 4 digital inputs was developed for decentralized switching tasks. It is suitable for detecting 230 V AC switch states, for example, switches or buttons for light control. The input terminals 1L to 4L are wired with 1N to 4N terminals to 230 V AC via switches or contacts. The inputs can be integrated individually or simultaneously by SNVT network variables.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	63 mA (AC) / 24 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Inputs	4 x digital
Input / input voltage	230 V AC
Display	Green and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	72 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram



Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
1108511319IP	gray	10x IN (U or contact)	

P/N	Color	Feature 1	Feature 2
11086313	gray	4x IN (U=230 V AC)	

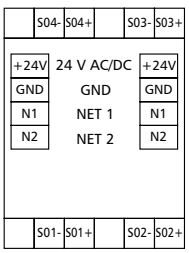
Matching accessory for LF-SI4

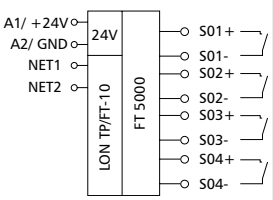
LF-SI4

The LON module with 4 S0 inputs to DIN EN 62053-31 class A was developed for decentralized switching tasks. It is suitable for counting S0 counter pulses. The software contains the LONMARK profile 2201-10 utility meter. This allows very good integration of the module into a LON-based energy controlling system. For each channel, the module saves up to 500 data records consisting of counter pulses and time stamps by means of a real-time clock (RTC). This makes it possible to use the LF-SI4 also as data logger. In case of a power failure, the data records remain saved. SNVT network variables allow scanning the inputs individually or simultaneously.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	210 mA (AC) / 82 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Inputs	4 x S0 input, class A
Input / acc. to standard	DIN EN 62053-31
Display	Green and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	83 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram





P/N	Color	Feature 1	Feature 2
11085813	gray	4x IN (S0 impulse)	

Matching accessory for LF-AI8

	Page
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

Matching accessory for LF-CI4

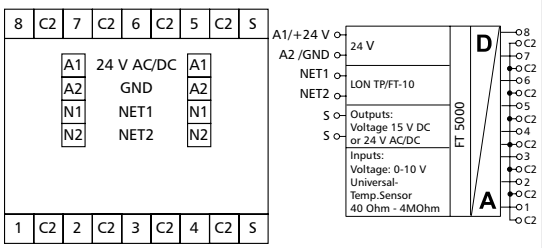
	Page
Power supply NG4 gray	20
Terminal block for I/O Components	71
Jumper plug for I/O components	71

LF-AI8

The LON module with 8 individually configurable resistance or voltage inputs was developed for decentralized switching tasks. It is suitable for detecting resistances and voltages of, for example, passive and active temperature sensors, electrical vent and mixing valves, valve positions, etc. The inputs can be scanned simultaneously by SNVT network variables.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	65 mA (AC) / 25 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Inputs	8 x individually configurable
Input / resistance	40 Ohm to 4 MOhm
Input / voltage	0 to 10 V DC
Input / resolution	10 mV (0 to 100 %)
Input / error	approx. +/- 10 mV
Display	Green and yellow LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	126 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram



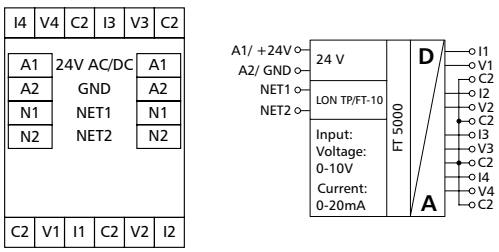
P/N	Color	Feature 1	Feature 2
11085313	gray	8x IN (U or R)	

LF-CI4

The LON module with analog inputs was developed for de-centralized switching tasks. It is suitable for detecting 4 currents and 4 voltages of, for example, active temperature sensors, electrical vent and mixing valves, valve positions, etc. The inputs can be scanned by SNVT network variables.
Suitable for decentralized mounting on TH35 rails according to IEC 60715 in electrical distribution cabinets.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	67 mA (AC) / 24 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Inputs	4 x voltage, 4 x current
Input / voltage	0 V to 10 V DC
Input / resolution	10 mV (0 to 100 %)
Input / resistance	10 kOhm
Input / current	0 to 20 mA DC
Input / resolution	0.05 mA
Input / error	1 %
Display	Green and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	84 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
1108601332	gray	4x IN (U or I) activ	

Matching accessory for LF-DO4

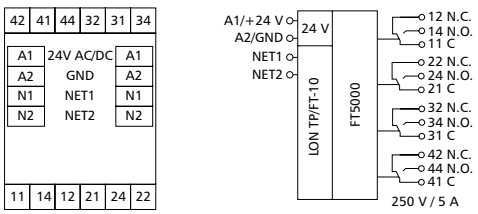
Matching accessory for LF-DO4-IP65

LF-DO4

The LON module with 4 digital outputs was developed for de-centralized switching tasks. It is suitable for switching electrical components, such as motors, contactors, lamps, louvers, etc. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The outputs can be actuated by SNVT network variables. The module has a manual control activated only in configured mode. In addition, an adjustable wipe function is integrated.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	205 mA (AC) / 67 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Outputs	4 changeover contacts (4PDT)
Output / switching voltage	max. 250 V AC
Output / continuous current	5 A / output
Output / total current	max. 12 A / all outputs
Output / switching frequency	360 cycles/h
Display	Green and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	95 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram



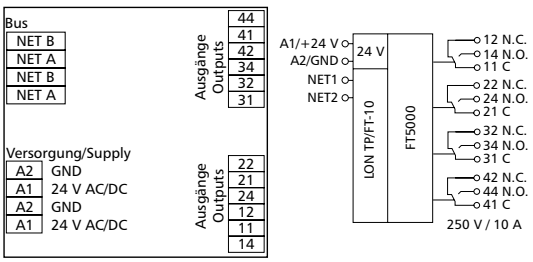
P/N	Color	Feature 1	Feature 2
1108521321	gray	4x OUT (relay CO)	manual/ automatic

LF-DO4-IP65

The LON module in an IP65 housing with 4 digital outputs was developed for decentralized switching tasks. It is suitable for switching electrical components, such as motors, contactors, lamps, louvers, etc.
In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The outputs can be actuated by SNVT network variables. The module has a manual control activated only in configured mode. In addition, an adjustable wipe function is integrated.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	205 mA (AC) / 67 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Outputs	4 changeover contacts (4PST)
Output / switching voltage	max. 250 V AC
Output / switch-on, switch-off current	80 A, 20 ms
Output / continuous current	10 A / output
Output / total current	max. 25 A / all outputs
Output / switching frequency	360 cycles/h
Display	Green and yellow LED
Dimensions (W x H x D)	160 x 40.7 x 120 mm
Weight	368 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP65 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
1108521321IP	gray	4x OUT (relay CO)	manual/ automatic

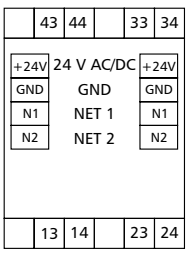
Matching accessory for LF-TO4

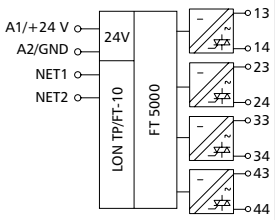
LF-TO4

The LON module with 4 digital outputs was developed for de-centralized switching tasks. It is suitable for switching electrical components, such as relays, contactors, HLK valves, etc.
The 4 triacs can be controlled individually in a LON installation by means of standard network variables. The module has a manual control activated only in configured mode. In addition, an adjustable pulse/pause function is integrated.
Suitable for decentralized mounting in serial sub-distributor.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	63 mA (AC) / 24 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Outputs	4 digital outputs (triac)
Output / switching voltage	20 V to 250 V AC
Output / continuous current	0.8 A / output
Output / total current	2.4 A / all outputs
Display	Green and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	104 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram





P/N	Color	Feature 1	Feature 2
11086213	gray	4x OUT (triac)	

Matching accessory for LF-AOP4

	Page
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Terminal block for I/O Components	71
Jumper plug for I/O components	71

Matching accessory for LF-AO4-IP65

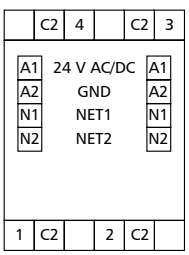
	Page
Power supply NG4 gray	20

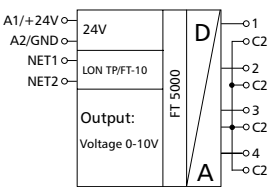
LF-AOP4

The LON module with 4 analog outputs was developed for decentralized switching tasks. It is suitable as encoder for control variables, for example for electrical vent and mixing valves, valve positions, etc.
The analog outputs can be activated proportionally by SNVT network variables, or previously defined voltage values can be adjusted. Each output can be set for automatic or manual operation by means of 4 potentiometers at the front.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	100 mA (AC) / 40 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Outputs	4 x analog
Output / voltage	0 V to 10 V DC
Output / current	5 mA to 10 V DC
Output / resolution	0.625 mV / digit
Output / error	100 mV
Display	Green and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	84 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram





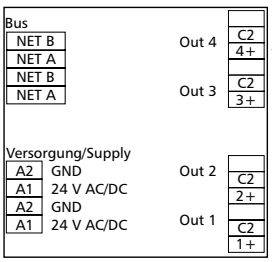
P/N	Color	Feature 1	Feature 2
11085413	gray	4x OUT (U)	manual/ automatic

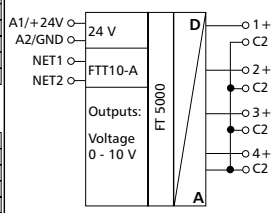
LF-AO4-IP65

The LON module with 4 analog outputs was developed for decentralized switching tasks. It is suitable as encoder for control variables, for example for electrical vent and mixing valves, valve positions, etc.
The analog outputs can be activated proportionally by SNVT network variables, or previously defined voltage values can be adjusted.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	50 mA (AC) / 20 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Outputs	4 x analog
Output / voltage	0 V to 10 V DC
Output / current	5 mA to 10 V DC
Output / resolution	0.625 mV / digit
Output / error	100 mV
Display	Green and yellow LED
Dimensions (W x H x D)	160 x 40.7 x 120 mm
Weight	300 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP65 / IP20

Wiring/Principle diagram





P/N	Color	Feature 1	Feature 2
11085413IP	gray	4x OUT (U)	

Matching accessory for LF-AM2/4

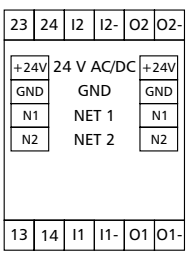
Matching accessory for LF-TI-IP65

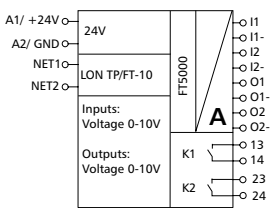
LF-AM2/4

The LON I/O module with 2 analog inputs, 2 analog outputs and 2 digital outputs. It is suitable for controlling, for example, motorized vent valves and switching on alarm at the set threshold value. The inputs and outputs are scanned and activated by SNVT network variables. The analog inputs can be scanned simultaneously. The analog outputs can be activated proportionally, or previously defined voltage values can be adjusted. Both digital outputs can be activated individually or as a function of an adjustable threshold value.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	95 mA (AC) / 35 mA (DC)
Relative duty cycle	100 %
Inputs	2 x analog
Input / voltage	0 V to 10 V DC
Input / resolution	10 mV (0 to 100 %)
Outputs	2 x analog
Output / voltage	0 V to 10 V DC
Output / current	5 mA at 10 V DC
Output / resolution	10 mV (0 to 100 %)
Output	2 x digital
Output / contacts	2 NO (DPST-NO) photoMOS relay
Switching voltage	max. 40 V AC/DC
Continuous current	max. 100 mA
Operation and bus display	Green and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	82 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram





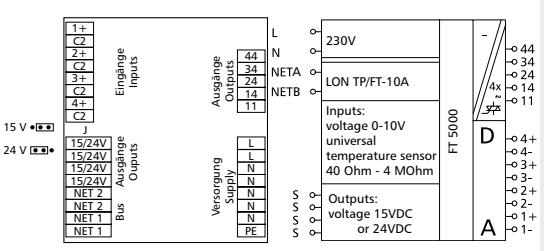
P/N	Color	Feature 1	Feature 2
11085713	gray	2x IN (U)	2x OUT (U), 2x OUT (opto NO)

LF-TI-IP65

The LON module in an IP65 housing with 4 universal inputs and 4 digital outputs was developed for decentralized switching tasks. It is suitable for detecting temperatures or voltages or for switching 4 thermal valve drives with triacs. The inputs and outputs are scanned and activated by SNVT network variables. The outputs can be operated either only switching or in clocking mode with adjustable pulse/pause ratio.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	230 V AC, 50 Hz
Current consumption	less than 25 mA
Relative duty cycle	100 %
Inputs	4 x analog
Input / resistance	40 Ohm to 4 MOhm
Input / voltage	0 V to 10 V DC
Input / resolution	10 mV (0 to 100 %)
Outputs	4 x digital, triac
Output / switching voltage	20 V to 250 V AC
Output / current	0.8 A
Output / total current	2.4 A / all outputs
Output / fuse	2 A / output
Operation and bus display	Green and yellow LED
Dimensions (W x H x D)	159 x 41.5 x 120 mm
Weight	330 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP65 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
11086105IP	gray	4x IN (U or R)	4x OUT (triac)

Matching accessory for LF-DM4/4

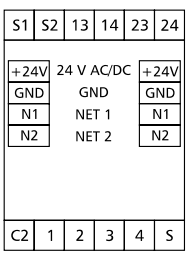
Matching accessory for LF-TP

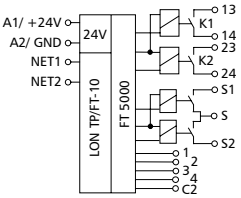
LF-DM4/4

The LON I/O module with 4 digital inputs, 2 relay outputs and 2 digital outputs was developed for decentralized switching tasks. It is suitable for querying, for example, switching states and, as a result, switching motors or other actuators. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The inputs and outputs are scanned and activated by SNVT network variables. The input terminals 1 to 4 are wired with the C2 terminals on two poles to potential-free switches or contacts. In addition, a wipe function is integrated.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	200 mA (AC) / 65 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Inputs	4 x digital contacts
Input / switching threshold	4,5 V DC
Outputs (relay)	2 NO (DPST-NO)
Output / switching voltage	250 V AC
Output / current	6 A / output
Outputs (digital)	2 NO (DPST-NO) (photoMOS)
Output / switching voltage	40 V AC/DC
Output / current	100 mA
Operation and bus display	Green and yellow LED
Dimensions (W x H x D)	35 x 70 x 65 mm
Weight	90 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram





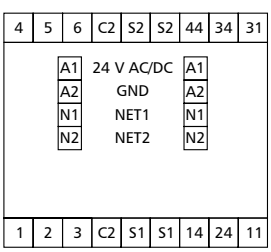
P/N	Color	Feature 1	Feature 2
1108561326	gray	4x IN (contact)	2x OUT (relay NO), 2x OUT (opto NO)

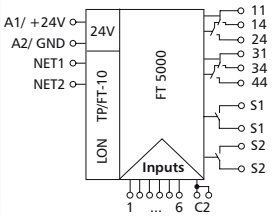
LF-TP

The LON three-point module with 6 digital inputs, 2 two-level relay outputs and 2 digital outputs was developed for decentralized switching tasks. It is suitable for switching, for example, multi-level pumps, fans, burners or similar. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The inputs and outputs are scanned and activated by SNVT network variables. The input terminals 1 to 6 are wired with the C2 terminals on two poles to potential-free switches or contacts. The module has a manual control for the outputs, which is activated only in configured mode.
Suitable for decentralized mounting in serial sub-distributor.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	220 mA (AC) / 90 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Inputs	6 x digital contacts
Input / switching threshold	4.5 V DC
Outputs (relay)	2 x two-level
Output / switching voltage	250 V AC
Output / current	6 A / output
Outputs (digital)	2 NO (DPST-NO) (photoMOS)
Output / switching voltage	40 V AC/DC
Output / current	100 mA
Operation and bus display	Green and yellow LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	126 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram





P/N	Color	Feature 1	Feature 2
11085913	gray	6x IN (contact)	2x OUT (relay CO), 2x OUT (opto NO)

Matching accessory for LF-DIO4/2

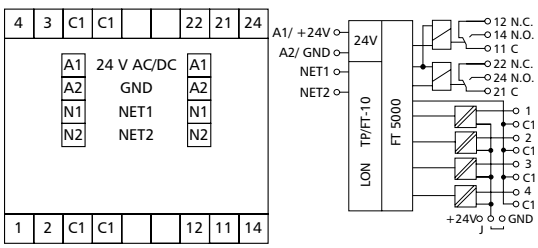
Matching accessory for LF-DIO4/2-IP65

LF-DIO4/2

The LON module with 4 digital inputs and 2 relay outputs was developed for decentralized switching tasks. It is suitable for accommodating, for example, light switches and window contacts in a room, switching two light strips or controlling louvers. It can also be used to control 2 motorized fire dampers. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The inputs can be used either as contact or voltage inputs. SNVT network variables switch and scan the inputs and outputs. The outputs have a manual control activated only in configured mode. In addition, an adjustable wipe function is integrated. Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	220 mA (AC) / 90 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Inputs	4 x digital
Input / voltage	24 V AC/DC
Input / high signal	more than 8 V AC/DC
Outputs	2 changeover contacts (DPDT)
Output / switching voltage	250 V AC
Output / current	16 A / output
Output / total current	25 A across all outputs
Operation and bus display	Green and yellow LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	126 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram



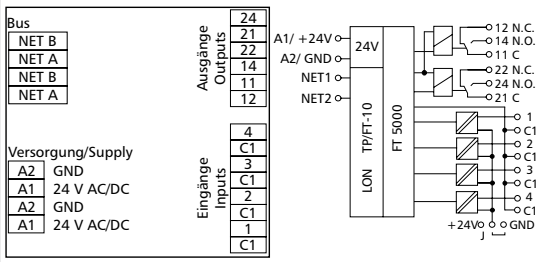
P/N	Color	Feature 1	Feature 2
1108551326	gray	4x IN (U or contact)	2x OUT (relay CO)

LF-DIO4/2-IP65

The LON module in an IP65 housing with 4 digital inputs and 2 relay outputs was developed for decentralized switching tasks. It is suitable for accommodating, for example, light switches and window contacts in a room, switching two light strips or controlling louvers. It can also be used to control 2 motorized fire dampers. In this case it is necessary to protect the relay contacts by appropriate load-dependent measures. The inputs can be used either as contact or voltage inputs. SNVT network variables switch and scan the inputs and outputs. The outputs have a manual control activated only in configured mode. In addition, an adjustable wipe function is integrated.

Protocol	TP/FT-10, free topology
Neuron	FT5000
Transmission rate	78 KBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	220 mA (AC) / 90 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Inputs	4 x digital
Input / voltage	24 V AC/DC
Input / high signal	more than 8 V AC/DC
Outputs	2 changeover contacts (DPDT)
Output / switching voltage	250 V AC
Output / continuous current (UL)	8 A / output
Output / continuous current (VDE)	10 A / output
Output / total current	20 A across all outputs
Operation and bus display	Green and yellow LED
Dimensions (W x H x D)	160 x 40.7 x 120 mm
Weight	330 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP65 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
1108551326IP	gray	4x IN (U or contact)	2x OUT (relay CO)

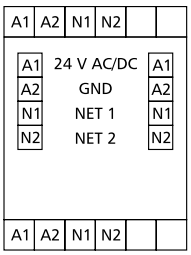
Matching accessory for LF-FAM

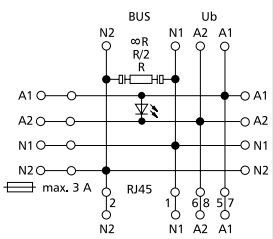
LF-FAM

Switch-on module for bus connection, supply voltage and adjustable bus termination. The switch-on module was developed as wiring help for supplying the supply voltage and a two-wire bus to the LON bus modules. The supply voltage and the two-wire bus are led to the upper part of the housing over a sturdy terminal block with a cross section of max. 2.5 mm² and connected to the modules by means of the jumper. Using a suitable interface cable, the two-wire bus can be connected to a PC over the two RJ45 jacks. A bus terminating resistor of 52.3 Ohm (R/2) for free network topology and 105 Ohm (R) for line topology can be set by means of the jumper under the removable cover.
Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	less than 5 mA
Switch-on duration	relative 100 %
Display	Green LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	75 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal blocks	IP40 / IP20

Wiring/Principle diagram





P/N	Color	Feature 1	Feature 2
11087913	gray		

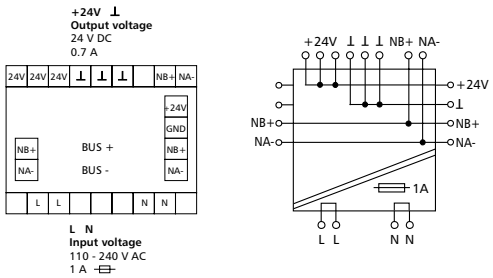
Matching accessory for NG4

NG4

The NG4 HS power supply supplies a regulated direct voltage of 24 V DC / 16 W for supplying power to the respective devices of the product family of I/O components. The secondary voltage can only be tapped at the right side of the device front at a pluggable terminal block and at the screw-type terminal blocks. The bus communication can be tapped on both sides of the device front. A parallel operation of various power supply units is not allowed. Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Field of application	LON-Bus (LF-xxx) BACnet (BMT-xxx), Modbus (MR-xxx)
Input voltage range	110 - 240 V AC, 50 / 60 Hz
Internal fuse, soldered fuse	T 1,0 A/250 V
Output / power	16 W
Output / voltage	+24 V DC (SELV)
Output / current	700 mA
Load and control accuracy	+/-3 %
Mains failure backup	smaller than 40 ms
Display	green LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	108 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20
Terminal blocks	
Wire cross section solid wire	max. 4 mm²
Wire cross section stranded wire	max. 2,5 mm²
Wire diameter	0.3 mm up to max. 2.7 mm

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
110561	gray		with jumper plug

Echelon IzoT® CT 4.1 Standard and Echelon IzoT® CT 4.1 Professional is matching accessory for

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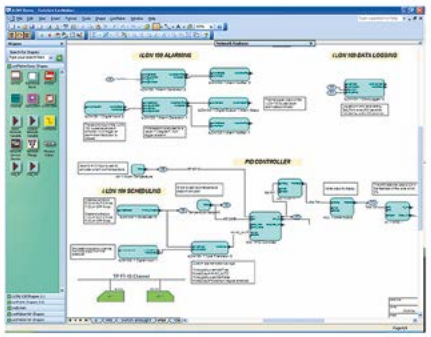
LF-I/O-Module	from 52
Echelon U10 USB Network Interface	65

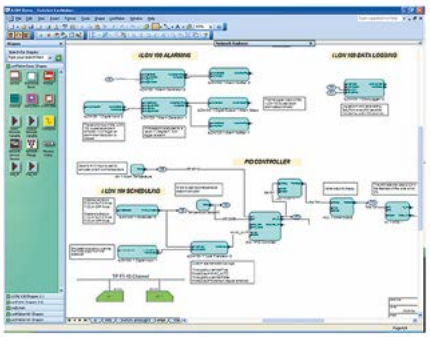


Echelon IzoT® CT 4.1 Standard

IzoT CT (Commissioning Tool) Standard
Open LNS Server
Visio 2016 Standard
DVD
max. number of networks limited to 5

(Echelon Model-No.: 38100-401)

P/N	Color	Feature 1	Feature 2
110208			



Echelon IzoT® CT 4.1 Professional

IzoT CT (Commissioning Tool) Professional
OpenLNS Server
Visio 2016 Professional
DVD

(Echelon Model-No.: 38000-401)

P/N	Color	Feature 1	Feature 2
110209			

Other Echelon products on request.

