Intelligent components for systems and switch cabinets
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Intelligent components for systems and switch cabinets

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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

![Signature]

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:

### 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.
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

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  Interface modules  Timer-, process- and monitoring relays
Uniform automation – central engineering

Building automation, Process engineering

C | Logline
high performance components for integrated control tasks
Technical networks and safety solutions in buildings and industrial plants are becoming increasingly 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.
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.
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 EWIO2-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.
**EWIO₂-M** (M-Bus)

The EWIO₂-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 EWIO₂-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

**EWIO₂-M-BM** (M-Bus/BACnet/Modbus)

Das EWIO₂-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 further Data logger and connection to a LAN network. The EWIO₂-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 EWIO₂-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**
--- | --- | --- | ---
110930 | black | | |
110935 | black | | |
EWIO₂-MW
(M-Bus/WLAN)
The EWIO₂-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 EWIO₂-MW for save settings, data and applications.

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>24 V DC +/- 10 %</th>
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<tbody>
<tr>
<td>Power consumption (max.)</td>
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<td>Network</td>
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<tr>
<td>Protocol</td>
<td>TCP/IP</td>
</tr>
<tr>
<td>Controller</td>
<td>NXP i.MX7D Dual Core ARM-A7, 1 GHz</td>
</tr>
<tr>
<td>RAM</td>
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</tr>
<tr>
<td>max. 32 GB / ext. 2 GB µSD</td>
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<tr>
<td>Operating system</td>
<td>Linux embedded, Kernel 4.14, 32 Bit</td>
</tr>
<tr>
<td>Interfaces</td>
<td>Extension bus, max. 6 MR-I/O bus modules Modbus RTU, max. 32 participants</td>
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<tr>
<td>M-Bus (DIN EN 13757-T1,2,3), max. 80 M-Bus charges</td>
<td></td>
</tr>
<tr>
<td>I/Os</td>
<td>8 x digital inputs 3 x analog universal inputs 8 x digital outputs 3 x analog outputs</td>
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</tbody>
</table>

EWIO₂-MW-BM
(M-Bus/WLAN/BACnet/Modbus)
The EWIO₂-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 and/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 EWIO₂-MW-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 EWIO₂-MW-BM for save settings, data and applications.

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<td>Network</td>
<td>2 x RJ45 LAN 10/100BaseT</td>
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<td>Protocol</td>
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<tr>
<td>I/Os</td>
<td>8 x digital inputs 3 x analog universal inputs 8 x digital outputs 3 x analog outputs</td>
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WLAN / UMTS antenna is matching accessory for

<table>
<thead>
<tr>
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<th>Color</th>
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</table>

WLAN / UMTS antenna
Antenna with cable for the Ethernet-I/O (EWIO₂) and Datenlogger (EWIO₂-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
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 collector) in proportion to the energy measured. Impulses of any potential-free contacts can be recorded for counting, for example, 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
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

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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110556</td>
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<th>P/N</th>
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<th>Feature 1</th>
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</thead>
<tbody>
<tr>
<td>11055601</td>
<td>gray</td>
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</tbody>
</table>
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

---

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
- PT100, PT500, PT1000, Ni100, Ni1000, NTC1k8, NTC10k, NTC20k, KTY10
- 0 °C to +400 °C
- PT100, PT1000

### Resistance value index
- 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

### 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: 11055601P
- Color: gray
- Feature 1
- Feature 2

#### P/N: 110562
- Color: gray
- Feature 1
- Feature 2
**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.

<table>
<thead>
<tr>
<th>Selectable characteristics</th>
<th>sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>-30 °C to +130 °C</td>
<td>PT100, PT500, PT1000, Ni100, Ni1000, NTC1k8, NTC10k, NTC20k, KTY10</td>
</tr>
<tr>
<td>0 °C to +400 °C</td>
<td>PT100, PT1000</td>
</tr>
</tbody>
</table>

**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

---

**Matching accessory for T/M converter-IP65**

Power supply NG4 gray
MYD IP65

The M-Bus distributor is used in a flush-mount IP65 housing 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

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

P/N | Color | Feature 1 | Feature 2
---|---|---|---
11056303 | green | | |
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).
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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110561</td>
<td>gray</td>
<td></td>
<td>with jumper plug</td>
</tr>
</tbody>
</table>
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.
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.
**EWIO₂**

(ETHernet-I/O)

The EWIO₂ is a compact Ethernet I/O controller based on Linux, which connects digital and analogue 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 EWIO₂. Modbus RTU devices. An integrated µSD memory card expands the range of functions of the EWIO₂ 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

**EWIO₂-BM**

(ETHernet-I/O/BACnet/Modbus)

Depending on the configuration, the EWIO₂-BM is a compact Modbus and/or BACnet Server, which connects digital and analogue 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 EWIO₂-BM, Modbus RTU devices. An integrated µSD memory card expands the range of functions of the EWIO₂-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
The EWIO₂-W is a compact Ethernet I/O controller based on Linux, which connects digital and analogue 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 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 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 EWIO₂-W-BM, Modbus RTU devices.

An integrated µSD memory card expands the range of functions of the EWIO₂-W for save settings, data and applications.

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

EWIO₂-W-BM

(Email/IO/WLAN/BACnet/Modbus)

Depending on the configuration, the EWIO₂-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 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 EWIO₂-W-BM, Modbus RTU devices.

An integrated µSD memory card expands the range of functions of the EWIO₂-W-BM for save settings, data and applications.

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

**Digital input**

**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**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
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</thead>
<tbody>
<tr>
<td>1108341319</td>
<td>gray</td>
<td>4x IN</td>
<td>(U or contact)</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
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</thead>
<tbody>
<tr>
<td>1108341319IP</td>
<td>gray</td>
<td>4x IN</td>
<td>(U or contact)</td>
</tr>
</tbody>
</table>
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.

**MR-DI4-IP65 with external display**

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

**MR-D10**

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**  
110834131901IP: gray 4x IN (U or contact)

**P/N**  
1108311319: gray 10x IN (U or contact)
Matching accessory for MR-SI4

<table>
<thead>
<tr>
<th>Power supply NG4 gray</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal block for I/O Components</td>
<td>71</td>
</tr>
<tr>
<td>Jumper plug for I/O components</td>
<td>71</td>
</tr>
</tbody>
</table>

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 Bt/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

Matching accessory for MR-SI4

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11083913</td>
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<td>4x IN</td>
<td>(S0 impulse)</td>
</tr>
</tbody>
</table>
### Modbus RTU I/Os | Analog input

#### 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)  
**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  

#### 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)  
**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  

#### Wiring/Principle diagram

**P/N**  

<table>
<thead>
<tr>
<th>11083213</th>
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<th>Feature 2</th>
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</thead>
<tbody>
<tr>
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</table>

**P/N**  

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<tr>
<th>1108401332</th>
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<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>gray</td>
<td>4x IN (U or I)</td>
<td>activ</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11084113</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Modbus RTU I/Os | Digital output

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 (4PST)
Output / switching voltage: 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: IP40 / IP20

Wiring/Principle diagram

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1108361321</td>
<td>gray</td>
<td>4x OUT (relay CO)</td>
<td>manual/automatic</td>
</tr>
</tbody>
</table>

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: IP40 / IP20

Wiring/Principle diagram

<table>
<thead>
<tr>
<th>P/N</th>
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<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110836132101</td>
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<td>4x OUT (relay CO)</td>
<td></td>
</tr>
</tbody>
</table>
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

---

### Matching accessory for MR-TO4

<table>
<thead>
<tr>
<th>Power supply NG4 gray</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal block for I/O Components</td>
<td>71</td>
</tr>
<tr>
<td>Jumper plug for I/O components</td>
<td>71</td>
</tr>
</tbody>
</table>

### MR-TO4

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11083013</td>
<td>gray</td>
<td>4x OUT (triac)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Modbus RTU I/Os | Analog output

Matching accessory for MR-AOP4

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

Matching accessory for MR-AO4

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

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
---|---|---|---
1108371302 | gray | 4x OUT (U) | manual / automatic

Wiring/Principle diagram

P/N | Color | Feature 1 | Feature 2
---|---|---|---
1108351302 | gray | 4x OUT (relay CO) |
### MR-Multi-I/O

The Modbus module MR-Multi I/O is a compact and rapidly to install solution to connect digital and analog signals from the actuator 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**
  - 11 x Optocoupler, galvanically isolated
  - 1 x per DIN EN 62053-31, Class A
- **Inputs analog configurable**
  - for resistance or voltage: 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

### 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)
- **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
  - 0 V to 10 V DC
  - 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

---

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11084313</td>
<td>gray</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11084213P</td>
<td>gray</td>
<td>4x IN (U or R)</td>
<td></td>
</tr>
</tbody>
</table>
Modbus RTU I/Os | Mixed Modules

Matching accessory for MR-DIO4/2

<table>
<thead>
<tr>
<th>Power supply NG4 gray</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal block for I/O Components</td>
<td>71</td>
</tr>
<tr>
<td>Jumper plug for I/O components</td>
<td>71</td>
</tr>
</tbody>
</table>

Matching accessory for MR-AIO4/2-IP65

| 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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1108331326</td>
<td>gray</td>
<td>4x IN (U or contact)</td>
<td>2x OUT (relay CO)</td>
</tr>
<tr>
<td>110833132601</td>
<td>gray</td>
<td>4x IN (U or contact)</td>
<td>2x OUT (relay NO)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1108331326IP</td>
<td>gray</td>
<td>4x IN (U or contact)</td>
<td>2x OUT (relay CO)</td>
</tr>
</tbody>
</table>
Modbus RTU I/Os | Mixed Modules

Matching accessory for MR-DIO4/2-IP65 230 V
Power supply NG4 gray | Page 20

MR-DIO4/2-IP65 230 V
The Modbus module in an 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 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. Module address, 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

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, Factory setting 19200 bit/s Even
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

Ingress protection for housing / terminal blocks: IP40 / IP20

P/N Color Feature 1 Feature 2
1108330526IP gray 6x IN (contact) 2x OUT (relay CO), 2x OUT (opto NO)
11083813 gray 6x IN (contact) 2x OUT (relay CO), 2x OUT (opto NO)
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
**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

![Wiring diagram](image_url)

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11084413</td>
<td>gray</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**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

**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

- 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

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<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110329</td>
<td>gray/black</td>
<td>LKS-ZD</td>
<td>wire break monitoring</td>
</tr>
<tr>
<td>11032902</td>
<td>gray/black</td>
<td>LKS-ZD</td>
<td>wire break monitoring</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
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</thead>
<tbody>
<tr>
<td>110324</td>
<td>silver</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**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.

