Intelligent components for systems and switch cabinets
Intelligent system and switch cabinet components

2012 | 2013

Building automation,
Process engineering
By our range of product catalogues we really get things handy for you: concise information and highly interesting innovations across all our three product ranges U|Contact, C|Logline and P|Cabling.

Use our product range catalogues to learn more about our connection systems for printed circuit boards and devices, our intelligent system and switch cabinet components or our network cabling options.
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C  Logline

Building automation, process engineering

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Dear business partners, dear customers,

Just as with our previous catalogs, we wish to inform you at this point about the positive developments within the METZ CONNECT group of companies.

Having informed you on our deliberate integration of our product range with its four key pillars

**Customer benefit – universal communication**
**Product range philosophy– synergy effect**
**Product technology– safe connections**
**Claim for leadership – sustained success**

in our last edition, we are pleased to present you now the new catalogs.

To allow for a structured overview of the numerous possibilities provided by METZ CONNECT, we subdivided our product range into the following three core ranges and catalogs **U|Contact**, **C|Logline** and **P|Cabling**. By this subdivision we set clear competence focuses:

- **U|Contact** stands for the connection techniques related to printed circuit boards and devices,
- **C|Logline** stands for intelligent system and switch cabinet components and
- **P|Cabling** stands for cabling systems in the copper and fiber optic techniques for building and industrial cabling applications.

Due to the ever increasing networking also within our product range and the specifications arising from this, METZ CONNECT did not only gear its overall range of products to this market development but also adapt its sales concept correspondingly. Expert consulting services on universal connection techniques ranging from the connection of a sensor with classical components up to infrastructural connections (e.g. the Internet) by complete communication solutions meet the growing needs of most diverse application solutions and complex customer expectations.

The global market activities of our customers are secured through our local support and sales structures that are still integrated into the company brands RIA CONNECT GmbH and BTR NETCOM GmbH.

In order to offer even better and more fine-tuned consulting services to our customers, we redefined our sales structure at the beginning of 2011. The sales organization is now subdivided into two customer segments: the one for the producers of devices and machines integrating our product systems and serial individual components into their own products and the other one for those customers, who are specialized in the installation of systems and buildings and who use our system solutions and products for such activities. Also the cooperation with wholesale dealers will continue to play a key role.

And finally we would like to draw your attention to our completely revised web presence that will offer you valuable information next to the catalog that you hold in your hands.

To support your daily businesses, we developed numerous new functions and contents; – such as documents on the individual products, a planning area as well as a significantly improved navigation, not to mention the new visual design of the site. But you may want to simply check it out yourselves under www.metz-connect.com.

We are happy to meet the challenges that await us and are looking forward to advise and assist you as a real partner by our technically and economically sound solutions!

Your

[Signature]

**Torsten Janwlecke**

And the entire team from METZ CONNECT.
Detailed knowledge in a matter of seconds

Our product catalogs offer detailed product descriptions. But if you want to get even deeper into the details, visit us at www.metz-connect.com to get precise technical information within no time at all.

To do so, you may also use mobile tagging: Simply scan the shown QR-code using your smartphone and you will directly be connected to the METZ CONNECT homepage.
Our website for even more efficiency

Ideal user-friendliness and non-stop availability, – our website www.metz-connect.com offers you the most recent news about METZ CONNECT and our products that you need for your daily business. And all this at a speed that will really impress you!

Our products

You may use different options to search for a product: the integrated navigation bar with its “Products” menu and concise structure, or the enterprise research option including its filter function or the online catalogs for all those, who wish to rely on our known product portfolio structure. A few clicks will lead you to the desired products and enable you to download all relevant documents such as data sheets, drawings or certificates. In the same time also compatible accessory components will be displayed.

Under “Services” a complete download overview will be shown presenting the entire download offer from information brochures and certificates up to test results and 3D-data.

Your contacts

Finding your right contact with METZ CONNECT, a distributor or special dealer is easy and comfortable using the country and zip-code search options under "Contact". You can also select here your global sales partner.

News(letter)

In our News area we inform you in real time on our product innovations, events and news.

In the same time you may want to subscribe to the METZ CONNECT newsletter. This will ensure that you will receive the latest information literally in real time directly on your computer.

Or just come and discover the web site of METZ CONNECT and play around with all its benefits – welcome to www.metz-connect.com!
Globally, the importance of networks is ever increasing. The principles of universal, transparent information – from everywhere and at any time – and a communication with devices mapping different processes – define more and more our everyday life. And all this depends on reliable connection techniques.

To establish perfect connections is the core competence of METZ CONNECT. The METZ CONNECT group of companies offers a complete product range that stands out by its maximum system compatibility and continuity.

Our sophisticated portfolio and product approach in the market segments industrial electronics, data and communication technology and building services engineering guarantees smooth data flow from the printed circuit board through to connectors, cables and patch panels up to the infrastructural environment.

METZ CONNECT can thus guarantee a comprehensive, high-quality and transparent communication across all applications without system failures or performance losses. Next to the complete solutions, our group of companies offers also comprehensive services such as tailored product adaptations and new developments, qualified trainings, marketing support for our trade partners as well as a vast information program.

METZ CONNECT excels by quality – resulting from its intelligent company-internal value adds and perfectly harmonized processes from a product idea up to its delivery and commissioning. Our quality management system enables processes that are free from losses and protect the environment. An additional competitive advantage for our customers: METZ CONNECT supplies complete solutions as one single provider.

To do so, we rely on our own stamping shops, plastic mold injection and tooling shops, testing laboratories, internal assembly units and experts in construction and programming of tools and production automation.
All from one single source – for your competitive advantage

APPLICATIONS

Intelligence

Distribution

Function

Process

Structure

Processor

Printed circuit boards

Devices, machines

Systems, installations

Buildings, commercial vehicles

Infrastructur

WLAN/Internet

Communication

Industrial electronics

Data and communication technology

Building services engineering

MARKET SEGMENTS
By our three company brands RIA CONNECT, BTR NETCOM and MCQ TECH, METZ CONNECT offers a universal range of products from printed circuit boards up to terminal devices. As your customer-oriented solutions partner, we subdivided our diversified, user-friendly and internationally standardized components and/or systems into three well structured arrays.

Under the name of **U|Contact** we bundle innovative connectivity products and solutions for printed circuit boards for a use with all modern techniques applied in the assembly of printed circuit boards. Products that are compatible with the standards of the markets as well as tailored product solutions for industrial controls and building automation are our core strengths in this field. This includes terminal blocks, board-to-board connectors as well as peripheral connectors (RJ, M12, USB) for different applications and protection classes.

**P|Cabling** includes highly specified, internationally standardized and powerful connection components and connection systems in the copper and fiber optic techniques. These solutions are used in structured building and industry cabling applications and for data centers. Convenient installation, maximum quality and perfect system compatibility across all important performance classes are the main characteristics of our modular inserts, connectors, wall outlets, patch panels, distributors, IP-protected plug connectors and patch and installation cables.

**C|Logline** stands for intelligent system components for a highly communicative and decentralized control in the application and product areas building automation, measurement and monitoring relays, interface modules, industrial relays and telecommunication.

In addition we offer cross range system solutions. Perfectly harmonized connection systems with a protection degree of IP67 facilitate fast, safe and flexible connections of devices using optical coupler, RJ45 or Ethernet M12 connections.
Customer-oriented solutions provider

**Contact**
Printed circuit board and device connection techniques

- Terminal blocks, pin headers
- Connectors
- Board-to-board

**Logline**
Intelligent components

- Bus modules
- Interface modules
- Time, measurement and monitoring relays

**Cabling**
Cabling systems

- Connectors
- Wall outlets, distributors
- Patch cables, lines
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 increasing more intelligent. They offer the possibility of integrating internal and external processes so they can be controlled and monitored efficiently. METZ CONNECT has the perfect solutions for this.

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

<table>
<thead>
<tr>
<th>Technology/Building Automation</th>
<th>U/I Components</th>
<th>Controller Router/Switcher Interfaces/Adapter</th>
<th>Display/ Appliance</th>
<th>Software</th>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCP/IP</td>
<td></td>
<td>Ethernet Switch</td>
<td></td>
<td></td>
<td>Electricity Supplies</td>
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<tr>
<td>BACnet</td>
<td></td>
<td>BMT-series</td>
<td></td>
<td></td>
<td>Jumper</td>
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<tr>
<td>Modbus RTU</td>
<td></td>
<td>MR-series</td>
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<tr>
<td>LON</td>
<td></td>
<td>L-seriesactivité en réseau</td>
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<tr>
<td>CAN</td>
<td></td>
<td>L-series</td>
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</table>

## Measuring and Monitoring Relays

<table>
<thead>
<tr>
<th>Technology/Building Automation</th>
<th>Conventional Relays Technology</th>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan Timer</td>
<td>LTRk-E12</td>
<td></td>
</tr>
<tr>
<td>Speed</td>
<td>DRIV-E16</td>
<td>Speed Sensor, Mounting Bracket, Auxiliary Cam</td>
</tr>
<tr>
<td>Motor Protection/ V-belt</td>
<td>CMW-E12</td>
<td>Current Transformer</td>
</tr>
<tr>
<td>Level Monitor</td>
<td>ENW-E12</td>
<td>Submersible Electrode, Leakage Sensor</td>
</tr>
<tr>
<td>Phase</td>
<td>PD-E12</td>
<td></td>
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<tr>
<td>Monitoring Relays</td>
<td>ASD-C18</td>
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<tr>
<td>Selective Protection</td>
<td>PSB-E12</td>
<td></td>
</tr>
<tr>
<td>Voltage Mono. Relay</td>
<td>EUW-C18</td>
<td></td>
</tr>
<tr>
<td>Current Mono. Relay</td>
<td>EIW-C18</td>
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</tbody>
</table>

## Interface Modules and Industrial Relays

<table>
<thead>
<tr>
<th>Technology/Building Automation</th>
<th>Electro-mechanic</th>
<th>Semi-Conductor</th>
<th>Filtering/Convert</th>
<th>Indicator</th>
<th>Setpoint Device</th>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coupling Modules</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Potential Divider</td>
<td>KRA M-series</td>
<td>KRA F-series</td>
<td>K92-series</td>
<td>KRE-series</td>
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<tr>
<td>Annunciator Modules</td>
<td></td>
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<td></td>
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<tr>
<td>AD/OA Converter</td>
<td></td>
<td></td>
<td></td>
<td>PT-C12</td>
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<tr>
<td>Analog Data Encoder</td>
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<td></td>
<td></td>
<td>KAD-C12</td>
<td>KMA(h)-F</td>
<td></td>
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<tr>
<td>Analog Modules</td>
<td></td>
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<td></td>
<td>ADU-C12</td>
<td></td>
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<tr>
<td>Industrial Relays</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Pulse Shaper</td>
<td></td>
<td></td>
<td></td>
<td>RTM-C12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Threshold Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
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</table>

## Electronic Timer Relays

<table>
<thead>
<tr>
<th>Technology/Building Automation</th>
<th>Multi-Time</th>
<th>fixed Time</th>
<th>Diverse Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-Function</td>
<td>MARK-E08 U</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>MFRK-E08 F</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>MARK-E08</td>
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<td></td>
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<tr>
<td></td>
<td>MFRK-E08</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MFRK-E12 (2W)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delay On Make</td>
<td>MZAK-E10, RTD-E10</td>
<td></td>
<td></td>
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<tr>
<td>Delay On Brake</td>
<td>MKAK-E10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circuit Obs. Wiping</td>
<td>EWEK-E10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flashing</td>
<td>RTBk-E10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clock Generator</td>
<td>TERk-E08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delta-Star Relay</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Telecommunication Products

<table>
<thead>
<tr>
<th>Technology/Building Automation</th>
<th>adjustable Features</th>
<th>fixed Features</th>
<th>Multiple Changing</th>
<th>Additional Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Switching Relay</td>
<td>SAR5</td>
<td>SAR1</td>
<td>AMS Faxstar basic</td>
<td>AMS 1/2 AP, AMS 1/2 NF-UP, AMS 1/4 AP, TZG WK 955 AP/UP</td>
</tr>
<tr>
<td>Far Change 9 Switch</td>
<td>SAR1</td>
<td></td>
<td>AMS Faxstar basic</td>
<td>AMS 1/2 AP, AMS 1/2 NF-UP, AMS 1/4 AP, TZG WK 955 AP/UP</td>
</tr>
<tr>
<td>Automatic Changing Switch</td>
<td>SAR1</td>
<td></td>
<td>AMS Faxstar basic</td>
<td>AMS 1/2 AP, AMS 1/2 NF-UP, AMS 1/4 AP, TZG WK 955 AP/UP</td>
</tr>
<tr>
<td>Sec. Alarm Affords</td>
<td>SAR1</td>
<td></td>
<td>AMS Faxstar basic</td>
<td>AMS 1/2 AP, AMS 1/2 NF-UP, AMS 1/4 AP, TZG WK 955 AP/UP</td>
</tr>
</tbody>
</table>
C|Logline – Product overview

In total, C|Logline comprises all intelligent components of the highly-communicative and distributed controller with system components for building automation as well as measurement and monitoring relays, interface modules and industrial relays, time-controlled relays and telecommunication products.