Echelon U10 USB Network Interface

The USB network interface is a low-cost, high-performance LONWORKS interface for USB-capable personal computers and controllers. The U10 USB network interface is connected directly to a TP/FT10 free-topology twisted-pair (ANSI/ CEA-709.3) LONWORKS channel by means of a high-quality removable connector. It is fully compatible with link powered channels.

- High network throughput and performance
- Sturdy design, removable plugs
- Plug-and-play driver for Windows 2000, XP and Server 2003
- Compatible with LNS® and OpenLDV™ based applications
- Compatible with LonScanner™ protocol analyzer
- CE marking, UL and cUL listed, TÜV certification

Dimensions (W x H x D)	22.4 x 18.2 x 113.2 mm
Operating temperature range	0 °C to +70 °C
Storage temperature range	-20 °C to +85 °C
Echelon Model-No.:	75010R

P/N	Color	Feature 1	Feature 2
110214		TP/FT-10 Channel	

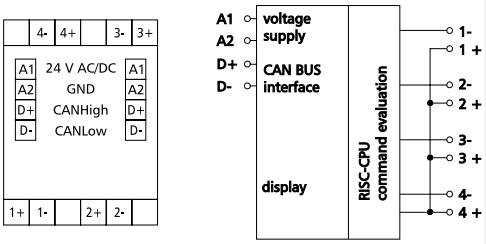
Matching accessory for FDE 4

FDE 4

CAN module with 4 digital inputs, which can be operated as contact or voltage inputs. It is suitable for detecting switch states, for example, of electrical limit switches on vent valves or auxiliary contacts of power contactors. The fieldbus module is an input module for universal use. It is controlled by means of the CAN bus. The module is addressed by means of an adjustable address, and the input states are transmitted in data bytes. If there is one (or more) relay output module(s) with the same address in the system, the respective outputs are switched.

Protocol	CAN
Addressing range	00 to 99
Bus interface ©CiA standard	2.0B passive (two-wire bus)
Transmission rate	20 to 500 kBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	63 mA (AC) / 21 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Inputs	4 x digital
Input / high signal	less than 7 V DC
Display	Green, red and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	83 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
1105751319	gray		

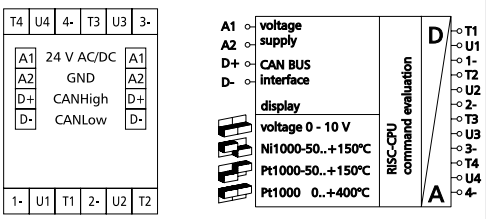
Matching accessory for FAE 4

FAE 4

CAN module with 4 temperature and 4 voltage inputs. It is suitable for recording temperatures with Ni1000 or PT1000 sensors and voltages of, for example, electrical vent and mixing valves, valve positions, etc.
The fieldbus module is an input module for universal use. It is controlled by means of the CAN bus. The module is addressed by means of an adjustable address, and the input states are transmitted in data bytes. If there is one (or more) analog output module(s) with the same address in the system, the voltage measured there is issued at the respective output.
Each input can be adjusted either from 0 to 10 V DC, to Ni1000 (-50 °C to +150 °C), PT1000 (-50 °C to +150 °C) or PT1000 (0 °C to +400 °C) by means of a DIP switch.

Protocol	CAN
Addressing range	00 to 99
Bus interface ©CiA standard	2.0B passive (two-wire bus)
Transmission rate	20 to 500 kBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	67 mA (AC) / 24 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Inputs	4 x analog
Input / voltage	0 to 10 V DC
Input / resolution	10 mV / (0 % to 100 %)
Input / error	approx. +/- 20 mV
Input / temperature range	Ni1000, -50 to +150 °C
Input / temperature range	PT1000, -50 to +150 °C
Input / temperature range	PT1000, 0 to +400 °C
Display	Green and red LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	84 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
1105741306	gray		

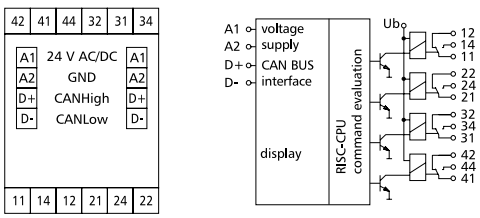
Matching accessory for FRAS 4/21

FRAS 4/21

CAN module with 4 digital outputs. It is suitable for switching electrical components, for example motors, contactors, lamps, louvers, etc. With strong inductive loads, we recommend protecting the relay contacts additionally with an RC element. The fieldbus module is an input module for universal use. It is controlled by means of the CAN bus. The module is addressed by means of an adjustable address. Data bytes transmit whether data are queried or commands are executed. If there is a digital input module with the same address in the system, the module can be operated by remote control.

Protocol	CAN
Addressing range	00 to 99
Bus interface ©CiA standard	2.0B passive (two-wire bus)
Transmission rate	20 to 500 kBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	205 mA (AC) / 67 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Output / contacts	4 x changeover contacts (4 DPST)
Output / switching voltage	250 V AC
Output / continuous current	5 A / output
Output / total current	max. 12 A / all outputs
Display	Green, red and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	104 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
1105701321	gray		

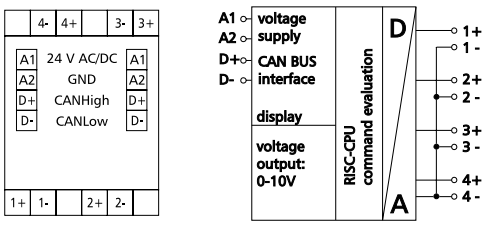
Matching accessory for FAA 4

FAA 4

CAN module with 4 analog outputs. It is suitable as encoder for control variables, for example for electrical vent and mixing valves, valve positions, etc.
The fieldbus module is an output module for universal use. It is controlled by means of the CAN bus. The module is addressed by means of an adjustable address, and the output states are transmitted in data bytes. If there is an analog input module with the same address in the system, the voltage measured there is issued at the respective output.

Protocol	CAN
Addressing range	00 to 99
Bus interface ©CiA standard	2.0B passive (two-wire bus)
Transmission rate	20 to 500 kBit/s
Operating voltage	24 V AC/DC +/- 10 % (SELV)
Current consumption	90 mA (AC) / 32 mA (DC)
Relative duty cycle	100 %
Recovery time	550 ms
Outputs	4 x analog
Output / voltage	0 to 10 V DC
Output / current	5 mA at 10 V DC
Output / resolution	10 mV / digit
Output / switching voltage	+/- 1 %
Display	Green and red LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	84 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
1105731302	gray		

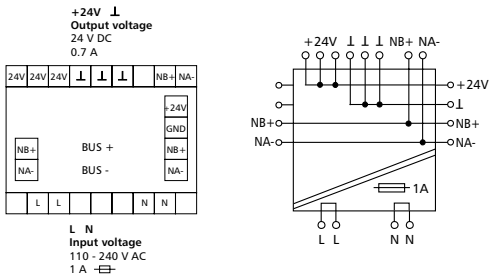
Matching accessory for NG4

NG4

The NG4 HS power supply supplies a regulated direct voltage of 24 V DC / 16 W for supplying power to the respective devices of the product family of I/O components. The secondary voltage can only be tapped at the right side of the device front at a pluggable terminal block and at the screw-type terminal blocks. The bus communication can be tapped on both sides of the device front. A parallel operation of various power supply units is not allowed. Suitable for decentralized mounting on DIN TH35 rail according to IEC 60715 in electrical distribution cabinets.

Field of application	LON-Bus (LF-xxx) BACnet (BMT-xxx), Modbus (MR-xxx)
Input voltage range	110 - 240 V AC, 50 / 60 Hz
Internal fuse, soldered fuse	T 1,0 A/250 V
Output / power	16 W
Output / voltage	+24 V DC (SELV)
Output / current	700 mA
Load and control accuracy	+/-3 %
Mains failure backup	smaller than 40 ms
Display	green LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	108 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20
Terminal blocks	
Wire cross section solid wire	max. 4 mm²
Wire cross section stranded wire	max. 2.5 mm²
Wire diameter	0.3 mm up to max. 2.7 mm

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
110561	gray		with jumper plug

Jumper plug for I/O components is matching accessory for

Terminal block for I/O components is matching accessory for

Jumper plug for I/O components

Jumper plug for quickly connecting I/O components without tools. The jumper plug connects bus and power supply of I/O modules mounted next to each other.

- pluggable, 4-pole
- Grid dimension 3.5 mm
- Black

Rated voltage UL	150 V
Rated voltage SEV	125 V AC/DC eff.
Rated current	max. 4 A
Pin diameter	0.9 mm
Pin material	CuZn
Upper temperature limit	125 °C
Lower temperature limit	-30 °C

P/N	Color	Feature 1	Feature 2
31135104	black		

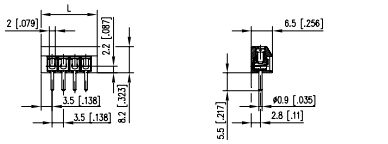
Terminal block for I/O components

Terminal block to feed bus and power supply of I/O components.

- Screw-type terminal block, solderable, 4-pole
- Grid dimension 3.5 mm, connection direction 90°
- Wire protection
- Black

Rated voltage UL/CSA	300 V
Rated current UL/CSA	10 A
Conductor connection UL/CSA	AWG 28 to AWG 16
Wire diameter SEV	0.2 mm to 1.38 mm
Cross-section (solid wire)	1.5 mm²
Cross-section (finely stranded wire)	0.75 mm²
Insulation coordination to	EN 60664-1
Minimum air gap and creepage	min. 2.1 mm
Overvoltage category	III / III / II
Degree of pollution	3 / 2 / 2
Rated voltage V	160 / 400 / 130
Rated surge voltage	2.5 / 4 / 2.5
Ingress protection to IEC 60529	IP00
Tightening torque SEV	max. 0.15 Nm
Stripping length	min. 5 mm

Dimensional drawing



P/N	Color	Feature 1	Feature 2
110369	black		

METZ CONNECT

We realize ideas

Switches

METZ CONNECT – your partner for building automation

EAs one of the leading suppliers of I/O bus modules, we and our partners have set up a cooperation structure addressing the challenges implied in modern building automation and that – thanks to its innovations – counts among the best on the market – to the advantage of our investors, planners, fitters and operators.

Through the products from our partners Echelon and Moxa, METZ CONNECT offers system components such as routers and switches that you will need to set up and to operate networks. This includes, as a matter of fact, also competent advice on how to plan, install and operate networks.

Switches

Other Moxa switches on request.

MOXA EtherDevice Switch EDS 205

The industrial Ethernet switch EDS205 is an entry-level switch supporting IEEE 802.3/802.3u/802.3x with 10/100M, full/half duplex, MDI/MDIX auto-sensing. Switches of the EDS205 series can be easily and conveniently mounted on and dismounted from a standard top hat rail.

- 5 ports with 10/100BaseT(X) RJ45
- Supports IEEE 802.3/802.3u/802.3x
- Power supply: DC 12 to 48 V
- Mounting on standard top hat rail
- Powerful network switch technology
- Protected against broadcast storm
- Store and forward switching mode

Dimensions (W x H x D)	25 x 109 x 88 mm
Operating temperature range	-10 °C to +60 °C
Storage temperature range	-40 °C to +70 °C
Ingress protection	IP30

P/N	Color	Feature 1	Feature 2
110195	gray	5 port RJ45	

MOXA EtherDevice Switch 8 port

The industrial Ethernet switch EDS208 is an entry-level switch supporting IEEE 802.3/802.3u/802.3x with 10/100M, full/half duplex, MDI/MDIX auto-sensing. Switches of the EDS208 series can be easily and conveniently mounted on and dismounted from a standard top hat rail.
Variants:
EDS208: 8 x 10/100BaseT(X) RJ45
EDS208-M-SC: 7 x 10/100BaseT(X) RJ45,
1 x 100BaseFX Multi-mode SC-connector

- 8 ports with 10/100BaseT(X) RJ45 or 7 ports with 10/100BaseT(X) RJ45 and 1 port100BaseFX multi-mode SC connector
- Supports IEEE 802.3/802.3u/802.3x
- Powerful network switch technology
- Protected against broadcast storm
- Store and Forward Switching Mode

Operating voltage DC	12 bis 48 V
Operating voltage AC	18 bis 30 V
Dimensions (W x H x D)	40 x 109 x 95 mm
Operating temperature range	-10 °C to +60 °C
Storage temperature range	-40 °C to +70 °C
Ingress protection	IP30

P/N	Color	Feature 1	Feature 2
110196	gray	8 port RJ45	
11019601	gray	7 port RJ45	1 Port SC MM

METZ CONNECT

We realize ideas

Control cabinet components

Interface modules

In the control and automation technology, METZ CONNECT interface modules form the separation between the logic level and the load level. Interface technology means separating, forming, processing, converting and adapting signals. METZ CONNECT offers solutions for almost any application in various housing designs for the DIN rail mounting.

In addition to universally applicable coupling modules, we also offer sensor and actuator interface modules as optocouplers, potential distributors, diode modules, signalling modules, threshold switches, analogue value transmitters, analogue-digital converters and as potential isolators. The product range is supplemented by powerful and compact, pluggable 14-pole industrial relays.

Control cabinet components | Interface modules

Relays for measuring and monitoring purposes

Monitoring relays are used to protect people and machines and to control electrical cycles in line with the electrical or physicals parameters and, according to the low voltage directives certain individual applications have to be equipped with these relays.

The range of products from METZ CONNECT offers a broad spectrum of measuring and monitoring relays suited for a multitude of applications: current monitors for universal applications, phase monitors as protection against destruction/deterioration of system parts, phase sequence relays to monitor the rotating field, asymmetric relays for a safe detection of phase failures, multifunctional 3-phase monitors, level relays for fill level monitoring.

Switching, controlling, visualizing – Electronic time relays

A timer relay is a special version of a relay which can be used, for example, in the field of control and automation technology to achieve switch-on or switch-off delays. The product range includes timer relays with multiple functions and adjustable time ranges as well as relays with special functions such as on-delay, off-delay, on-wiping, flashing, clocking and star-delta relays.

Control cabinet components

C | Logline

Matching accessory for KRA-F8/21

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Connecting bridge, 10 pole	108
Labeling plate Series KRA F8/F10	108

Matching accessory for KRA-S-F8/21

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Connecting bridge, 10 pole	108
Labeling plate Series KRA F8/F10	108

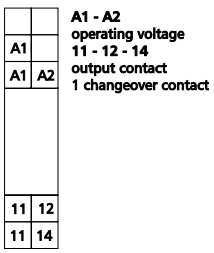
KRA-F8/21

Coupling devices are used to secure electrical isolation between logic and load.

- Connection with spring-clamp terminal
- Additional terminals for jumper
- Test contacts for each terminal
- Safe separation

Operating voltage	24 V AC/DC
Current consumption max.	13 mA
Output / contact	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	8 A
Output / switching frequency	300 cycles/h
Response time typical	10 ms
Release time typical	5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Solid wire cross-section	0.08 mm² - 2.5 mm²
Stranded wire without end sleeve	0.08 mm² - 2.5 mm²
Stranded wire with end sleeve	0.08 mm² - 1.5 mm²
Display	Green LED
Dimensions (W x H x D)	11.2 x 87.5 x 60 mm
Weight	43 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection of the housing	IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11070013	gray	24 V AC/DC	1 DPST

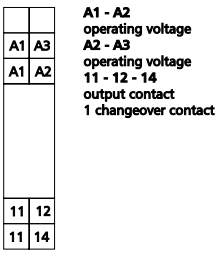
KRA-S-F8/21

Coupling devices are used to secure electrical isolation between logic and load.

- Connection with spring-clamp terminal
- Additional terminals for jumper
- Test contacts for each terminal
- Safe separation
- with manual control level

Operating voltage AC/DC	24 V AC/DC
Power consumption: 24 V AC/DC	approx. 13 mA
Output / contacts	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	8 A
Output / switching frequency	300 cycles/h
Response time	approx. 10 ms
Release time	approx. 5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Solid wire cross-section	0.08 mm² - 2.5 mm²
Stranded wire without end sleeve	0.08 mm² - 2.5 mm²
Stranded wire with end sleeve	0.08 mm² - 1.5 mm²
Display	Green LED
Dimensions (W x H x D)	11.2 x 87.5 x 60 mm
Weight	43 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection	IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11070613	gray	24 V AC/DC	1 DPST

Matching accessory for KRA-SR-F10/21

	Page
Connecting bridge, 10 pole	108
Labeling plate Series KRA F8/F10	108

Matching accessory for KRA-SRA-F10/21

	Page
Connecting bridge, 10 pole	108
Labeling plate Series KRA F8/F10	108

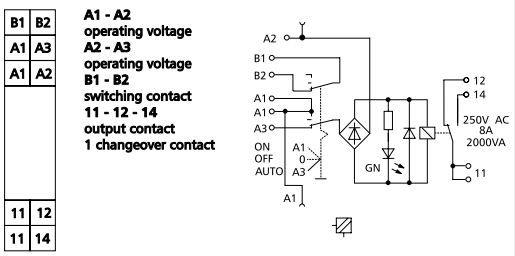
KRA-SR-F10/21

Coupling devices are used to secure electrical isolation between logic and load.

- connection with spring-clamp terminal
- additional terminals for jumper
- test contacts for each terminal
- safe separation
- with manual control level and automatic-checkback function

Operating voltage	24 V AC/DC
Current consumption	approx. 13 mA
Output / contacts	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	8 A
Output / switching frequency	300 cycles/h
Response time	approx. 10 ms
Release time	approx. 5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Solid wire cross-section	0.08 mm² - 2.5 mm²
Stranded wire without end sleeve	0.08 mm² - 2.5 mm²
Stranded wire with end sleeve	0.08 mm² - 1.5 mm²
Display	Green LED
Dimensions (W x H x D)	11.2 x 87.5 x 60 mm
Weight	43 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection	IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11070813	gray	24 V AC/DC	1 DPST

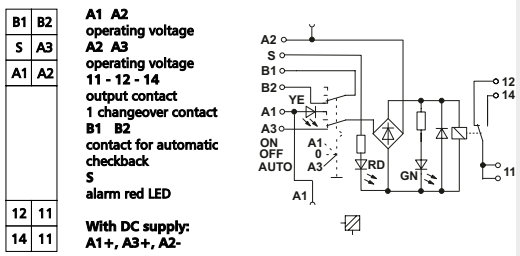
KRA-SRA-F10/21

Coupling devices are used to secure electrical isolation between logic and load.

- Connection with spring-clamp terminal
- Additional terminals for jumper
- Test contacts for each terminal
- safe separation
- with manual control level and automatic-checkback function
- 3 LED-Indicator, status displays

Operating voltage	24 V AC/DC
Current consumption	approx. 13 mA
Outputs / contact	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	8 A
Output / switching frequency	360 cycles/h
Response time	approx. 10 ms
Release time	approx. 5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Solid wire cross-section	0.08 mm² - 2.5 mm²
Stranded wire without end sleeve	0.08 mm² - 2.5 mm²
Stranded wire with end sleeve	0.08 mm² - 1.5 mm²
Display	Green, red and yellow LED
Dimensions (W x H x D)	11.2 x 87.5 x 60 mm
Weight	43 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection of the housing	IP20

Wiring/Circuit diagram



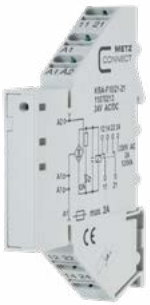
P/N	Color	Feature 1	Feature 2
11071013	gray	24 V AC/DC	1 DPST

Matching accessory for KRA-F10/21-21

	Page
Connecting bridge, 10 pole	108
Labeling plate Series KRA F8/F10	108

Matching accessory for KRA-S-F10/21-21

	Page
Connecting bridge, 10 pole	108
Labeling plate Series KRA F8/F10	108



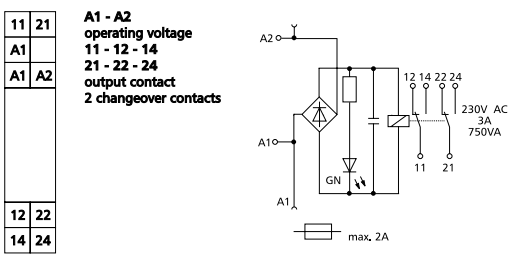
KRA-F10/21-21

Coupling devices are used to electrical isolation between logic and load.

- Connection with spring-clamp terminal
- Additional terminals for jumper
- Test contacts for each terminal
- safe separation

Operating voltage	24 V AC/DC
Current consumption	approx. 16 mA
Outputs / contact	2 changeover contacts (DPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	3 A
Output / switching frequency	300 cycles/h
Response time	approx. 10 ms
Release time	approx. 5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Solid wire cross-section	0.08 mm^2 - 2.5 mm^2
Stranded wire without end sleeve	0.08 mm^2 - 2.5 mm^2
Stranded wire with end sleeve	0.08 mm^2 - 1.5 mm^2
Display	Green LED
Dimensions (W x H x D)	11.2 x 87.5 x 60 mm
Weight	43 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection of the housing	IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11070213	gray	24 V AC/DC	2 DPST

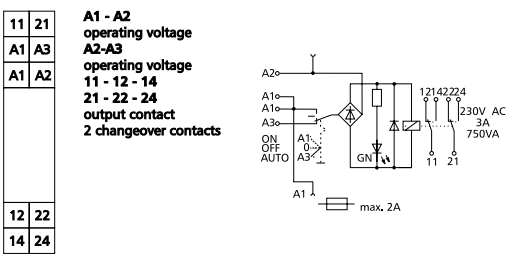
KRA-S-F10/21-21

Coupling devices are used to electrical isolation between logic and load.