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

**Principle diagram**

![USB/RS485 converter principle diagram](image)

**P/N | Color | Feature 1 | Feature 2**
<table>
<thead>
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</thead>
<tbody>
<tr>
<td>11080101</td>
<td>gray</td>
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</tbody>
</table>
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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.metz-connect.com">www.metz-connect.com</a></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
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</thead>
<tbody>
<tr>
<td>110561</td>
<td>gray</td>
<td>with jumper plug</td>
<td></td>
</tr>
</tbody>
</table>
BACnet MS/TP I/Os

Digital input

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.

**BMT-DI4**

- 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

**BMT-DI4-IP65**

- 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**
--- | --- | --- | ---
1108841319 | gray | 4x IN (U or contact) |  |

**P/N** | **Color** | **Feature 1** | **Feature 2**
--- | --- | --- | ---
1108841319IP | gray | 4x IN (U or contact) |  |
BACnet MS/TP I/Os

Digital input

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 contacts. 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

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

BMT-SI4
The BACnet MS/TP module with 4 SO inputs to DIN EN 62053-31 class A was developed for decentralized switching tasks. It is suitable for counting SO 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 SO 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

P/N | Color | Feature 1 | Feature 2
--- | --- | --- | ---
11088913 | gray | 4x IN (SO impulse) | 

Wiring / Principle diagram
BACnet MS/TP I/Os

Matching accessory for BMT-AI8
- Power supply NG4 gray
- Terminal block for I/O Components
- Jumper plug for I/O components

Page 20

Matching accessory for BMT-CI4
- Power supply NG4 gray
- Terminal block for I/O Components
- Jumper plug for I/O components

Page 20

I/O components

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: 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) acti |
BACnet MS/TP I/Os | Digital output

**Matching accessory for BMT-DO4**

<table>
<thead>
<tr>
<th>Page</th>
<th>Power supply NG4 gray</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Terminal block for I/O Components</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>Jumper plug for I/O components</td>
<td>71</td>
</tr>
</tbody>
</table>

**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**

![Wiring diagram for BMT-DO4](image)

**Wiring**

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

---

**Matching accessory for BMT-TO4**

<table>
<thead>
<tr>
<th>Page</th>
<th>Power supply NG4 gray</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Terminal block for I/O Components</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>Jumper plug for I/O components</td>
<td>71</td>
</tr>
</tbody>
</table>

**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, HKL 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/Principle diagram**

![Wiring diagram for BMT-TO4](image)

**Wiring**

- **P/N**: 11088013
- **Color**: gray
- **Feature 1**: 4x OUT (triac)
BACnet MS/TP I/Os | Analog output

Matching accessory for BMT-AOP4

<table>
<thead>
<tr>
<th>Power supply NG4 gray</th>
<th>Terminal block for I/O Components</th>
<th>Jumper plug for I/O components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Page 20</td>
<td>71</td>
<td>71</td>
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</tbody>
</table>

Matching accessory for BMT-AO4

<table>
<thead>
<tr>
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<th>Terminal block for I/O Components</th>
<th>Jumper plug for I/O components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Page 20</td>
<td>71</td>
<td>71</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
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<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
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<tr>
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<td>gray</td>
<td>4x OUT (U)</td>
<td>manual / automatic</td>
</tr>
</tbody>
</table>

**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**

<table>
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<th>Feature 2</th>
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</thead>
<tbody>
<tr>
<td>1108851302</td>
<td>gray</td>
<td>4x OUT (U)</td>
<td>manual / automatic</td>
</tr>
</tbody>
</table>
Matching accessory for BMT-Multi-I/O

<table>
<thead>
<tr>
<th>Feature</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply NG4 gray</td>
<td>20</td>
</tr>
<tr>
<td>Terminal block for I/O Components</td>
<td>71</td>
</tr>
<tr>
<td>Jumper plug for I/O components</td>
<td>71</td>
</tr>
</tbody>
</table>

**BMT-Multi-I/O**

The BACnet module BMT-Multi I/O is a compact and rapidly to install solution to connect digital and analog signals from the actuator 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**

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

**Wiring/Principle diagram**

<table>
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<tr>
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<th>Color</th>
<th>Feature 1</th>
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<tbody>
<tr>
<td>11089313</td>
<td>gray</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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**

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

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<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
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<tbody>
<tr>
<td>1108831326</td>
<td>gray</td>
<td>4x IN (U or contact)</td>
<td>2x OUT (relay CO)</td>
</tr>
</tbody>
</table>
BACnet MS/TP I/Os | Mixed Modules

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

Power supply NG4 gray

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

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. The 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 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

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<thead>
<tr>
<th>P/N</th>
<th>Color</th>
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<th>Feature 2</th>
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<tbody>
<tr>
<td>1108831326IP</td>
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<td>4x IN (U or contact)</td>
<td>2x OUT (relay CO)</td>
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<table>
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<tr>
<td>1108830526IP</td>
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</table>
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 b/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

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<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
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<tbody>
<tr>
<td>11088813</td>
<td>gray</td>
<td>6x IN (contact)</td>
<td>2x OUT (relay CD), 2x OUT (opto NO)</td>
</tr>
</tbody>
</table>
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

![Wiring Diagram]

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11080001</td>
<td>black</td>
<td>6x IN (contact)</td>
<td>2x OUT (relay CO), 2x OUT (opto NO)</td>
</tr>
</tbody>
</table>
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
Inputs 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

Matching accessory for NG4
- Terminal block for I/O Components: 71
- Jumper plug for I/O components: 71

Wiring / Principle diagram

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110561</td>
<td>gray</td>
<td>with jumper plug</td>
<td></td>
</tr>
</tbody>
</table>
**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
- **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**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1108501319</td>
<td>gray</td>
<td>4x IN (U or contact)</td>
<td></td>
</tr>
</tbody>
</table>

**Matching accessory for LF-DI4**

- **Power supply NG4 gray**
- **Terminal block for I/O Components**
- **Jumper plug for I/O components**

**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 contact or voltage
- **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**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1108511319</td>
<td>gray</td>
<td>10x IN (U or contact)</td>
<td></td>
</tr>
</tbody>
</table>
### 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

**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

**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
**Matching accessory for LF-SI4**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply NG4 gray</td>
<td>20</td>
</tr>
<tr>
<td>Terminal block for I/O Components</td>
<td>71</td>
</tr>
<tr>
<td>Jumper plug for I/O components</td>
<td>71</td>
</tr>
</tbody>
</table>

**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 50 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**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11085813</td>
<td>gray</td>
<td>4x IN (S0 impulse)</td>
<td></td>
</tr>
</tbody>
</table>
**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

---

**LF-CI4**

The LON module with analog inputs was developed for decentralized 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 / current**: 0 V to 20 mA 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
The LON 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 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 / IP40 / IP20 terminal blocks

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 / IP65 / IP20 terminal blocks

Wiring/Principle diagram

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1108521321</td>
<td>gray</td>
<td>4x OUT (relay CO)</td>
<td>manual/automatic</td>
</tr>
<tr>
<td>1108521321IP</td>
<td>gray</td>
<td>4x OUT (relay CO)</td>
<td>manual/automatic</td>
</tr>
</tbody>
</table>
**LON FT I/Os** | Digital output

**Matching accessory for LF-TO4**
- Power supply NG4 gray
- Terminal block for I/O Components
- Jumper plug for I/O components

**LF-TO4**
The LON module with 4 digital outputs was developed for decentralized 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

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**Wiring/Principle diagram**

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**P/N**
- 11086213

**Color**
- gray

**Feature 1**
- 4x OUT (triac)

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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
**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 digital
- **Output / contacts**: 2 NO (DPST-NO)
- **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**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11085713</td>
<td>gray</td>
<td>2x IN (U)</td>
<td>2x OUT (U), 2x OUT (opto NO)</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11086105P</td>
<td>gray</td>
<td>4x IN (U or R)</td>
<td>4x OUT (triac)</td>
</tr>
</tbody>
</table>
### LON FT I/Os | Mixed Modules

#### 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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1108561326</td>
<td>gray</td>
<td>4x IN (contact)</td>
<td>2x OUT (relay NO), 2x OUT (opto NO)</td>
</tr>
</tbody>
</table>