Digital and analog input and output bus modules with LON®, CAN and BACnet protocols are also included in this.
I/O components with 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.
<table>
<thead>
<tr>
<th>Unit</th>
<th>Component</th>
<th>P/N</th>
<th>Quantity</th>
<th>Dimensions (WxHxD)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LON I/Os</strong></td>
<td>Digital input</td>
<td>20</td>
<td>1 pcs</td>
<td>167 x 147 x 95 mm</td>
<td>645 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
<td>1 pcs</td>
<td>167 x 147 x 95 mm</td>
<td>501 g</td>
</tr>
<tr>
<td><strong>Ethernet I/Os</strong></td>
<td>Digital input</td>
<td>21</td>
<td>1 pcs</td>
<td>75 x 40 x 80 mm</td>
<td>103 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>21</td>
<td>1 pcs</td>
<td>75 x 40 x 80 mm</td>
<td>108 g</td>
</tr>
<tr>
<td><strong>Ethernet I/Os</strong></td>
<td>Analog input</td>
<td>22</td>
<td>1 pcs</td>
<td>74 x 51 x 80 mm</td>
<td>123 g</td>
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<td>Digital output</td>
<td>23</td>
<td>1 pcs</td>
<td>75 x 40 x 80 mm</td>
<td>112 g</td>
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<tr>
<td></td>
<td></td>
<td>23</td>
<td>1 pcs</td>
<td>75 x 40 x 80 mm</td>
<td>126 g</td>
</tr>
<tr>
<td><strong>BACnet I/Os</strong></td>
<td>Digital input</td>
<td>25</td>
<td>1 pcs</td>
<td>74 x 51 x 80 mm</td>
<td>139 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25</td>
<td>1 pcs</td>
<td>122 x 44 x 164 mm</td>
<td>401 g</td>
</tr>
<tr>
<td><strong>BACnet I/Os</strong></td>
<td>Analog input</td>
<td>26</td>
<td>1 pcs</td>
<td>75 x 40 x 80 mm</td>
<td>108 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>26</td>
<td>1 pcs</td>
<td>75 x 40 x 80 mm</td>
<td>113 g</td>
</tr>
<tr>
<td><strong>BACnet I/Os</strong></td>
<td>Analog output</td>
<td>27</td>
<td>1 pcs</td>
<td>74 x 51 x 80 mm</td>
<td>133 g</td>
</tr>
<tr>
<td><strong>BACnet I/Os</strong></td>
<td>Mixed Modules</td>
<td>29</td>
<td>1 pcs</td>
<td>75 x 40 x 80 mm</td>
<td>105 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>29</td>
<td>1 pcs</td>
<td>75 x 40 x 80 mm</td>
<td>105 g</td>
</tr>
<tr>
<td><strong>Modbus I/Os</strong></td>
<td>Digital input</td>
<td>31</td>
<td>1 pcs</td>
<td>75 x 40 x 80 mm</td>
<td>103 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31</td>
<td>1 pcs</td>
<td>75 x 40 x 80 mm</td>
<td>108 g</td>
</tr>
<tr>
<td><strong>Modbus I/Os</strong></td>
<td>Analog input</td>
<td>32</td>
<td>1 pcs</td>
<td>74 x 51 x 80 mm</td>
<td>130 g</td>
</tr>
<tr>
<td><strong>Modbus I/Os</strong></td>
<td>Digital output</td>
<td>33</td>
<td>1 pcs</td>
<td>75 x 40 x 80 mm</td>
<td>111 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>33</td>
<td>1 pcs</td>
<td>75 x 40 x 80 mm</td>
<td>132 g</td>
</tr>
<tr>
<td><strong>Modbus I/Os</strong></td>
<td>Analog output</td>
<td>34</td>
<td>1 pcs</td>
<td>75 x 40 x 80 mm</td>
<td>100 g</td>
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<td></td>
<td></td>
<td>34</td>
<td>1 pcs</td>
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<td>100 g</td>
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<tr>
<td><strong>Modbus I/Os</strong></td>
<td>Mixed Modules</td>
<td>35</td>
<td>1 pcs</td>
<td>74 x 51 x 80 mm</td>
<td>139 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35</td>
<td>1 pcs</td>
<td>122 x 44 x 164 mm</td>
<td>402 g</td>
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<tr>
<td><strong>LON I/Os</strong></td>
<td>Digital input</td>
<td>36</td>
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<td>75 x 40 x 80 mm</td>
<td>106 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>36</td>
<td>1 pcs</td>
<td>75 x 40 x 80 mm</td>
<td>115 g</td>
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<td></td>
<td></td>
<td>37</td>
<td>1 pcs</td>
<td>122 x 44 x 164 mm</td>
<td>330 g</td>
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<td></td>
<td></td>
<td>37</td>
<td>1 pcs</td>
<td>75 x 40 x 80 mm</td>
<td>95 g</td>
</tr>
</tbody>
</table>

**Notes:**
- All dimensions are in millimeters (mm) and weights are in grams (g).
- The table above includes a variety of I/O components including LON, Ethernet, Modbus, BACnet, and LON I/Os.
- Each entry includes the P/N, quantity, dimensions, and gross weight.
- Additional components such as Digital Input, Analog Output, Digital Input, Analog Output, and Interface/Adapter are also listed.
<table>
<thead>
<tr>
<th>M-Bus I/Os</th>
<th>Digital/analog inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Page</td>
<td>P/N</td>
</tr>
<tr>
<td>57</td>
<td>110556</td>
</tr>
<tr>
<td>57</td>
<td>110562</td>
</tr>
</tbody>
</table>
Ethernet I/Os | Multi I/O Controller (platform)

EWIO-9180
Compact Linux I/O platform with 27 analog/digital inputs/outputs, some of them with manual control. Integrated web interface for developing your own decentralized automation controllers. Applications can be programmed using the Linux Shell installed on the server or using C/C++ and JAVA development environments. The network is connected by means of a standard RJ45 Ethernet interface. External I/O extension with up to 6 optional modules of the EW-xxxx series possible.

EWIO-9180-FB
Compact Linux I/O platform with 27 analog/digital inputs/outputs, some of them with manual control. Integrated web interface for developing your own decentralized automation controllers. Applications can be programmed using the Linux Shell installed on the server or using C/C++ and JAVA development environments. The network is connected by means of a standard RJ45 Ethernet interface. Optional extension with fieldbus modules.

EWIO-9180

| Operating voltage | 24 V AC/DC +/- 10% / 50/60 Hz |
| Current consumption | 450 mA (AC) / 225 mA (DC) |
| Network | Ethernet RJ45, 10/100MBit, TCP/IP |
| Controller | ARM9 180 MHz |
| Internal memory | 64 MB RAM / 64 MB Flash |
| External memory | microSD up to 4 GB |
| Real time clock | Error 1 s/day, 24 h power reserve |
| Operating system | embedded Linux |
| External I/O interfaces | SPI/RS485 |
| Inputs / digital | 8x; 4 of them can be used as 50 acc. to DIN EN 62053-31 |
| Inputs / resistance | 4x analog 40 Ohm to 4 Mohm |
| Inputs / voltage | 4x analog 0 to 10 V DC |
| Outputs / relays | 3x changeover contacts (3PST)/250 V AC/5 A |
| Outputs / triac | 2x changeover contacts (DPST)/250 V AC/10A |
| Outputs / transistor | 1x two-level / 250 V AC / 5 A |
| Outputs / voltage | 2x 20 to 250 V AC / 0.5 A |
| Outputs / resistor | 3x PNP / 24 V DC / 20 mA |
| Outputs / relay | 1x PNP / 24 V DC / 30 mA |
| Outputs / relay | 3x analog 0 to 10 V DC |
| Dimensions (W x H x D) | 125 x 90 x 60 mm, 7HP, TH35 |
| Weight | 430 g |
| Operation / storage | -5° to +55°C / -20° to +70° C |
| Ingress protection | IP20 |

EWIO-9180-FB

| Operating voltage | 24 V AC/DC +/- 10% / 50/60 Hz |
| Current consumption | 450 mA (AC) / 225 mA (DC) |
| Network | Ethernet RJ45, 10/100MBit, TCP/IP |
| Controller | ARM9 180 MHz |
| Internal memory | 64 MB RAM / 64 MB Flash |
| External memory | microSD up to 4 GB |
| Real time clock | Error 1 s/day, 24 h power reserve |
| Operating system | embedded Linux |
| External I/O interface | UART/RS485 for fieldbus |
| Inputs / digital | 8x; 4 of them can be used as 50 acc. to DIN EN 62053-31 |
| Inputs / resistance | 4x analog 40 Ohm to 4 Mohm |
| Inputs / voltage | 4x analog 0 to 10 V DC |
| Outputs / relays | 3x changeover contacts (3PST)/250 V AC/5 A |
| Outputs / triac | 2x 20 to 250 V AC / 0.5 A |
| Outputs / transistor | 3x PNP / 24 V DC / 20 mA |
| Outputs / relay | 1x PNP / 24 V DC / 30 mA |
| Outputs / relay | 3x analog 0 to 10 V DC |
| Dimensions (W x H x D) | 125 x 90 x 60 mm, 7HP, TH35 |
| Weight | 430 g |
| Operation / storage | -5° to +55°C / -20° to +70° C |
| Ingress protection | IP20 |

Matching accessories
for EWIO-9180

| Terminal block Type 259 | Page | 132 |
| Power supply NG4 gray | Page | 131 |
| Jumper 135 | Page | 132 |

Matching accessories
for EWIO-9180-FB

| Terminal block Type 259 | Page | 132 |
| Power supply NG4 gray | Page | 131 |
| Jumper 135 | Page | 132 |

P/N | Color | Feature 1 | Feature 2 | EAN |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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<tr>
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<td>Feature 2</td>
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P/N | Color | Feature 1 | Feature 2 | EAN |
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<tr>
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<td>Feature 2</td>
<td>EAN</td>
</tr>
</tbody>
</table>
**Matching accessories for EW-DI4**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal block Type 259</td>
<td>132</td>
</tr>
<tr>
<td>Power supply NG4 gray</td>
<td>131</td>
</tr>
<tr>
<td>Jumper 135</td>
<td>132</td>
</tr>
</tbody>
</table>

**EW-DI4**

The extension 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 extension module can only be used in combination with EWIO-9180, which scans the outputs. The module address is set by means of an address switch on the front.

**Suitable for decentralized mounting in serial sub-distributor.**

<table>
<thead>
<tr>
<th>Protocol</th>
<th>EWIO internal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addressing range</td>
<td>0 to 9</td>
</tr>
<tr>
<td>Bus interface</td>
<td>Two-wire bus</td>
</tr>
<tr>
<td>Transmission rate</td>
<td>115200 Bd</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>20 V to 28 V AC/DC (SELV)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>50 mA (AC) / 20 mA (DC)</td>
</tr>
<tr>
<td>Relative duty cycle</td>
<td>100 %</td>
</tr>
<tr>
<td>Inputs</td>
<td>4 x digital</td>
</tr>
<tr>
<td>Input / voltage</td>
<td>30 V DC</td>
</tr>
<tr>
<td>Input / high signal</td>
<td>more than 10 V AC/DC</td>
</tr>
<tr>
<td>Display</td>
<td>Green, red and yellow LED</td>
</tr>
</tbody>
</table>

**Dimensions (W x H x D)**

35 x 70 x 65 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

---

**EW-DI10**

The extension 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 extension module can only be used in combination with EWIO-9180, which scans the outputs. The module address is set by means of an address switch on the front.

**Suitable for decentralized mounting in serial sub-distributor.**

<table>
<thead>
<tr>
<th>Protocol</th>
<th>EWIO bus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addressing range</td>
<td>0 to 9</td>
</tr>
<tr>
<td>Bus interface</td>
<td>RS485 (two-wire bus)</td>
</tr>
<tr>
<td>Transmission rate</td>
<td>9600 to 115200 baud</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>20 V to 28 V AC/DC (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>10 x digital</td>
</tr>
<tr>
<td>Input / voltage</td>
<td>30 V DC</td>
</tr>
<tr>
<td>Input / high signal</td>
<td>more than 7 V AC/DC</td>
</tr>
<tr>
<td>Display</td>
<td>Green, red and yellow LED</td>
</tr>
</tbody>
</table>

**Dimensions (W x H x D)**

35 x 70 x 65 mm

**Weight**

83 g

**Operating temperature range**

-5 °C to +55 °C

**Storage temperature range**

-20 °C to +70 °C

**Ingress protection for housing / terminal block**

IP40 / IP20

---

**Wiring/Principle diagram**

---

**P/N | Color | Feature 1 | Feature 2 | EAN**

| 1109541319 | gray |          |          | 4250184138051 |

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**Wiring/Principle diagram**

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**P/N | Color | Feature 1 | Feature 2 | EAN**

| 1109511319 | gray |          |          | 4250184138037 |
**EW-AI8**

The extension 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 extension module can only be used in combination with EWIO-9180, which universally configures the inputs.