- Connection with spring-clamp terminal
- Additional terminals for jumper
- Test contacts for each terminal
- safe separation
- with manual control level

Operating voltage AC/DC	24 V AC/DC
Power consumption: 24 V AC/DC	approx. 16 mA
Output / contacts	2 changeover contacts (DPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	3 A
Output / switching frequency	300 cycles/h
Response time	approx. 10 ms
Release time	approx. 5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Solid wire cross-section	0.08 mm^2 - 2.5 mm^2
Stranded wire without end sleeve	0.08 mm^2 - 2.5 mm^2
Stranded wire with end sleeve	0.08 mm^2 - 1.5 mm^2
Display	Green LED
Dimensions (W x H x D)	11.2 x 87.5 x 60 mm
Weight	43 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection	IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11070713	gray	24 V AC/DC	2 DPST

Matching accessory for KRA-M4/1, 1 normally open contact, 24 V AC/DC

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Connecting bridge Series KRA M4/M6/M8	109
Labeling plate Series KRA M4/M6/M8	110

Matching accessory for KRA-M4/1, 1 normally open contact, 24 V DC

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Connecting bridge Series KRA M4/M6/M8	110
Labeling plate Series KRA M4/M6/M8	110

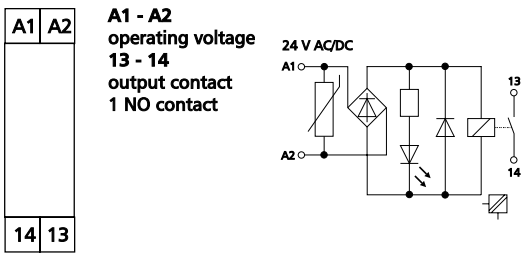
KRA-M4/1, 1 normally open contact, 24 V AC/DC

Coupling devices are used to secure electrical isolation between logic and load.

- Connection with screw-type terminals
- closed compact series
- integrated protective circuit
- safe separation

Operating voltage	24 V AC/DC
Current consumption	approx. 13 mA
Output / contact	1 normally open contact (SPST-NO)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	6 A
Output / switch-on current	8 A
Output / switching frequency	600 cycles/h
Response time	10 ms
Release time	5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	11.2 x 61.3 x 43 mm
Weight	45 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11061313	gray	24 V AC/DC	1 normally open contact

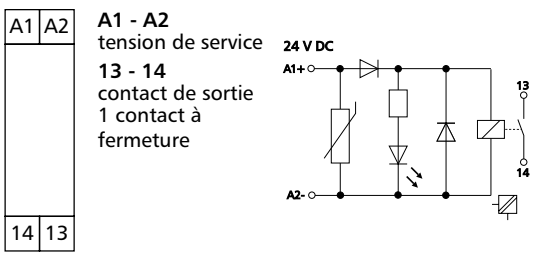
KRA-M4/1, 1 normally open contact, 24 V DC

Coupling devices are used to secure electrical isolation between logic and load.

- Connection with screw-type terminals
- closed compact series
- integrated protective circuit
- safe separation

Operating voltage	24 V DC
Current consumption	approx. 13 mA
Output / contact	1 normally open contact (SPST-NO)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	6 A
Output / switch-on current	8 A
Output / switching frequency	600 cycles/h
Response time	10 ms
Release time	5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	11.2 x 61.3 x 43 mm
Weight	45 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11061325	gray	24 V DC	1 normally open contact

Control cabinet components

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Matching accessory for KRA-M4/1, 1 normally open contact, 230 V AC

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Connecting bridge Series KRA M4/M6/M8	110
Labeling plate Series KRA M4/M6/M8	110

Matching accessory for KRA-M6/21, 1 changeover contact, 12 or 24 V AC/DC

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Connecting bridge Series KRA M4/M6/M8	110
Labeling plate Series KRA M4/M6/M8	110

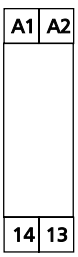
KRA-M4/1, 1 normally open contact, 230 V AC

Coupling devices are used to secure electrical isolation between logic and load.

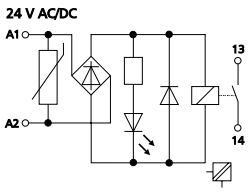
- Connection with screw-type terminals
- closed compact series
- integrated protective circuit
- safe separation

Operating voltage	230 V AC
Current consumption	approx. 5 mA
Output / contact	1 normally open contact (SPST-NO)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	6 A
Output / switch-on current	8 A
Output / switching frequency	600 cycles/h
Response time	10 ms
Release time	5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	11.2 x 61.3 x 43 mm
Weight	45 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



A1 - A2
operating voltage
13 - 14
output contact
1 NO contact



P/N	Color	Feature 1	Feature 2
11061305	gray	230 V AC	1 normally open contact

KRA-M6/21, 1 changeover contact, 12 or 24 V AC/DC

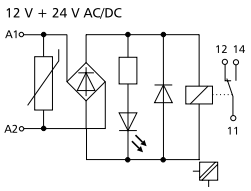
Coupling devices are used to secure electrical isolation between logic and load.

- Connection with screw-type terminals
- closed compact series
- integrated protective circuit
- safe separation

Operating voltage	12 V or 24 V AC/DC
Current consumption 12 V AC/DC	20 mA
Current consumption 24 V AC/DC	13 mA
Output / contacts	1 changeover contact (1 SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	6 A
Output / switch-on current	8 A
Output / switching frequency	600 cycles/h
Response time	10 ms
Release time	5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	11.2 x 61.3 x 60 mm
Weight	45 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram

A1 - A2
operating voltage
11 - 12 - 14
output contact
1 changeover



P/N	Color	Feature 1	Feature 2
11061550	gray	12 V AC/DC	1 DPST
11061513	gray	24 V AC/DC	1 DPST

Matching accessory for KRA-M6/21, 1 changeover contact, 24 V DC

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Connecting bridge Series KRA M4/M6/M8	110
Labeling plate Series KRA M4/M6/M8	110

Matching accessory for KRA-M6/21, 1 changeover contact, 230 V AC

	Page
Connecting bridge Series KRA M4/M6/M8	110
Labeling plate Series KRA M4/M6/M8	110

KRA-M6/21, 1 changeover contact, 24 V DC

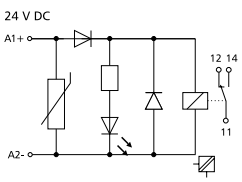
Coupling devices are used to secure electrical isolation between logic and load.

- Connection with screw-type terminals
- closed compact series
- integrated protective circuit
- safe separation

Operating voltage	24 V DC
Current consumption	13 mA
Output / contacts	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	6 A
Output / switch-on current	8 A
Output / switching frequency	600 cycles/h
Response time	10 ms
Release time	5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	11.2 x 61.3 x 60 mm
Weight	45 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram

A1 - A2
operating voltage
11 - 12 - 14
output contact
1 changeover



P/N	Color	Feature 1	Feature 2
11061525	gray	24 V DC	1 changeover contact

KRA-M6/21, 1 changeover contact, 230 V AC

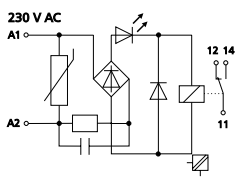
Coupling devices are used to secure electrical isolation between logic and load.

- Connection with screw-type terminals
- closed compact series
- integrated protective circuit
- safe separation

Operating voltage	230 V AC
Current consumption	5 mA
Output / contacts	1 changeover contact (1 SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	6 A
Output / switch-on current	8 A
Output / switching frequency	360 cycles/h
Response time	10 ms
Release time	15 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	11.2 x 61.3 x 60 mm
Weight	45 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram

A1 - A2
operating voltage
11 - 12 - 14
output contact
1 changeover



P/N	Color	Feature 1	Feature 2
11061505	gray	230 V AC	1 changeover contact

Control cabinet components

C | Logline

Matching accessory for KRA-S-M6/21

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Connecting bridge Series KRA M4/M6/M8	110
Labeling plate Series KRA M4/M6/M8	110

Matching accessory for KRA-SR-M8/21

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Connecting bridge Series KRA M4/M6/M8	110
Labeling plate Series KRA M4/M6/M8	110

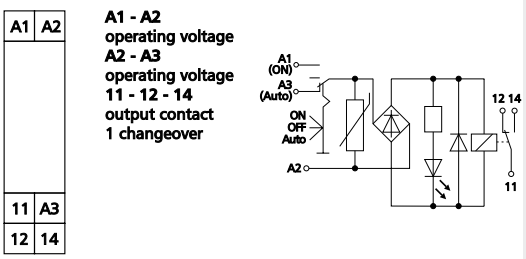
KRA-S-M6/21

Coupling devices are used to electrical isolation between logic and load.

- Connection with screw-type terminals
- closed compact series
- integrated protective circuit
- with manual control level

Operating voltage AC/DC	24 V AC/DC
Current consumption 24 V AC/DC	13 mA
Output / contacts	1 changeover contact (1 SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	6 A
Output / switch-on current	8 A
Output / switching frequency	600 cycles/h
Response time	10 ms
Release time	5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	LED rot
Dimensions (W x H x D)	11.2 x 61.3 x 60 mm
Weight	45 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11061213	gray	24 V AC/DC	1 changeover contact

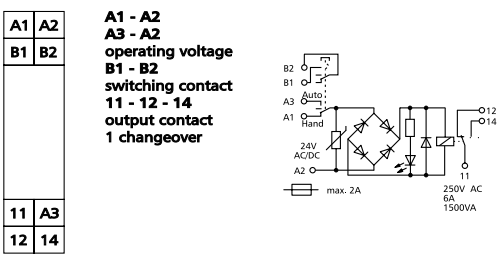
KRA-SR-M8/21

Coupling devices are used to electrical isolation between logic and load.

- Connection with screw-type terminals
- closed compact series
- integrated protective circuit
- with manual control level and automatic checkback

Operating voltage AC/DC	24 V AC/DC
Current consumption 24 V AC/DC	13 mA
Output / contacts	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	6 A
Output / switch-on current	8 A
Output / switching frequency	600 cycles/h
Response time	10 ms
Release time	5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	11.2 x 61.3 x 60 mm
Weight	45 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11064513	gray	24 V AC/DC	1 changeover contact

Matching accessory for KRA-M8/21-21, 2 changeover contact, 12V or 24 V AC/DC

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Connecting bridge Series KRA M4/M6/M8	110
Labeling plate Series KRA M4/M6/M8	110

Matching accessory for KRA-M8/21-21, 2 changeover contact, 24 V DC

	Page
Connecting bridge Series KRA M4/M6/M8	110
Labeling plate Series KRA M4/M6/M8	110

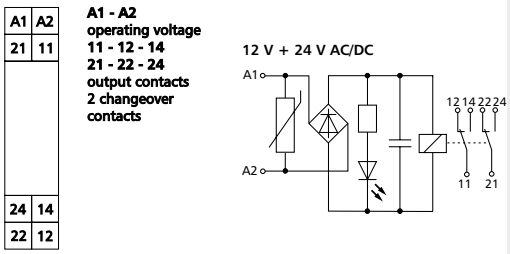
KRA-M8/21-21, 2 changeover contact, 12 V or 24 V AC/DC

Coupling devices are used to secure electrical isolation between logic and load.

- Connection with screw-type terminals
- closed compact series
- integrated protective circuit
- safe separation

Operating voltage	12 V or 24 V AC/DC
Current consumption 12 V AC/DC	25 mA
Current consumption 24 V AC/DC	16 mA
Output / contacts	2 changeover contacts (DPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	4 A
Output / switching frequency	360 cycles/h
Response time	10 ms
Release time AC	15 ms
Release time DC	5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	6 x 10^4 switching cycles
Cross-section	2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	11.2 x 61.3 x 60 mm
Weight	45 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11061950	gray	12 V AC/DC	2 changeover contact
11061913	gray	24 V AC/DC	2 changeover contact

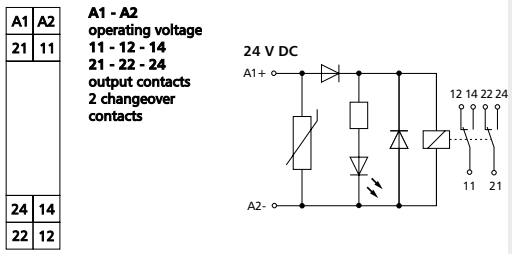
KRA-M8/21-21, 2 changeover contact, 24 V DC

Coupling devices are used to electrical isolation between logic and load.

- Connection with screw-type terminals
- closed compact series
- integrated protective circuit
- safe separation

Operating voltage	24 V DC
Current consumption	16 mA
Output / contacts	2 changeover contacts (DPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	4 A
Output / switching frequency	360 cycles/h
Response time	10 ms
Release time	5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	6 x 10^4 switching cycles
Cross-section	2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	11.2 x 61.3 x 60 mm
Weight	45 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11061925	gray	24 V DC	2 changeover contact

Control cabinet components

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Matching accessory for KRA-M8/21-21, 2 changeover contact, 230 V AC

KRA-M8/21-21, 2 changeover contact, 230 V AC

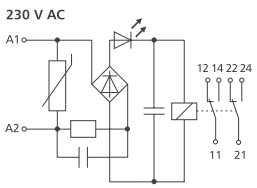
Coupling devices are used to electrical isolation between logic and load.

- Connection with screw-type terminals
- closed compact series
- integrated protective circuit
- safe separation

Operating voltage	230 V AC
Current consumption	16 mA
Output / contacts	2 changeover contacts (DPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	4 A
Output / switching frequency	360 cycles/h
Response time	10 ms
Release time	15 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	6 x 10^4 switching cycles
Cross-section	2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	11.2 x 61.3 x 60 mm
Weight	45 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram

A1 - A2
operating voltage
11 - 12 - 14
21 - 22 - 24
output contacts
2 changeover contacts



P/N	Color	Feature 1	Feature 2
11061905	gray	230 V AC	2 changeover contact

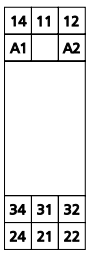
KRA-S12/21-21-21

Coupling devices are used to electrical isolation between logic and load.

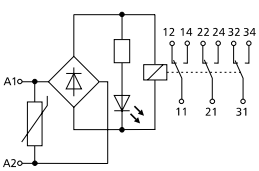
- Connection with screw-type terminals

Operating voltage AC/DC	24 V AC/DC
Current consumption 24 V AC/DC	50 mA
Output / contacts	3 changeover contacts (3PDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	6 A
Output / switch-on current	8 A
Output / switching frequency	360 cycles/h
Response time	10 ms
Release time	5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	22.5 x 75 x 95 mm
Weight	140 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



A1 - A2
operating voltage
11 - 12 - 14
21 - 22 - 24
31 - 32 - 34
output contacts
3 changeover contacts



P/N	Color	Feature 1	Feature 2
11060913	gray	24 V AC/DC	3 changeover contact

Matching accessory for RM21-21 24 V DC

	Page
RC module for industrial sockets	111

Matching accessory for RM21-21 24 V AC or 230 V AC

	Page
RC module for industrial sockets	111

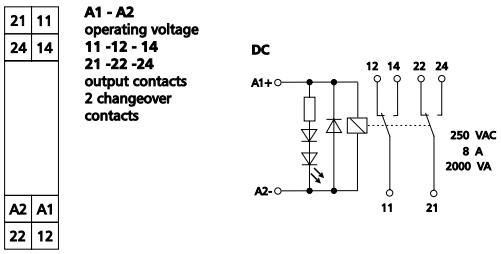
RM21-21 24 V DC

Relay module for electrical isolation between logic and load.

- Connection with screw-type terminals
- pluggable relay
- with labeling field

Operating voltage	24 V DC
Current consumption	17 mA
Output / contacts	2 changeover contacts (DPDT)
Output / contact material	AgNi 90/10
Output / switching voltage	250 V AC
Output / continuous current	8 A
Output / switching frequency	360 cycles/h
Mechanical endurance	30 x 10^6 switching cycles
Electrical endurance	1 x 10^6 switching cycles
Anschlussquerschnitt	2 x 2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	15.5 x 75 x 65 mm
Weight	95 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11050725	black	24 V DC	2 changeover contact

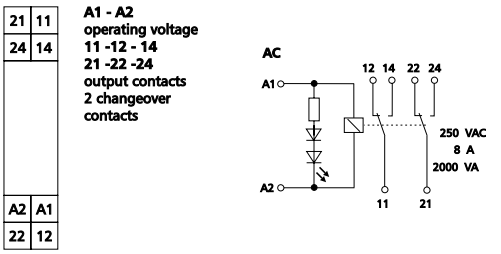
RM21-21 24 V AC or 230 V AC

Relay module for electrical isolation between logic and load.

- Connection with screw-type terminals
- pluggable relay
- with labeling field

Operating voltage	24 V or 230 V AC
Current consumption 24 V AC	32 mA
Current consumption 230 V AC	3,3 mA
Output / contacts	2 changeover contacts (DPDT)
Output / contact material	AgNi 90/10
Output / switching voltage	250 V AC
Output / continuous current	8 A
Output / switching frequency	360 cycles/h
Mechanical endurance	5 x 10^6 switching cycles
Electrical endurance	1 x 10^6 switching cycles
Cross-section	2 x 2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	15.5 x 75 x 65 mm
Weight	95 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11050710	black	24 V AC	2 changeover contact
11050705	black	230 V AC	2 changeover contact

Control cabinet components

C | Logline

Matching accessory for RM3-2W 24 V DC

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RC module for industrial sockets	111

Matching accessory for RM3-2W 24 V AC or 230 V AC

	Page
RC module for industrial sockets	111

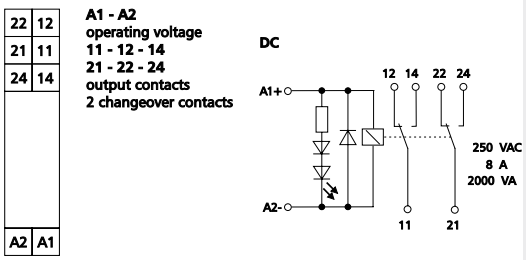
RM3-2W 24 V DC

Relay module for electrical isolation between logic and load.

- Connection with screw-type terminals
- pluggable relay
- with labeling field

Operating voltage	24 V DC
Current consumption	17 mA
Output / contacts	2 changeover contacts (DPDT)
Output / contact material	AgNi 90/10
Output / switching voltage	250 V AC
Output / continuous current	8 A
Output / switching frequency	360 cycles/h
Mechanical endurance	30 x 10^6 switching cycles
Electrical endurance	1 x 10^6 switching cycles
Cross-section	2 x 2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	15.5 x 75 x 65 mm
Weight	95 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11051025	black	24 V DC	2 changeover contact

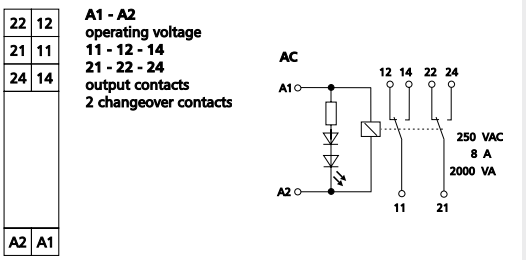
RM3-2W 24 V AC or 230 V AC

Relay module for electrical isolation between logic and load.

- Connection with screw-type terminals
- pluggable relay
- with labeling field

Operating voltage	24 V or 230 V AC
Current consumption 24 V AC	32 mA
Current consumption 230 V AC	3,3 mA
Output / contacts	2 changeover contacts (DPDT)
Output / contact material	AgNi 90/10
Output / switching voltage	250 V AC
Output / continuous current	8 A
Output / switching frequency	360 cycles/h
Mechanical endurance	5 x 10^6 switching cycles
Electrical endurance	1 x 10^6 switching cycles
Cross-section	2 x 2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	15.5 x 75 x 65 mm
Weight	95 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11051010	black	24 V AC	2 changeover contact
11051005	black	230 V AC	2 changeover contact

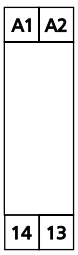
KRE-M4/1 DC

Transistor couplers are used for switching DC loads.

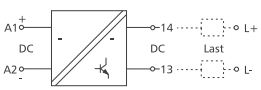
- Connection with screw-type terminals
- Protective diode

Input / operating voltage	24 V DC
Input / power consumption	10 mA
Output / switching voltage	4 to 48 V DC
Output / continuous current	0.8 A
Output / current pulse	2 A / 1 s
Cross-section	2.5 mm
Display	Green LED
Dimensions (W x H x D)	11.2 x 61.3 x 43 mm
Weight	35 g
Operating temperature range	0 °C to +50 °C
Storage temperature range	-10 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



A1 - A2
operating voltage
13 - 14
electronic
output



P/N	Color	Feature 1	Feature 2
1106302517	gray		

KRE-M4/1 AC

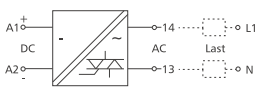
Triac couplers are used for switching AC loads.

- Connection with screw-type terminals
- Zero point switch
- RC element

Input / operating voltage	24 V DC
Input / power consumption	10 mA
Output / switching voltage	26 to 250 V AC
Output / continuous current	0.8 A
Output / current pulse	2 A / 1 s
Cross-section	2.5 mm²
Display	Green LED
Dimensions (W x H x D)	11.2 x 61.3 x 43 mm
Weight	35 g
Operating temperature range	0 °C to +50 °C
Storage temperature range	-10 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram

A1 - A2
operating voltage
13 - 14
electronic
output



P/N	Color	Feature 1	Feature 2
1106312518	gray		

Matching accessory for KMA-F8

Matching accessory for KMAi-F8

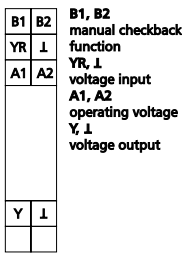
KMA-F8

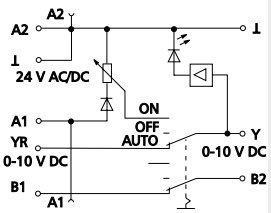
The analog encoder is used as encoder for manual control variable definition, e.g. mixing valves, valve positions, temperature values, etc. The module can be operated in three modes, which can be commuted by means of integrated three-level switches (ON, OFF, automatic). The switch position is signalized by external control contact terminals B1 and B2. The control variable can be set on the potentiometer at the front.
The output signal 0 to 10 V is available on the Y terminal.
If the switch is in "AUTO" position, the control variable is looped through over the YR terminal to the Y output without change.