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#### 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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11085913</td>
<td>gray</td>
<td>6x IN (contact)</td>
<td>2x OUT (relay CO), 2x OUT (opto NO)</td>
</tr>
</tbody>
</table>
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

Matching accessory for 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 / current 8 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
**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

![Principle diagram](image)

---

### P/N | Color | Feature 1 | Feature 2
--- | --- | --- | ---
11087913 | gray |  |  |
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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110561</td>
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<td>with jumper plug</td>
<td></td>
</tr>
</tbody>
</table>
Echelon IzoT® CT 4.1 Standard and Echelon IzoT® CT 4.1 Professional is matching accessory for 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) |

| Echelon IzoT® CT 4.1 Professional |
| IzoT CT (Commissioning Tool) Professional |
| OpenLNS Server |
| Visio 2016 Professional |
| DVD |
| (Echelon Model-No.: 38000-401) |

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<tr>
<td>110209</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
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<tr>
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<td>TP/FT-10 Channel</td>
<td></td>
</tr>
</tbody>
</table>


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
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
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

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**Wiring / Principle diagram**

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### P/N | Color | Feature 1 | Feature 2
--- | --- | --- | ---
1105701321 | gray | | |
CAN I/Os | Analog output

Matching accessory for FAA 4

<table>
<thead>
<tr>
<th>Power supply NG4 gray</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>Terminal block</td>
<td>20</td>
</tr>
<tr>
<td>for I/O Components</td>
<td>71</td>
</tr>
<tr>
<td>Jumper plug</td>
<td>71</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
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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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110561</td>
<td>gray</td>
<td>with jumper plug</td>
<td></td>
</tr>
</tbody>
</table>
## Accessories | Connection aids

### 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. |
| Pin diameter | 0.9 mm |
| Pin material | CuZn |
| Upper temperature limit | 125 °C |
| Lower temperature limit | -30 °C |

### 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
--- | --- | --- | ---
31135104 | black | | |

#### P/N | Color | Feature 1 | Feature 2
--- | --- | --- | ---
110369 | black | | |
Switches

METZ CONNECT – your partner for building automation

As 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.
Contents | Switches

Switches
1  Industry Switches | Ethernet................................. 74
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

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

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

<table>
<thead>
<tr>
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<tr>
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<td>5 port RJ45</td>
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<td>11019601</td>
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<td>7 port RJ45</td>
<td>1 Port SC MM</td>
</tr>
<tr>
<td>110196</td>
<td>gray</td>
<td>8 port RJ45</td>
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</tbody>
</table>
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.
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 physical 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.
Interface modules | Electromechanical coupling modules

**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**: AgSnO₂  
**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 10⁷ switching cycles  
**Electrical endurance**: 1 x 10⁵ 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

---

**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  
**Power consumption**: approx. 13 mA  
**Output / contacts**: 1 changeover contact (SPDT)  
**Output / contact material**: AgSnO₂  
**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 10⁷ switching cycles  
**Electrical endurance**: 1 x 10⁵ 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

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**Wiring/Circuit diagram**

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<table>
<thead>
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<td>1 DPST</td>
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<td>24 V AC/DC</td>
<td>1 DPST</td>
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Matching accessory for KRA-SR-F10/21
Connecting bridge, 10 pole 108
Labeling plate Series KRA F8/F10 108

Matching accessory for KRA-SRA-F10/21
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

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>24 V AC/DC</th>
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<tbody>
<tr>
<td>Current consumption</td>
<td>approx. 13 mA</td>
</tr>
<tr>
<td>Output / contacts</td>
<td>1 changeover contact (SPDT)</td>
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<tr>
<td>Output / contact material</td>
<td>AgSnO₂</td>
</tr>
<tr>
<td>Output / switching voltage</td>
<td>250 V AC/DC</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>8 A</td>
</tr>
<tr>
<td>Output / switching frequency</td>
<td>300 cycles/h</td>
</tr>
<tr>
<td>Response time</td>
<td>approx. 10 ms</td>
</tr>
<tr>
<td>Release time</td>
<td>approx. 5 ms</td>
</tr>
<tr>
<td>Mechanical endurance</td>
<td>1 x 10⁷ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10⁶ switching cycles</td>
</tr>
<tr>
<td>Solid wire cross-section</td>
<td>0.08 mm² - 2.5 mm²</td>
</tr>
<tr>
<td>Stranded wire without end sleeve</td>
<td>0.08 mm² - 2.5 mm²</td>
</tr>
<tr>
<td>Stranded wire with end sleeve</td>
<td>0.08 mm² - 1.5 mm²</td>
</tr>
<tr>
<td>Display</td>
<td>Green LED</td>
</tr>
</tbody>
</table>

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

### 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

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>24 V AC/DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption</td>
<td>approx. 13 mA</td>
</tr>
<tr>
<td>Outputs / contact</td>
<td>1 changeover contact (SPDT)</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgSnO₂</td>
</tr>
<tr>
<td>Output / switching voltage</td>
<td>250 V AC/DC</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>8 A</td>
</tr>
<tr>
<td>Output / switching frequency</td>
<td>360 cycles/h</td>
</tr>
<tr>
<td>Response time</td>
<td>approx. 10 ms</td>
</tr>
<tr>
<td>Release time</td>
<td>approx. 5 ms</td>
</tr>
<tr>
<td>Mechanical endurance</td>
<td>1 x 10⁶ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10⁶ switching cycles</td>
</tr>
<tr>
<td>Solid wire cross-section</td>
<td>0.08 mm² - 2.5 mm²</td>
</tr>
<tr>
<td>Stranded wire without end sleeve</td>
<td>0.08 mm² - 2.5 mm²</td>
</tr>
<tr>
<td>Stranded wire with end sleeve</td>
<td>0.08 mm² - 1.5 mm²</td>
</tr>
<tr>
<td>Display</td>
<td>Green, red and yellow LED</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
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<tr>
<td>11070813</td>
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<td>24 V AC/DC</td>
<td>1 DPST</td>
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<tr>
<td></td>
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**Wiring/Circuit diagram**

<table>
<thead>
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<td>1 DPST</td>
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</tr>
</tbody>
</table>
**Interface modules** | **Electromechanical coupling modules**

### 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**: AgSnO₂
- **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 10⁷ switching cycles
- **Electrical endurance**: 1 x 10⁵ 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

### 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**: 24 V AC/DC
- **Power consumption**: 24 V AC/DC approx. 16 mA
- **Output / contacts**: 2 changeover contacts (DPDT)
- **Output / contact material**: AgSnO₂
- **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 10⁷ switching cycles
- **Electrical endurance**: 1 x 10⁵ 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

**KRA-F10/21-21**

```
A1 - A2
opening voltage
T1 - T2 - T4
2 - 22 - 2A
2 changeover contacts
```

**KRA-S-F10/21-21**

```
A1 - A2
opening voltage
A1 - A2
opening voltage
11 - 12 - 14
21 - 32 - 34
2 changeover contacts
```

---

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

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

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

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

### P/N Color Feature 1 Feature 2

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11070213</td>
<td>gray</td>
<td>24 V AC/DC</td>
<td>2 DPST</td>
</tr>
<tr>
<td>11070713</td>
<td>gray</td>
<td>24 V AC/DC</td>
<td>2 DPST</td>
</tr>
</tbody>
</table>
Interface modules | Electromechanical coupling modules

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: AgSnO₂
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 10⁷ switching cycles
Electrical endurance: 1 x 10⁵ switching cycles
Cross-section: 2.5 mm²
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: AgSnO₂
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 10⁷ switching cycles
Electrical endurance: 1 x 10⁵ switching cycles
Cross-section: 2.5 mm²
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
Matching accessory for KRA-M6/21, 1 changeover contact, 12 or 24 V AC/DC

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

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

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**: AgSnO₂
**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 10⁷ switching cycles
**Electrical endurance**: 1 x 10⁵ switching cycles
**Cross-section**: 2.5 mm²
**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
---|---|---|---
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**:
- 20 mA at 12 V AC/DC
- 13 mA at 24 V AC/DC

**Output / contacts**:
- 1 changeover contact (1 DPDT)

**Output / contact material**: AgSnO₂
**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 10⁷ switching cycles
**Electrical endurance**: 1 x 10⁵ switching cycles
**Cross-section**: 2.5 mm²
**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
---|---|---|---
11061550 | gray | 12 V AC/DC | 1 DPST
11061513 | gray | 24 V AC/DC | 1 DPST
Interface modules | Electromechanical coupling modules