The module address is set by means of an address switch on the front.

Suitable for decentralized mounting in serial sub-distributor.

- **Protocol**: EWIO internal
- **Addressing range**: 0 to 9
- **Bus interface**: Two-wire bus
- **Transmission rate**: 115200 Bd
- **Operating voltage range**: 20 V to 28 V AC/DC (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 V to 10 V DC
- **Input / resolution**: 1 mV (0 to 100 %)
- **Input / error**: approx. +/- 10 mV
- **Display**: Green and red LED

**Dimensions (W x H x D)**: 50 x 70 x 65 mm

- **Weight**: 104 g
- **Operating temperature range**: -5 °C to +55 °C
- **Storage temperature range**: -20 °C to +70 °C
- **Ingress protection for housing / terminal block**: IP40 / IP20

**Wiring/Principle diagram**
EW-TO4
The extension module with 4 digital triac outputs was developed for decentralized switching tasks. It is suitable for switching electrical components, such as relays, contactors, HLK valves, etc. The extension module can only be used in combination with EWIO-9180, which switches the outputs. In addition, the outputs can be overridden manually by means of switches on the device. The module address is set by means of an address switch on the front.
Suitable for decentralized mounting in serial sub-distributor.

<table>
<thead>
<tr>
<th>Protocol</th>
<th>EWIO internal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addressing range</td>
<td>0 to 9</td>
</tr>
<tr>
<td>Bus interface</td>
<td>Two-wire bus</td>
</tr>
<tr>
<td>Transmission rate</td>
<td>115200 Bd</td>
</tr>
<tr>
<td>Operating voltage range</td>
<td>20 V to 28 V AC/DC (SELV)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>100 mA (AC) / 40 mA (DC)</td>
</tr>
<tr>
<td>Relative duty cycle</td>
<td>100 %</td>
</tr>
<tr>
<td>Output / contacts</td>
<td>4 digital outputs (triac)</td>
</tr>
<tr>
<td>Output / switching voltage</td>
<td>24 V AC up to max. 250 V AC</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>0.5 A / output</td>
</tr>
<tr>
<td>Output / switching current</td>
<td>0.8 A (less than 30 s)</td>
</tr>
<tr>
<td>Output / switch-on current</td>
<td>10 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>35 x 70 x 75 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>95 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 block</td>
<td>IP40 / IP20</td>
</tr>
</tbody>
</table>

EW-DO4
The extension 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. With strong inductive loads, we recommend protecting the relay contacts additionally with an RC element. The module is provided with a manual control for manually switching the relays. The extension module can only be used in combination with EWIO-9180, which switches the outputs. The module address is set by means of an address switch on the front.

Suitable for decentralized mounting in serial sub-distributor.

<table>
<thead>
<tr>
<th>Protocol</th>
<th>EWIO internal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addressing range</td>
<td>0 to 9</td>
</tr>
<tr>
<td>Bus interface</td>
<td>Two-wire bus</td>
</tr>
<tr>
<td>Transmission rate</td>
<td>115200 Bd</td>
</tr>
<tr>
<td>Operating voltage range</td>
<td>20 V to 28 V AC/DC (SELV)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>200 mA (AC) / 70 mA (DC)</td>
</tr>
<tr>
<td>Relative duty cycle</td>
<td>100 %</td>
</tr>
<tr>
<td>Output / contacts</td>
<td>4 changeover contacts (4PST)</td>
</tr>
<tr>
<td>Output / switching voltage</td>
<td>250 V AC</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>5 A / output</td>
</tr>
<tr>
<td>Output / switching frequency</td>
<td>360 cycles/h</td>
</tr>
<tr>
<td>Output / max. total current</td>
<td>12 A across all outputs</td>
</tr>
<tr>
<td>Display</td>
<td>Green, red and yellow LED</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>35 x 70 x 75 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>95 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 block</td>
<td>IP40 / IP20</td>
</tr>
</tbody>
</table>

P/N  | Color | Feature 1 | Feature 2 | EAN       |
---   | ----- | --------- | --------- | --------- |
11096013 | gray  |           |           | 4250184137986 |
1109561321 | gray  |           |           | 4250184138044 |
EW-AO4

The extension 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 extension module can only be used in combination with EWIO-9180, which switches the outputs. The module address is set by means of an address switch on the front.

Suitable for decentralized mounting in serial sub-distributor.

- **Protocol**: EWIO internal
- **Addressing range**: 0 to 9
- **Bus interface**: Two-wire bus
- **Transmission rate**: 115200 Bd
- **Operating voltage range**: 20 V to 28 V AC/DC (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 70 x 65 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 block**: IP40 / IP20

**Wiring/Principle diagram**

**Table:**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
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<tr>
<td>1109551302</td>
<td>gray</td>
<td></td>
<td></td>
<td>4250184138020</td>
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</tbody>
</table>
EW-DIO4/2

The extension 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. With strong inductive loads, we recommend protecting the relay contacts with an RC element. The inputs can be used as contact or voltage inputs. The module can only be used in combination with EWIO-9180, which scans and switches the inputs and outputs. The module address is set by means of an address switch on the front. Suitable for decentralized mounting in serial sub-distributor.

Protocol: EWIO bus
Addressing range: 0 to 9
Bus interface: RS485 (two-wire bus)
Transmission rate: 9600 to 115200 baud
Operating voltage range: 20 V to 28 V AC/DC (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 7 V AC/DC
Output / contacts: 2 changeover contacts (DPST)
Output / switching voltage: 250 V AC
Output / continuous current: 8 A / output (UL), 10 A / output (VDE)
Output / switch-on current: 80 A (less than 20 ms)
Display: Green, red and yellow LED

Dimensions (W x H x D): 50 x 70 x 75 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 block: IP40 / IP20

EW-DIO4/2-IP

The extension 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. With strong inductive loads, we recommend protecting the relay contacts additionally with an RC element. The inputs can be used as contact or voltage inputs. The module can only be used in combination with EWIO-9180, which scans and switches the inputs and outputs. The module address is set by means of an address switch.

Protocol: EWIO bus
Addressing range: 0 to 9
Bus interface: RS485 (two-wire bus)
Transmission rate: 9600 to 115200 baud
Operating voltage range: 20 V to 28 V AC/DC (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 7 V AC/DC
Output / contacts: 2 changeover contacts (DPST)
Output / switching voltage: 250 V AC
Output / continuous current: 8 A / output
Output / continuous current: 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): 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 block: IP65 / IP20
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 in serial sub-distributor.

<table>
<thead>
<tr>
<th>Protocol</th>
<th>BACnet MS/TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addressing 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 baud</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>20 V to 28 V AC/DC (SELV)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>50 mA (AC) / 20 mA (DC)</td>
</tr>
<tr>
<td>Relative duty cycle</td>
<td>100 %</td>
</tr>
<tr>
<td>Inputs</td>
<td>4 x digital</td>
</tr>
<tr>
<td>Input / voltage</td>
<td>30 V DC</td>
</tr>
<tr>
<td>Input / high signal</td>
<td>more than 7 V AC/DC</td>
</tr>
<tr>
<td>Display</td>
<td>Green, red and yellow LED</td>
</tr>
</tbody>
</table>

Dimensions (W x H x D): 35 x 70 x 65 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

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

Suitable for decentralized mounting in serial sub-distributor.

<table>
<thead>
<tr>
<th>Protocol</th>
<th>BACnet MS/TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addressing 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 baud</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>20 V to 28 V AC/DC (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>10 x digital</td>
</tr>
<tr>
<td>Input / voltage</td>
<td>30 V DC</td>
</tr>
<tr>
<td>Input / high signal</td>
<td>more than 7 V AC/DC</td>
</tr>
<tr>
<td>Display</td>
<td>Green, red and yellow LED</td>
</tr>
</tbody>
</table>

Dimensions (W x H x D): 35 x 70 x 65 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

Matching accessories for BMT-DI4
- Terminal block Type 259: Page 132
- Power supply NG4 gray: Page 131
- Jumper 135: Page 132

Matching accessories for BMT-DI10
- Terminal block Type 259: Page 132
- Power supply NG4 gray: Page 131
- Jumper 135: Page 132
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 in serial sub-distributor.

Protocol: BACnet MS/TP
Addressing range: 00 to F9
Bus interface: RS485 (two-wire bus)
Transmission rate: 9600 to 115200 baud
Operating voltage range: 20 V to 28 V AC/DC (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 V to 10 V DC
Input / resolution: 10 mV (0 to 100 %)
Input / error: approx. +/- 100 mV
Display: Green, red and yellow LED

Dimensions (W x H x D): 50 x 70 x 65 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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Matching accessories for BMT-AI8

- Terminal block Type 259: Page 132
- Power supply NG4 gray: Page 131
- Jumper 135: Page 132

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Wiring/Principle diagram

---

P/N | Color | Feature 1 | Feature 2 | EAN
---|---|---|---|---
11088213 | gray | | | 4250184138716
The BACnet MS/TP module with 4 digital triac outputs was developed for decentralized switching tasks. It is suitable for switching electrical components, such as relays, contactors, HLK valves, etc. The outputs can be switched by means of standard objects via a BACnet client. In addition, the outputs can be overridden manually by means of switches on the device. The module is addressed and the baud rate is set by means of two address switches on the front.

Suitable for decentralized mounting in serial sub-distributor.

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. With strong inductive loads, we recommend protecting the relay contacts additionally with an RC element. 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 in serial sub-distributor.

### BMT-TO4

- **Protocol**: BACnet MS/TP
- **Addressing range**: 00 to F9
- **Bus interface**: RS485 (two-wire bus)
- **Transmission rate**: 9600 to 115200 baud
- **Operating voltage range**: 20 V to 28 V AC/DC (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 70 x 75 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

### BMT-DO4

- **Protocol**: BACnet MS/TP
- **Addressing range**: 00 to F9
- **Bus interface**: RS485 (two-wire bus)
- **Transmission rate**: 9600 to 115200 baud
- **Operating voltage range**: 20 V to 28 V AC/DC (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 70 x 75 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

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**Wiring/Principle diagram**

**P/N**: 11088013
**Color**: gray
**Feature 1**
**Feature 2**
**EAN**: 4250184138693

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**Wiring/Principle diagram**

**P/N**: 1108861321
**Color**: gray
**Feature 1**
**Feature 2**
**EAN**: 4250184138761
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 in serial sub-distributor.

### Protocol
- BACnet MS/TP

### Addressing range
- 00 to F9

### Bus interface
- RS485 (two-wire bus)

### Transmission rate
- 9600 to 115200 baud

### Operating voltage range
- 20 V to 28 V AC/DC (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 70 x 65 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 block
- IP40 / IP20

### Wiring/Principle diagram

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**BMT-AO4**

**BMT-AOP4**

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

### Protocol
- BACnet MS/TP

### Addressing range
- 00 to F9

### Bus interface
- RS485 (two-wire bus)

### Transmission rate
- 9600 to 115200 baud

### Operating voltage range
- 20 V to 28 V AC/DC (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 70 x 65 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 block
- IP40 / IP20
BACnet I/Os | Mixed Modules

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. With strong inductive loads, we recommend protecting the relay contacts with an RC element. 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 in serial sub-distributor.

Protocol: BACnet MS/TP
Addressing range: 00 to F9
Bus interface: RS485 (two-wire bus)
Transmission rate: 9600 to 115200 baud
Operating voltage range: 20 V to 28 V AC/DC (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 7 V AC/DC
Output / contacts: 2 changeover contacts (DPST)
Output / voltage: 250 V AC
Output / current: 10 A / output
Output / switch voltage: 80 V (less than 20 ms)
Display: Green, red and yellow LED

Dimensions (W x H x D): 50 x 70 x 75 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 block: IP40 / IP20

Wiring/Principle diagram

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BMT-DIO4/2-IP
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. With strong inductive loads, we recommend protecting the relay contacts additionally with an RC element. 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
Addressing range: 00 to F9
Bus interface: RS485 (two-wire bus)
Transmission rate: 9600 to 115200 baud
Operating voltage range: 20 V to 28 V AC/DC (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 7 V AC/DC
Output / contacts: 2 changeover contacts (DPST)
Output / voltage: 250 V AC
Output / current: 10 A / output
Output / switch voltage: 80 V (less than 20 ms)
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 block: IP65 / IP20

Wiring/Principle diagram

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Matching accessories for BMT-DIO4/2
- Terminal block Type 259
- Power supply NG4 gray
- Jumper 135

P/N Color Feature 1 Feature 2 EAN
1108831326 gray 4250184138723

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P/N Color Feature 1 Feature 2 EAN
1108831326IP gray 4250184138730
The Modbus module with 4 digital inputs was developed for decentralized switching tasks. It is suitable for detecting potential-free switches or contacts or used as voltage inputs. The inputs can be scanned by means of standard objects via a Modbus master. The module address, the baud rate and the parity are set by means of two address switches on the front. Suitable for decentralized mounting in serial sub-distributor.