- Connection by spring clamp terminal blocks (push-in)
- Setpoint device
- Manual control level with checkback
- LED brightness proportional to control variable

Input / operating voltage	24 V AC/DC
Input / power consumption	30 mA
Input / power consumption	19 mA
Input / voltage	0 to 10 V DC
Output / voltage	0 to 10 V DC
Display	Red LED
Dimensions (W x H x D)	11.2 x 87.5 x 60 mm
Weight	43 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram





P/N	Color	Feature 1	Feature 2
110730	gray	24 V AC/DC	0-10 V DC
11073001	gray	24 V AC/DC	0 - 10 V DC Return voltage proof

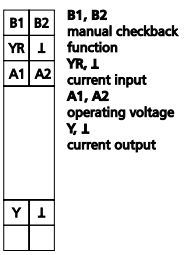
KMAi-F8

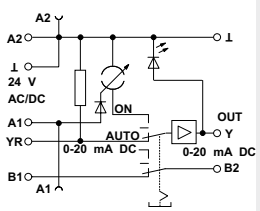
The analog encoder is used for manual control variable settings for example for mixing valves, valve positions, temperature values etc. The module can be controlled in two operating modes that are set by means of the three level switch (ON, OFF, AUTO) on the front. The switch position is confirmed via the two external control contacts B1 and B2. Switch position "ON" The control variable can be set with the potentiometer on the front. The output signal 0 to 20 mA is available at contact Y. The current flow at input YR is not interrupted when the switch is in position ON or OFF.
Switch position "AUTO"
The input current (YR) is transmitted to the control variable output Y with a tolerance of +/-5 % (full scale value).

- Connection by spring clamp terminal blocks (push-in)
- Setpoint generator
- Manual control level with checkback function
- LED brightness proportional to control variable

Input / operating voltage	24 V AC/DC
Input / Current consumption AC	30 mA
Input / Current consumption DC	19 mA
Input / voltage	0 to 20 mA DC
Output / voltage	0 to 20 mA DC
Display	Red LED
Dimensions (W x H x D)	11.2 x 87.5 x 60 mm
Weight	43 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram





P/N	Color	Feature 1	Feature 2
110731	gray	24 V AC/DC	0 - 20 mA

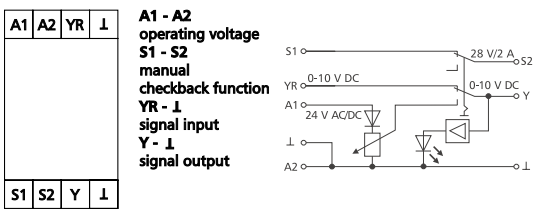
KMA-E08

The analog encoder is used as encoder for manual control variable definition, e.g. mixing valves, valve positions, temperature values, etc. The module can be operated in two modes, which can be commuted by means of integrated two-level switches (manual, automatic). The switch position is signalized by external control contact terminals S1 and S2. The control variable can be set on the potentiometer at the front.
The output signal 0 to 10 V is available on the Y terminal.
If the switch is in "AUTO" position, the control variable is looped through over the YR terminal to the Y output without change.

- Setpoint device
- Manual control level with checkback
- LED brightness proportional to control variable

Input / Operating voltage	24 V AC/DC
Input / Current consumption AC	24 mA
Input / Current consumption DC	19 mA
Input / voltage	0 to 10 V DC
Output / voltage	0 to 10 V DC
Display	Red LED
Dimensions (W x H x D)	22.5 x 61.3 x 60 mm
Weight	70 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
110660	gray	24 V AC/DC	0 - 10 V
11066001	gray	24 V AC/DC	0 - 10 V DC Return voltage proof

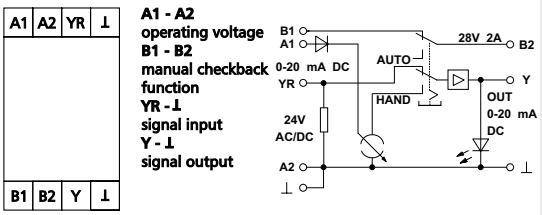
KMAi-E08

The analog encoder is used for manual control variable settings for example for mixing valves, valve positions, temperature values etc. The module can be controlled in two operating modes that are set by means of the two level switch (Hand, Auto) on the front. The switch position is confirmed via the two external control contacts B1 and B2. Switch position "Hand" (manual mode)The control variable can be set with the potentiometer on the front. The output signal 0 to 20 mA is available at contact Y. The current flow at input YR is not interrupted.
Switch position "Auto"
The input current (YR) is transmitted to the control variable output Y with a tolerance of +/-5 % (full scale value).

- Setpoint generator
- Manual control level with checkback function
- LED brightness proportional to control variable

Input / operating voltage	24 V AC/DC
Input / Current consumption AC	50 mA
Input / Current consumption DC	30 mA
Input / current	0 to 20 mA DC
Output / current	0 to 20 mA DC
Display	Red LED
Dimensions (W x H x D)	22.5 x 61.3 x 60 mm
Weight	70 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
110659	gray	24 V AC/DC	0 - 20 mA

Matching accessory for PV10 F10

	Page
Labeling plate Series KRA-F8/F10	108

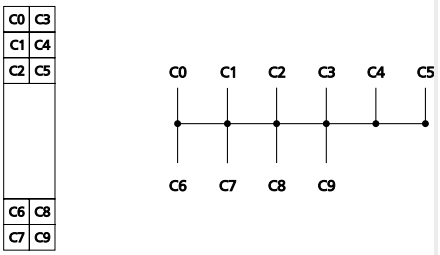
PV10 F10

The potential distributor distributes the potential of up to 10 lines on the top hat rail.

- Potential distributor
- Connection with spring-clamp terminal blocks (push-in)
- Test contacts for each terminal block

Operating voltage	250 V AC/DC
Total current	16 A AC/DC
Solid wire cross-section	0.08 mm² - 2.5 mm²
Stranded wire without end sleeve	0.08 mm² - 2.5 mm²
Stranded wire with end sleeve	0.08 mm² - 1.5 mm²
Dimensions (W x H x D)	11.2 x 87.5 x 60 mm
Weight	30 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Type of protection	IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
110720	gray	250 V AC/DC	

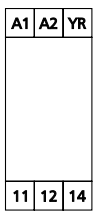
KRS-E06

The threshold gate switches units, pumps, fans, burners, etc. As soon as the input voltage reaches the switching threshold, the relay is activated. When the input voltage falls below the switch-off threshold, the relay is released again.

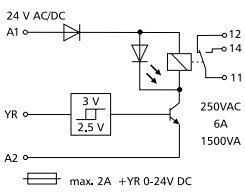
- Connection with screw-type terminals

Operating voltage	24 V AC/DC
Current consumption 24 V AC	80 mA
Current consumption 24 V DC	16 mA
Threshold voltage	3.0 V DC
Switch-off voltage	2.5 V DC
Output / voltage	250 V AC
Output / contact	1 changeover contact (SPST)
Output / contact material	$AgSnO_2$
Output / continuous current	6 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Display	Yellow LED
Dimensions (W x H x D)	17.5 x 61.3 x 60 mm
Weight	70 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



A1 - A2
operating voltage
YR
signal input
11 - 12 - 14
output contact
1 changeover



P/N	Color	Feature 1	Feature 2
110655	gray	2.5 V off 3 V on	w/o manual control

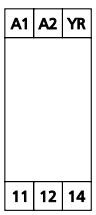
KRS-E06 H

The threshold gate switches units, pumps, fans, burners, etc. As soon as the input voltage reaches the switching threshold, the relay is activated. When the input voltage falls below the switch-off threshold, the relay is released again.

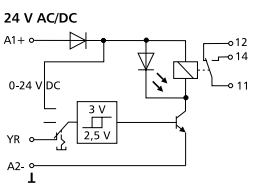
- with manual control level
- Connection with screw-type terminals

Operating voltage	24 V AC/DC
Current consumption 24 V AC	80 mA
Current consumption 24 V DC	16 mA
Threshold voltage	3.0 V DC
Switch-off voltage	2.5 V DC
Output / voltage	250 V AC
Output / contact	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / continuous current	6 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Display	Yellow LED
Dimensions (W x H x D)	17.5 x 61.3 x 60 mm
Weight	70 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



A1 - A2
operating voltage
YR
signal input
11 - 12 - 14
output contact
1 changeover



P/N	Color	Feature 1	Feature 2
110661	gray	2.5 V off 3 V on	with manual control

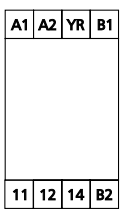
KRS-E08 HR

The threshold gate switches units, pumps, fans, burners, etc. As soon as the input voltage reaches the switching threshold, the relay is activated. When the input voltage falls below the switch-off threshold, the relay is released again.

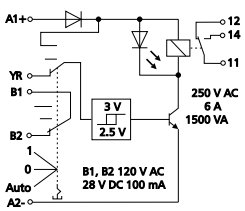
- with manual control level
- Connection with screw-type terminals

Operating voltage	24 V AC/DC
Current consumption 24 V AC	80 mA
Current consumption 24 V DC	16 mA
Threshold voltage	3.0 V DC
Switch-off voltage	2.5 V DC
Output / voltage	250 V AC
Output / contact	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / continuous current	6 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Display	Yellow LED
Dimensions (W x H x D)	22.5 x 61.3 x 60 mm
Weight	70 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



A1 - A2
operating voltage
24 V AC/DC
B1 - B2
manual checkback function
YR
signal input
11 - 12 - 14
output contact
1 changeover



P/N	Color	Feature 1	Feature 2
110667	gray	2.5 V off 3 V on	1 DPST

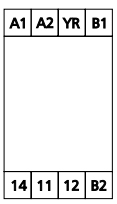
KRS-E08 HRP

The threshold gate switches units, pumps, fans, burners, etc. As soon as the input voltage reaches the switching threshold, the relay is activated. When the input voltage falls below the switch-off threshold, the relay is released again.

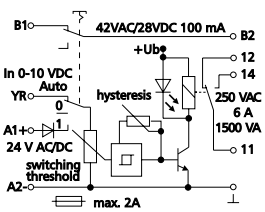
- with manual control level
- Adjustable switch-on voltage and hysteresis
- Connection with screw-type terminals

Operating voltage	24 V AC/DC
Current consumption 24 V AC	80 mA
Current consumption 24 V DC	20 mA
Adjustable threshold voltage	1 to 10 V DC
Adjustable hysteresis	5 to 75 %
Switch-off voltage	2.5 V DC
Output / voltage	250 V AC
Output / contact	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / continuous current	6 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Display	Green LED
Dimensions (W x H x D)	22.5 x 61.3 x 60 mm
Weight	70 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



A1 - A2
operating voltage
24 V AC/DC
B1 - B2
manual checkback function
YR
signal input
11 - 12 - 14
output contact
1 changeover contact



P/N	Color	Feature 1	Feature 2
110666	gray	selectable	1 DPST

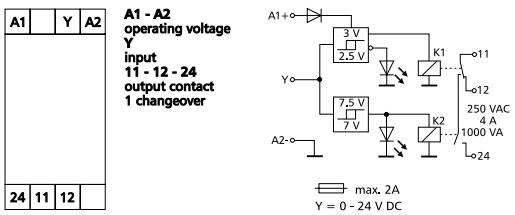
KRS-E08 3

The threshold gate switches units, pumps, fans, burners, etc. As soon as the input voltage reaches the switching threshold, the relay is activated. When the input voltage falls below the switch-off threshold, the relay is released again. The module is designed for a two-level control by means of an analog 0 to 10 V DC control signal.

- Control signal 0 V DC = Level 1 active
- Control signal 5 V DC = No level is active (OFF)
- Control signal 10 V DC = Level 2 active
- Connection with screw-type terminals

Operating voltage	24 V AC/DC
Current consumption 24 V AC	100 mA
Current consumption 24 V DC	35 mA
Output / voltage	250 V AC
Output / contact	1 changeover contact with 0 position
Output / contact material	$AgSnO_2$
Output / continuous current	4 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Display	Yellow and red LED
Dimensions (W x H x D)	22.5 x 61.3 x 60 mm
Weight	70 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
110673	gray	2.5 V off 7 V on	3 V off 7.5 V on

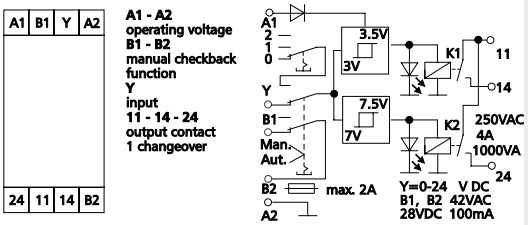
KRS1-E08 HR3

The threshold gate switches units, pumps, fans, burners, etc. As soon as the input voltage reaches the switching threshold, the relay is activated. When the input voltage falls below the switch-off threshold, the relay is released again. The module is designed for a two-level control by means of an analog 0 to 10 V DC control signal.

- Control signal 0 V DC = No level is active (OFF)
- Control signal 5 V DC = Level 1 active
- Control signal 10 V DC = Level 1 and Level 2 active
- with manual control level
- Connection with screw-type terminals

Operating voltage	24 V AC/DC
Current consumption 24 V AC	100 mA
Current consumption 24 V DC	35 mA
Output / voltage	250 V AC
Output / contact	2 levels with 0 position
Output / contact material	$AgSnO_2$
Output / continuous current	4 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Display	Yellow and red LED
Dimensions (W x H x D)	22.5 x 61.3 x 60 mm
Weight	70 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
110672	gray	2.5 V off 7 V on	3 V off 7.5 V on

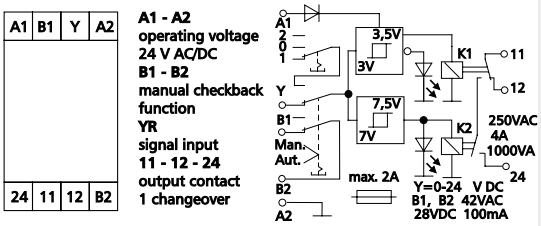
KRS-E08 HR3

The threshold gate switches units, pumps, fans, burners, etc. As soon as the input voltage reaches the switching threshold, the relay is activated. When the input voltage falls below the switch-off threshold, the relay is released again. The module is designed for a two-level control by means of an analog 0 to 10 V DC control signal.

- Control signal 0 V DC = Level 1 active
- Control signal 5 V DC = No level is active (OFF)
- Control signal 10 V DC = Level 2 active
- with manual control level
- Connection with screw-type terminals

Operating voltage	24 V AC/DC
Current consumption 24 V AC	100 mA
Current consumption 24 V DC	35 mA
Output / voltage	250 V AC
Output / contact	1 changeover contact with 0 position
Output / contact material	$AgSnO_2$
Output / continuous current	4 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Display	Yellow and red LED
Dimensions (W x H x D)	22.5 x 61.3 x 60 mm
Weight	70 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
110665	gray	2.5 V, 7 V off	3 V, 7.5 V on

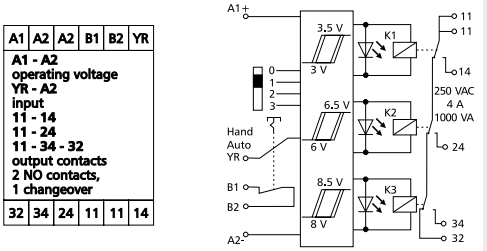
KRS-C12 3VHR

The threshold gate was developed for three-level motor control. Three LEDs are integrated in the module for visually checking the switching state.

- Activation by just one analog input
- Manual control level with checkback
- integrated timer relay
- 3 changeover contacts (3PDT) with automatic locking
- Connection with screw-type terminals

Operating voltage	24 V AC/DC
Current consumption 24 V AC	60 mA
Current consumption 24 V DC	22 mA
Output / voltage	250 V AC
Output / contact	3 changeover contacts (3PDT)
Output / contact material	$AgSnO_2$
Output / continuous current	4 A
Output / switching frequency	360 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Display	Yellow LED
Dimensions (W x H x D)	35 x 68 x 60 mm
Weight	95 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11043413	gray		

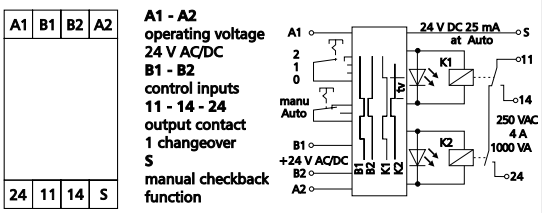
KRZ-E08 HR

The coupling module is designed for two-level motor control.

- Interlocked relays
- Manual control level
- Connection with screw-type terminals

Operating voltage	24 V AC/DC
Power consumption 24 V AC/DC	30 mA
Output / contacts	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	4 A
Output / switch-on current	6 A
Output / switching frequency	1200 cycles/h
Response time	20 ms
Release time AC/DC	20 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	2 red LEDs
Dimensions (W x H x D)	22.5 x 61.3 x 60 mm
Weight	70 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
110668132722	gray	switchover	0-1-2
110676132722	gray	switchover	1-0-2

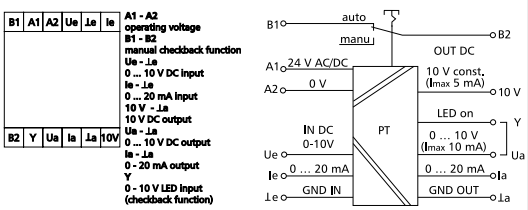
RIA CONNECT BTR NETCOM

PT-C12 / PTi-C12

The potential isolator / signal converter is used for isolating analog signals in the range from 0 to 10 V DC, and 0 to 20 mA DC or for a signal conversion from 0 to 10 V DC to 0 to 20 mA DC or 0 to 20 mA DC to 0 to 10 V DC. The input and output signals as well as the supply voltage are electrically isolated from each other. An input signal from 0 to 10 V or 0 to 20 mA can be connected to the device.
Electrical isolation function:
With the PT-C12, the input signal 0 to 10 V is adjusted proportionally to the output signal 0 to 10 V. The PTi-C12 adjusts the input signal from 0 to 20 mA proportional to the output signal from 0 to 20 mA.
Function Signal conversion with potential separation:
With a signal conversion from 0 to 10 V to 0 to 20 mA, or from 0 to 20 mA to 0 to 10 V, the output signal converted thereby can be readjusted using an integrated spindle trimmer.
In addition, a manual emergency operating option with a MANUAL AUTO switch with feedback contact is also integrated. The output signal from 0 to 10 V or 0 to 20 mA can be set via the front potentiometer when the switch is in the MANUAL position. A constant output voltage of max. 10 V DC and 5 mA is available at the 10V terminal. Input Y is used for the LED display of the output voltage Ua. The brightness of the LED depends on the level of the output signal (bridge between Ua and Y). Alternatively, an external signal at the input Y can be connected to the LED display from 0 to 10 V DC.

Operating voltage	24 V AC/DC
Test voltage / separation	1000 V DC
Input / voltage	0 to 10 V DC
Input / current	0 to 20 mA DC
Output / fix voltage	10 V DC / 5 mA, fix
Output / proportional voltage	0 to 10 V / max. 10 mA
Output / proportional current	0 to 20 mA
Output / current load	max. 500 Ohm
Display	Green LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	78 g
Operating temperature range	0 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



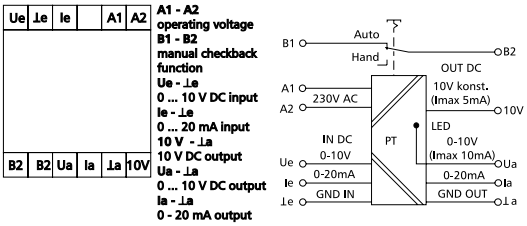
P/N	Color	Feature 1	Feature 2
110501	gray	24 V AC/DC	voltage balanced
11050108	gray	24 V AC/DC	current balanced

PT-C12 230 / PTi-C12 230

The potential isolator / signal converter is used for isolating analog signals in the range from 0 to 10 V DC, and 0 to 20 mA DC or for a signal conversion from 0 to 10 V DC to 0 to 20 mA DC or 0 to 20 mA DC to 0 to 10 V DC. The input and output signals as well as the supply voltage are electrically isolated from each other. An input signal from 0 to 10 V or 0 to 20 mA can be connected to the device.
Electrical isolation function:
With the PT-C12 230, the input signal 0 to 10 V is adjusted proportionally to the output signal 0 to 10 V. The PTi-C12 230 adjusts the input signal from 0 to 20 mA proportional to the output signal from 0 to 20 mA.
Function Signal conversion with potential separation:
With a signal conversion from 0 to 10 V to 0 to 20 mA, or from 0 to 20 mA to 0 to 10 V, the output signal converted thereby can be readjusted using an integrated spindle trimmer.
In addition, a manual emergency operating option with a MANUAL AUTO switch with feedback contact is also integrated. The output signal from 0 to 10 V or 0 to 20 mA can be set via the front potentiometer when the switch is in the MANUAL position. A constant output voltage of max. 10 V DC and 5 mA is available at the 10V terminal. The integrated LED is used to display the brightness depending on the level of the output signal Ua.

Operating voltage	230 V AC
Test voltage / separation	1000 V DC
Input / voltage	0 to 10 V DC
Input / current	0 to 20 mA DC
Output / fix voltage	10 V DC / 5 mA, fix
Output / proportional voltage	0 to 10 V / max. 10 mA
Output / proportional current	0 to 20 mA
Output / current load	max. 500 Ohm
Display	Green LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	78 g
Operating temperature range	0 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
110502	gray	230 V AC	voltage balanced
11050208	gray	230 V AC	current balanced

KAD-C12

The digital/analog converter is designed to convert contacts into an analog signal. The inputs are scanned in steps of 0.5 V. They can be connected to and scanned at a compact control with an analog input (0-10 V). The bridged inputs are signalized by means of LEDs. Example: S1 and S4 bridged corresponds to an output voltage of 4.5 V.

- Switching states are indicated by means of LEDs
- Connection with screw-type terminals

Operating voltage	24 V AC/DC
Current consumption 24 V AC	60 mA
Current consumption 24 V DC	50 mA
Input / scanning	0.5 V steps
Output / voltage	0 to 7.5 V DC
Display	Yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	30 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

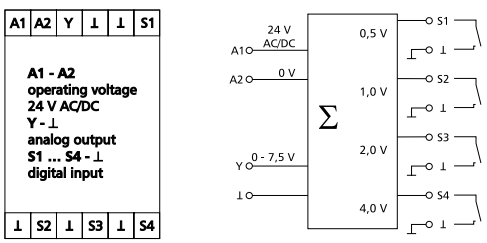
Table of switching conditions

Output V DC	Inputs S 1 2 3 4	Output V DC	Inputs S 1 2 3 4
0.0 V	0 0 0 0	4.5 V	1 0 0 1
0.5 V	1 0 0 0	5.0 V	0 1 0 1
1.0 V	0 1 0 0	5.5 V	1 1 0 1
1.5 V	1 1 0 0	6.0 V	0 0 1 1
2.0 V	0 0 1 0	6.5 V	1 0 1 1
2.5 V	1 0 1 0	7.0 V	0 1 1 1
3.0 V	0 1 1 0	7.5 V	1 1 1 1
3.5 V	1 1 1 0	>7.5 V	1 1 1 1
4.0 V	0 0 0 1		

Value of the inputs

S1 = 0.5 V	S2 = 1.0 V	S3 = 2.0 V	S4 = 4.0 V

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
110656	gray	4 x D/A converter	0 - 7.5 V output

ADU-C12

The analog/digital converter ADU-C12 processes input voltages from 0 to 7.5 V DC in 0.5 V steps. The digital outputs switch according to the applied input voltage. The outputs are updated every 1.5 seconds, and the switching state is signalized by means of an LED.