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

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>24 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption</td>
<td>13 mA</td>
</tr>
<tr>
<td>Output / contacts</td>
<td>1 changeover contact (SPDT)</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgSnO₂</td>
</tr>
<tr>
<td>Output / switching voltage</td>
<td>250 V AC/DC</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>6 A</td>
</tr>
<tr>
<td>Output / switch-on current</td>
<td>8 A</td>
</tr>
<tr>
<td>Output / switching frequency</td>
<td>600 cycles/h</td>
</tr>
<tr>
<td>Response time</td>
<td>10 ms</td>
</tr>
<tr>
<td>Release time</td>
<td>5 ms</td>
</tr>
<tr>
<td>Mechanical endurance</td>
<td>1 x 10⁷ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10⁵ switching cycles</td>
</tr>
<tr>
<td>Cross-section</td>
<td>2.5 mm²</td>
</tr>
<tr>
<td>Display</td>
<td>Red LED</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
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<tbody>
<tr>
<td>11061525</td>
<td>gray</td>
<td>24 V DC</td>
<td>1 changeover contact</td>
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</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>230 V AC</th>
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<tbody>
<tr>
<td>Current consumption</td>
<td>5 mA</td>
</tr>
<tr>
<td>Output / contacts</td>
<td>1 changeover contact (SPDT)</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgSnO₂</td>
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<tr>
<td>Output / switching voltage</td>
<td>250 V AC/DC</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>6 A</td>
</tr>
<tr>
<td>Output / switch-on current</td>
<td>8 A</td>
</tr>
<tr>
<td>Output / switching frequency</td>
<td>360 cycles/h</td>
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<tr>
<td>Response time</td>
<td>10 ms</td>
</tr>
<tr>
<td>Release time</td>
<td>15 ms</td>
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<tr>
<td>Mechanical endurance</td>
<td>1 x 10⁷ switching cycles</td>
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<td>Electrical endurance</td>
<td>1 x 10⁵ switching cycles</td>
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<tr>
<td>Cross-section</td>
<td>2.5 mm²</td>
</tr>
<tr>
<td>Display</td>
<td>Red LED</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
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<tbody>
<tr>
<td>11061505</td>
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<td>230 V AC</td>
<td>1 changeover contact</td>
</tr>
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Control cabinet components
Interface modules | Electromechanical coupling modules

Matching accessory for KRA-S-M6/21
Connecting bridge Series KRA M4/M6/MB 110
Labeling plate Series KRA M4/M6/MB 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 AgSnO₂
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 10⁷ switching cycles
Electrical endurance 1 x 10⁶ switching cycles
Cross-section 2.5 mm²
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

<table>
<thead>
<tr>
<th>P/N</th>
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<th>Feature 2</th>
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<tr>
<td>11061213</td>
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<td>24 V AC/DC</td>
<td>1 changeover contact</td>
</tr>
</tbody>
</table>

Control cabinet components
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: 25 mA (12 V AC/DC), 16 mA (24 V AC/DC)
Output/contacts: 2 changeover contacts (DPDT)
Output/contact material: AgSnO₂
Output/switching voltage: 250 V AC/DC
Output/continuous current: 4 A
Output/switching frequency: 1 x 10⁷ switching cycles
Response time: 10 ms
Release time: 5 ms
Mechanical endurance: 1 x 10⁷ switching cycles
Electrical endurance: 6 x 10⁴ switching cycles
Cross-section: 2.5 mm²
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
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: AgSnO₂
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 10⁷ switching cycles
Electrical endurance: 6 x 10⁶ switching cycles
Cross-section: 2.5 mm²
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
--- | --- | --- | ---
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: 50 mA
Output / contacts: 3 changeover contacts (3PDT)
Output / contact material: AgSnO₂
Output / switching voltage: 250 V AC/DC
Output / continuous current: 6 A
Output / switch-on current: 8 A
Response time: 10 ms
Release time: 5 ms
Mechanical endurance: 1 x 10⁷ switching cycles
Electrical endurance: 1 x 10⁶ switching cycles
Cross-section: 2.5 mm²
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

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

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

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

Control cabinet components
**Interface modules** | **Relay modules**

Matching accessory for RM21-21 24 V DC

Page 111

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

Page 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: $3 \times 10^6$ switching cycles
- Electrical endurance: $1 \times 10^6$ switching cycles
- Anschlussquerschnitt: 2 x 2.5 mm²
- 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

---

**WM21-21 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, 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: $5 \times 10^6$ switching cycles
- Electrical endurance: $1 \times 10^6$ switching cycles
- Cross-section: 2 x 2.5 mm²
- 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

---

**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
## Interface modules

### Relay modules

**RM3-2W 24 V DC**
Relay module for electrical isolation between logic and load.
- **Connection with screw-type terminals**
- **pluggable relay**
- **with labeling field**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>24 V DC</td>
</tr>
<tr>
<td>Current consumption</td>
<td>17 mA</td>
</tr>
<tr>
<td>Output / contacts</td>
<td>2 changeover contacts (DPDT)</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgNi 90/10</td>
</tr>
<tr>
<td>Output / switching voltage</td>
<td>250 V AC</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>8 A</td>
</tr>
<tr>
<td>Output / switching frequency</td>
<td>360 cycles/h</td>
</tr>
<tr>
<td>Mechanical endurance</td>
<td>$3 \times 10^6$ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>$1 \times 10^6$ switching cycles</td>
</tr>
<tr>
<td>Cross-section</td>
<td>2 x 2.5 mm$^2$</td>
</tr>
<tr>
<td>Display</td>
<td>Red LED</td>
</tr>
</tbody>
</table>

| 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

![Wiring Diagram](image)

### P/N Table

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11051025</td>
<td>black</td>
<td>24 V DC</td>
<td>2 changeover contact</td>
</tr>
</tbody>
</table>

---

**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**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>24 V or 230 V AC</td>
</tr>
<tr>
<td>Current consumption</td>
<td>24 V AC: 32 mA; 230 V AC: 3.3 mA</td>
</tr>
<tr>
<td>Output / contacts</td>
<td>2 changeover contacts (DPDT)</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgNi 90/10</td>
</tr>
<tr>
<td>Output / switching voltage</td>
<td>250 V AC</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>8 A</td>
</tr>
<tr>
<td>Output / switching frequency</td>
<td>360 cycles/h</td>
</tr>
<tr>
<td>Mechanical endurance</td>
<td>$5 \times 10^6$ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>$1 \times 10^6$ switching cycles</td>
</tr>
<tr>
<td>Cross-section</td>
<td>2 x 2.5 mm$^2$</td>
</tr>
<tr>
<td>Display</td>
<td>Red LED</td>
</tr>
</tbody>
</table>

| 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

![Wiring Diagram](image)

### P/N Table

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11051010</td>
<td>black</td>
<td>24 V AC</td>
<td>2 changeover contact</td>
</tr>
<tr>
<td>11051005</td>
<td>black</td>
<td>230 V AC</td>
<td>2 changeover contact</td>
</tr>
</tbody>
</table>
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

---

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**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1106302517</td>
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</table>

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
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</thead>
<tbody>
<tr>
<td>1106312518</td>
<td>gray</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Interface modules | Analog data encoder

Matching accessory for KMA-F8

Connecting bridge, 10 pole
Labeling plate Series KMA F8

Matching accessory for KMAI-F8

Connecting bridge, 10 pole
Labeling plate Series KMA 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 signaled 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.

- 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 Input / power consumption 30 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 / IP40 / IP20

terminal block

Wiring/Circuit diagram

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
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</thead>
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<tr>
<td>110730</td>
<td>gray</td>
<td>24 V AC/DC</td>
<td>0-10 V DC</td>
</tr>
<tr>
<td>11073001</td>
<td>gray</td>
<td>24 V AC/DC</td>
<td>0 - 10 V DC Return voltage proof</td>
</tr>
</tbody>
</table>

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.

- 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 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 / IP40 / IP20

terminal block

Wiring/Circuit diagram

<table>
<thead>
<tr>
<th>P/N</th>
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<th>Feature 1</th>
<th>Feature 2</th>
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</thead>
<tbody>
<tr>
<td>110731</td>
<td>gray</td>
<td>24 V AC/DC</td>
<td>0 - 20 mA</td>
</tr>
</tbody>
</table>
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 signaled by external control contact terminals S1 and S2. The control variable can be set via potentiometer on 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 over through the external control contact terminals YR 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: 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. The switch position "Hand" (manual mode) the control variable can be set with the potentiometer on the front. The control variable is looped over through the external control contact terminals YR to the Y output without change.

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: IP40 / IP20

Wiring/Circuit diagram

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

Control cabinet components

C Logline
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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110720</td>
<td>gray</td>
<td>250 V AC/DC</td>
<td></td>
</tr>
</tbody>
</table>
Interface modules | Threshold control

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 AgSnO2
- 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

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 AgSnO2
- 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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110655</td>
<td>gray</td>
<td>2.5 V off 3 V on</td>
<td>w/o manual control</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

Wiring/Circuit diagram

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110661</td>
<td>gray</td>
<td>2.5 V off 3 V on</td>
<td>with manual control</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
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 10^6 switching cycles
Electrical endurance 1 x 10^6 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 / IP40 / IP20

Wiring/Circuit diagram

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 10^6 switching cycles
Electrical endurance 1 x 10^6 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 / IP40 / IP20

Wiring/Circuit diagram

P/N Color Feature 1 Feature 2
110666 gray sélectable 1 DPST
Interface modules | Threshold control

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 AgSnO₂
Output / continuous current 4 A
Output / switching frequency 1200 cycles/h
Mechanical endurance 1 x 10⁵ switching cycles
Electrical endurance 1 x 10⁶ 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

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 AgSnO₂
Output / continuous current 4 A
Output / switching frequency 1200 cycles/h
Mechanical endurance 1 x 10⁵ switching cycles
Electrical endurance 1 x 10⁶ 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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110673</td>
<td>gray</td>
<td>2.5 V off 7 V on</td>
<td>3 V off 7.5 V on</td>
</tr>
</tbody>
</table>

Wiring/Circuit diagram

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110672</td>
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<td>2.5 V off 7 V on</td>
<td>3 V off 7.5 V on</td>
</tr>
</tbody>
</table>
**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** AgSnO₂