MR-DI4

Protocol: Modbus RTU
Addressing range: 00 to F9
Bus interface: RS485 (two-wire bus)
Transmission rate: 1200 to 115200 baud
Operating voltage range: 20 V to 28 V AC/DC (SELV)
Current consumption: 50 mA (AC) / 20 mA (DC)
Relative duty cycle: 100 %
Inputs / 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 70 x 65 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

MR-DI10

The Modbus module with 10 digital inputs was developed for decentralized switching tasks. It is suitable for detecting potential-free switch states, for example electrical limit switches on vent valves or auxiliary contacts of power contactors. The inputs can be used as contact or voltage inputs. The inputs can be scanned by means of standard objects via a Modbus master. The module address, the baud rate and the parity are set by means of two address switches on the front. Suitable for decentralized mounting in serial sub-distributor.

Protocol: Modbus RTU
Addressing range: 00 to F9
Bus interface: RS485 (two-wire bus)
Transmission rate: 1200 to 115200 baud
Operating voltage range: 20 V to 28 V AC/DC (SELV)
Current consumption: 85 mA (AC) / 75 mA (DC)
Relative duty cycle: 100 %
Inputs / voltage: 30 V DC
Input / high signal: more than 17 V AC/DC
Display: Green, red and yellow LED
Dimensions (W x H x D): 35 x 70 x 65 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
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 objects via a Modbus master. The module address, the baud rate and the parity are set by means of two address switches on the front. Suitable for decentralized mounting in serial sub-distributor.

Protocol Modbus RTU
Addressing range 00 to F9
Bus interface RS485 (two-wire bus)
Transmission rate 1200 to 115200 baud
Operating voltage range 20 V to 28 V AC/DC (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 V 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 70 x 65 mm
Weight 104 g
Operating temperature range -5 °C to +55 °C
Storage temperature range -20 °C to +70 °C
Ingress protection for housing / terminal block IP40 / IP20

Wiring/Principle diagram
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, HLK valves, etc. The outputs can be switched by means of standard objects via a Modbus master. In addition, the outputs can be overridden manually by means of switches on the device. The module address, the baud rate and the parity are set by means of two address switches on the front.

Suitable for decentralized mounting in serial sub-distributor.

**MR-T04**

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, lamps, louvers, etc. With strong inductive loads, we recommend protecting the relay contacts additionally with an RC element.

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 Modbus master. The module address, the baud rate and the parity are set by means of two address switches on the front.

Suitable for decentralized mounting in serial sub-distributor.

**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, motors, etc. With strong inductive loads, we recommend protecting the relay contacts additionally with an RC element.

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 Modbus master. The module address, the baud rate and the parity are set by means of two address switches on the front.

Suitable for decentralized mounting in serial sub-distributor.

**Protocol**
- Modbus RTU

**Addressing range**
- 00 to F9

**Bus interface**
- RS485 (two-wire bus)

**Transmission rate**
- 1200 to 115200 baud

**Operating voltage range**
- 20 V to 28 V AC/DC (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 70 x 75 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

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**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, motors, etc. With strong inductive loads, we recommend protecting the relay contacts additionally with an RC element.

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 Modbus master. The module address, the baud rate and the parity are set by means of two address switches on the front.

Suitable for decentralized mounting in serial sub-distributor.

**Protocol**
- Modbus RTU

**Addressing range**
- 00 to F9

**Bus interface**
- RS485 (two-wire bus)

**Transmission rate**
- 1200 to 115200 baud

**Operating voltage range**
- 20 V to 28 V AC/DC (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 70 x 75 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
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 objects via a Modbus master. Each output can be set for automatic or manual operation by means of 4 potentiometers at the front. The module address, the baud rate and the parity are set by means of two address switches on the front. Suitable for decentralized mounting in serial sub-distributor.

**Protocol:** Modbus RTU  
**Addressing range:** 00 to 99  
**Bus interface:** RS485 (two-wire bus)  
**Transmission rate:** 1200 to 115200 baud  
**Operating voltage range:** 20 V to 28 V AC/DC (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 70 x 65 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 block:** IP40 / IP20

### MR-AO4

**Protocol:** Modbus RTU  
**Addressing range:** 00 to 99  
**Bus interface:** RS485 (two-wire bus)  
**Transmission rate:** 1200 to 115200 baud  
**Operating voltage range:** 20 V to 28 V AC/DC (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 70 x 65 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 block:** IP40 / IP20

### 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 objects via a Modbus master. Each output can be set for automatic or manual operation by means of 4 potentiometers at the front. The module address, the baud rate and the parity are set by means of two address switches on the front. Suitable for decentralized mounting in serial sub-distributor.

**Protocol:** Modbus RTU  
**Addressing range:** 00 to 99  
**Bus interface:** RS485 (two-wire bus)  
**Transmission rate:** 1200 to 115200 baud  
**Operating voltage range:** 20 V to 28 V AC/DC (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 70 x 65 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 block:** IP40 / IP20
**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. With strong inductive loads, we recommend protecting the relay contacts with an RC element. 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 Modbus master. The module address, the baud rate and the parity are set by means of two address switches on the front. Suitable for decentralized mounting in serial sub-distributor.

### Protocol
- Modbus RTU

### Addressing range
- 00 to F9

### Bus interface
- RS485 (two-wire bus)

### Transmission rate
- 1200 to 115200 baud

### Operating voltage range
- 20 V to 28 V AC/DC (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 (DPST)

### Output / switching voltage
- 250 V AC

### Output / continuous current
- 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)
- 50 x 70 x 75 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 block
- IP20 / IP20

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**MR-DIO4/2-IP**

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. With strong inductive loads, we recommend protecting the relay contacts with an RC element. 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 Modbus master. The module address, the baud rate and the parity are set by means of two address switches.

### Protocol
- Modbus RTU

### Addressing range
- 00 to F9

### Bus interface
- RS485 (two-wire bus)

### Transmission rate
- 1200 to 115200 baud

### Operating voltage range
- 20 V to 28 V AC/DC (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 (DPST)

### 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)
- 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 block
- IP65 / IP20

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**P/N | Color | Feature 1 | Feature 2 | EAN**
---|---|---|---|---
1108331326 | gray | | | 4250184135623

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**P/N | Color | Feature 1 | Feature 2 | EAN**
---|---|---|---|---
1108331326IP | gray | | | 4250184135630
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 in serial sub-distributor.

Protocol: FT/TP-10, free topology
Neuron: FT5000
Transmission rate: 78 KBit/s
Operating voltage range: 20 V to 28 V AC/DC (SELV)
Current consumption: 63 mA (AC) / 24 mA (DC)
Relative duty cycle: 100 %
Recovery time: 550 ms
Inputs: 4 contact inputs
Input / switching threshold: 4.5 V DC
Display: Green and yellow LED
Dimensions (W x H x D): 35 x 70 x 65 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 block: IP40 / IP20

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 in serial sub-distributor.

Protocol: FT/TP-10, free topology
Neuron: FT5000
Transmission rate: 78 KBit/s
Operating voltage range: 20 V to 28 V AC/DC (SELV)
Current consumption: 63 mA (AC) / 21 mA (DC)
Relative duty cycle: 100 %
Recovery time: 550 ms
Inputs: 10 x contact or voltage
Input / high signal: more than 8 V AC/DC
Display: Green and yellow LED
Dimensions (W x H x D): 35 x 70 x 65 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
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**  
FT/TP-10, free topology

**Neuron**  
FT5000

**Transmission rate**  
78 KBit/s

**Operating voltage range**  
20 V to 28 V AC/DC (SELV)

**Current consumption**  
63 mA (AC) / 21 mA (DC)

**Relative duty cycle**  
100 %

**Recovery time**  
550 ms

**Inputs**  
10 x contact or voltage

**Input / high signal**  
more than 8 V AC/DC

**Display**  
Green and yellow LED

**Dimensions (W x H x D)**  
159 x 41.5 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

---

**Protocol**  
FT/TP-10, free topology

**Neuron**  
FT5000

**Transmission rate**  
78 KBit/s

**Operating voltage range**  
20 V to 28 V AC/DC (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 70 x 65 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
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 1+ to 4+ are wired with 1- to 4- 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 in serial sub-distributor.

Protocol: FT/TP-10, free topology
Neuron: FT5000
Transmission rate: 78 KBit/s
Operating voltage range: 20 V to 28 V AC/DC (SELV)
Current consumption: 63 mA (AC) / 21 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 70 x 65 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 block: IP40 / IP20

Wiring/Principle diagram
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 in serial sub-distributor.

**Protocol**
FT/TP-10, free topology

**Neuron**
FT5000

**Transmission rate**
78 KBit/s

**Operating voltage range**
20 V to 28 V AC/DC (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 V 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 70 x 65 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 block**
IP40 / IP20

---

The LON module with 4 current and 4 voltage inputs was developed for decentralized switching tasks. It is suitable for detecting currents and voltages, for example, in industrial applications and refrigeration. The inputs can be scanned by SNVT network variables.

Suitable for decentralized mounting in serial sub-distributor.

**Protocol**
FT/TP-10, free topology

**Neuron**
FT5000

**Transmission rate**
78 KBit/s

**Operating voltage range**
20 V to 28 V AC/DC (SELV)

**Current consumption**
67 mA (AC) / 24 mA (DC)

**Relative duty cycle**
100 %

**Recovery time**
550 ms

**Inputs**
4 x voltage, 4 x current

**Input / voltage**
0 V to 10 V DC

**Input / resolution**
10 mV (0 to 100 %)

**Input / resistance**
10 kOhm

**Input / current**
0 V 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 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 block**
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. With strong inductive loads, we recommend protecting the relay contacts additionally with an RC element. 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 in serial sub-distributor.

Protocol FT/TP-10, free topology
Neuron FT5000
Transmission rate 78 KBit/s
Operating voltage range 20 V to 28 V AC/DC (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 / 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 70 x 65 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

Protocol FT/TP-10, free topology
Neuron FT5000
Transmission rate 78 KBit/s
Operating voltage range 20 V to 28 V AC/DC (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) 159 x 41.5 x 120 mm
Weight 368 g
Operating temperature range -5 °C to +55 °C
Storage temperature range -20 °C to +70 °C
Ingress protection for housing / terminal block

Matching accessories for LF-DO4
Terminal block Type 259  132
Power supply NG4 green  131
Jumper 135  132

P/N Color Feature 1 Feature 2  EAN
1108521321 green
4250184135715

P/N Color Feature 1 Feature 2  EAN
1108521321IP green
4250184135722
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 FT/TP-10, free topology
Neuron FT5000
Transmission rate 78 KBit/s
Operating voltage range 20 V to 28 V AC/DC (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 70 x 75 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
LF-AOP4

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

Suitable for decentralized mounting in serial sub-distributor.

- Protocol: FT/TP-10, free topology
- Neuron: FT5000
- Transmission rate: 78 KBit/s
- Operating voltage range: 20 V to 28 V AC/DC (SELV)
- Current consumption: 50 mA (AC) / 20 mA (DC)
- Relative duty cycle: 100%
- Recovery time: 550 ms
- Outputs: 4 x analog
- Output / voltage: 0 V to 10 V DC
- Output / current: 5 mA at 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 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 block: IP40 / IP20

LF-AO4-IP

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

- Protocol: FT/TP-10, free topology
- Neuron: FT5000
- Transmission rate: 78 KBit/s
- Operating voltage range: 20 V to 28 V AC/DC (SELV)
- Current consumption: 50 mA (AC) / 20 mA (DC)
- Relative duty cycle: 100%
- Recovery time: 550 ms
- Outputs: 4 x analog
- Output / voltage: 0 V to 10 V DC
- Output / current: 5 mA at 10 V DC
- Output / resolution: 0.625 mV / digit
- Output / error: 100 mV
- Display: Green and yellow LED

- Dimensions (W x H x D): 159 x 41.5 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
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. With strong inductive loads, we recommend protecting the relay contacts with an RC element. 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 in serial sub-distributor.