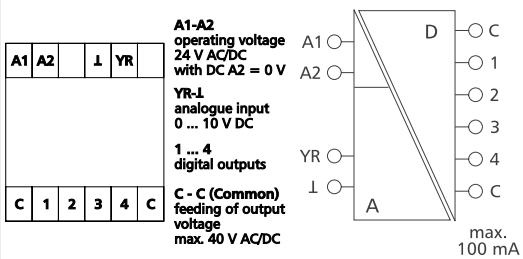
- Switching states are indicated by means of LEDs
- Connection with screw-type terminals

Operating voltage	24 V AC/DC
Current consumption 24 V AC	35 mA
Current consumption 24 V DC	16 mA
Input / voltage	0 to 10 V
Input / scanning	0.5 V steps
Output / voltage	up to 40 V AC/DC
Output / power consumption	max. 100 mA / channel
Display	Green and yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	30 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Table of switching conditions

Input V DC	Outputs 1 2 3 4	Input V DC	Outputs 1 2 3 4
0.0 V	0 0 0 0	4.5 V	1 0 0 1
0.5 V	1 0 0 0	5.0 V	0 1 0 1
1.0 V	0 1 0 0	5.5 V	1 1 0 1
1.5 V	1 1 0 0	6.0 V	0 0 1 1
2.0 V	0 0 1 0	6.5 V	1 0 1 1
2.5 V	1 0 1 0	7.0 V	0 1 1 1
3.0 V	0 1 1 0	7.5 V	1 1 1 1
3.5 V	1 1 1 0	>7.5 V	1 1 1 1
4.0 V	0 0 0 1		

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11043513	gray	4 x A/D converter	0 - 10 V input

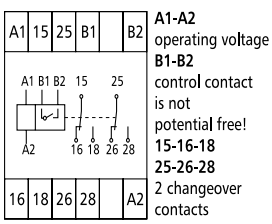
RTM-C12

The timer relay is used for pulse prolongation. When the control contact is closed min. 5 ms, the relay is activated and releases after the adjusted pulse time has lapsed. Further control pulses during the pulse time do not have any effect.

- Adjustable pulse length: 0.15 to 3 s
- Connection with screw-type terminals

Operating voltage	24 V AC/DC
Current consumption max.	less than or equal to 15 mA
Continuous current max.	8 A
Output / contact	2 changeover contacts (DPDT)
Output / contact material	AgNi 90/10 gold plated
Response time typical	20 ms
Release time typical	20 ms
Recovery time	greater than or equal to 20 ms
Minimum switch-on duration	greater than or equal to 5 ms
Mechanical endurance	3 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Wire cross section solid wire	2.5 mm² / AWG 14
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	160 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Function diagram



P/N	Color	Feature 1	Feature 2
11027613	gray	24 V AC/DC	2 DPST

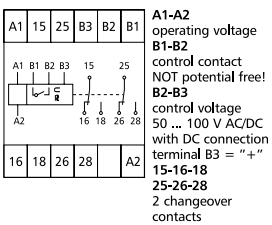
RTM-C12 230 V

The timer relay is used for pulse prolongation. When the control contact is closed min. 5 ms, the relay is activated and releases after the adjusted pulse time has lapsed. Further control pulses during the pulse time do not have any effect.

- Adjustable pulse length: 0.15 to 3 s
- Connection with screw-type terminals

Operating voltage	230 V AC
Current consumption max.	less than or equal to 15 mA
Continuous current max.	8 A
Output / contact	2 changeover contacts (DPDT)
Output / contact material	AgNi 90/10 gold plated
Response time typical	20 ms
Release time typical	20 ms
Recovery time	greater than or equal to 20 ms
Minimum switch-on duration	greater than or equal to 5 ms
Mechanical endurance	3 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Wire cross section solid wire	2.5 mm² / AWG 14
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	160 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Function diagram



P/N	Color	Feature 1	Feature 2
11027605	gray	230 V AC	2 DPST

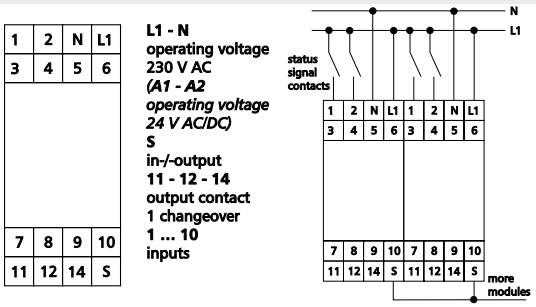
SMM-E16

The annunciator module can indicate to 10 incoming messages by means of a relay. The relay is activated as soon as a voltage is applied to min. one of the 10 inputs. The supply voltage has to be applied continuously to the terminals L1 - N. Several modules with the same voltage can be grouped over the input/output "S". As soon as one relay of the modules is activated, all other relays of the modules operated in parallel are activated.

- Cascade connection of the devices possible
- 10 signal inputs
- Connection with screw-type terminals

Operating voltage	24 V AC/DC, 230 V AC/DC
Power consumption: 24 V AC/DC	20 mA
Power consumption: 230 V AC/DC	20 mA
Output / contact	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V
Output / continuous current	4 A
Output / switching frequency	1200 cycles/h
Response time	10 ms
Release time	5 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Dimensions (W x H x D)	22.5 x 61.3 x 60 mm
Weight	70 g
Operating temperature range	-10 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
110518	gray	230 V AC	1 DPST
11051813	gray	24 V AC/DC	1 DPST

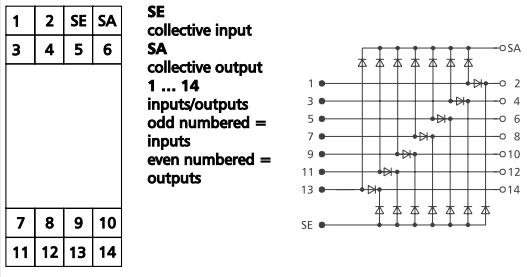
LTM-E16

The lamp test module combines several functions in one module (individual and collective messages and lamp test). The incoming fault messages are applied to the inputs (1, 3, 5, 7, 9, 11, 13). The signal lamps are connected to the outputs (2, 4, 6, 8, 10, 12, 14). When there is a message at an input, the belonging signal lamp lights up. At the same time, a signal is transmitted to the SA output. When a signal is applied to the SE input, all signal lamps light up without a signal being transmitted to the SA output. Please do not use it for 230 V LEDs! (capacitor power supply units)

- for 7 lamps
- Output for collective message
- Input for lamp test
- Connection with screw-type terminals

Input / voltage	250 V AC/DC
Input / cut-off voltage	1000 V
Input / cut-off current	30 μA at 75 °C
Input / forward current	1 A
Total current through all diodes	max. 3.5 A
Dimensions (W x H x D)	22.5 x 61.3 x 60 mm
Weight	100 g
Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
110280	gray		

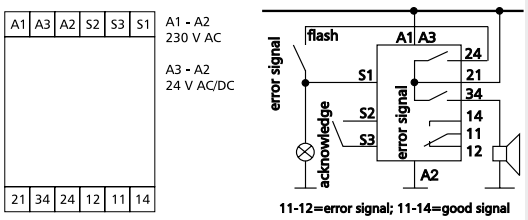
STM-C12

When a fault message is applied, an alarm signal, a flashing signal and a horn relay are activated. The horn relay can be switched off by means of the incorporated pushbutton or an externally applied signal. An active alarm signal is shown as long as it is applied.

- acknowledgeable horn output
- Connection with screw-type terminals

Operating voltage	24 V AC/DC, 230 V AC/DC
Current consumption	less than 60 mA
Output / contact	3 relay outputs
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V
Output / continuous current	4 A
Output / switching frequency	360 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	6 x 10^4 Schaltspiele
Cross-section	2.5 mm^2
Display	Yellow LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	70 g
Operating temperature range	0 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
110520	gray		

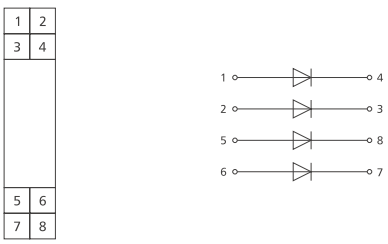
KD-M8/4E

The diode module is equipped with 4 individual diodes. The modules are used for inverse-polarity protection, decoupling and arc extinction.

- individual circuit
- Connection with screw-type terminals

Cut-off voltage	1000 V
Input / voltage	250 V AC/DC
Forward current	1 A
Forward voltage	1.1 V at 1 A
Total current through all diodes	less than or equal to 1.8 A
Cut-off current	30 µA at 75 °C
Dimensions (W x H x D)	11.2 x 61.3 x 60 mm
Weight	30 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
110639	gray	individual	4 diodes

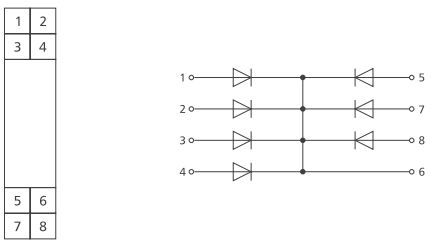
KD-M8/7K

The diode module is equipped with 7 diodes. The cathodes of the diodes are all connected to each other. The module is used for failure indication systems (collective fault message).

- common cathode
- Connection with screw-type terminals

Cut-off voltage	1000 V
Input / voltage	250 V AC/DC
Forward current	1 A
Forward voltage	1.1 V at 1 A
Total current through all diodes	ess than or equal to 1.8 A
Cut-off current	30 µA at 75 °C
Dimensions (W x H x D)	11.2 x 61.3 x 60 mm
Weight	20 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
110641	gray	common cathode	7 diodes

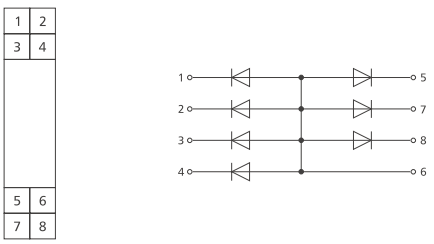
KD-M8/7A

The diode module is equipped with 7 diodes. The anodes of the diodes are all connected to each other. The module is used for failure indication systems (lamp tests).

- common anode
- Connection with screw-type terminals

Cut-off voltage	1000 V
Input / voltage	250 V AC/DC
Forward current	1 A
Forward voltage	1.1 V at 1 A
Total current through all diodes	less than or equal to 1.8 A
Cut-off current	30 µA at 75 °C
Dimensions (W x H x D)	11.2 x 61.3 x 60 mm
Weight	20 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
110640	gray	common anode	7 diodes

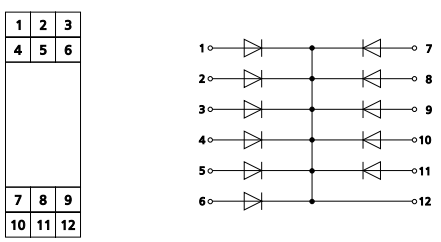
KD-S12/11K

The diode module is equipped with 11 diodes. The cathodes of the diodes are all connected to each other. The module is used for failure indication systems (collective fault message).

- common cathode
- Connection with screw-type terminals

Cut-off voltage	1000 V
Input / voltage	250 V AC/DC
Forward current	1 A
Forward voltage	1.1 V at 1 A
Total current through all diodes	less than or equal to 3.2 A
Cut-off current	30 µA at 75 °C
Dimensions (W x H x D)	22.5 x 75 x 95 mm
Weight	20 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
110629	gray	common anode	11 diodes

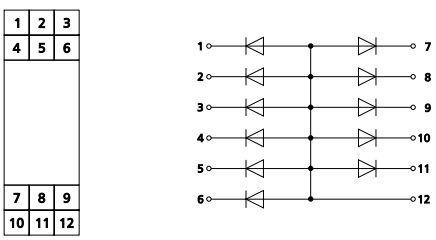
KD-S12/11A

The diode module is equipped with 11 diodes. The anodes of the diodes are all connected to each other. The module is used for failure indication systems (lamp tests).

- common anode
- Connection with screw-type terminals

Cut-off voltage	1000 V
Input / voltage	250 V AC/DC
Forward current	1 A
Forward voltage	1.1 V at 1 A
Total current through all diodes	less than or equal to 3.2 A
Cut-off current	30 µA at 75 °C
Dimensions (W x H x D)	22.5 x 75 x 95 mm
Weight	20 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
110628	gray	common anode	11 diodes

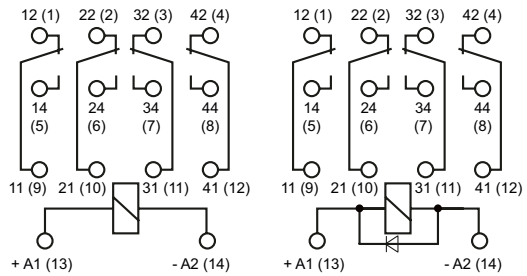
MC274-4W

Compact, pluggable relay for industrial use.

- Socket pins as soldering lugs
- mechanical switch position display
- With manual test button
- cadmium-free contacts
- LED-Indicator

Operating voltage AC	24 V AC or 230 V AC
Operating voltage DC	24 V DC
Current consumption 24 V AC	65 mA
Current consumption 24 V DC	41 mA
Current consumption 230 V AC	8 mA
Continuous current	7 A
Output / contact	4 changeover contacts (4DPST)
Output / contact material	Silver alloy
Output / switching capacity	1500 VA
Mechanical endurance	1 x 10^7 switching cycles
Display	LED and mechanical
Dimensions (W x H x D)	21 x 35.5 x 27.4 mm
Weight	35 g
Operating temperature range	-40 °C to +55 °C
Storage temperature range	-40 °C to +85 °C

Wiring AC/Wiring DC



P/N	Color	Feature 1	Feature 2
110017051407	gray	230 V AC	4 DPST
110017101407	gray	24 V AC	4 DPST
110017251407	gray	24 V DC	4 DPST

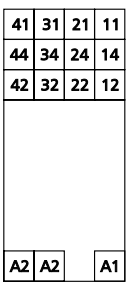
Socket 14 poles

14-pole relay socket for commercially available industrial relays with screw-type terminals. All metal parts are arranged under cover to protect them against contact. The relay socket matches MC274.

- Optional bracket
- integrated quick fastening for DIN rail
- Terminal designation to EN 50022
- separate input and output

Nominal current	10 A
Nominal voltage	300 V AC
Electric strength	
Coil / contact	2500 V / 50 Hz / 1min
Isolationsgruppe	VDE 0110b C250
Ambient temperature	+70 °C
Protection against contact	VBG 4
Solid wire cross-section	2 x 2.5 mm²
Stranded wire with end sleeve	2 x 1.5 mm²
Screw torque	max. 0.8 Nm
Housing dimensions (W x H x D)	27.2 x 75 x 61.2 mm
Weight	63 g
Operating temperature range	0 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection	IP20

Wiring



P/N	Color	Feature 1	Feature 2
110175	black	3 floors	

Matching accessory for Socket 14 poles for electronic modules

Matching accessory for Socket with spring-clamp terminals

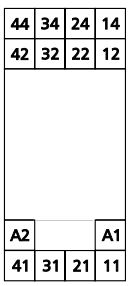
Socket 14 poles for electronic modules

14-pole relay socket for commercially available industrial relays with screw-type terminals. All metal parts are arranged under cover to protect them against contact. The relay socket matches R274. Electronic modules, such as LED or RC modules, can be plugged in the socket optionally.

- Optional bracket
- integrated quick fastening for DIN rail
- Terminal designation to EN 50022
- separate input and output

Nominal current	10 A
Nominal voltage	300 V AC
Electric strength	
Coil / contact	2500 V / 50 Hz / 1 min
Isolation group	VDE 0110b C250
Ambient temperature	+70 °C
Protection against contact	VBG 4
Solid wire cross-section	2 x 2.5 mm²
Stranded wire with end sleeve	2 x 1.5 mm²
Screw torque	max. 0.8 Nm
Housing dimensions (W x H x D)	27.2 x 75 x 42.6 mm
Weight	56 g
Operating temperature range	0 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection	IP20

Wiring



P/N	Color	Feature 1	Feature 2
110178	black	2 floors	

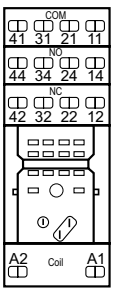
Socket with spring-clamp terminals

14-pole relay socket with spring-loaded terminals for commercially available industrial relays. All metal parts are arranged under cover to protect them against contact. The relay socket matches to industrial relay MC274. Electronic modules, such as LED or RC modules, can be plugged in the socket optionally.

- Optional bracket
- integrated quick fastening for DIN rail
- Terminal designation to EN 50022
- separate input and output

Nominal current	10 A
Nominal voltage	300 V AC
Electric strength	
Coil / contact	2500 V
Isolation group	VDE 0110b C250
Protection against contact	VBG 4
Solid wire	2 x 0.2 - 1.5 mm²
Stranded wire with end sleeve	2 x 0.2 - 1.5 mm²
Insulation strip length	7 mm
Pulling force (contact)	at least 35 N
Housing dimensions (W x H x D)	31 x 96.35 x 42.65 mm
Weight	88 g
Operating temperature range	0 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection	IP20

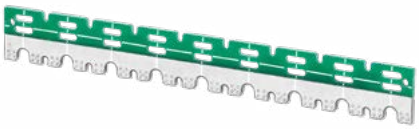
Wiring



P/N	Color	Feature 1	Feature 2
110185	black	3 floors	

Connecting bridge, 10 pole is matching accessory for

Labeling plate Series KRA-F8/F10 is matching accessory for



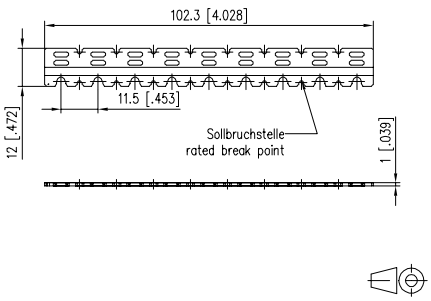
Connecting bridge, 10 pole

The connecting bridge easily connects the terminal blocks A1 and/or A2 of the coupling modules of series F8 and F10 by just plugging in, without having to wire the individual leads. The connecting bridge has 10 poles and is available with grid dimension 11.5 mm.

- Hot air tin-plated, lead-free surface
- flame retardant, self-extinguishing to UL 94V-2

Rated voltage	24 V AC/DC
Rated current	2 A
Number of poles	10
Grid dimension	11.5 mm
Upper temperature limit	100 °C
Lower temperature limit	-20 °C
Material / printed circuit board	FR4

Dimensional drawing



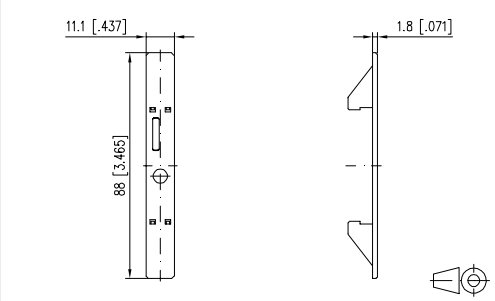
P/N	Color	Feature 1	Feature 2
110728	green		

Labeling plate Series KRA-F8/F10

The labeling plate was designed especially for coupling modules with spring-clamp terminal blocks of the series F8 and F10. Great importance was attached to an area for the device tag and one for identification.

- Material: ABS, transparent

Dimensional drawing



P/N	Color	Feature 1	Feature 2
110729	transparent		

Labeling plate Series KMA F8 is matching accessory for

	Page
KMA-F8	90
KMAi-F8	90

Matching accessory for Connecting bridge Series KRA-M4/M6/M8

	Page
End mount	110

Connecting bridge Series KRA-M4/M6/M8 is matching accessory for

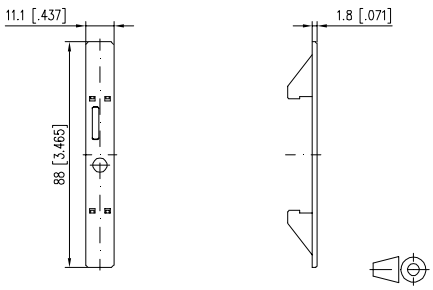
	Page
KRA-M4/1	from 81
KRA-M6	from 82
KRA-M8	from 85
KRA-SR-M8/21	from 86
KRA-M8/21-21	from 86

Labeling plate Series KMA F8

The labeling plate was designed especially for analog encoders with spring-clamp terminals. Great importance was attached to an area for the device tag and one for identification.

- Material: ABS, transparent

Dimensional drawing



P/N	Color	Feature 1	Feature 2
110727	transparent		

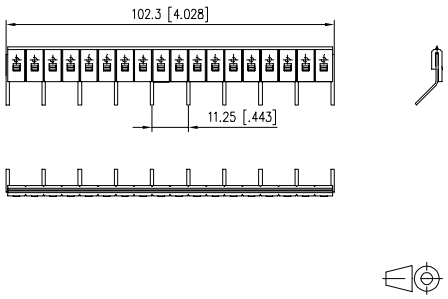
Connecting bridge Series KRA-M4/M6/M8

The connecting bridge easily connects the terminal blocks of the coupling modules of series KRA-M4/M6/M8, without having to wire them individually. The connecting bridge has 10 poles and is available with grid dimension 11.5 mm. The end mounts completely insulate the comb-type back to provide finger protection.

- Mechanically polished surface
- flame retardant, self-extinguishing to UL 94V-2

Rated voltage	250 V
Rated current	10 A
Number of poles	10
Grid dimension	11.5 mm
Upper temperature limit	100 °C
Lower temperature limit	-40 °C
Material / jumper	CuZn 37 F54
Ingress protection	IP20

Dimensional drawing



P/N	Color	Feature 1	Feature 2
850349-02	black	10 poles	

Labeling plate Series KRA-M4/M6/M8 is matching accessory for

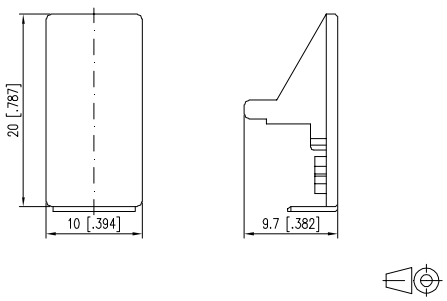
End mount for connecting bridge is matching accessory for

Labeling plate Series KRA-M4/M6/M8

The labeling plate was designed especially for coupling modules with switch because the labeling cannot be attached to the coupling module due to the incorporated switch.