**Output / continuous current** 4 A

**Output / switching frequency** 1200 cycles/h

**Mechanical endurance** 1 x 10⁷ switching cycles

**Electrical endurance** 1 x 10⁵ 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

---

**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** AgSnO₂

**Output / continuous current** 4 A

**Output / switching frequency** 360 cycles/h

**Mechanical endurance** 1 x 10⁷ switching cycles

**Electrical endurance** 1 x 10⁵ 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** 110665 11043413

**Color** gray gray

**Feature 1** 2.5 V, 7 V off 2.5 V, 7 V off

**Feature 2** 3 V, 7.5 V on 3 V, 7.5 V on
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**: AgSnO₂

**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 10⁷ switching cycles

**Electrical endurance**: 1 x 10⁶ switching cycles

**Cross-section**: 2.5 mm²

**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
Interface modules | Potential separator Signal separator

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 PT-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 / 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 / IP40 / IP20

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 PT-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 / IP40 / IP20

terminal block

Wiring/Circuit diagram

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110501</td>
<td>gray</td>
<td>24 V AC/DC</td>
<td>voltage balanced</td>
</tr>
<tr>
<td>11050108</td>
<td>gray</td>
<td>24 V AC/DC</td>
<td>current balanced</td>
</tr>
</tbody>
</table>

Wiring/Principle diagram

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110502</td>
<td>gray</td>
<td>230 V AC</td>
<td>voltage balanced</td>
</tr>
<tr>
<td>11050208</td>
<td>gray</td>
<td>230 V AC</td>
<td>current balanced</td>
</tr>
</tbody>
</table>
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

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

Table of switching conditions

<table>
<thead>
<tr>
<th>Output V DC</th>
<th>Inputs S1</th>
<th>Inputs S2</th>
<th>Inputs S3</th>
<th>Inputs S4</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 V</td>
<td>0 0 0 0</td>
<td>4.5 V</td>
<td>1 0 0 1</td>
<td></td>
</tr>
<tr>
<td>0.5 V</td>
<td>1 0 0 0</td>
<td>5.0 V</td>
<td>0 1 0 1</td>
<td></td>
</tr>
<tr>
<td>1.0 V</td>
<td>0 1 0 0</td>
<td>5.5 V</td>
<td>1 1 0 1</td>
<td></td>
</tr>
<tr>
<td>1.5 V</td>
<td>1 1 0 0</td>
<td>6.0 V</td>
<td>0 1 1 1</td>
<td></td>
</tr>
<tr>
<td>2.0 V</td>
<td>0 1 1 0</td>
<td>6.5 V</td>
<td>1 0 1 1</td>
<td></td>
</tr>
<tr>
<td>2.5 V</td>
<td>1 0 1 0</td>
<td>7.0 V</td>
<td>0 1 1 1</td>
<td></td>
</tr>
<tr>
<td>3.0 V</td>
<td>0 1 1 1</td>
<td>7.5 V</td>
<td>1 1 1 1</td>
<td></td>
</tr>
<tr>
<td>3.5 V</td>
<td>1 1 1 1</td>
<td>&gt;7.5 V</td>
<td>1 1 1 1</td>
<td></td>
</tr>
<tr>
<td>4.0 V</td>
<td>0 1 1 1</td>
<td>0 0 0 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Value of the inputs:
- S1 = 0.5 V
- S2 = 1.0 V
- S3 = 2.0 V
- S4 = 4.0 V

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

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

Table of switching conditions

<table>
<thead>
<tr>
<th>Input V DC</th>
<th>Outputs 1</th>
<th>Outputs 2</th>
<th>Outputs 3</th>
<th>Outputs 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 V</td>
<td>0 0 0 0</td>
<td>4.5 V</td>
<td>1 0 0 1</td>
<td></td>
</tr>
<tr>
<td>0.5 V</td>
<td>1 0 0 0</td>
<td>5.0 V</td>
<td>0 1 0 1</td>
<td></td>
</tr>
<tr>
<td>1.0 V</td>
<td>0 1 0 0</td>
<td>5.5 V</td>
<td>1 1 0 1</td>
<td></td>
</tr>
<tr>
<td>1.5 V</td>
<td>1 1 0 0</td>
<td>6.0 V</td>
<td>0 1 1 1</td>
<td></td>
</tr>
<tr>
<td>2.0 V</td>
<td>0 1 1 0</td>
<td>6.5 V</td>
<td>1 0 1 1</td>
<td></td>
</tr>
<tr>
<td>2.5 V</td>
<td>1 0 1 0</td>
<td>7.0 V</td>
<td>0 1 1 1</td>
<td></td>
</tr>
<tr>
<td>3.0 V</td>
<td>0 1 1 1</td>
<td>7.5 V</td>
<td>1 1 1 1</td>
<td></td>
</tr>
<tr>
<td>3.5 V</td>
<td>1 1 1 1</td>
<td>&gt;7.5 V</td>
<td>1 1 1 1</td>
<td></td>
</tr>
<tr>
<td>4.0 V</td>
<td>0 1 1 1</td>
<td>0 0 0 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Wiring/Circuit diagram
Interface modules | Pulse shaper Signal extender

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

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>24 V AC/DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption max.</td>
<td>less than or equal to 15 mA</td>
</tr>
<tr>
<td>Continuous current max.</td>
<td>8 A</td>
</tr>
<tr>
<td>Output / contact</td>
<td>2 changeover contacts (DPDT)</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgNi 90/10 gold plated</td>
</tr>
<tr>
<td>Response time typical</td>
<td>20 ms</td>
</tr>
<tr>
<td>Release time typical</td>
<td>20 ms</td>
</tr>
<tr>
<td>Recovery time</td>
<td>greater than or equal to 20 ms</td>
</tr>
<tr>
<td>Minimum switch-on duration</td>
<td>greater than or equal to 5 ms</td>
</tr>
<tr>
<td>Mechanical endurance</td>
<td>3 x 10⁷ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10⁸ switching cycles</td>
</tr>
<tr>
<td>Wire cross section solid wire</td>
<td>2.5 mm² / AWG 14</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>35 x 69.3 x 60 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>160 g</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-10 °C to +50 °C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-25 °C to +70 °C</td>
</tr>
<tr>
<td>Ingress protection for housing / terminal block</td>
<td>IP40 / IP20</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>230 V AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption max.</td>
<td>less than or equal to 15 mA</td>
</tr>
<tr>
<td>Continuous current max.</td>
<td>8 A</td>
</tr>
<tr>
<td>Output / contact</td>
<td>2 changeover contacts (DPDT)</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgNi 90/10 gold plated</td>
</tr>
<tr>
<td>Response time typical</td>
<td>20 ms</td>
</tr>
<tr>
<td>Release time typical</td>
<td>20 ms</td>
</tr>
<tr>
<td>Recovery time</td>
<td>greater than or equal to 20 ms</td>
</tr>
<tr>
<td>Minimum switch-on duration</td>
<td>greater than or equal to 5 ms</td>
</tr>
<tr>
<td>Mechanical endurance</td>
<td>3 x 10⁷ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10⁸ switching cycles</td>
</tr>
<tr>
<td>Wire cross section solid wire</td>
<td>2.5 mm² / AWG 14</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>35 x 69.3 x 60 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>160 g</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-10 °C to +50 °C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-25 °C to +70 °C</td>
</tr>
<tr>
<td>Ingress protection for housing / terminal block</td>
<td>IP40 / IP20</td>
</tr>
</tbody>
</table>

Control cabinet components
### 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
- 230 V AC/DC 20 mA
**Output / contact**
- 1 changeover contact (SPDT)
**Output / contact material** AgSnO₂
**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 10⁷ switching cycles
**Electrical endurance** 1 x 10⁵ switching cycles
**Cross-section** 2.5 mm²

**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

### 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

### Table

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110518</td>
<td>gray</td>
<td>230 V AC</td>
<td>1 DPST</td>
</tr>
<tr>
<td>11051813</td>
<td>gray</td>
<td>24 V AC/DC</td>
<td>1 DPST</td>
</tr>
</tbody>
</table>

### Table

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110280</td>
<td>gray</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Interface modules | Annunciator modules

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: AgSnO2
Output / switching voltage: 250 V
Output / continuous current: 4 A
Output / switching frequency: 360 cycles/h
Mechanical endurance: 1 x 10⁷ switching cycles
Electrical endurance: 6 x 10⁴ Schaltspiele
Cross-section: 2.5 mm²
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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110520</td>
<td>gray</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Interface modules | Diode modules

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

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

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

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

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

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

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

Wiring/Circuit diagram
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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110628</td>
<td>gray</td>
<td>common anode</td>
<td>11 diodes</td>
</tr>
</tbody>
</table>
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 or 230 V AC
- DC 24 V DC

Current consumption
- 24 V AC: 65 mA
- 24 V DC: 41 mA
- 230 V AC: 8 mA
- Continuous current: 7 A

Output / contact
- 4 changeover contacts (4DPST)
- Material: Silver alloy
- Switching capacity: 1500 VA

Mechanical endurance
- 1 x 10^7 switching cycles

Display
- LED and mechanical

Dimensions
- 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

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
- 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
- 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
### Interface modules | Industrial relays