Protocol FT/TP-10, free topology
Neuron FT5000
Transmission rate 78 KBit/s
Operating voltage range 20 V to 28 V AC/DC (SELV)
Current consumption 220 mA (AC) / 90 mA (DC)
Relative duty cycle 100%
Recovery time 550 ms
Inputs 4 x digital
Input / voltage 30 V AC/DC
Input / high signal more than 8 V AC/DC
Outputs 2 changeover contacts (DPST)
Output / switching voltage 250 V AC
Output / continuous current (UL) 8 A / output
Output / continuous current (VDE) 10 A / output
Output / total current 20 A across all outputs
Operation and bus display Green and yellow LED
Dimensions (W x H x D) 60 x 70 x 75 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 block IP40 / IP20

Matching accessories for LF-DIO4/2

<table>
<thead>
<tr>
<th>Terminal block Type</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>259</td>
<td>132</td>
</tr>
<tr>
<td>Power supply NG4</td>
<td>131</td>
</tr>
<tr>
<td>Jumper 135</td>
<td>132</td>
</tr>
</tbody>
</table>

**Wiring/Principle diagram**

4 3 22 21 24
A1 24 V AC/DC A1
A2 GND A2
N1 NET1 N1
N2 NET2 N2
1 2 C1 12 11 14
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. With strong inductive loads, we recommend protecting the relay contacts additionally with an RC element. 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 in serial sub-distributor.

Protocols: FT/TP-10, free topology
Neuron: FT5000
Transmission rate: 78 KBit/s
Operating voltage range: 20 V to 28 V AC/DC (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
Output / switching voltage: 250 V AC
Output / current: 6 A / output
Outputs (digital): 2 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 block: IP40 / IP20

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. With strong inductive loads, we recommend protecting the relay contacts additionally with an RC element. 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. The module has a manual control for the outputs, which is activated only in configured mode. Suitable for decentralized mounting in serial sub-distributor.

Protocols: FT/TP-10, free topology
Neuron: FT5000
Transmission rate: 78 KBit/s
Operating voltage range: 20 V to 28 V AC/DC (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: 5 A / output
Outputs (digital): 2 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 70 x 75 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 block: 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 in serial sub-distributor.

- **Protocol**: FT/TP-10, free topology
- **Neuron**: FT5000
- **Transmission rate**: 78 KBit/s
- **Operating voltage range**: 20 V to 28 V AC/DC (SELV)
- **Current consumption**: 95 mA (AC) / 35 mA (DC)
- **Relative duty cycle**: 100%
- **Inputs**: 2 x analog
- **Input / voltage**: 0 V to 10 V DC
- **Input / resolution**: 10 mV (0 to 100%)
- **Outputs**: 2 x analog
- **Output / voltage**: 0 V to 10 V DC
- **Output / current**: 5 mA at 10 V DC
- **Output / resolution**: 10 mV (0 to 100%)
- **Operation and bus display**: Green and yellow LED
- **Dimensions (W x H x D)**: 35 x 70 x 65 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 block**: IP40 / IP20

**Wiring/Principle diagram**

---

**LF-TI-IP**

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**: FT/TP-10, free topology
- **Neuron**: FT5000
- **Transmission rate**: 78 KBit/s
- **Operating voltage range**: 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 block**: IP65 / IP20

**Wiring/Principle diagram**

---

**P/N** | **Color** | **Feature 1** | **Feature 2** | **EAN**
---|---|---|---|---
11085713 | green |  |  | 4250184135791

**P/N** | **Color** | **Feature 1** | **Feature 2** | **EAN**
---|---|---|---|---
11086105IP | green |  |  | 4250184135838
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 in serial sub-distributor.

<table>
<thead>
<tr>
<th>Operating voltage range</th>
<th>20 V to 28 V AC/DC (SELV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption</td>
<td>less than 5 mA</td>
</tr>
<tr>
<td>Switch-on duration</td>
<td>relative 100 %</td>
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<tr>
<td>Display</td>
<td>Green LED</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>35 x 70 x 78 mm</td>
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<tr>
<td>Weight</td>
<td>75 g</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-5 °C to +55 °C</td>
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<tr>
<td>Storage temperature range</td>
<td>-20 °C to +70 °C</td>
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<tr>
<td>Ingress protection for housing / terminal block</td>
<td>IP40 / IP20</td>
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Wiring/Principle diagram

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<th>Feature 1</th>
<th>Feature 2</th>
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<td>A1</td>
<td>A2</td>
<td>N1</td>
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</table>
Matching accessories for LM1

| 19 inch Frame 3RU 80HP | 134 |
| 10 inch Frame 3RU 40HP | 134 |
| Labeling sheet for door installation modules | 136 |
| Terminal block ASP02 | 133 |

Matching accessories for LM2

| 19 inch Frame 3RU 80HP | 134 |
| 10 inch Frame 3RU 40HP | 134 |
| Labeling sheet for door installation modules | 136 |
| Terminal block ASP02 | 133 |

**LM1**

Button and display module for 19" assembly frames. It is suitable for manual control in switch cabinet doors or remote control panels. When delivered, the module is used as collective fault alarm module. The LEDs and buttons are activated and analyzed by SNVT network variables. Functions of the collective fault alarm module:

- **LED 1** Operating mode indicator: Illuminated
- **LED 2** Collective warning: Yellow
- **LED 3** Collective fault message: Red, flashing
- **LED 4** Switch in manual position: Illuminated
- **Button 1** Acknowledgement
- **Button 2** Unblocking
- **Button 3** Lamp test

Protocol: FTT10A, free topology
Neuron: 3120, 3k EEPROM
Transmission rate: 78 KBit/s
Operating voltage range: 24 V DC +/- 15 %
Current consumption: 43 mA
Relative duty cycle: 100 %
Display: 3 LEDs
Buttons: 4 x
Dimensions (W x H x D): 40 x 128.7 x 35 mm
Dimensions for 19" design: 3RU x 8HP
Connection / terminal block: Pluggable, 1.5 mm²
Operating temperature range: -5 °C to +55 °C
Storage temperature range: -20 °C to +70 °C
Ingress protection: IP20

**LM2**

Display module with 10 LEDs for 19" assembly frames. It is suitable as alarm module in switch cabinet doors or remote control panels. The individual LEDs are actuated by SNVT network variables.

Protocol: FTT10A, free topology
Neuron: 3120, 3k EEPROM
Transmission rate: 78 KBit/s
Operating voltage range: 24 V DC +/- 15 %
Current consumption: 53 mA
Relative duty cycle: 100 %
Display: 10 LEDs
Display / adjustable colors: Red, green, yellow
Dimensions (W x H x D): 40 x 128.7 x 35 mm
Dimensions for 19" design: 3RU x 8HP
Connection / terminal block: Pluggable, 1.5 mm²
Operating temperature range: -5 °C to +55 °C
Storage temperature range: -20 °C to +70 °C
Ingress protection: IP20

**Wiring**

<table>
<thead>
<tr>
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</table>
LS1
Switch and display module for 19" assembly frames. It is suitable for manual control in switch cabinet doors or remote control panels. The individual LEDs and switches are activated and analyzed by SNVT network variables.

Protocol: FTT10A, free topology
Neuron: 3120, 3k EEPROM
Transmission rate: 78 KBit/s
Operating voltage range: 24 V DC +/- 15 %
Current consumption: 46 mA
Relative duty cycle: 100 %
Display / adjustable colors: Red, green, yellow
Switch: 2 x
Dimensions (W x H x D): 40 x 128.7 x 35 mm
Dimensions for 19” design: 3RU x 8HP
Connection / terminal block: pluggable, 1.5 mm²
Operating temperature range: -5 °C to +55 °C
Storage temperature range: -20 °C to +70 °C
Ingress protection: IP20

LT1
Button and display module for 19" assembly frames. It is suitable for manual control in switch cabinet doors or remote control panels. The individual LEDs and buttons are activated and analyzed by SNVT network variables.

Protocol: FTT10A, free topology
Neuron: 3120, 3k EEPROM
Transmission rate: 78 KBit/s
Operating voltage range: 24 V DC +/- 15 %
Current consumption: 47 mA
Relative duty cycle: 100 %
Display / adjustable colors: Red, green, yellow
Buttons: 2 x
Dimensions (W x H x D): 40 x 128.7 x 35 mm
Dimensions for 19” design: 3RU x 8HP
Connection / terminal block: pluggable, 1.5 mm²
Operating temperature range: -5 °C to +55 °C
Storage temperature range: -20 °C to +70 °C
Ingress protection: IP20
LT2
Button and display module for 19” assembly frames. It is suitable for manual control in switch cabinet doors or remote control panels or for operating motorized fire dampers. The module allows to conduct test runs or to move to the opposite position of the fire dampers. The individual LEDs and buttons are activated and analyzed by SNVT network variables.

Protocol: FTT10A, free topology
Neuron: 3120, 3k EEPROM
Transmission rate: 78 KBit/s
Operating voltage range: 20 to 28 V AC/DC
Current consumption: 90 mA (AC) / 38 mA (DC)
Relative duty cycle: 100%
Display: 4 LEDs
Display / adjustable colors: Red, green, yellow
Buttons: 4 x
Dimensions (W x H x D): 40 x 128.7 x 35 mm
Dimensions for 19” design: 3RU x 8HP
Connection / terminal block: pluggable, 1.5 mm²
Operating temperature range: -5 °C to +55 °C
Storage temperature range: -20 °C to +70 °C
Ingress protection: IP20

P/N: 11039613
Color: gray
EAN: 4250184121640

LT3
Button and display module for 19” assembly frames. It is suitable for manual control in switch cabinet doors or remote control panels. The individual LEDs and buttons are activated and analyzed by SNVT network variables.

Protocol: FTT10A, free topology
Neuron: 3120, 4k EEPROM
Transmission rate: 78 KBit/s
Operating voltage range: 20 to 28 V AC/DC
Current consumption: 90 mA (AC) / 38 mA (DC)
Relative duty cycle: 100%
Display: 8 LEDs
Display / adjustable colors: Red, green, yellow
Buttons: 2 x
Dimensions (W x H x D): 40 x 128.7 x 35 mm
Dimensions for 19” design: 3RU x 8HP
Connection / terminal block: pluggable, 1.5 mm²
Operating temperature range: -5 °C to +55 °C
Storage temperature range: -20 °C to +70 °C
Ingress protection: IP20

P/N: 11039713
Color: gray
EAN: 4250184121657
LA1
Display and setpoint device for 19" assembly frames.
It is suitable for displaying and manually controlling analog signals in switch cabinet doors or remote control panels.
The bar graphs and potentiometers are activated and analyzed by SNVT network variables.

- Protocol: FTT10A, free topology
- Neuron: 3120, 4k EEPROM
- Transmission rate: 78 KBit/s
- Operating voltage range: 24 V DC +/- 15 %
- Current consumption: 50 mA
- Relative duty cycle: 100 %
- Display: 2 bar graphs
- Switch: 2 x
- Potentiometer: 2 x

Dimensions (W x H x D): 40 x 128.7 x 35 mm
Dimensions for 19" design: 3RU x 8HP
Connection / terminal block: pluggable, 1.5 mm²
Operating temperature range: -5 °C to +55 °C
Storage temperature range: -20 °C to +70 °C
Ingress protection: IP20

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Wiring

---

P/N  Color  Feature 1  Feature 2  EAN
11039025  gray  4250184121196
Echelon LonMaker SR4 Standard
The LonMaker® integration tool SR4 Turbo Standard is a software package for designing, installing, operating and maintaining open and interoperable LONWORKS® control networks of several manufacturers. Based on the LNS network operating system of Echelon, the LonMaker® tool combines a powerful client-server architecture with the user-friendly graphical interface of Microsoft VISIO® 2010 Standard.

- Ideal maintenance tool for system operators
- Suitable for many LonMaker OEM applications
- Includes Microsoft Visio 2010 Standard with easy drawing function
- With five LonMaker credits (you can purchase further credits after having put into operation 5 devices; credits are not required for devices with FT5000 Smart transceiver or Neuron 5000 processor.)
- For devices that have already been put into operation with the Professional Edition, no further credits have to be purchased.
- Drawings created by means of LonMaker Professional Edition can be read and modified.

Echelon LonMaker SR4 Professional
The LonMaker® integration tool SR4 Turbo Professional is a software package for designing, installing, operating and maintaining open and interoperable LONWORKS® control networks of several manufacturers. Based on the LNS network operating system of Echelon, the LonMaker® tool combines a powerful client-server architecture with the user-friendly graphical interface of Microsoft VISIO® 2010 Professional.

- The leading integration tool for network integrators
- Includes Microsoft Visio 2010 Professional with all functions of Visio 2010 and extended support for machine drawings, building, room and floor plans, logical network diagrams and other technical drawings
- With 64 LonMaker credits (you can purchase further credits after having put into operation 64 devices; credits are not required for devices with FT5000 Smart transceiver or Neuron 5000 processor.)
- Supports several users
Echelon i.LON 600

The i.LON 600 LONWORKS®/IP server is a LonTalk-to-IP router compliant with EIA 852. It provides reliable and secure internet access to devices, such as pumps, motors, valves, sensors, regulators and lighting systems.