- Material: PA 66, flame retardant and self-extinguishing to UL-94-V2

Dimensional drawing



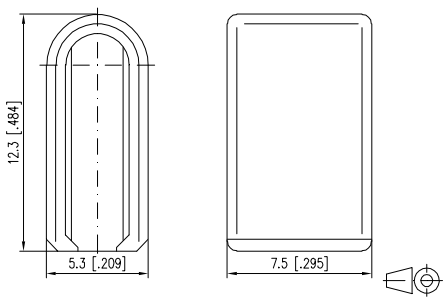
P/N	Color	Feature 1	Feature 2
820234-01-9	white		

End mount for connecting bridge

To be placed on the ends of the connecting bridge. The end mount completely insulates the comb-type back to provide finger protection.

- Material: PC Makrolon 2805 mat finish, eroded

Dimensional drawing



P/N	Color	Feature 1	Feature 2
820165-2	black		

Connecting bridge for industrial sockets is matching accessory for

	Page
Socket 14 poles 3 floors	106
Socket 14 poles 2 floors for electronic modules	107

Matching accessory for Connecting bridge for industrial sockets

	Page
End mount	110

RC module for industrial sockets is matching accessory for

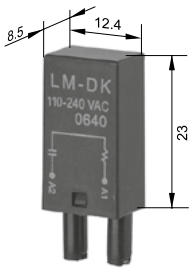
	Page
RM 21-21	87
RM3-2W	88
Socket 14 poles 2 floors for electronic modules	107

RC module for industrial sockets

RC module for 230 V AC or 24 V AC to suppress interference.

- for relay modules of the RM series and 14-pole Industry sockets

Dimensional drawing



P/N	Color	Feature 1	Feature 2
11017910	black	24 V AC	
11017905	black	230 V AC	

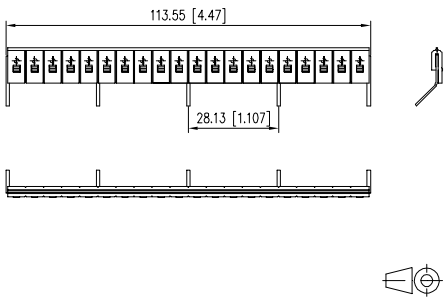
Connecting bridge for industrial sockets

The connecting bridge easily connects the terminal blocks of the 14-pole Industry sockets 110175 and 110178, without having to wire them individually. The connecting bridge has 5 poles and is available with grid dimension 28.1 mm. The end mounts completely insulate the comb-type back to provide finger protection.

- Mechanically polished surface
- flame retardant, self-extinguishing to UL 94V-2

Rated voltage	250 V
Rated current	10 A
Number of poles	5
Grid dimension	28.1 mm
Upper temperature limit	100 °C
Lower temperature limit	-40 °C
Material / jumper	CuZn 37 F54
Ingress protection	IP20

Dimensional drawing



P/N	Color	Feature 1	Feature 2
850349-03	black	5 poles	

Holding Bracket Wire / Holding bracket plastic is matching accessory for

Holding bracket wire

Metal holding bracket for securing the relay in the relay socket. It avoids that the relay gets loose due to vibrations.

P/N	Color	Feature 1	Feature 2
817133	black	Holder	Wire

Holding bracket plastic

Plastic holding bracket for securing the relay in the relay socket. It avoids that the relay gets loose due to vibrations.

P/N	Color	Feature 1	Feature 2
110189	black	Holder	Plastics

Control cabinet components | Measuring and monitoring relays

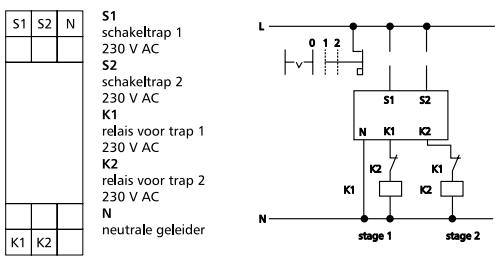
LTRk-E12

The fan timer relay was designed especially for controlling two-level motors. Response and switch-off delay can be adjusted separately and infinitely. A two-level switch is used for activation. The motor contactors are activated by two mutually blocking outputs.
Mode of operation:

- 1. If you directly select level 2, level 1 is first activated for the adjusted start-up time so that the fan can accelerate to nominal speed. Then level 2 is activated.
- 2. When switching from level 2 back to level 1 or switching off, a switch-off delay is activated allowing the fan to run down before level 1 is activated.
- 3. If level 1 has been activated for minimum the adjusted start-up time, it is immediately switched to level 2. When switching from level 1 to 2, the interruption may be max. 250 ms. If this time is exceeded, the procedure is as described under point 1.

Operating voltage AC	230 V AC
Operating voltage AC/DC	24 V AC/DC
Recovery time	approx. 20 ms
Output / voltage	Operating voltage
Output / max. current	6 A AC1 / 1.5 A AC3
Response time for level 1	0 ms
Response time for level 2	approx. 30 ms
Start-up delay	adjustable time of up to 30 s
Switch-off delay	adjustable time of up to 60 s
Dimensions (W x H x D)	22.5 x 75 x 95 mm
Weight	150 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



P/N	Color	Feature 1	Feature 2
11028313	gray	24 V AC	
1102830530	gray	230 V AC	

Matching accessory for DRIW-E16

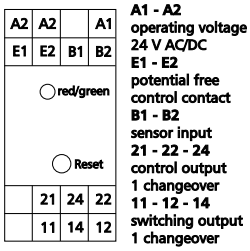
Two-wire sensor is matching accessory for

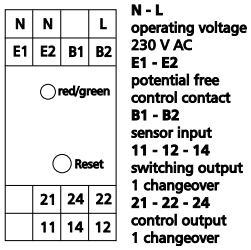
DRIW-E16

The speed and V-belt monitor is used for monitoring the rotary movement (insufficient speed) of motor and V-belt driven shafts. Inductive proximity switches are used for capturing the speed. Pulses are generated by the sensor without contact by means of driven control cams, toothed wheels, segmented discs, metal signal flags or similar. The relay is activated when the operating voltage is applied. After start-up bridging has finished, the monitoring function is started on the E1 and E2 terminals by means of the power contactor of the drive. When the drive speed falls below the switch-off speed, the relay is deactivated. The fault message of the speed or V-belt monitor is reset by means of the reset function and by switching off the operating voltage.

Operating voltage AC/DC	24 V AC/DC
Operating voltage AC	230 V AC
Recovery time	400 ms
Type of monitoring	Low speed
Max. monitoring range	4200 pulses/min
Switch-off range	120 pulses/min
Sensor input	Two-wire
Start-up bridging	60 s
Outputs	2 changeover contacts (DPDT)
Output / switching voltage	250 V
Output / current	6 A
Output / total current	8 A / across all contacts
Display	Green and red LED
Dimensions (W x H x D)	22.5 x 61.3 x 60 mm
Weight	70 g
Operating temperature range	0 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

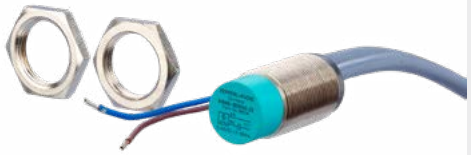
Wiring AC/DC / Wiring AC





P/N	Color	Feature 1	Feature 2
1101501322	gray	24 V AC/DC	
1101500522	gray	230 V AC	

Two-wire sensor

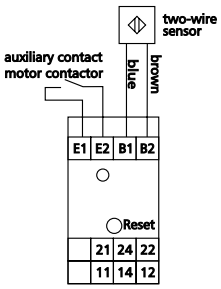


The sensor consists of a cylindrical nickel-plated metal body with M18 thread and 2 thin nuts. The cable output is located at the rear. Laterally, there is a yellow LED lighted in an attenuated state.The oscillator creates a high-frequency electromagnetic field emerging at the front of the sensor. It generates a field over the active area, which is called active pulse zone. When an electrically conductive material enters the field, it takes energy from the oscillator. This attenuates the oscillations so that they stop completely or partially. When the conductive material is removed from the active zone, the oscillator can again oscillate with its full amplitude. These two states can be evaluated electronically by the DRIW-E16.

The sensor has the following main components:

- 1. Oscillator (LC resonator)
- 2. Demodulator
- 3. Bistable amplifier
- 4. Amplifier

Wiring



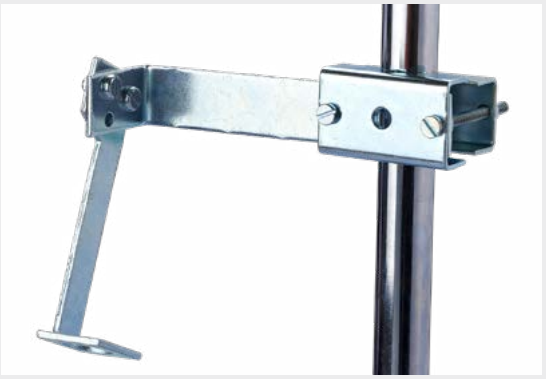
P/N	Color	Feature 1	Feature 2
110149	silver		

Mounting bracket HWR is matching accessory for

	Page
DRIW-E16	115

Mounting bracket HWF ist passendes Zubehör zu

	Page
DRIW-E16	115



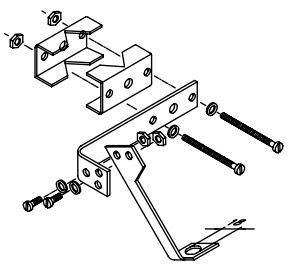
Mounting bracket HWR

To fasten sensors with max. diameters of 18 mm. For universal mounting. An auxiliary cam for shafts with diameters of up to 45 mm is included in the delivery.

Mounting bracket HWF

To fasten sensors with max. diameters of 18 mm. Ideal for fastening on flat irons. An auxiliary cam for shafts with diameters of up to 45 mm is included in the delivery.

Principle diagram



P/N	Color	Feature 1	Feature 2
110146	silver		

P/N	Color	Feature 1	Feature 2
110151	silver		

Matching accessory for CPW-E12

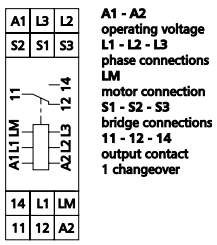
	Page
Current Converter TAmini 50/5 A	125
Current Converter TAmini 100/5 A	125

CPW-E12

The cosPhi monitor is used for detecting underload. The response value and the response time can be adjusted. It can also be used in combination with a frequency converter (frequency: 2 to 200 Hz). Monitoring is accomplished by recognizing the phase shift between current and voltage. This phase angle varies depending on the motor load. The functions can be adjusted by means of bridges S1 - S2 - S3
S1 - S2 open = relay deactivated with underload
S1 - S2 bridged = relay activated with underload
S1 - S3 open = with fault memory
S1 - S3 bridged = without fault memory
The module can be unblocked remotely by means of a closing contact on S1 - S3.
If there is a fault memory (no bridge over S1-S3), the fault message is active until it is acknowledged or the supply voltage is interrupted.

Operating voltage	230 V AC
Frequency range	2 to 200 Hz
Input / motor voltage	230 V AC / 400 V AC
Input / current	min. 0.2 A / max. 10 A
Input / cosPhi response value	0 to 0.97, adjustable
Input / response time	1 to 100 s, adjustable
Output	1 changeover contact (SPDT)
Output / switching voltage	max. 250 V AC
Output / continuous current	max. 4 A
Output / switching frequency	1200 cycles/h
Display	Green and red LED
Dimensions (W x H x D)	22.5 x 75 x 95 mm
Weight	170 g
Operating temperature range	0 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring



A1 - A2
operating voltage
L1 - L2 - L3
phase connections
LM
motor connection
S1 - S2 - S3
bridge connections
11 - 12 - 14
output contact
1 changeover

P/N	Color	Feature 1	Feature 2
1102810520	gray	measuring range	1 - 10 A
110281052013	gray	measuring range	0.2 - 2.5 A

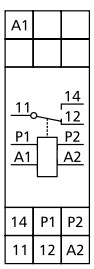
TMR-E12 without error memory

The thermistor relay is used as protection relay for motors against thermal overload (inadmissible heating). This heating might be caused by mechanical overload on the shaft or when operating the motor with inadmissible voltages. A PTC thermistor is used as sensor. It should be mounted to the part of the motor that heats most in case of overload (e.g. integrated in motor winding). The device can also be used for motors with integrated thermo switch.

Variants:
- 230 V AC or 24 V AC/DC
- 1 or 2 changeover contacts (1 or 2 DPST)

Operating voltage AC	230 V AC
Operating voltage AC/DC	24 V AC/DC
Start-up delay	100 ms
Input / thermistor voltage	12 V
Input / thermistor current	1 mA
Input / switch-on resistance	1.8 kOhm
Input / switch-off resistance	3.0 kOhm, +/- 5 %
Output / contact	1 (SPDT) or 2 (DPST) changeover contacts
Output / switching voltage	250 V
Output / continuous current	4 A
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Switching frequency	1200 cycles/h
Display	Green and red LED
Dimensions (W x H x D)	22.5 x 75 x 95 mm
Weight	150 g
Operating temperature range	0 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring



A1 - A2
operating voltage
230 V AC or 24 V AC/DC
P1 - P2
PTC thermistor
11 - 12 - 14
output contact
1 changeover contact

P/N	Color	Feature 1	Feature 2
11031505	gray	230 V AC, 1W	w/o errror memory
1103150522	gray	230 V AC, 2W	w/o errror memory
1103151322	gray	24 V AC/DC, 2W	w/o errror memory

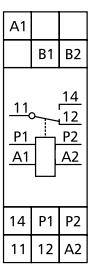
TMR-E12 with error memory

The thermistor relay is used as protection relay for motors against thermal overload (inadmissible heating). This heating might be caused by mechanical overload on the shaft or when operating the motor with inadmissible voltages. A PTC thermistor is used as sensor. It should be mounted to the part of the motor that heats most in case of overload (e.g. integrated in motor winding). The device can also be used for motors with integrated thermo switch. Integrated fault memory with reset key at the front.

Variants:
- 230 V AC or 24 V AC/DC
- 1 or 2 changeover contacts (1 or 2 DPST)

Operating voltage AC	230 V AC
Operating voltage AC/DC	24 V AC/DC
Start-up delay	10 ms
Input / thermistor voltage	12 V
Input / thermistor current	1 mA
Input / switch-on resistance	1.8 kOhm
Input / switch-off resistance	3.0 kOhm, +/- 5 %
Output / contact	1 (SPDT) or 2 (DPDT) changeover contacts
Output / switching voltage	250 V
Output / continuous current	4 A
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Switching frequency	1200 cycles/h
Display	Green and red LED
Dimensions (W x H x D)	22.5 x 75 x 95 mm
Weight	150 g
Operating temperature range	0 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring



A1 - A2
operating voltage
230 V AC or 24 V AC
P1 - P2
PTC thermistor
11 - 12 - 14
output contact
1 changeover
B1 - B2
external reset
(error memory)

P/N	Color	Feature 1	Feature 2
11031605	gray	230 V AC, 1W	with errror memory
1103160522	gray	230 V AC, 2W	with errror memory
1103161322	gray	24 V AC/DC, 2W	with errror memory

Matching accessory for ENW-E12

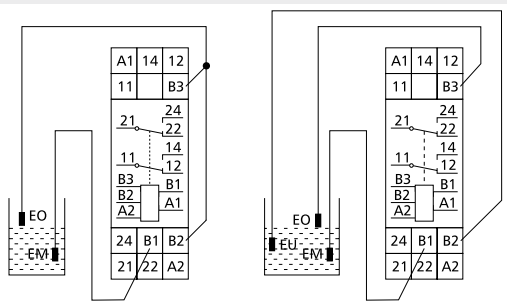
Submersible Electrode TE1 is matching accessory for

ENW-E12

The level sensor monitors filling levels or leakage of all conductive, noncombustible media. The trigger can be adjusted by means of a proportional potentiometer. As monitor, the device works with an electrode (EO) and the ground connection (EM), e.g. for minimum and maximum levels, to protect submersible pumps from overflowing or running dry. If the surface of the fluid is subject to disturbance, we recommend another electrode (EU). As two-level controller, the device controls pumps or valves for automatically filling and emptying containers by means of the EO and EU electrodes and the EM ground connection. A container wall, being conductive to the medium, can also be used as ground connection.With 2 electrodes connected the contacts B2 and B3 must be connected with a bridge! Variants: 230 V AC or 24 V AC

Operating voltage	230 V AC / 24 V AC
Response sensitivity	5 to 50 kOhm, adjustable
Input	up to 3 electrodes
Input / electrode voltage	12 V
Output / contact	2 changeover contacts (DPDT)
Output / switching voltage	250 V
Output / continuous current	6 A
Output / total current	8 A / across all contacts
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Switching frequency	600 cycles/h
Display	Green LED
Dimensions (W x H x D)	22.5 x 75 x 95 mm
Weight	300 g
Operating temperature range	0 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring



P/N	Color	Feature 1	Feature 2
11030805	gray	230 V AC	
11030810	gray	24 V AC	

Submersible Electrode TE1

One-pole submersible electrode made of stainless steel in plastic housing. To monitor filling levels of conductive liquids. To be connected to the level sensor ENW-E12 P/N 110308xx. Contents of the packaging: 1 submersible electrode, 1 sleeve, 1 strain relief

Connecting cable	H 07 RN-F 1.5 mm²
Submersible electrode	high-alloy steel, Material number 1.4104 (C12CrMoS12)
Dimensions (diameter x length)	23 mm x 130 mm

P/N	Color	Feature 1	Feature 2
110324	silver		

Leakage sensor LKS1 is matching accessory for

	Seite
MR-LD6	37
ENW-E12	119

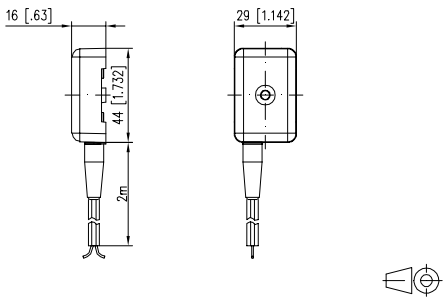
Leakage sensor LKS1

Leakage sensors are connected to level sensors, such as ENW-E12 (P/N 110308xx), to detect conductive liquids, for example, when a pipe bursts. If an electrically conductive liquid (e.g. water) comes between the two electrodes, an electrical connection is produced, which triggers an alarm in the connected level sensor ENW-E12.
Variants: Gray

Variants:
- LKS1, without wire break monitoring
- LKS-ZD, with wire break monitoring

Wire breakage monitoring unit	no
Connecting cable	2 x 0.75 mm²
Cable length	2 m
Elektrode	Stainless steel
Dimensions (W x H x D)	44 x 16 x 29 mm
Mounting	Mounting with 1 screw

Dimensional drawing



P/N	Color	Feature 1	Feature 2
110329	gray/black	LKS1	

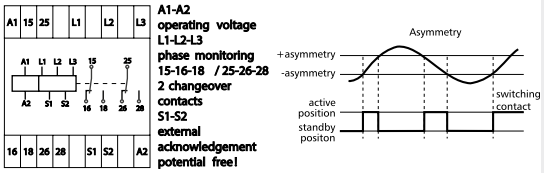
ASD-C18

Monitoring relay for monitoring asymmetry, phase failure, phase sequence errors, overvoltage and undervoltage of a three-phase connection. With external fault acknowledgement.

- Adjustable response delay
- Adjustable asymmetry
- Selectable fault memory
- 7-segment display

Operating voltage	230 V AC / 50 Hz
Current consumption	less than 15 mA
Response delay	0.1 to 9.9 s, adjustable
Asymmetry	5% to 20%, adjustable
Switching hysteresis	20 %
Monitoring voltage	3 x 230/400 V AC, 50 Hz
Output contact	2 changeover contacts (DPDT)
Max. switching voltage	250 V AC/DC
Max. continuous current	8 A
Mechanical endurance	3 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	200 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Function diagram



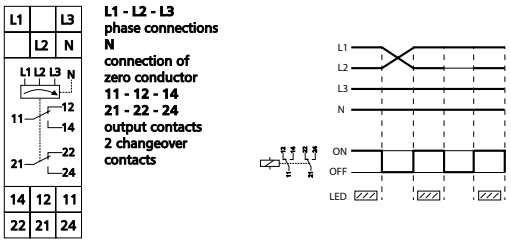
P/N	Color	Feature 1	Feature 2
110270	gray		

PFD2-E12

The monitoring relay monitors the correct phase sequence L1-L2-L3 (direction of rotation to the right) and complete failures of individual phase voltages.
The phase voltages to be monitored are connected to the terminals L1-L2-L3; the terminals 11, 14 or 21, 24 of the relay output contacts are connected ahead of the field coil of the motor relay.
If the phase sequence is correct, the output relay is activated (green LED is on). In case of total failure of a phase, the output relay returns to its neutral position (green LED is off).
A special supply voltage is not required for the monitoring relay. Only connect the device to N if the three phases to monitored are connected to N over an electric circuit (e.g. temperature monitoring or similar).

Supply and measuring voltage	L1-L2-L3 | 400 V
Current consumption	10 mA
Response delay	< = 1 s
Response delay by error	> = 100 ms
Contacts	2x changeover contact (DPDT)
Contact material	AgNi
Switching voltage	max. 250 V
Continuous current	max. 6 A
Switching frequency	1200 cycles/h
Mechanical endurance	3 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Display	Green LED
Housing Dimensions (W x H x D)	22.5 x 75 x 95 mm
Weight	120 g
Mounting acc. IEC 60715	TH35 rail DIN
Mounting position	any
Side-by-side mounting	without space
Material Housing	Polyamid 6.6 V0
Terminal blocks	Polyamid 6.6 V0
Ingress protection for housing / terminal block (IEC 60529)	IP40 / IP20
Temperature range Operation	-5 °C to +55 °C
Storage	-20 °C to +70 °C

Wiring/Function diagram



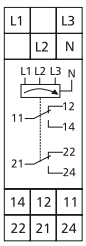
P/N	Color	Feature 1	Feature 2
110292032215	gray		

PFD3-E12

The monitoring relay monitors the correct phase sequence L1-L2-L3 (direction of rotation to the right) and complete failures of individual phase voltages.
The phase voltages to be monitored are connected to the terminals L1-L2-L3; the terminals 11, 14 or 21, 24 of the relay output contacts are connected ahead of the field coil of the motor relay.
If the phase sequence is correct, the output relay is activated (green LED is on). In case of total failure of a phase, the output relay returns to its neutral position (green LED is off).
A special supply voltage is not required for the monitoring relay. Connect the device to N. In case of total failure of N (zero conductor), the output relay returns to its neutral position (green LED is off).