**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

<table>
<thead>
<tr>
<th>Nominal current</th>
<th>10 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage</td>
<td>300 V AC</td>
</tr>
<tr>
<td>Electric strength</td>
<td>2500 V / 50 Hz / 1 min</td>
</tr>
<tr>
<td>Coil / contact</td>
<td>VDE 0110b C250</td>
</tr>
<tr>
<td>Isolation group</td>
<td>+70 °C</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>VBG 4</td>
</tr>
<tr>
<td>Protection against contact</td>
<td>2 x 2.5 mm²</td>
</tr>
<tr>
<td>Solid wire cross-section</td>
<td>2 x 1.5 mm²</td>
</tr>
<tr>
<td>Stranded wire with end sleeve</td>
<td>max. 0.8 Nm</td>
</tr>
<tr>
<td>Screw torque</td>
<td>7 mm</td>
</tr>
<tr>
<td>Insulation strip length</td>
<td>31 x 96.35 x 42.65 mm</td>
</tr>
<tr>
<td>Housing dimensions (W x H x D)</td>
<td>56 g</td>
</tr>
<tr>
<td>Weight</td>
<td>0 °C to +55 °C</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-20 °C to +70 °C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>IP20</td>
</tr>
<tr>
<td>Ingress protection</td>
<td></td>
</tr>
</tbody>
</table>

**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

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

**Wiring**

### Matching accessory for Socket 14 poles for electronic modules

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110178</td>
<td>black</td>
<td>2 floors</td>
<td></td>
</tr>
</tbody>
</table>

### Matching accessory for Socket with spring-clamp terminals

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110185</td>
<td>black</td>
<td>3 floors</td>
<td></td>
</tr>
</tbody>
</table>
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

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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
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</tr>
</thead>
<tbody>
<tr>
<td>110728</td>
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<table>
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<th>Feature 2</th>
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<tbody>
<tr>
<td>110729</td>
<td>transparent</td>
<td></td>
<td></td>
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</tbody>
</table>
Labeling plate Series KMA F8 is matching accessory for

- KMA-F8: Page 90
- KMAi-F8: Page 90

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

- End mount: Page 110

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

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

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 |

<table>
<thead>
<tr>
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<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
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<tbody>
<tr>
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<table>
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<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
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</thead>
<tbody>
<tr>
<td>850349-02</td>
<td>black</td>
<td>10 poles</td>
<td></td>
</tr>
</tbody>
</table>
**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

**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

---

**Control cabinet components**

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

<table>
<thead>
<tr>
<th>Product</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>KRA-M4/1</td>
<td>from 81</td>
</tr>
<tr>
<td>KRA-M6</td>
<td>from 82</td>
</tr>
<tr>
<td>KRA-M8</td>
<td>from 85</td>
</tr>
<tr>
<td>KRA-SR-M8/21</td>
<td>86</td>
</tr>
<tr>
<td>KRA-M8/21-21</td>
<td>86</td>
</tr>
</tbody>
</table>

End mount for connecting bridge is matching accessory for

<table>
<thead>
<tr>
<th>Product</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecting bridge, 10 pole</td>
<td>108</td>
</tr>
<tr>
<td>Connecting bridge, 5 pole</td>
<td>111</td>
</tr>
</tbody>
</table>
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

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 |

<table>
<thead>
<tr>
<th>P/N</th>
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<th>Feature 1</th>
<th>Feature 2</th>
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<tbody>
<tr>
<td>11017910</td>
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<td>24 V AC</td>
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</tr>
<tr>
<td>11017905</td>
<td>black</td>
<td>230 V AC</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>850349-03</td>
<td>black</td>
<td>5 poles</td>
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</table>
Holding bracket Wire / Holding bracket plastic is matching accessory for

<table>
<thead>
<tr>
<th>Holding bracket wire</th>
<th>Holding bracket plastic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal holding bracket for securing the relay in the relay socket. It avoids that the relay gets loose due to vibrations.</td>
<td>Plastic holding bracket for securing the relay in the relay socket. It avoids that the relay gets loose due to vibrations.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
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<tbody>
<tr>
<td>817133</td>
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<td>Holder</td>
<td>Wire</td>
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<tr>
<td>110189</td>
<td>black</td>
<td>Holder</td>
<td>Plastics</td>
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</tr>
<tr>
<td>Contents</td>
<td>Control cabinet components</td>
<td>Measuring and monitoring relays</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------</td>
<td>--------------------------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Measuring and monitoring relays</td>
<td>Fan timer ................................................................. 114</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Measuring and monitoring relays</td>
<td>Speed Monitoring .......................................................... 115</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Measuring and monitoring relays</td>
<td>cosPhi monitoring ......................................................... 117</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Measuring and monitoring relays</td>
<td>Motor protection .......................................................... 118</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Measuring and monitoring relays</td>
<td>Level monitoring .......................................................... 119</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Measuring and monitoring relays</td>
<td>Phase monitoring .......................................................... 121</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Measuring and monitoring relays</td>
<td>Undervoltage monitor .................................................... 123</td>
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<tr>
<td>8</td>
<td>Measuring and monitoring relays</td>
<td>Current/Voltage monitoring ............................................. 124</td>
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</tr>
<tr>
<td>9</td>
<td>Measuring and monitoring relays</td>
<td>Current Converter ......................................................... 125</td>
<td></td>
</tr>
</tbody>
</table>
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.

**Wiring/Circuit diagram**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11028313</td>
<td>gray</td>
<td>24 V AC</td>
<td></td>
</tr>
<tr>
<td>1102830530</td>
<td>gray</td>
<td>230 V AC</td>
<td></td>
</tr>
</tbody>
</table>
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

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

### Two-wire sensor

- 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

#### Wiring AC/DC / Wiring AC

#### Wiring

<table>
<thead>
<tr>
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<th>Feature 1</th>
<th>Feature 2</th>
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</thead>
<tbody>
<tr>
<td>1101501322</td>
<td>gray</td>
<td>24 V AC/DC</td>
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</tr>
<tr>
<td>1101500522</td>
<td>gray</td>
<td>230 V AC</td>
<td></td>
</tr>
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</table>

### Matching accessory for DRIW-E16

<table>
<thead>
<tr>
<th>Component</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two-wire sensor</td>
<td>115</td>
</tr>
<tr>
<td>Mounting bracket HWR</td>
<td>116</td>
</tr>
<tr>
<td>Mounting bracket HWF</td>
<td>116</td>
</tr>
</tbody>
</table>

### Two-wire sensor

- 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

#### Wiring AC/DC / Wiring AC

#### Wiring

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1101501322</td>
<td>gray</td>
<td>24 V AC/DC</td>
<td></td>
</tr>
<tr>
<td>1101500522</td>
<td>gray</td>
<td>230 V AC</td>
<td></td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110146</td>
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<td></td>
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<table>
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<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110151</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Measuring and monitoring relays | cosPhi monitoring

**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

**Wiring**

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

**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
**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)

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11031505</td>
<td>gray</td>
<td>230 V AC, 1W</td>
<td>w/o error memory</td>
</tr>
<tr>
<td>1103150522</td>
<td>gray</td>
<td>230 V AC, 2W</td>
<td>w/o error memory</td>
</tr>
<tr>
<td>1103151322</td>
<td>gray</td>
<td>24 V AC/DC, 2W</td>
<td>w/o error memory</td>
</tr>
</tbody>
</table>

**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)

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11031605</td>
<td>gray</td>
<td>230 V AC, 1W</td>
<td>with error memory</td>
</tr>
<tr>
<td>1103160522</td>
<td>gray</td>
<td>230 V AC, 2W</td>
<td>with error memory</td>
</tr>
<tr>
<td>1103161322</td>
<td>gray</td>
<td>24 V AC/DC, 2W</td>
<td>with error memory</td>
</tr>
</tbody>
</table>

**Wiring**

<table>
<thead>
<tr>
<th>A1</th>
<th>A2</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>P2</td>
</tr>
<tr>
<td>P3</td>
<td>P4</td>
</tr>
</tbody>
</table>

- A1 - A2: operating voltage
- P1 - P2: PTC thermistor
- P3 - P4: output contact
- P5 - P6: 1 changeover contact
**Measuring and monitoring relays | Level monitoring**

**ENW-E12**

The level sensor monitors filling levels or leakage of all conductive, non-combustible 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 a 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.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>230 V AC / 24 V AC</td>
</tr>
<tr>
<td>Response sensitivity</td>
<td>5 to 50 kOhm, adjustable</td>
</tr>
<tr>
<td>Input</td>
<td>up to 3 electrodes</td>
</tr>
<tr>
<td>Input / electrode voltage</td>
<td>12 V</td>
</tr>
<tr>
<td>Output / contact</td>
<td>2 changeover contacts (DPDT)</td>
</tr>
<tr>
<td>Output / switching voltage</td>
<td>250 V</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>6 A</td>
</tr>
<tr>
<td>Output / total current</td>
<td>8 A / across all contacts</td>
</tr>
<tr>
<td>Mechanical endurance</td>
<td>1 x 10⁷ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10⁵ switching cycles</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>600 cycles/h</td>
</tr>
<tr>
<td>Display</td>
<td>Green LED</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>22.5 x 75 x 95 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>300 g</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>0 °C to +55 °C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-20 °C to +70 °C</td>
</tr>
<tr>
<td>Ingress protection for housing / terminal block</td>
<td>IP40 / IP20</td>
</tr>
</tbody>
</table>

**Wiring**

<table>
<thead>
<tr>
<th>Pin</th>
<th>A1</th>
<th>A2</th>
<th>B1</th>
<th>B2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EO</td>
<td>EO</td>
<td>EM</td>
<td>EM</td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>Connecting cable</th>
<th>H 07 RN-F 1.5 mm²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submersible electrode</td>
<td>high-alloy steel,</td>
</tr>
<tr>
<td>Material number</td>
<td>1.4104 (C12CrMoS12)</td>
</tr>
<tr>
<td>Dimensions (diameter x length)</td>
<td>23 mm x 130 mm</td>
</tr>
</tbody>
</table>