Documentation:

A printed version of the i.LON 600 LONWORKS®/IP server Quick Start Guide is delivered with each device.

Variants:

110213: TP/FT-10 (90 V to 240 V AC or DC)
11021302: TP/XF-1250 (90 V to 240 V AC or DC)
11021303: TP/FT-10 (24 V AC/DC)

The i.LON SmartServer connects LONWORKS networks – the standardized automatic platform for a large number of control applications in buildings, industry, transport, homes, services - as well as other systems with IP networks or the internet. It provides access to and control and monitoring of electronic devices. It also allows an intelligent use of data to save electricity, improve operating procedures and reduce maintenance costs. By embedding a large number of existing software applications that use web services for remote monitoring and control of automatic systems and machines, iLON SmartServer can provide data promptly to the building management system.

Documentation:

A printed version of the i.LON SmartServer Quick Start Guide is delivered with each device.

Variants:

11021220: TP/FT-10, without modem
11021221: TP/FT-10, with modem
11021223: TP/FT-10 programmable, without modem
11021243: PL, IP-852, programmable, without modem

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<tr>
<th>P/N</th>
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<td>PL Channel</td>
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</tbody>
</table>
Echelon USB Network Interface

The USB network interface is a low-cost, high-performance LONWORKS interface for USB-capable personal computers and controllers.

**Variants:**

- **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.
- **U20 USB network interface** is connected to a PL-20 C band power line (ANSI/CEA-709.2) LONWORKS channel by means of a plug-in coupling circuit/power supply.

The PCLTA-21 PC network adapter is a powerful LONWORKS interface for PC. It was developed for use in LONWORKS control networks that need a PC for network monitoring, administration and diagnostics. The PCLTA-21 adapter is ideal for applications in industrial control units, building automation and process control. The PCLTA-21 adapter has an integrated twisted-pair transceiver, a downloadable memory, an interface for network administration and plug-and-play capability with Microsoft Windows 98/2000 and Windows XP.

<table>
<thead>
<tr>
<th>P/N</th>
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<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
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<tr>
<td>110214</td>
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<td>PL-20 Channel</td>
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</table>

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 PCI Network Adapter

The PCLTA-21 PC network adapter is a powerful LONWORKS interface for PC. It was developed for use in LONWORKS control networks that need a PC for network monitoring, administration and diagnostics. The PCLTA-21 adapter is ideal for applications in industrial control units, building automation and process control. The PCLTA-21 adapter has an integrated twisted-pair transceiver, a downloadable memory, an interface for network administration and plug-and-play capability with Microsoft Windows 98/2000 and Windows XP.

- **Universal 32-bit PCI adapter card** for LONWORKS networks for PC with 3.3 V or 5 V PCI
- **Plug-and-play capability with Microsoft® Windows® 98/2000 and Windows XP**
- **Firmware can be downloaded from the manufacturer’s website**
- **FT 3150® free topology smart transceiver, RS-485, TPT/XF-78 or TPT/XF-1250 transceiver**
- **The LNS® network service interface (NSI) supports LNS applications**
- **CE marking, UL and cUL listed**

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</table>

Dimensions (W x D) 98 x 132 mm
Operating temperature range 0 °C to +70 °C
Storage temperature range -45 °C to +85 °C
Echelon PC Card LonTalk Adapter

The PCC-10 network adapter is a powerful LONWORKS interface for personal computers equipped with a type II PC card (previously PCMCIA) and a compatible operating system. It was developed for use in LONWORKS control networks that need a PC for network monitoring, administration and diagnostics. The PCC-10 adapter is ideal for applications in industrial control units, building automation and process control. The PCC-10 adapter has an integrated FTT-10A twisted-pair transceiver, a downloadable memory, an interface for network administration and plug-and-play capability with Microsoft Windows 95/98/2000 and Windows NT.

- Type II PC card for LONWORKS® networks
- Plug-and-play capability with Microsoft® Windows® 95/98/2000 and Windows NT®
- Downloadable firmware allows updating without accessing or modifying the hardware
- Integrated FTT-10A transceiver, external transceiver pods for TPT/XF-78 and TPT/XF-1250 transceiver
- The LNS network service interface (NSI) supports LNS applications
- CE marking, UL and cUL listed
- Network driver for Windows 95/98/2000 and Windows NT available

Dimensions (W x H x D) 54 x 5 x 85.6 mm
Operating temperature range 0 °C to +55 °C
Storage temperature range -20 °C to +65 °C

<table>
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<td>110051</td>
<td>Cable set</td>
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</table>
CAN-Bus I/Os | Input/Output digital

**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.

**FRAS 4/21**
CAN module with 4 digital outputs. It is suitable for switching electrical components, for example motors, contactors, lamps, louvers, etc. With strong inductive loads, we recommend protecting the relay contacts additionally with an RC element. The fieldbus module is an input module for universal use. It is controlled by means of the CAN bus. The module is addressed by means of an adjustable address. Data bytes transmit whether data are queried or commands are executed. If there is a digital input module with the same address in the system, the module can be operated by remote control.

### Protocol
- **CAN**

### Addressing range
- 00 to 99

### Bus interface
- CiA standard 2.0B passive (two-wire bus)

### Transmission rate
- 20 to 500 kBit/s

### Operating voltage range
- 20 V to 28 V AC/DC (SELV)

### Current consumption
- 63 mA (AC) / 21 mA (DC)

### Relative duty cycle
- 100 %

### Recovery time
- 550 ms

### Inputs
- 4 x digital

### Input / voltage
- 0 V to 10 V DC

### Input / resolution
- 10 mV / (0 % to 100%)

### Input / error
- approx. +/- 100 mV

### Display
- Green, red and yellow LED

### Dimensions (W x H x D)
- 35 x 70 x 65 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

### P/N Color Feature 1 Feature 2 EAN

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</table>

### Matching accessories for FDE 4
- **Terminal block Type 259**
- **Power supply NG4 green**
- **Jumper 135**

### Matching accessories for FRAS 4/21
- **Terminal block Type 259**
- **Power supply NG4 green**
- **Jumper 135**

### P/N Color Feature 1 Feature 2 EAN

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### 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 range
- 20 V to 28 V AC/DC (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 70 x 75 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
**CAN-Bus I/Os**  |  Input/Output analog

### Matching accessories for FAE 4
- Terminal block Type 259  
- Power supply NG4 green  
- Jumper 135

### 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 range
- 20 V to 28 V AC/DC (SELV)

### Current consumption
- 67 mA (AC) / 24 mA (DC)

### Relative duty cycle
- 100%

### Recovery time
- 550 ms

### Inputs
- 4 x analog

### Input / voltage
- 0 V to 10 V DC

### Input / resolution
- 10 mV / (0 % to 100 %)

### Input / temperature range
- Ni1000, -50 to +150 °C
- PT1000, -50 to +150 °C
- PT1000, 0 to +400 °C

### Display
- Green and red 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 block
- IP40 / IP20

### Matching accessories for FAA 4
- Terminal block Type 259  
- Power supply NG4 green  
- Jumper 135

### 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 range
- 20 V to 28 V AC/DC (SELV)

### Current consumption
- 90 mA (AC) / 32 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 at 10 V DC

### Output / resolution
- 10 mA / digit

### Output / switching voltage
- +/- 1%

### Display
- Green and red 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 block
- IP40 / IP20

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### P/N Color Feature 1 Feature 2 EAN

<table>
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<tr>
<th>P/N</th>
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<td>1105731302</td>
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</table>
M-Bus I/Os | Digital/analog inputs

S0/M Converter
4-channel impulse counter for counting impulses that are generated by energy counters via reed contacts or passive transistor outputs (open collectors) in proportion to the energy measured. Impulses of any potential-free contacts can be recorded for counting, for example, events up to a frequency of 15 Hz. The impulses generated by the energy counters are recorded by means of a standardized current interface to DIN EN 62053-31 class A. The 4-channel impulse counter occupies a clear M-Bus address specified by the manufacturer. Suitable for decentralized mounting in serial sub-distributor.

Protocol: M-Bus
Bus interface: Two-wire bus
Transmission rate: 300 Bd to 9600 Bd
Operating voltage: 24 V DC (SELV)
Current consumption: 50 mA DC
Inputs: 4 x S0 to DIN EN 62053-31 Class A
Display: LED
Dimensions (W x H x D): 50 x 68 x 65 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

Temperature converter for connecting up to four 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. For instance, up to four different resistance temperature sensors can be connected. The temperature is directly converted in the device. The temperature converter occupies four clear M-Bus addresses specified by the manufacturer. Per channel, one of nine preset temperature characteristics can be selected or alternatively the direct resistance value is transmitted. Selectable characteristics: -30 °C to + 130 °C: PT100, PT500, PT1000, Ni100, Ni1000, NTC1k8, NTC10k, NTC20k, KTY10.0 °C to + 400 °C: PT100, PT1000; resistance value [index = 1]. The factory setting is PT1000 (- 30 °C to + 130 °C). The cable length adjustment is done via the key assigned to the temperature input. Suitable for decentralized mounting in serial sub-distributor.

Protocol: M-Bus
Bus interface: Two-wire bus
Transmission rate: 300 Bd to 9600 Bd
Operating voltage: 24 V DC (SELV)
Current consumption: 50 mA DC
Inputs: 4 x S0 to DIN EN 62053-31 Class A
Display: LED
Dimensions (W x H x D): 50 x 68 x 65 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

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P/N | Color | Feature 1 | Feature 2 | EAN
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110536 | gray | | | 4250184122432

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P/N | Color | Feature 1 | Feature 2 | EAN
---|---|---|---|---
110562 | gray | | | 4250184122487
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.
<table>
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<td>265 x 160 x 90 mm</td>
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<td>1 pcs</td>
<td>135 x 178 x 37 mm</td>
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<tr>
<td>62</td>
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<td>210 x 150 x 75 mm</td>
<td>373 g</td>
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<td>11019601</td>
<td>1 pcs</td>
<td>210 x 150 x 75 mm</td>
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Echelon Multi Port Router

The MPR-50 multi-port router provides routing compliant with ANSI/CEA-709.1 over 5 channels; 4 of them TP/FT-10 free-topology twisted-pair (ANSI/CEA-709.3) and 1 LONMARK standard TP/XF-1250 channel. Each TP/FT-10 channel connection is compatible with link-powered channels.

With MPR-50, two, three or four TP/FT-10 channels can be connected to each other or a high-speed TP/XF-1250 backbone channel.

Documentation:
The MPR-50 multi-port router User’s Guide and MPR-50 multi-port router Quick Start Guide are delivered in PDF format on the CD-ROM. These manuals are also available on the website www.echelon.com.

- All five channels can be connected individually by means of their 3.5 mm mono-phone connector on the front
- Intelligent monitor certified to LONMARK® saves time and costs during installation

<table>
<thead>
<tr>
<th>Channels</th>
<th>4 x TP/FT-10</th>
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<tr>
<td></td>
<td>1 x TP/XF-1250</td>
</tr>
<tr>
<td>Operating voltage AC</td>
<td>9 to 28 V AC, 40-70 Hz</td>
</tr>
<tr>
<td>Operating voltage DC</td>
<td>9 to 35 V DC</td>
</tr>
<tr>
<td>Mounting</td>
<td>DIN rail or wall mounting</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>157.5 x 80 x 80 mm</td>
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<tr>
<td>Operating temperature range</td>
<td>0 °C to +70 °C</td>
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<tr>
<td>Storage temperature range</td>
<td>-20° to +85 °C</td>
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<td>110058</td>
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MOXA EtherDevice Switch 5 Port
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, AC 18 to 30 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 port 100BaseFX multi-mode SC connector
- Supports IEEE 802.3/802.3u/802.3x
- Powerful network switch technology
- Protected against broadcast storm
- Supports IEEE 802.3/802.3u/802.3x
- Store and forward switching mode

Operating voltage DC 12 to 48 V
Operating voltage AC 18 to 30 V

Dimensions (W x H x D) 40 x 109 x 95 mm
Operating temperature range -10 °C to +60 °C
Storage temperature range -40 °C to +70 °C
Ingress protection IP30

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</table>
Control cabinet components

1 Packing Details 66
2 Measuring and monitoring relays 68
3 Interface modules 80
4 Electronic timer relays 114
Relays for measuring and monitoring purposes

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

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

Interface modules

We offer interface modules and/or sensor/actuator-interface modules with change-over contacts, make contacts, with break contacts and make contacts, with switches and optocoupler; potential distribution blocks; diode modules; lamp test modules; threshold switches; voltage value transformers; analogous-to-digital-converters; signalling modules and potential separators.