Supply and measuring voltage	L1-L2-L3-N | 400 V / 230 V
Current consumption	10 mA
Response delay	< = 1 s
Response delay by error	> = 100 ms
Contacts	2x changeover contact (DPDT)
Contact material	AgNi
Switching voltage	max. 250 V
Continuous current	max. 6 A
Switching frequency	1200 cycles/h
Mechanical endurance	3 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Display	Green LED
Housing Dimensions (W x H x D)	22.5 x 75 x 95 mm
Weight	120 g
Mounting acc. IEC 60715	TH35 rail DIN
Mounting position	any
Side-by-side mounting	without space
Material Housing	Polyamid 6.6 V0
Terminal blocks	Polyamid 6.6 V0
Ingress protection for housing / terminal block (IEC 60529)	IP40 / IP20
Temperature range Operation	-5 °C to +55 °C
Storage	-20 °C to +70 °C

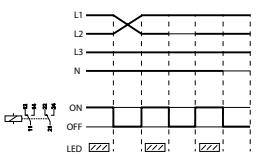
Wiring/Function diagram



L1 - L2 -L3
phase connections

N
connection of zero conductor

11 - 12 - 14
21 - 22 - 24
output contacts
2 changeover contacts



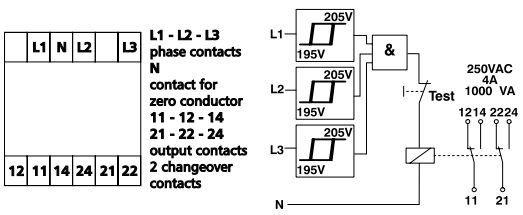
P/N	Color	Feature 1	Feature 2
110292032230	gray	Neutral connection	

DUW-C12

Undervoltage monitor in three-phase mains (each phase against neutral) with fixed threshold value, fixed hysteresis and integrated testing key. It has been developed especially for emergency lighting to DIN VDE 0108. The device can also be used for monitoring an individual phase. All unoccupied inputs have to be connected to the connected phase. If there is an inverse voltage due to the consumer, which exceeds the adjusted threshold value, there is not any fault message.
OK message: Relay is activated (contacts 11-14 and 21-24 closed), LED is off.
Fault message: Relay is deactivated (contacts 11-14 and 21-24 open), LED is on.
Key pressed: Relay is being deactivated (contacts 11-14 and 21-24 open), LED lights up.

Operating voltage	3N 400/230 V, 50 Hz
Tolerance	-30 % to +10 %
Consumption	16 VA (1.7 W)
Recovery time	less than 300 ms
Dropout voltage	less than 85 %
Trigger delay	approx. 100 ms
Threshold value	195 V AC, fixed
Hysteresis	approx. 5 %, fixed
Output / Contact	2 changeover contacts (DPDT), potential-free
Output / switching voltage	max. 250 V AC/DC
Mechanical endurance	3 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Display	Green and red LED
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Weight	110 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Principle diagram



P/N	Color	Feature 1	Feature 2
110271	gray		

Control cabinet components

C | Logline

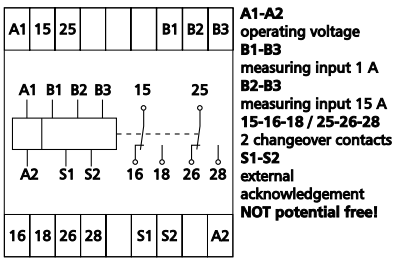
Matching accessory for EIW-C18

EIW-C18

Monitoring of direct or alternating currents in live systems. It is displayed whether the adjusted values are exceeded or not reached, and a switching process is triggered. The integrated 7-segment display indicates the sources of the fault. The current to be measured (AC or DC), an upper and a lower threshold value, a response delay and the fault memory (ON or OFF) can be adjusted manually on the device. The two current measuring ranges can be selected by means of the terminal blocks. Faults can be acknowledged directly on the device or by means of an external contact. Variants: 230 V AC or 24 V AC

Operating voltage	230 V AC, 50 Hz
Current consumption	max. 15 mA
Current measuring input B1 - B3	0.01 A to 1 A
Current measuring input B2 - B3	0.1 A to 15 A
Response delay	0.1 to 9.9 s, adjustable
Output	2 changeover contacts (DPDT)
Output / switching voltage	max. 250 V AC/DC
Output / continuous current	max. 8 A
Mechanical endurance	3 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Display / error	Two 7-segment displays
Display	Green and red LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	200 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring



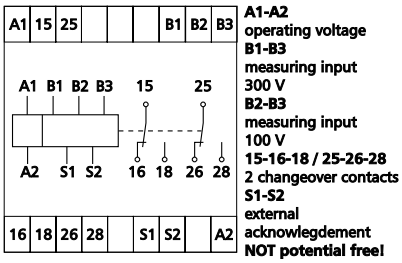
P/N	Color	Feature 1	Feature 2
11027205	gray		

EUW-C18

Monitoring of direct or alternating voltages in live systems. It is displayed whether the adjusted values are exceeded or not reached, and a switching process is triggered. The integrated 7-segment display indicates the sources of the fault. The voltage to be measured (AC or DC), two measuring ranges, an upper and a lower threshold value, a response delay and the fault memory (ON or OFF) can be adjusted manually on the device. Faults can be acknowledged directly on the device or by means of an external contact.

Operating voltage	230 V AC, 50 Hz
Current consumption	max. 15 mA
Voltage measuring input B1 - B3	10 V to 300 V
Voltage measuring input B2 - B3	1 V to 100 V
Response delay	0.1 to 9.9 s, adjustable
Output / contact	2 changeover contacts (DPDT)
Output / switching voltage	max. 250 V AC/DC
Output / continuous current	max. 8 A
Mechanical endurance	3 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Display / error	Two 7-segment displays
Display	Green and red LED
Dimensions (W x H x D)	50 x 69.3 x 60 mm
Weight	200 g
Operating temperature range	-5 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring



P/N	Color	Feature 1	Feature 2
11027405	gray		

TAmini 50 A / 5 A is matching accessory for

	Page
CPW-E12	117
EIW-C18	124

TAmini 100 A / 5 A is matching accessory for

	Page
CPW-E12	117
EIW-C18	124

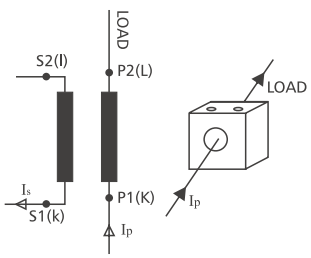
TAmini 50 A / 5 A

The current converter TAmini is used for measuring currents that are beyond the measuring range of the directly connected measuring instrument.

- small current converter for mounting on 35 mm DIN rail
- Hole diameter: 21 mm; suitable for cables and rail 20 x 5 mm

Transformer ratio	50 A / 5 A
Nominal frequency	50 Hz
Operating frequency	47 to 63 Hz
Secondary nominal current	5 A
Max. switch-on current	60 x nominal current smaller than 1 s
Max. internal consumption	less than 3 VA
Classification	UL-94 V0
Dimensions (W x H x D)	30 x 44 x 65 mm
Operating temperature range	-25 °C to +50 °C
Storage temperature range	-40 °C to +85 °C

Wiring



P/N	Color	Feature 1	Feature 2
1101810507	brown	transformer ration	50 A/5 A

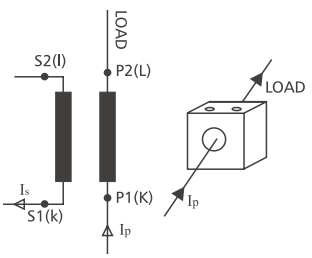
TAmini 100 A / 5 A

The current converter TAmini is used for measuring currents that are beyond the measuring range of the directly connected measuring instrument.

- small current converter for mounting on 35 mm DIN rail
- Hole diameter: 21 mm; suitable for cables and rail 20 x 5 mm

Transformer ratio	100 A / 5 A
Nominal frequency	50 Hz
Operating frequency	47 to 63 Hz
Secondary nominal current	5 A
Max. switch-on current	60 x nominal current smaller than 1 s
Max. internal consumption	less than 3 VA
Classification	UL-94 V0
Dimensions (W x H x D)	30 x 44 x 65 mm
Operating temperature range	-25 °C to +50 °C
Storage temperature range	-40 °C to +85 °C

Wiring



P/N	Color	Feature 1	Feature 2
1101810508	brown	transformer ration	100 A/5 A

Control cabinet components | Timer relay

MARk-E08

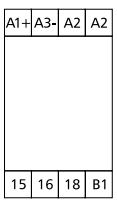
Multi-functional timer relay with incorporated coding switches to set functions. The time is set by means of a linear potentiometer on a relative scale.

Eight adjustable time ranges from 0.15 s to 10 h.
Five selectable functions

- 1. On-delayed
- 2. Off-delayed
- 3. Making-pulse interval
- 4. Flashing for pause start
- 5. Flashing for pulse start

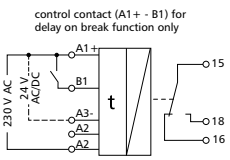
Operating voltage AC / AC/DC	230 V AC / 24 V AC/DC
Operating voltage DC	24 V DC / 12 V DC
Output / contact	1 changeover contact (SPST)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V
Output / continuous current	6 A
Output / switching frequency	1200 cycles/h
Recovery time	greater than 50 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Green and red LED
Dimensions (W x H x D)	22.5 x 61.3 x 60 mm
Weight	70 g
Operating temperature range	-10 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



A1+ - A2
operating voltage
230 V AC (24 V DC)
A1+ - A3-
operating voltage
24 V AC/DC (12 V DC)
A1+ - B1
control contact
15 - 16 - 18
output contact
1 changeover

Caution!
Terminal B1 is not isolated.



P/N	Color	Feature 1	Feature 2
110657	gray	5 functions	230 V AC / 24 V AC/DC
11065727	gray	5 functions	24 V DC / 12 V DC

MARk-E08 U

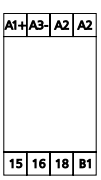
Multi-functional timer relay with incorporated coding switches to set functions. The time is set by means of a linear potentiometer on a relative scale.

Eight adjustable time ranges from 0.15 s to 10 h.
Two selectable functions

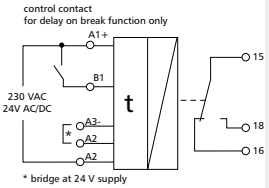
- 1. On-delayed
- 2. Off-delayed

Operating voltage	230 V AC / 24 V AC/DC
Output / contact	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V
Output / continuous current	6 A
Output / switching frequency	1200 1200 cycles/h
Recovery time	greater than 50 ms
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Green and red LED
Dimensions (W x H x D)	22.5 x 61.3 x 60 mm
Weight	70 g
Operating temperature range	-10 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



A1+ A2
operating voltage
A3- A2
bridge for operating voltage
24 V AC/DC or 12 V DC
A1+ B1
control contact
15 - 16 - 18
output contact 1 changeover



P/N	Color	Feature 1	Feature 2
1106574133	gray	2 functions	with voltage input

MFRk-E08 / MFRk-E08 F

Multi-functional timer relay with incorporated coding switches to set functions. The time is set by means of a linear potentiometer on a relative scale.

Ten adjustable time ranges from 0.05 s to 30 h.
Six selectable functions

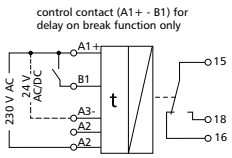
- 1. On-delayed
- 2. Making-pulse interval
- 3. Off-delay
- 4. Breaking-pulse interval
- 5. Flashing for pause start
- 6. Flashing for pulse start

Operating voltage	230 V AC / 24 V AC/DC
Output / contact	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V AC/DC
Output / continuous current	6 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Recovery time	MFRk-E08 / MFRk-E08 F
at 24 V AC	60 ms / 10 to 30 ms
at 24 V DC	50 ms / 10 to 30 ms
at 230 V AC	100 ms / 10 to 30 ms
Cross-section	2.5 mm²
Display	Green and red LED
Dimensions (W x H x D)	22.5 x 61.3 x 60 mm
Weight	70 g
Operating temperature range	-10 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram

A1+ - A2
operating voltage
230 V AC
A1+ - A3-
operating voltage
24 V AC/DC
A1+ - B1
control contact
15 - 16 - 18
output contact
1 changeover

Caution!
Terminal B1 is not isolated.



P/N	Color	Feature 1	Feature 2
110658	gray	recovery time tw	50 - 100 ms
110658412014	gray	recovery time tw	10 - 30 ms

MFRk-E12

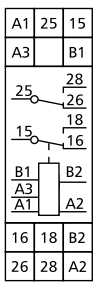
Multi-functional timer relay with incorporated coding switches to set functions. The time is set by means of a linear potentiometer on a relative scale.

Four adjustable time ranges for each device
0.15 to 800 s / 0.1 min to 10 h
Six selectable functions

- 1. On-delayed
- 2. Making-pulse interval
- 3. Off-delay
- 4. Breaking-pulse interval
- 5. Flashing for pause start
- 6. Flashing for pulse start

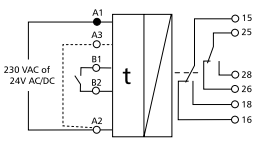
Operating voltage	230 V AC / 24 V AC/DC
Output / contact	2 changeover contacts (DPDT)
Output / contact material	AgNi
Output / switching voltage	250 V
Output / continuous current	4 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	3 x 10^7 switching cycles
Electrical endurance	2 x 10^5 switching cycles
Recovery time	greater than or equal to 250 ms
Cross-section	2.5 mm²
Display	Green and red LED
Dimensions (W x H x D)	22.5 x 75 x 95 mm
Weight	150 g
Operating temperature range	-10 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Circuit diagram



A1 - A2
tension de service
230 V AC
A2 - A3
tension de service
24 V AC/DC
B1 - B2
contact de commande
15 - 16- 18
25 - 26 - 28
contacts de sortie
2 inverseurs

Attention!
Les bornes B1 et B2 ne sont pas libres de potentiel.



P/N	Color	Feature 1	Feature 2
110310412230	gray	Time ranges	0.15 s - 800 s
110310412231	gray	Time ranges	0.1 min - 10 h

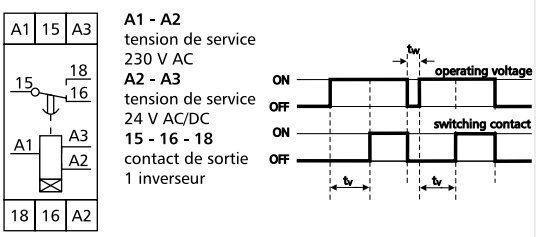
MZAk-E10

Multi-functional timer relay with incorporated coding switches to select time ranges. The time is set by means of a linear potentiometer on a relative scale.

- four adjustable time ranges from 0.15 to 800 s
- On-delayed

Operating voltage	230 V AC / 24 V AC/DC
Output / contact	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V
Output / continuous current	6 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Recovery time	greater than or equal to 100 ms
Cross-section	2.5 mm^2
Display	Green and red LED
Dimensions (W x H x D)	22.5 x 75 x 100 mm
Weight	150 g
Operating temperature range	-10 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Function diagram



P/N	Color	Feature 1	Feature 2
110295412030	gray		

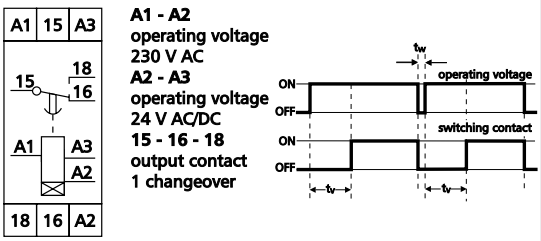
RTLk-E10

On-delayed timer relay with time setting. The time is set by means of a linear potentiometer on a relative scale.

- On-delayed

Operating voltage	230 V AC / 24 V AC/DC
Output / contact	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V
Output / continuous current	6 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Recovery time	greater than or equal to 100 ms
Cross-section	2.5 mm^2
Display	Green and red LED
Dimensions (W x H x D)	22.5 x 70 x 90 mm
Weight	150 g
Operating temperature range	-10 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Function diagram



P/N	Color	Feature 1	Feature 2
110352412003	gray	Time Ranges	0.5 - 10 s
110352412004	gray	Time Ranges	1.5 - 30 s
110352412005	gray	Time Ranges	3 - 60 s
110352412006	gray	Time Ranges	5 - 100 s
110352412008	gray	Time Ranges	15 - 300 s

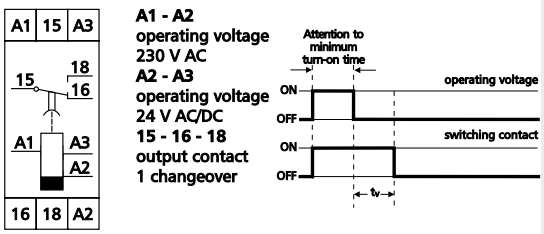
RKAk-E10

Off delayed timer relay with time setting. The time is set by means of a linear potentiometer on a relative scale.

- Off-delayed

Operating voltage	230 V AC / 24 V AC/DC
Output / contact	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V
Output / continuous current	6 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Green LED
Dimensions (W x H x D)	22.5 x 70 x 90 mm
Weight	150 g
Operating temperature range	-10 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Function diagram



P/N	Color	Feature 1	Feature 2
110304412003	gray	Time Ranges	0.5 - 10 s
110304412004	gray	Time Ranges	1.5 - 30 s
110304412005	gray	Time Ranges	3 - 60 s
110304412008	gray	Time Ranges	15 - 300 s
110304412011	gray	Time Ranges	3 - 60 min

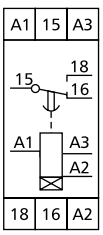
EWEk-E10

Wiping circuit-closing timer relay with time setting. The time is set by means of a linear potentiometer on a relative scale.

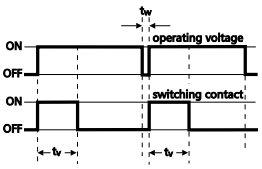
- Making-pulse interval
- Adjustable interval time

Operating voltage	230 V AC / 24 V AC/DC
Output / contact	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V
Output / continuous current	6 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Green and red LED
Dimensions (W x H x D)	22.5 x 70 x 95 mm
Weight	150 g
Operating temperature range	-10 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Function diagram



A1 - A2
tension de service
230 V AC
A2 - A3
tension de service
24 V AC/DC
15 - 16 - 18
contact de sortie
1 inverseur



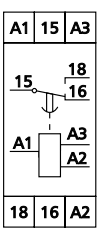
P/N	Color	Feature 1	Feature 2
110296412003	gray	Time Ranges	0.5 - 10 s
110296412004	gray	Time Ranges	1.5 - 30 s

REWk-E10

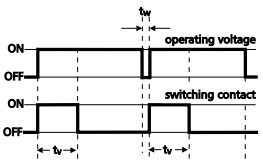
Wiping circuit-closing timer relay with factory-set interval time of 0.5 s.

Operating voltage	230 V AC / 24 V AC/DC
Recovery time	greater than or equal to 100 ms
Output / contact	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V
Output / continuous current	6 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	3 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Green and red LED
Dimensions (W x H x D)	22.5 x 70 x 95 mm
Weight	150 g
Operating temperature range	-10 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Function diagram



A1 - A2
operating voltage
230 V AC
A2 - A3
operating voltage
24 V AC/DC
15 - 16 - 18
output contact
1 changeover



P/N	Color	Feature 1	Feature 2
110354412016	gray		

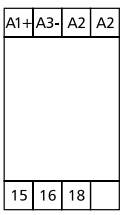
TERk-E08

Clock generator with separately adjustable delay and pulse times. The time ranges can be programmed by means of the coding switches incorporated in the front.

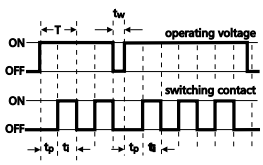
- Clock generating
- Adjustable time ranges

Operating voltage	230 V AC / 24 V AC/DC
Recovery time	greater than or equal to 50 ms
Output / contact	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V
Output / continuous current	6 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Green and red LED
Dimensions (W x H x D)	22.5 x 61.3 x 60 mm
Weight	70 g
Operating temperature range	-10 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Function diagram



A1+ - A2
tension de service
A3- - A2
pont pour tension de service 24 V
15 - 16 - 18
contact de sortie
1 inverseur



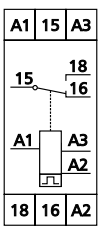
P/N	Color	Feature 1	Feature 2
11067441203030	gray	tp 0.15 - 800 s	ti 0.15 - 800 s
11067441203031	gray	tp 0.15 - 800 s	ti 0.1 min - 10h
11067441203130	gray	tp 0.1 min - 10 h	ti 0.15 - 800 s
11067441203131	gray	tp 0.1 min - 10 h	ti 0.1 min - 10h

RTBk-E10

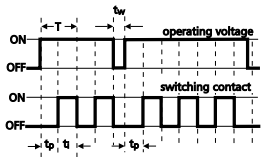
Flashing relay with factory-set fixed pause/pulse time of 0.5 s each at a 1:1 ratio.

Operating voltage	230 V AC / 24 V AC/DC
Recovery time	greater than or equal to 100 ms
Output / contact	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V
Output / continuous current	6 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Green and red LED
Dimensions (W x H x D)	22.5 x 70 x 90 mm
Weight	150 g
Operating temperature range	-10 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Function diagram



A1 - A2
operating voltage
230 V AC
A2 - A3
operating voltage
24 V AC/DC
15 - 16 - 18
output contact
1 changeover



P/N	Color	Feature 1	Feature 2
110355412016	gray		

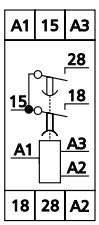
RSDw-E10

Star-delta relay with adjustable switching time for switching three-phase motors. The time is set by means of a linear potentiometer on a relative scale.

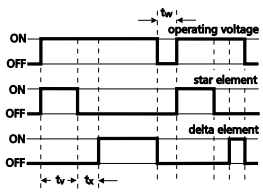
- Star-delta relay
- fixed switching time of 50 ms

Operating voltage	230 V AC / 24 V AC/DC
Recovery time	greater than or equal to 250 ms
Switching time	50 ms
Output / contact	1 changeover contact (SPDT)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V
Output / continuous current	6 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	22.5 x 70 x 90 mm
Weight	150 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Function diagram



A1 - A2
operating voltage
230 V AC
A2 - A3
operating voltage
24 V AC/DC
15 - 18
star element
15 - 28
delta element



P/N	Color	Feature 1	Feature 2
11016141280417	gray	230 V AC	1.5 - 30 s
11016141280517	gray	230 V AC	3 - 60 s

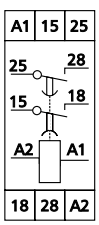
RSD-E10

Star-delta relay with adjustable switching time for switching three-phase motors. The time is set by means of a linear potentiometer on a relative scale.