**Matching accessory for ENW-E12**

<table>
<thead>
<tr>
<th>Submersible Electrode TE1</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submersible Electrode TE1</td>
<td>119</td>
</tr>
</tbody>
</table>

**Leakage sensor LKS1, LKS-ZD**

<table>
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<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
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<tr>
<td>11030805</td>
<td>gray</td>
<td>230 V AC</td>
<td></td>
</tr>
<tr>
<td>11030810</td>
<td>gray</td>
<td>24 V AC</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110324</td>
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</tr>
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</table>
Leakage sensor LKS1 is matching accessory for

<table>
<thead>
<tr>
<th>Seite</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR-LD6</td>
</tr>
<tr>
<td>ENW-E12</td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>Wire breakage monitoring unit</th>
<th>Connecting cable</th>
<th>Cable length</th>
<th>Electrode</th>
<th>Dimensions (W x H x D)</th>
<th>Mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
<td>2 x 0.75 mm²</td>
<td>2 m</td>
<td>Stainless steel</td>
<td>44 x 16 x 29 mm</td>
<td>Mounting with 1 screw</td>
</tr>
</tbody>
</table>

Dimensional drawing

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110329</td>
<td>gray/black</td>
<td>LKS1</td>
<td></td>
</tr>
</tbody>
</table>
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 10⁷ switching cycles
Electrical endurance: 1 x 10⁵ 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

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 10⁷ switching cycles
Electrical endurance: 1 x 10⁵ 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: IP40 / IP20
Temperature range Operation: -5 °C to +55 °C
Storage: -20 °C to +70 °C

Wiring/Function diagram

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
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<table>
<thead>
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<th>Color</th>
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<th>Feature 2</th>
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<tbody>
<tr>
<td>110292032215</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Measuring and monitoring relays

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 | \(< = 1 \text{ s}\)
Response delay by error | \(> = 100 \text{ ms}\)
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 | \(3 \times 10^7\) switching cycles
Electrical endurance | \(1 \times 10^6\) 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 | Polyamide 6.6 V0
Terminal blocks | Polyamide 6.6 V0
Ingress protection for housing / terminal block (IEC 60529) | IP40 / IP20
Temperature range Operation | -5 °C to +55 °C
Temperature range Storage | -20 °C to +70 °C

Wiring/Function diagram

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1102992032230</td>
<td>gray</td>
<td>Neutral connection</td>
<td></td>
</tr>
</tbody>
</table>
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 10⁷ switching cycles
Electrical endurance 1 x 10⁸ 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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110271</td>
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</table>
**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 / current: max. 8 A  
- Mechanical endurance: 3 x 10⁷ switching cycles  
- Electrical endurance: 1 x 10⁴ 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

**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 / current: max. 8 A  
- Mechanical endurance: 3 x 10⁷ switching cycles  
- Electrical endurance: 1 x 10⁴ 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

**Matching accessory for EIW-C18**

- Current Converter TAmimi 50/5 A
- Current Converter TAmimi 100/5 A

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11027205</td>
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</tr>
</tbody>
</table>

**Wiring**

**P/N** 11027205  
**Color** gray  
**Feature 1**  
**Feature 2**  

---

**Logline**

**Control cabinet components**

**Current/Voltage monitoring**

**Measuring and monitoring relays**
TAmi 50 A / 5 A
The current converter TAmi 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

TAmi 100 A / 5 A
The current converter TAmi 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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1101810507</td>
<td>brown</td>
<td>transformer ratio</td>
<td>50 A/5 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<table>
<thead>
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<th>P/N</th>
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<td>transformer ratio</td>
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<tr>
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<td></td>
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</tr>
<tr>
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</tr>
</tbody>
</table>
Contents | Control cabinet components | Timer relay

Control cabinet components | Timer relay
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3 Timer relay | Delay on break................................131
4 Timer relay | Circuit closing, wiping......................132
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**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 AgSnO₂
- Output / switching voltage 250 V
- Output / current 6 A
- Output / switching frequency 1200 cycles/h
- Recovery time greater than 50 ms
- Mechanical endurance 1 x 10⁵ switching cycles
- Electrical endurance 1 x 10⁵ switching cycles
- 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

---

**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 AgSnO₂
- Output / switching voltage 250 V
- Output / current 6 A
- Output / switching frequency 1200 cycles/h
- Recovery time greater than 50 ms
- Mechanical endurance 1 x 10⁷ switching cycles
- Electrical endurance 1 x 10⁵ switching cycles
- 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**

---

**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

---

**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 AgSnO₂
Output / switching voltage 250 V AC/DC
Output / continuous current 6 A
Output / switching frequency 1200 cycles/h
Mechanical endurance 1 x 10⁸ switching cycles
Electrical endurance 1 x 10⁸ 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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110658</td>
<td>gray</td>
<td>recovery time</td>
<td>50 - 100 ms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>travel time</td>
<td></td>
</tr>
</tbody>
</table>

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 10⁸ switching cycles
Electrical endurance 2 x 10⁸ 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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110310412230</td>
<td>gray</td>
<td>Time ranges</td>
<td>0.15 s - 800 s</td>
</tr>
<tr>
<td></td>
<td></td>
<td>travel time</td>
<td></td>
</tr>
<tr>
<td>110310412231</td>
<td>gray</td>
<td>Time ranges</td>
<td>0.1 min - 10 h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>travel time</td>
<td></td>
</tr>
</tbody>
</table>
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 AgSnO2
Output / switching voltage 250 V
Output / continuous current 6 A
Output / switching frequency 1200 cycles/h
Mechanical endurance 1 x 10⁷ switching cycles
Electrical endurance 1 x 10⁷ switching cycles
Recovery time greater than or equal to 100 ms
Cross-section 2.5 mm²
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

Wiring/Function diagram

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110295412030</td>
<td>gray</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Timer relay | Delay on break

RKAc-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 AgSnO₂
Output / switching voltage 250 V
Output / continuous current 6 A
Output / switching frequency 1200 cycles/h
Mechanical endurance 1 x 10⁷ switching cycles
Electrical endurance 1 x 10⁵ switching cycles
Cross-section 2.5 mm²
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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110304412003</td>
<td>gray</td>
<td>Time Ranges 0.5 - 10 s</td>
<td></td>
</tr>
<tr>
<td>110304412004</td>
<td>gray</td>
<td>Time Ranges 1.5 - 30 s</td>
<td></td>
</tr>
<tr>
<td>110304412005</td>
<td>gray</td>
<td>Time Ranges 3 - 60 s</td>
<td></td>
</tr>
<tr>
<td>110304412008</td>
<td>gray</td>
<td>Time Ranges 15 - 300 s</td>
<td></td>
</tr>
<tr>
<td>110304412011</td>
<td>gray</td>
<td>Time Ranges 3 - 60 min</td>
<td></td>
</tr>
</tbody>
</table>
**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: AgSnO₂
- Output / switching voltage: 250 V
- Output / continuous current: 6 A
- Output / switching frequency: 1200 cycles/h
- Mechanical endurance: 1 x 10⁷ switching cycles
- Electrical endurance: 1 x 10⁷ switching cycles
- Cross-section: 2.5 mm²
- 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

**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: AgSnO₂
- Output / switching voltage: 250 V
- Output / continuous current: 6 A
- Output / switching frequency: 1200 cycles/h
- Mechanical endurance: 3 x 10⁷ switching cycles
- Electrical endurance: 1 x 10⁷ switching cycles
- Cross-section: 2.5 mm²
- 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**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110296412003</td>
<td>gray</td>
<td>Time Ranges</td>
<td>0.5 - 10 s</td>
</tr>
<tr>
<td>110296412004</td>
<td>gray</td>
<td>Time Ranges</td>
<td>1.5 - 30 s</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
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</thead>
<tbody>
<tr>
<td>110354412016</td>
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</table>
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

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>230 V AC / 24 V AC/DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recovery time</td>
<td>greater than or equal</td>
</tr>
<tr>
<td></td>
<td>to 50 ms</td>
</tr>
<tr>
<td>Output / contact</td>
<td>1 changeover contact (SPDT)</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgSnO₂</td>
</tr>
<tr>
<td>Output / switching voltage</td>
<td>250 V</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>6 A</td>
</tr>
<tr>
<td>Output / switching frequency</td>
<td>1200 cycles/h</td>
</tr>
<tr>
<td>Mechanical endurance</td>
<td>1 x 10⁷ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10⁴ switching cycles</td>
</tr>
<tr>
<td>Cross-section</td>
<td>2.5 mm²</td>
</tr>
<tr>
<td>Display</td>
<td>Green and red LED</td>
</tr>
</tbody>
</table>

- 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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11067441203030</td>
<td>gray</td>
<td>tp 0.15 - 800 s</td>
<td>ti 0.15 - 800 s</td>
</tr>
<tr>
<td>11067441203031</td>
<td>gray</td>
<td>tp 0.15 - 800 s</td>
<td>ti 0.1 min - 10h</td>
</tr>
<tr>
<td>11067441203130</td>
<td>gray</td>
<td>tp 0.1 min - 10 h</td>
<td>ti 0.15 - 800 s</td>
</tr>
<tr>
<td>11067441203131</td>
<td>gray</td>
<td>tp 0.1 min - 10 h</td>
<td>ti 0.1 min - 10h</td>
</tr>
</tbody>
</table>
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: AgSnO2
- Output / switching voltage: 250 V
- Output / continuous current: 6 A
- Output / switching frequency: 1200 cycles/h
- Mechanical endurance: 1 x 10⁷ switching cycles
- Electrical endurance: 1 x 10⁶ switching cycles
- Cross-section: 2.5 mm²
- 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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>110355412016</td>
<td>gray</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Timer relay | Star-delta