Interface engineering stands for the separation, conversion, processing, transformation and adaptation of signals from all areas of control and automation engineering.

By its housing shapes for DIN-rails METZ CONNECT offers solutions to almost every application.

In many applications the signals must be separated by additional features (e.g. measuring transducers, speed monitors and others).

A common system, however, will also accumulate a share of (analogous) signals, for which the operator wants to have “only” a floating separation before the signals will be used by an SPS.

The range of products from METZ CONNECT comprises compact pluggable 14-pin industrial relays of a supply voltage of 24 V DC, 24 V AC and 230 V AC with 2 and 4 change-over contacts.

The cadmium-free contact material is optionally made of a silver or of a gold alloy. The mounting tabs are shaped as soldering tags so that they can also be wired in classical fashion. The position will either be indicated mechanically or visually via LED.

A manual test key allows for floating circuit tests.

The internationally standardized 11-pin undecal socket from METZ CONNECT is a rugged power relay for industrial applications. These relays are available for the following supply voltages: 24 V DC, 24 V AC and 230 V AC with 3 change-over contacts.

The isolating parts are made of self-extinguishing plastics. The relays are equipped with manual switch, mechanical position indication device and with LED display.

This product line is completed by plug-in sockets with screwed connection for common 11-pin and 14-pin industrial relays.

All metal parts are largely protected against contact.
Switching, controlling, visualizing – Electronic time relays

This range of products includes time relays with multiple functions and adjustable time ranges as well as relays with specific functions such as switch-on delay, switch-off delay, delayed on pulse, flashing, clocking and star-delta-relays.

Switch-on delay
Once the operating voltage is applied, the set time constant $t_v$ will start and as soon as this has completed the output relay will energize. It will only fall back once the operating voltage is no longer applied. When the voltage is interrupted during the processing of such a time, the time constant will restart once the device is switched on again and will take the recovery time $tw$ into account.

Delayed on pulse
Once the operating voltage is applied, the output relay will energize without delay and will fall back once the interval time $t_v$ has elapsed. The operating voltage must as a minimum exceed the length of the interval time. In case that this is interrupted prior to the end of the interval time, the relay will immediately fall back. This function will only be repeated as soon as the operating voltage will be applied again and in doing so the recovery time $tw$ must be taken into account.

Switch-off delay
The operating voltage will have to be applied continuously. Only once the floating control contact has been closed, the output relay will energize without delay. Once the control contact has been opened, the set time constant $tv$ will start to run and the relay will fall back as soon as this time constant has elapsed.

Delayed off pulse
The operating voltage will have to be applied continuously. Once the floating control contact is closed, the output relay will stay in rest position. Only once the control contact has been opened, the set interval time will start to run and the relay will fall back as soon as this interval time has elapsed. This interval function can only be repeated once the control contact has been closed and opened again (the recovery time must be taken into account).

Flashing starting pause
Once the operating voltage is applied, the output relay will stay in its rest position for the length of the set pause time $tp$ and will then excite for the length of the pulse on time $ti$. This process will be repeated until the operating voltage will no longer be applied.

Flashing pulse starting
Once the operating voltage is applied, the output relay will excite for the duration of the set pulse on time $ti$ and will then fall back for the duration of the pause time $tp$. This process will be repeated until the operating voltage will no longer be applied.
### Measuring and monitoring relays | Fan timer relay

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### Control cabinet components

#### Packing Details

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<td>122 1101605270417</td>
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<td>76 x 46 x 118 mm</td>
<td>218 g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>122 1101605270517</td>
<td>2 pcs</td>
<td>76 x 46 x 118 mm</td>
<td>224 g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>122 1101605270317</td>
<td>2 pcs</td>
<td>76 x 46 x 118 mm</td>
<td>218 g</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
LTRk-E12

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

Mode of operation:

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

Operating voltage AC 230 V AC
Operating voltage (AC/DC) 24 V AC/DC
Recovery time approx. 20 ms
Output / voltage Operating voltage
Output / max. current 6 A AC1 / 1.5 A AC3
Response time for level 1 0 ms
Response time for level 2 approx. 30 ms
Start-up delay adjustable time of up to 30 s
Switch-off delay adjustable time of up to 60 s

Dimensions (W x H x D) 22.5 x 75 x 100 mm
Weight 150 g
Operating temperature range -5 °C to +55 °C
Storage temperature range -20 °C to +70 °C
Ingress protection for housing / terminal block IP40 / IP20

Wiring/Circuit diagram

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>11028313</td>
<td>green</td>
<td>24 V AC/DC</td>
<td></td>
<td>4250184121060</td>
</tr>
<tr>
<td>110283053F</td>
<td>green</td>
<td>230 V AC</td>
<td></td>
<td>4250184121053</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 or by switching off the operating voltage.

**DRIW-E16 230 V**

Operating voltage: 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 (2 DPST)
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 60 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

**DRIW-E16 24 V AC/DC**

Operating voltage: 24 V AC/DC
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 (2 DPST)
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 60 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**

```
+-------+-------+-------+
|       |       |       |
| N     | N     | L     |
| E1    | E2    | B1    |
|       |       | B2    |

RJ1

N-L operating voltage 230 V AC
51 - 62 potential-free control contact,
B1 - B2 sensor input
11 - 12 - 14 switching output
1 changeover
21 - 22 - 23 - 24 control output
1 changeover

P/N Color Feature 1 Feature 2 EAN
1101501322 green 230 V AC 4250184120308
```
Two-wire sensor

The sensor consists of a cylindrical nickel-plated metal body at the rear. Laterally, there is a yellow LED lighted in an attenuated state.

The oscillator creates a high-frequency electro-magnetic 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

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.

Wiring

```
<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>110149</td>
<td></td>
<td></td>
<td></td>
<td>4250184120285</td>
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</tbody>
</table>
```

3D print

```
<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>110146</td>
<td>silver</td>
<td></td>
<td></td>
<td>4250184120278</td>
</tr>
</tbody>
</table>
```
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>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>110151</td>
<td>silver</td>
<td></td>
<td></td>
<td>4250184120315</td>
</tr>
</tbody>
</table>

Auxiliary cam for shafts up to 80 mm

Auxiliary cam for shafts with diameters up to 80 mm.
Measuring and monitoring relays | Motor protection - v-belt 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 (1 DPST)
**Output / switching voltage** | max. 250 V AC
**Output / continuous current** | max. 4 A
**Output / switching frequency** | 1200 cycles/h
**Display** | Green and red LED

**Dimensions (W x H x D)** | 22.5 x 75 x 100 mm
**Weight** | 170 g
**Operating temperature range** | 0 °C to +55 °C
**Storage temperature range** | -20 °C to +70 °C
**Ingress protection for housing / terminal block** | IP40 / IP20

#### Wiring

<table>
<thead>
<tr>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 10 A</td>
<td>1 - 10 A</td>
</tr>
</tbody>
</table>

### TMR-E12 without error memory

The thermistor relay is used as protection relay for motors against thermal overload (inadmissible heating). This heating might be caused by mechanical overload on the shaft or when operating the motor with inadmissible voltages.

A PTC thermistor is used as sensor. It should be mounted to the part of the motor that heats most in case of overload (e.g. integrated in motor winding). The device can also be used for motors with integrated thermo switch.

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

**Operating voltage AC** | 230 V AC
**Operating voltage (AC/DC)** | 24 V AC/DC
**Start-up delay** | 100 ms
**Input / thermistor voltage** | 12 V
**Input / thermistor current** | 1 mA
**Input / switch-on resistance** | 1.8 kOhm
**Input / switch-off resistance** | 3.0 kOhm, +/- 5%
**Output / contact** | 1 or 2 changeover contacts (1 or 2 DPST)
**Output / switching voltage** | 250 V
**Output / continuous current** | 4 A
**Mechanical endurance** | 3x10⁰ switching cycles
**Electrical endurance** | 1x10⁰ switching cycles
**Switching frequency** | 1200 cycles/h
**Display** | Green and red LED

**Dimensions (W x H x D)** | 22.5 x 75 x 100 mm
**Weight** | 150 g
**Operating temperature range** | 0 °C to +55 °C
**Storage temperature range** | -20 °C to +70 °C
**Ingress protection for housing / terminal block** | IP40 / IP20

#### Wiring

<table>
<thead>
<tr>
<th>Feature 1</th>
<th>Feature 2</th>
</tr>
</thead>
</table>
| operating voltage | P1 - P2
- 230 V AC or 24 V AC/DC
- PTC thermistor
- 11 - 12 - 14
- 21 - 22 - 24
- output contacts
- 2 changeover contacts
- B1 - B2
- external reset (error memory)
- model without error memory has no terminals B1/B2

#### Measuring and monitoring relays

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1102810520</td>
<td>green</td>
<td>measuring range</td>
<td>1 - 10 A</td>
<td>4250184121039</td>
</tr>
<tr>
<td>110281052013</td>
<td>green</td>
<td>measuring range</td>
<td>9.2 - 2.5 A</td>
<td>425018412046</td>
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</table>

#### Motor protection - v-belt monitoring

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>11031505</td>
<td>green</td>
<td>230 V AC, 1 DPST</td>
<td>no error memory</td>
<td>4250184118688</td>
</tr>
<tr>
<td>1103150522</td>
<td>green</td>
<td>230 V AC, 2 DPST</td>
<td>no error memory</td>
<td>4250184121282</td>
</tr>
<tr>
<td>1103151322</td>
<td>green</td>
<td>24 V AC/DC, 2 DPST</td>
<td>no error memory</td>
<td>4250184118688</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>Operating voltage AC</th>
<th>230 V AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage (AC/DC)</td>
<td>24 V AC/DC</td>
</tr>
<tr>
<td>Start-up delay</td>
<td>10 ms</td>
</tr>
<tr>
<td>Input / thermistor voltage</td>
<td>12 V</td>
</tr>
<tr>
<td>Input / thermistor current</td>
<td>1 mA</td>
</tr>
<tr>
<td>Input / switch-on resistance</td>
<td>1.8 kOhm</td>
</tr>
<tr>
<td>Input / switch-off resistance</td>
<td>3.0 kOhm, +/- 5%</td>
</tr>
<tr>
<td>Output / contact</td>
<td>1 or 2 changeover contacts (1 or 2 DPST)</td>
</tr>
<tr>
<td>Output / switching voltage</td>
<td>250 V</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>4 A</td>
</tr>
<tr>
<td>Mechanical endurance</td>
<td>3x10^7 switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1x10^5 switching cycles</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>1200 cycles/h</td>
</tr>
<tr>
<td>Display</td>
<td>Green and red LED</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>22.5 x 75 x 100 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>150 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>A1</th>
<th>11</th>
<th>B1</th>
<th>B2</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2</td>
<td>14</td>
<td>17</td>
<td></td>
</tr>
</tbody>
</table>

- A1 - A2 operating voltage
- 230 V AC or 24 V AC/DC
- P1 - P2 PTC thermistor
- 11 - 12 - 14
- 21 - 22 - 24 output contacts
- 2 changeover contacts
- B1 - B2 external reset (error memory)
- model without error memory has no terminals B1/B2

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>11031605</td>
<td>green</td>
<td>230 V AC, 1 DPST</td>
<td>with error memory</td>
<td>4250184118671</td>
</tr>
<tr>
<td>1103160522</td>
<td>green</td>
<td>230 V AC, 2 DPST</td>
<td>with error memory</td>
<td>4250184121299</td>
</tr>
<tr>
<td>1103161322</td>
<td>green</td>
<td>24 V AC/DC, 2 DPST</td>
<td>with error memory</td>
<td>4250184118695</td>
</tr>
</tbody>
</table>
ENW-E12

The level sensor monitors filling levels or leakage of all conductive, noncombustible media. The trigger can be adjusted by means of a proportional potentiometer. As monitor, the device works with an electrode (EO) and the ground connection (EM), e.g. for minimum and maximum levels, to protect submersible pumps from overflowing or running dry. If the surface of the fluid is subject to disturbance, we recommend another electrode (EU). As 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.

Variants:
230 V AC or 24 V AC

Operating voltage
Response sensitivity
5 to 50 kOhm, adjustable
Input
up to 3 electrodes
Input / electrode voltage
12 V
Output / contact
2 changeover contacts (2 DPST)
Output / switching voltage
250 V
Output / continuous current
6 A
Output / total current
8 A / across all contacts
Mechanical endurance
3 x 10^6 switching cycles
Electrical endurance
2 x 10^6 switching cycles
Switching frequency
600 cycles/h
Display
Green and red LED

Dimensions (W x H x D)
Weight
22.5 x 75 x 100 mm
300 g
Operating temperature range
0 °C to +55 °C
Storage temperature range
-20 °C to +70 °C
Ingress protection for housing / terminal block
IP40 / IP20

Wiring

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

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 or brown

- 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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>110329</td>
<td>gray</td>
<td></td>
<td></td>
<td>4250184121367</td>
</tr>
<tr>
<td>11032901</td>
<td>brown</td>
<td></td>
<td></td>
<td>4250184118855</td>
</tr>
</tbody>
</table>
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 before 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 be monitored are connected to N over an electric circuit (e.g. temperature monitoring or similar).