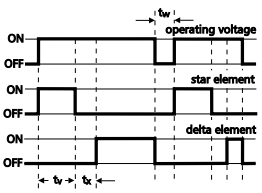
- Star-delta relay
- fixed switching time of 50 ms

Operating voltage	230 V AC / 24 V AC/DC
Recovery time	greater than or equal to 250 ms
Switching time	50 ms
Output / contact	2 normally open contacts (DPST-NO)
Output / contact material	$AgSnO_2$
Output / switching voltage	250 V
Output / continuous current	6 A
Output / switching frequency	1200 cycles/h
Mechanical endurance	1 x 10^7 switching cycles
Electrical endurance	1 x 10^5 switching cycles
Cross-section	2.5 mm^2
Display	Red LED
Dimensions (W x H x D)	22.5 x 70 x 90 mm
Weight	150 g
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-25 °C to +70 °C
Ingress protection for housing / terminal block	IP40 / IP20

Wiring/Function diagram



A1 - A2
operating voltage
15 - 18
star element -
1 NO contact
delay on make
25 - 28
delta element -
1 NO contact
delay on break



P/N	Color	Feature 1	Feature 2
11016005270317	gray	230 V AC	0.5 - 10 s
11016005270417	gray	230 V AC	1.5 - 30 s
11016005270517	gray	230 V AC	3 - 60 s
11016013270317	gray	24 V AC/DC	0.5 - 10 s

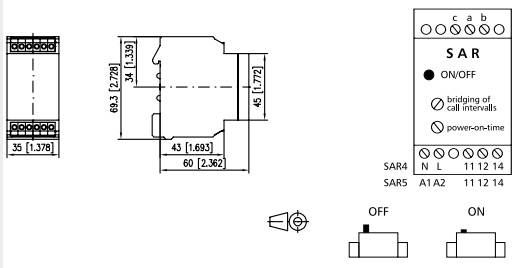
Control cabinet components | Telecommunication products

SAR 4 / SAR 5

The SAR4 and SAR5 can be connected to a telecommunications access line or separate control voltage source (AC/DC) and are activated by the call voltage or control voltage. The SAR reacts either only to the call voltage or to the control voltage. It activates an external signal emitter with its own or separate power supply (e.g. bell, horn, or lamp).

Operating voltage SAR4	230 V AC / 50 Hz
Operating voltage SAR5 DC	24 V DC / 10 mA
Operating voltage SAR5 AC	24 V AC / 10 mA
Input / a/b telecommunications access line	
Input / call voltage	32 to 80 V AC
Input / frequency range	23 to 54 Hz
Input / impedance	10 kOhm at 75 V, 25 Hz
Input / insertion loss	less than 0.5 dB
Input / leakage resistance	more than 5 MOhm at 100 V
Input / a/c external voltage	
Input / control voltage DC	5 to 40 V
Input / control voltage AC	5 to 40 V, 50 Hz
Input / resistance	approx. 6 kOhm
Output / switching current	max. 8 A
Output / continuous current	max. 6 A
Output / switching voltage	max. 250 V AC
Output / switching capacity	1500 VA (AC) 30 W (less than 30 V DC) 60 W (greater than 30 V DC)
Call interval bridging	0 to 12 s
Limitation of power-on time	0.25 to 12 s
Electrical safety	acc. to EN 60950
Dimensions (W x H x D)	35 x 69.3 x 60 mm
Operating temperature range	-5 °C to + 55 °C
Storage temperature range	-20 °C to + 70 °C

Dimensional drawing/Circuit diagram



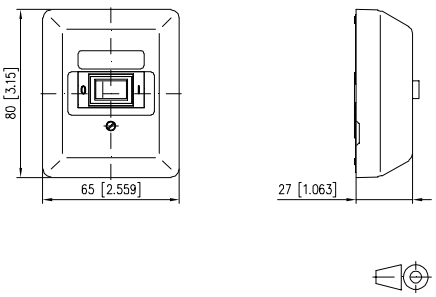
P/N	Color	Feature 1	Feature 2
130283-I	white	SAR4	230 V AC
130284-I	white	SAR5	24 V AC/DC

SAR 1

The SAR 1 is connected to a telecommunications line and controlled by the call voltage.The SAR 1 only reacts to the call voltage, not to dialing pulses (IWV). It activates an external signal emitter with its own or separate power supply (e.g. bell, horn, or lamp) by means of a contact.The incorporated switch can be used to activate and deactivate external signals.

Input / call voltage	32 to 80 V AC
Input / frequency range	23 to 54 Hz
Input / impedance	10 kOhm at 75 V, 25 Hz
Input / insertion loss	less than 0.5 dB
Input / leakage resistance	more than 5 MOhm at 100 V
Output / switching current	max. 8 A
Output / continuous current	max. 6 A
Output / switching voltage	max. 250 V AC
Output / switching capacity	2000 VA (AC) 30 W (less than 30 V DC) 60 W (greater than 30 V DC)
Electrical safety	acc. to EN 60950
Dimensions (W x H x D)	65 x 80 x 27 mm
Operating temperature range	-5 °C to + 55 °C
Storage temperature range	-25 °C to + 70 °C

Dimensional drawing



P/N	Color	Feature 1	Feature 2
130280-I	pearl white	surface-mount / surface-mounted	

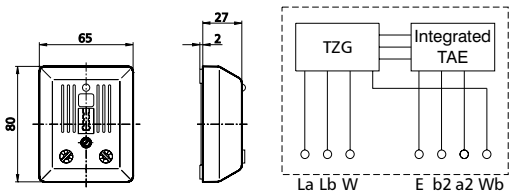
TZG WK 955 AP

The secondary call signaler allows additionally signalizing incoming calls by means of acoustic and optical signals. An incoming call is signalized simultaneously by the telephone and the secondary call signaler. The called persons are able to notice calls even if they are not close to the telephone.

- Surface-mounted termination unit
- Adjustable sound intensity and clock frequency
- Three-sound call 95 dB
- visual signal for incoming calls
- Audible signal can be deactivated if the telephone is plugged into a TAE jack

Input / call voltage	32 to 80 V AC
Input / frequency range	23 to 54 Hz
Input / impedance	10 kOhm at 75 V, 25 Hz
Input / insertion loss	less than 0.5 dB
Input / leakage resistance	more than 5 MOhm at 100 V
Output / internal	TAE-F jack
Dimensions (W x H x D)	65 x 80 x 27 mm
Operating temperature range	-5 °C to + 55 °C
Storage temperature range	-20 °C to + 70 °C

Dimensional drawing/Wiring



P/N	Color	Feature 1	Feature 2
130592-I	pearl white	surface-mount / surface-mounted	

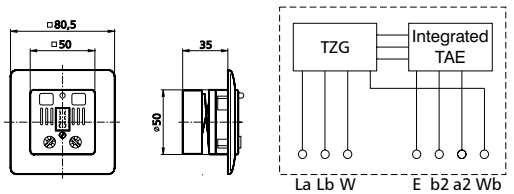
TZG WK 955 UP

The secondary call signaler allows additionally signalizing incoming calls by means of acoustic and optical signals. An incoming call is signalized simultaneously by the telephone and the secondary call signaler. The called persons are able to notice calls even if they are not close to the telephone.

- Flush-mounted termination unit
- Adjustable sound intensity and clock frequency
- Three-sound call 95 dB
- visual signal for incoming calls
- Audible signal can be deactivated if the telephone is plugged into a TAE jack

Input / call voltage	32 to 80 V AC
Input / frequency range	23 to 54 Hz
Input / impedance	10 kOhm at 75 V, 25 Hz
Input / insertion loss	less than 0.5 dB
Input / leakage resistance	more than 5 MOhm at 100 V
Output / internal	TAE-F jack
Dimensions (W x H x D)	80.5 x 80.5 x 35 mm
Operating temperature range	-5 °C to + 55 °C
Storage temperature range	-20 °C to + 70 °C

Dimensional drawing/Wiring



P/N	Color	Feature 1	Feature 2
130593-I	pearl white	Flush mount	

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You will find your responsible contacts for your sector in your region at our website:
http://www.metz-connect.com/en/contact-search

Please note

General Information

All the information, descriptions and illustrations given in this catalog are non-binding.
It does in no way entitle to deduce warranty claims.

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General Terms and Conditions (GTC)

of METZ CONNECT GmbH | Im Tal 2 | 78176 Blumberg | Germany
Managing Director: Jochen Metz
registered at the Freiburg Register Court in Breisgau under HRB [Commercial Register Department B] 611606

I. Application, validity

1.1 The following General Terms and Conditions apply to all transactions and deliveries between us and companies (Section 14 BGB) as well as with legal persons under public law and special funds under public law.

1.2 We do not recognise the general terms and conditions of the customer unless we have expressly agreed to their validity. Our terms and conditions also apply exclusively if we perform the delivery to the customer without reference to these terms and conditions, despite being aware of terms and conditions of the customer that conflict with or deviate from our terms and conditions.

II. Contract conclusion, scope of delivery

2.1 We are entitled, without giving any reason, to revoke our offers until receipt of the declaration of acceptance (offers are non-binding). We can accept orders of the customer (offer within the meaning of Sections 145 et seqq. BGB [German Civil Code]) within two weeks.

2.2 If we do not respond to the customer's order by providing the customer with an order confirmation, the order will be accepted by transmitting the delivery and/or delivery note.

2.3 The customer has to check all of its dimension and product specifications. We are not obliged to check the dimensions, product data or specifications provided by the customer. When using our products with other components (e.g. connectors to our modules), the customer is responsible for verifying the usability of the components which the customer uses for our product as well as for complying with national and EU standards and guidelines.

III. Delivery time, force majeure, transfer of risk

3.1 Only agreed delivery times are binding. An agreed delivery period begins upon receipt of the order confirmation or the commercial confirmation letter, etc., but not prior to the provision of any documents, approvals or releases which might have to be procured by the customer prior to the provision of the supply or before the receipt of an agreed down payment or required advance payment. The delivery deadline is met if the readiness for dispatch (non-loaded provision) has been prepared and communicated to the customer by the respective expiry date and time; this only applies in the case of delivery EXW Blumberg, Incoterms 2010.

3.2 In the event of force majeure, the agreed delivery times shall be extended appropriately. If the force majeure lasts longer than six weeks, both parties are entitled to withdraw from the contract after setting a further deadline of two weeks. Force majeure is an external event caused by elementary forces of nature or by actions of third parties, which is unforeseeable according to human insight and experience, and cannot be prevented or rendered harmless by economically acceptable means by the utmost care reasonably expected under the circumstances and cannot be accepted due to its frequency. This also includes fault-free interruptions in operation, such as strikes, lockouts as well as delays in delivery that are not caused by us.

3.3 Unless agreed otherwise, deliveries are performed ex works Blumberg, Germany (EXW Blumberg, Incoterms 2010). Unless contractually deviating from the EXW Incoterm clause, the risk for the respective delivery is transferred to the customer if the delivery (packaged goods) has been unloaded and made available to the customer in the Blumberg factory and the customer has been informed thereof in advance in good time. If the provision of the goods to the carrier or customer is delayed at the request of the customer or for other reasons for which we are not responsible or if the customer is in default of acceptance, the risk passes to the customer upon notification of the readiness for shipment or for collection. From that point on, the goods are stored at the expense and risk of the customer.

3.4 Partial deliveries and partial services are permissible insofar as they are reasonable for the customer. They are considered as independent deliveries and can be billed immediately.

3.5 For custom-made products, we reserve the right to over- or under-deliveries of up to 10% of the ordered and/or order-confirmed delivery quantities.

IV. Prices, payments

4.1 Unless otherwise agreed, our prices are ex works Blumberg in Euro plus VAT in the respective statutory amount.

4.2 If we agree to cancellations due to reasons of goodwill, the costs incurred by us as well as any additional costs are borne by the customer. The same applies to a change of contracts as initiated by the customer, provided that we agree to these changes out of goodwill.

4.3 Unless otherwise agreed, the payments are to be made net within 30 days of the invoice date, provided that the customer has received the goods and the invoice within 10 days of the date which follows the invoice date.

4.4 The customer is not entitled to withhold payments or offset them with counterclaims if these do not result from the same contractual relationship and are subject to deficiency. Moreover, offsetting is only permissible with legally determined, recognised or undisputed counterclaims.

V. Reservation of proprietary rights

5.1 The delivered goods remain our property until full payment of the purchase price and all claims from the entire business relationship, regardless of which type. Ownership of the property is only transferred once all claims, including all ancillary claims, have been settled. The customer is not entitled to pledge the goods or assign them as security.

5.2 If the customer defaults on the payment of a considerable amount of claims arising from the entire business condition, we are entitled to reclaim the reserved goods. The request for release implies a withdrawal from the contract. In such cases, it is not necessary to set a performance period. The assertion of damages remains reserved even in the case of a withdrawal from the contract.

5.3 The customer is entitled to resell the goods only in the ordinary course of business and under the condition of a reservation by the customer that the ownership only passes to the customer's purchaser if the latter has completely fulfilled its payment obligations in respect of the reserved goods. The customer hereby assigns to us the claim that results from the resale of the goods in the amount of our final invoice amount, including VAT; the customer is moreover obliged to provide us, upon request, with the name and address of the third party debtors as well as the amounts of the claims. The claim from any resale of our goods may not be assigned to third parties, including banks.

5.4 The customer is authorised to collect assigned claims. The collection authorisation expires in the case of a default in payment. In such cases, we are entitled to inform the customers' purchaser of the assignment as well as to collect the claims ourselves. For the assertion of the assigned claims, the customer has to provide the necessary information and to allow the verification of this information. In particular, upon request of a detailed list of the receivables arising from the resale of our goods, the customer has to provide us with the name and address of the purchaser, the amount of the individual claims, the invoice date, etc. as well as to allow access to the customer's business premises for the sake of verification.

5.5 If the reserved goods are connected, mixed or processed by the customer to a new item, this occurs for us without our being obliged in this regard. The connection, mixing and processing does not result in the customer acquiring sole ownership in the new product pursuant to Sections 947 et seqq. BGB. Rather, we acquire co-ownership of the new product according to the ratio of the invoice value of our reserved goods to the total value.

5.6 The customer undertakes to notify us immediately in the event of seizure, the suspension of payments or the substantial deterioration of its financial circumstances. Garnishers are to be specified, including a statement of their addresses. The customer bears all costs for the revocation of the access of garnishers to our goods as well as for the replacement of the respective goods.

5.7 The customer is obliged to ensure any unpaid goods against damage, particularly vandalism, theft, transport damage, fire, water and breakage. The customer agrees to tell us the name of the respective damage insurer and hereby conditionally assigns to us the customer's claim towards the respective insurer for any unpaid goods through the commencement of the insurance case on account of performance.

5.8 The customer shall hold the reserved goods for us free of charge; the customer is not entitled to justify a warehouseman's lien.

5.9 If, in the case of export deliveries, the above reservation of title pursuant to the law of the country of importation is not effective or needs to be supplemented and/or registered in order to be effective, the customer shall be obliged, as justified, to conclude a security agreement (pursuant to the law of the country of importation) which comes closest to the economic purpose of our purchase price security, as well as to perform the necessary registration.

VI. Obligation to examine and to provide notice of defects, guarantee, liability

6.1 **Customer's obligation to examine, provide notice of defects and take precautionary measures**

6.1.1 The customer has to inspect the delivered goods and to provide notification of any apparent defects or quantity deviations (hereafter uniformly: defects) immediately, but no later than within seven days after receipt of the goods. Notification of any unrecognisable defects is also to take place immediate upon discovery, but no later than seven days after they have been discovered. The notice period applies likewise for direct deliveries to third parties designated by the customer; in such cases, the customer also has to ensure a timely notification of any complaints.

6.1.2 If purchasers of the customer provide notifications of defects to the customer, the customer has to forward these complaints to us immediately. The customer undertakes that supplementary performance towards its purchasers or authorised purchasers from the supply chain shall only occur in coordination with us concerning the respective technical and economic measures.

6.1.3 If the customer intends to install, affix or further process the goods which are supplied by us, the customer has to inspect the goods prior to said installing, affixing or further processing. If the customer fails to do so, it acts negligently pursuant to Section 439 para. 3, Sections 442 para. 1 sentence 2 BGB. In such a case, the customer is only entitled to warranty claims if we have deliberately caused or fraudulently concealed the defect or if a guarantee in terms of quality has been accepted.

6.1.4 If the customer identifies defects in the goods, the customer undertakes not to resell, process, install or affix the respective goods until an agreement has been reached concerning the settlement of the warranty case or until a judicial or extrajudicial preservation of evidence has been performed. The customer is obliged to provide us with the rejected goods for the purpose of checking whether a warranty claim exists. If the customer culpably refuses to do so, any and all warranty claims are void.

6.2 **Warranty**

6.2.1 In the case of insignificant defects, the customer is not entitled to damages in place of full performance and has no right to withdraw.

6.2.2 If the final purchaser in the supply chain is not a consumer and if the customer's purchaser asserts claims for defects, the customer has, in deviation from Section 445a para. 2 BGB, to set a reasonable deadline for supplementary performance before being entitled to assert the other rights described in Section 437 BGB instead of the subsequent fulfilment (right of second delivery). The customer reserves the right to second delivery vis-à-vis the customer's purchaser provided that this purchaser is not a consumer. In cases in which we are entitled to a second delivery, we are entitled and obliged, at our discretion and within a reasonable period, to perform repair or re-deliver (free of charge) up to three times (subsequent performance), as long as the defect occurs within the limitation period and notification thereof is provided immediately upon its being recognised, provided that the cause of the defect was already present at the time of transfer of risk. The customer is required to provide evidence in this regard. If the supplementary performance fails, the customer can withdraw from the contract or reduce the remuneration without prejudice to any claims for damages according to Item 6.

6.2.3 If the customer has installed a defective product or attached it to another item pursuant to the product's type and intended use, the following applies:

a) The customer has to give us the opportunity to remove the defective goods and to install or affix the repaired or newly delivered goods. This does not apply in cases in which the customer's purchaser refuses this procedure (a fact of which the customer has to notify us) or cases in which the customer's purchaser is a consumer.

b) If we are obliged to pay for removal and installation costs pursuant to Section 439 para. 3 BGB, we are only responsible for those costs relating to the removal, installation and/or affixing of corresponding goods that are customary in the marketplace and which have been verified by the customer through the submission of appropriate documents. A right by the customer to advanced payment for removal and installation costs or the affixing of identical goods is excluded unless the customer's purchaser is a consumer that requires advanced payment from the customer.

6.2.4 Claims for defects expire one year from the date of delivery in accordance with Item 3.3. This does not apply if the law requires longer periods pursuant to Section 439 para. 1 No. 2 BGB (buildings and property for buildings), Section 438 para. 3 BGB (malicious concealment), Section 445 b para. 1 BGB (right of recourse), Section 476 para. 2 BGB (reduction of the limitation period if the end user is a consumer) and Section 634a para. 1 No. 2 BGB (construction defects). The statutory provisions concerning the expiry suspension, suspension and recommencement of the periods remain unaffected thereby.

6.2.5 For damages claims due to defects, item 6.3 applies. The customer is not entitled to any warranty claims concerning the regulated claims in items 6.1, 6.2 in conjunction with item 6.3.

6.2.6 If the customer is responsible for unjustifiable providing us with a notification of defects, we are entitled to demand that the customer pay us compensation for incurred expenses as well as for other damages.

6.3 **Liability**

6.3.1 Irrespective of the legal grounds, damage claims by the customer, particularly due to a breach of obligations arising from the contractual relationship and from tort, are excluded subject to the following provisions.

6.3.2 The exclusion of liability pursuant to Item 6.3.1 does not apply

- to the intentional or grossly negligent breach of duty by either oneself, representatives or vicarious agents,
- to the breach of essential contractual obligations, with contractual obligations being deemed to be essential if their fulfilment is made possible in the first place by the proper execution of the contract, and upon the compliance of which the customer may regularly rely,
- if, in the case of a breach of other duties within the meaning of Section 241 para. 2 BGB (obligation to take due consideration), the customer no longer expects our services,
- in the event of an injury to life, limb or health,
- pursuant to the Product Liability Act, or
- pursuant to any other mandatory statutory liability.

6.3.3 In the case of liability for a breach of essential contractual obligations as well as initial impossibility and in the case of mandatory liability for legal defects, we are liable (when only slight negligence exists) solely for the contractually typical and predictable average loss. This does not apply in cases of a simultaneous injury to life, limb or health or to product liability cases.

6.3.4 Except for cases of injury to life, limb or health, intent, gross negligence or product liability as well as other mandatory statutory liability regulations, our liability is limited in total to the coverage of our public liability insurance, provided that there is coverage in the scope that is usual in the industry.

6.3.5 The above exclusions or limitations of liability apply to the same extent in favour of the executive and non-executive employees as well as in the case of liability for our vicarious agents.

6.3.6 Claims of the customers for damage compensation can only be asserted within a limitation period of one year from the beginning of the statutory limitation period. Claims for damages due to material defects (Item 6.1) are statute-barred pursuant to Item 6.2.4.

The above exclusion period and limitation period reduction do not apply if we are liable for intent or gross negligence or for injury to life, body or health, pursuant to the Product Liability Act or other mandatory, statutory facts of liability.

6.3.7. If our goods are exported by the customer and processed, as well as in the case of the use of components, installation or attachment abroad, we are not liable for the exportability of the goods, particularly not for obstacles such as export control regulations, embargoes, state approval or import freedom in the export countries of the customer. Compliance with the national regulations of the respective exporting country is subject to the examination and responsibility of the customer.

6.3.8 The above exclusions and limitations of liability apply to the same extent for violations of data protection regulations, particularly according to the General Data Protection Regulation (GDPR). This does not apply in cases of a violation of the prohibition on the processing of personal data within the meaning of para. 9 GDPR.

6.3.9 A change in the burden of proof to the detriment of the customer is not connected with the regulations in this Item 6.3.

VII. Acceptance of a guarantee

7.1 In principle, we do not assume any guarantees, including those regarding quality or durability. In particular, quality provisions, performance descriptions and/or product specifications do not contain any statements of guarantee.

7.2 Acceptances of guarantee are not made by conclusive behaviour, but rather only by express declaration.

VIII. Place of performance, jurisdiction, applicable law

8.1 The place of performance and jurisdiction arising from the business relationship with our customer for the delivery and payment is Blumberg.

8.2 These GTC as well as all contractual relationships regarding deliveries and services with customers are subject to substantive German law and German procedural law, excluding the conflict of laws. The application of the United Nations Convention on Contracts for the International Sale of Goods Sale of goods (CISG) is excluded.

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