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 AgSnO₂
Output / switching voltage 250 V
Output / continuous current 6 A
Output / switching frequency 1200 cycles/h
Mechanical endurance 1 x 10⁷ switching cycles
Electrical endurance 1 x 10⁵ switching cycles
Cross-section 2.5 mm²
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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11016141280417</td>
<td>gray</td>
<td>230 V AC</td>
<td>0.5 - 10 s</td>
</tr>
<tr>
<td>11016141280517</td>
<td>gray</td>
<td>230 V AC</td>
<td>1.5 - 30 s</td>
</tr>
<tr>
<td>11016141280617</td>
<td>gray</td>
<td>230 V AC</td>
<td>3 - 60 s</td>
</tr>
</tbody>
</table>

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 AgSnO₂
Output / switching voltage 250 V
Output / continuous current 6 A
Output / switching frequency 1200 cycles/h
Mechanical endurance 1 x 10⁷ switching cycles
Electrical endurance 1 x 10⁵ switching cycles
Cross-section 2.5 mm²
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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11016005270317</td>
<td>gray</td>
<td>230 V AC</td>
<td>0.5 - 10 s</td>
</tr>
<tr>
<td>11016005270417</td>
<td>gray</td>
<td>230 V AC</td>
<td>1.5 - 30 s</td>
</tr>
<tr>
<td>11016005270517</td>
<td>gray</td>
<td>230 V AC</td>
<td>3 - 60 s</td>
</tr>
<tr>
<td>11016013270317</td>
<td>gray</td>
<td>24 V AC/DC</td>
<td>0.5 - 10 s</td>
</tr>
</tbody>
</table>
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   Power switching relay .................................................... 138

2 Telecommunication products |
   Secondary call signaler ............................................... 139
Telecommunication products | Power switching relay

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).

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage SAR4</td>
<td>230 V AC / 50 Hz</td>
</tr>
<tr>
<td>Operating voltage SAR5 DC</td>
<td>24 V DC / 10 mA</td>
</tr>
<tr>
<td>Operating voltage SAR5 AC</td>
<td>24 V AC / 10 mA</td>
</tr>
</tbody>
</table>

Input / a/b telecommunications access line
<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input / call voltage</td>
<td>32 to 80 V AC</td>
</tr>
<tr>
<td>Input / frequency range</td>
<td>23 to 54 Hz</td>
</tr>
<tr>
<td>Input / impedance</td>
<td>10 kOhm at 75 V, 25 Hz</td>
</tr>
<tr>
<td>Input / insertion loss</td>
<td>less than 0.5 dB</td>
</tr>
<tr>
<td>Input / leakage resistance</td>
<td>more than 5 MOhm at 100 V</td>
</tr>
<tr>
<td>Input / a/c external voltage</td>
<td>5 to 40 V</td>
</tr>
<tr>
<td>Input / control voltage AC</td>
<td>5 to 40 V, 50 Hz</td>
</tr>
<tr>
<td>Input / resistance</td>
<td>approx. 6 kOhm</td>
</tr>
<tr>
<td>Output / switching current</td>
<td>max. 8 A</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>max. 6 A</td>
</tr>
<tr>
<td>Output / switching voltage</td>
<td>max. 250 V AC</td>
</tr>
<tr>
<td>Output / switching capacity</td>
<td>1500 VA (AC)</td>
</tr>
<tr>
<td>30 W (less than 30 V DC)</td>
<td></td>
</tr>
<tr>
<td>60 W (greater than 30 V DC)</td>
<td></td>
</tr>
</tbody>
</table>

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 |

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.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input / call voltage</td>
<td>32 to 80 V AC</td>
</tr>
<tr>
<td>Input / frequency range</td>
<td>23 to 54 Hz</td>
</tr>
<tr>
<td>Input / impedance</td>
<td>10 kOhm at 75 V, 25 Hz</td>
</tr>
<tr>
<td>Input / insertion loss</td>
<td>less than 0.5 dB</td>
</tr>
<tr>
<td>Input / leakage resistance</td>
<td>more than 5 MOhm at 100 V</td>
</tr>
<tr>
<td>Input / DC 1 external voltage</td>
<td>5 to 40 V</td>
</tr>
<tr>
<td>Input / control voltage</td>
<td>5 to 40 V, 50 Hz</td>
</tr>
<tr>
<td>Input / resistance</td>
<td>approx. 6 kOhm</td>
</tr>
<tr>
<td>Output / switching current</td>
<td>max. 8 A</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>max. 6 A</td>
</tr>
<tr>
<td>Output / switching voltage</td>
<td>max. 250 V AC</td>
</tr>
<tr>
<td>Output / switching capacity</td>
<td>1500 VA (AC)</td>
</tr>
<tr>
<td>30 W (less than 30 V DC)</td>
<td></td>
</tr>
<tr>
<td>60 W (greater than 30 V DC)</td>
<td></td>
</tr>
</tbody>
</table>

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/Circuit diagram

P/N | Color | Feature 1 | Feature 2 |
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>130283-I</td>
<td>white</td>
<td>SAR4</td>
<td>230 V AC</td>
</tr>
<tr>
<td>130284-I</td>
<td>white</td>
<td>SAR5</td>
<td>24 V AC/DC</td>
</tr>
</tbody>
</table>

P/N | Color | Feature 1 | Feature 2 |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>130280-I</td>
<td>pearl white</td>
<td>surface-mount</td>
<td>surface-mounted</td>
</tr>
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Telecommunication products | Secondary call signaler

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

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

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

P/N Color Feature 1 Feature 2
130593-I pearl white Flush mount
Control cabinet components
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SALES OFFICES

METZ CONNECT USA Inc.
200 Tornillo Way
Tinton Falls, NJ 07712
USA
Phone +1 732 389 1300
Fax +1 732 389 9066
www.metz-connect.com

METZ CONNECT France SAS
28, Rue Schweighaeuser
67000 Strasbourg
France
Phone +33 3 886 170 73
Fax +33 3 886 194 73
www.metz-connect.com

METZ CONNECT GmbH
Im Tal 2
78176 Blumberg
Germany
Phone +49 7702 533-0
Fax +49 7702 533-189
www.metz-connect.com

METZ CONNECT Zhongshan Ltd.
Ping Chang Road
Ping Pu Industrial Park
Sanxiang Town
Zhongshan City, 528463
Guangdong Province
China
Phone +86 760 86365 055
Fax +86 760 86365 050
www.metz-connect.com

METZ CONNECT Asia Pacific Limited
Suite 1803, 18/F,
Chinachem
Hollywood Centre
1 Hollywood Road
Central
Hong Kong
Phone +852 26 027 300
Fax +852 27 257 522
www.metz-connect.com

PRODUCTION SITES

MCQ TECH GmbH
Ottlienweg 9
78176 Blumberg
Germany
Phone +49 7702 533-0
Fax +49 7702 533-433
www.metz-connect.com

MC Termelő Kft.
Vásár tér 16/A
6090 Kunszentmiklós
Hungary
Phone +36 76 350524

METZ CONNECT Zhongshan Ltd.
Ping Chang Road
Ping Pu Industrial Park
Sanxiang Town
Zhongshan City, 528463
Guangdong Province
China
Phone +86 760 86365 055
Fax +86 760 86365 050
www.metz-connect.com
Contact

Contacts
You will find your responsible contacts for your sector in your region at our website:

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.

Subject to change without prior notice.

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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 seq. 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 dimensions 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. connecting to our modules), the customer is responsible for verifying the usability of the components with which the customer uses 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 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 exist in 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 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 perform the assertion of damages, as the customer is only entitled to reclaim the goods.

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 customer of the claim in question as well as to collect the claims ourselves. For the assertion of the assigned claims, the customer has to provide us with 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 seq. 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. Garnishments 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 assignment of the reserved goods as well as for the revocation of the seizure.

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. The customer must produce the policy and/or show the respective proof of insurance.

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 recognisable defects is also to take place immediate upon discovery, but no later than seven days after they have been discovered. The notification 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 notify 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 is responsible for unjustifiable providing us with a notification of 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 fulfillment (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 6.3.

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 in 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 market or 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 recovery), 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 In the respect 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 fulfillment 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 liability 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 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.

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.

Date 01 August 2018
METZ CONNECT GmbH is member of the following organizations and associations.

METZ CONNECT USA Inc.
200 Tornillo Way
Tinton Falls, NJ 07712
USA
Phone +1-732-389-1300
Fax +1-732-389-9066

METZ CONNECT France SAS
28, Rue Schweighaeuser
67000 Strasbourg
France
Phone +33 3886 170 73
Fax +33 3886 194 73

METZ CONNECT Zhongshan Ltd.
Ping Chang Road
Ping Pu Industrial Park
Sanxiang Town
Zhongshan City, 528463
Guangdong Province
China
Phone +86 760 86365 055
Fax +86 760 86365 050

METZ CONNECT Asia Pacific Ltd.
Suite 1803, 18/F
Chinachem Hollywood Centre,
1 Hollywood Road, Central
Hong Kong
Phone +852 26 027 300
Fax +852 27 257 522

METZ CONNECT GmbH
Im Tal 2
78176 Blumberg
Germany
Phone +49 7702 533-0
Fax +49 7702 533-189
info@metz-connect.com
www.metz-connect.com