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

- **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 (2 DPST)
- **Max. switching voltage**: 250 V AC/DC
- **Max. continuous current**: 8 A
- **Mechanical endurance**: 3 x 10⁷ switching cycles
- **Electrical endurance**: 1.5 x 10⁷ switching cycles
- **Dimensions (W x H x D)**: 22.5 x 75 x 100 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

**Features**
- Operating voltage /g21/g22/g19/g3/g57/g3/g36/g38/g3/g18/g3/g24/g19/g3/g43/g93
- Current consumption /g79/g72/g86/g86/g3/g87/g75/g68/g81/g3/g20/g24/g3/g80/g36
- Response delay /g19/g17/g20/g3/g87/g82/g3/g28/g17/g28/g3/g86/g15/g3/g68/g71/g77/g88/g86/g87/g68/g69/g79/g72
- Asymmetry /g24/g8/g3/g87/g82/g3/g21/g19/g8/g15/g3/g68/g71/g77/g88/g86/g87/g68/g69/g79/g72
- Switching hysteresis /g21/g19/g3/g8
- Monitoring voltage /g22/g3/g91/g3/g21/g22/g19/g18/g23/g19/g19/g3/g57/g3/g36/g38/g15/g3/g24/g19/g3/g43/g93
- Output contact /g21/g3/g70/g75/g68/g81/g74/g72/g82/g89/g72/g85/g3/g70/g82/g81/g87/g68/g70/g87/g86
- Max. switching voltage /g21/g24/g19/g3/g57/g3/g36/g38/g18/g39/g38
- Max. continuous current 8 A
- Mechanical endurance /g22/g3/g91/g3/g20/g197 switching cycles
- Electrical endurance /g20/g17/g24/g3/g91/g3/g20/g195 switching cycles
- Dimensions (W x H x D) /g21/g21/g17/g24/g3/g91/g3/g26/g24/g3/g91/g3/g20/g19/g19/g3/g80/g80
- Weight /g21/g19/g19/g3/g74
- Operating temperature range -5 °C to +55 °C
- Storage temperature range -20 °C to +70 °C
- Ingress protection for housing / terminal block /g44/g51/g23/g19/g3/g18/g3/g44/g51/g21/g19

**Wiring/Function diagram**

**P/N** | Color | Feature 1 | Feature 2 | EAN
---|---|---|---|---
110292032215 | green | | | 4250184118176

**ASD-C18**

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

- **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 (2 DPST)
- **Max. switching voltage**: 250 V AC/DC
- **Max. continuous current**: 8 A
- **Mechanical endurance**: 3 x 10⁷ switching cycles
- **Electrical endurance**: 1.5 x 10⁷ switching cycles
- **Dimensions (W x H x D)**: 22.5 x 75 x 100 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

**Features**
- Operating voltage /g21/g22/g19/g3/g57/g3/g36/g38/g3/g18/g3/g24/g19/g3/g43/g93
- Current consumption /g79/g72/g86/g86/g3/g87/g75/g68/g81/g3/g20/g24/g3/g80/g36
- Response delay /g19/g17/g20/g3/g87/g82/g3/g28/g17/g28/g3/g86/g15/g3/g68/g71/g77/g88/g86/g87/g68/g69/g79/g72
- Asymmetry /g24/g8/g3/g87/g82/g3/g21/g19/g8/g15/g3/g68/g71/g77/g88/g86/g87/g68/g69/g79/g72
- Switching hysteresis /g21/g19/g3/g8
- Monitoring voltage /g22/g3/g91/g3/g21/g22/g19/g18/g23/g19/g19/g3/g57/g3/g36/g38/g15/g3/g24/g19/g3/g43/g93
- Output contact /g21/g3/g70/g75/g68/g81/g74/g72/g82/g89/g72/g85/g3/g70/g82/g81/g87/g68/g70/g87/g86
- Max. switching voltage /g21/g24/g19/g3/g57/g3/g36/g38/g18/g39/g38
- Max. continuous current 8 A
- Mechanical endurance /g22/g3/g91/g3/g20/g197 switching cycles
- Electrical endurance /g20/g17/g24/g3/g91/g3/g20/g195 switching cycles
- Dimensions (W x H x D) /g21/g21/g17/g24/g3/g91/g3/g26/g24/g3/g91/g3/g20/g19/g19/g3/g80/g80
- Weight /g21/g19/g19/g3/g74
- Operating temperature range -5 °C to +55 °C
- Storage temperature range -20 °C to +70 °C
- Ingress protection for housing / terminal block /g44/g51/g23/g19/g3/g18/g3/g44/g51/g21/g19

**Wiring/Function diagram**

**P/N** | Color | Feature 1 | Feature 2 | EAN
---|---|---|---|---
110270 | green | | | 4250184120940
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
(contact 11-14 and 21-24 closed), LED is off.
Fault message: Relay is deactivated
(contact 11-14 and 21-24 open), LED is on.
Key pressed: Relay is being deactivated
(contact 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 2 changeover contacts
(Output / switching voltage)
(max. 250 V AC/DC)
Mechanical endurance 2 x 10⁶ switching cycles
Electrical endurance 2 x 10⁵ switching cycles
Display Green and red LED
Dimensions (W x H x D) 35 x 70 x 65 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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>110271</td>
<td>green</td>
<td></td>
<td></td>
<td>4250184120964</td>
</tr>
</tbody>
</table>
FSB-E12
Medium protection module for protecting leads and cables in telecommunication, regulating and control systems. Disturbances caused by interference due to atmospheric conditions and discharges (thunderstorms) or interference from power supply lines and switching processes in the system itself can be limited to a value below 300 V using a fine protection module FSB-E12.

To meet highest requirements, a staggered protection consisting of gas-filled discharger and varistor connected indirectly in parallel has been selected. The discharger is used for coarse protection, the varistor for medium protection.

- Coarse protection
- Medium protection

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>230 V AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating current</td>
<td>3 A</td>
</tr>
<tr>
<td>Leakage current max. 8/20 μs</td>
<td>5 kA</td>
</tr>
<tr>
<td>Response time</td>
<td>100 ns</td>
</tr>
<tr>
<td>Transmission frequency</td>
<td>20 kHz, 50 Ohm</td>
</tr>
<tr>
<td>Back-up fuse</td>
<td>3 A</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>22.5 x 75 x 100 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>45 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 block</td>
<td>IP40 / IP20</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>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>11015605</td>
<td>green</td>
<td></td>
<td></td>
<td>4250184120322</td>
</tr>
</tbody>
</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 measurement 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
- Operating voltage: 24 V AC
- 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 (2 DPST)
- Output / switching voltage: max. 250 V AC/DC
- Output / continuous current: max. 8 A
- Mechanical endurance: 3 x 10^7 switching cycles
- Electrical endurance: 1 x 10^7 switching cycles
- Display: Two 7-segment displays
- Display: Green and red LED
- Dimensions: 50 x 68 x 65 mm
- Weight: 200 g
- Operating temperature range: -5 °C to +55 °C
- Storage temperature range: -20 °C to +70 °C
- Ingress protection: 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.

Variants:
- 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 (2 DPST)
- Output / switching voltage: max. 250 V AC/DC
- Output / continuous current: max. 8 A
- Mechanical endurance: 3 x 10^7 switching cycles
- Electrical endurance: 1 x 10^7 switching cycles
- Display / error: Two 7-segment displays
- Display: Green and red LED
- Dimensions: 50 x 68 x 65 mm
- Weight: 200 g
- Operating temperature range: -5 °C to +55 °C
- Storage temperature range: -20 °C to +70 °C
- Ingress protection: IP40 / IP20
Interface modules | Electromechanic 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 approx. 13 mA
Output / contact 1 changeover contact (1 DPST)
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 2 x 10⁵ 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 88 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-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

Operating voltage (AC/DC) 24 V AC/DC
Power consumption: 24 V AC/DC approx. 13 mA
Output / contacts 1 changeover contact (1 DPST)
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 2 x 10⁵ 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 88 x 60 mm
Weight 43 g
Operating temperature range -20 °C to +55 °C
Storage temperature range -25 °C to +70 °C
Ingress protection IP20

Wiring/Circuit diagram
Matching accessory for KRA-SR-F10/21
Connecting bridge, 10 pole
Labeling plate

Matching accessory for KRA-SRA-F10/21
Connecting bridge, 10 pole
Labeling plate

**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

<table>
<thead>
<tr>
<th>Operating voltage (AC/DC)</th>
<th>24 V AC/DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power consumption</td>
<td>approx. 13 mA</td>
</tr>
<tr>
<td>Output / contacts</td>
<td>1 changeover contact (1 DPST)</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgSn02</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>2 x 10⁷ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10⁷ 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 88 x 60 mm

**Weight**
43 g

**Operating temperature range**
-20 °C to +55 °C

**Storage temperature range**
-25 °C to +70 °C

**Ingress protection**
IP20

**Wiring/Circuit diagram**

**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

<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 (1 DPST)</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgSn02</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 10⁷ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10⁷ 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 88 x 60 mm

**Weight**
43 g

**Operating temperature range**
-20 °C to +55 °C

**Storage temperature range**
-25 °C to +70 °C

**Ingress protection of the housing**
IP20

**Wiring/Circuit diagram**

**P/N**
11070813

**Color**
green

**Feature 1**
24 V AC/DC

**Feature 2**
1 DPST

**EAN**
4250184123118

**P/N**
11071013

**Color**
green

**Feature 1**
24 V AC/DC

**Feature 2**
1 DPST

**EAN**
4250184123132
**Interface modules** | **Electromechanic Coupling Modules**

**KRA-F10/21-21**

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

- **Operating voltage:** 24 V AC/DC
- **Current consumption:** approx. 13 mA
- **Outputs / contact:** 2 changeover contacts (2 DPST)
- **Output / contact material:** AgSnO2
- **Output / switching voltage:** 250 V AC/DC
- **Output / continuous current:** 2 A
- **Output / switching frequency:** 300 cycles/h
- **Response time:** approx. 10 ms
- **Release time:** approx. 5 ms
- **Mechanical endurance:** 2 x 10^7 switching cycles
- **Electrical endurance:** 1 x 10^7 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 88 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**

```
A1 - A2
A1
A1 | A2
11 21
A1 | A2
11 21
21 22 - 24
2 changeover contacts

A1 - A2
A1
A1 | A2
11 21
A1 | A2
11 21
21 22 - 24
2 changeover contacts
```

**P/N** | **Color** | **Feature 1** | **Feature 2** | **EAN**
--- | --- | --- | --- | ---
11070213 | green | 24 V AC/DC | 2 DPST | 4250184123088

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

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

- **Operating voltage (AC/DC):** 24 V AC/DC
- **Power consumption:** 24 V AC/DC approx. 13 mA
- **Output / contacts:** 2 changeover contacts (2 DPST)
- **Output / contact material:** AgPdAu
- **Output / switching voltage:** 250 V AC/DC
- **Output / continuous current:** 2 A
- **Output / switching frequency:** 300 cycles/h
- **Response time:** approx. 10 ms
- **Release time:** approx. 5 ms
- **Mechanical endurance:** 2 x 10^7 switching cycles
- **Electrical endurance:** 1 x 10^7 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 88 x 60 mm
- **Weight:** 43 g
- **Operating temperature range:** -20 °C to +55 °C
- **Storage temperature range:** -25 °C to +70 °C
- **Ingress protection:** IP20

**Wiring/Circuit diagram**

```
A1 - A2
A1
A1 | A2
11 21
A1 | A2
11 21
21 22 - 24
2 changeover contacts

A1 - A2
A1
A1 | A2
11 21
A1 | A2
11 21
21 22 - 24
2 changeover contacts
```

**P/N** | **Color** | **Feature 1** | **Feature 2** | **EAN**
--- | --- | --- | --- | ---
11070713 | green | 24 V AC/DC | 2 DPST | 4250184123101
**Interface modules** | **Electromechanic Coupling Modules**

**KRA-M4/1 LC**
Coupling devices are used to secure electrical isolation between logic and load.

- Connection with screw-type terminals
- Safe separation

- Operating voltage (AC/DC): 24 V AC/DC
- Power consumption: 24 V AC/DC 13 mA
- Output / contact: 1 SPST-NO
- Output / contact material: AgNi
- 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: \(2 \times 10^5\) switching cycles
- Electrical endurance: \(1 \times 10^5\) switching cycles
- Cross-section: 2.5 mm²
- Display: Red LED

- Dimensions (W x H x D): 12.2 x 61.4 x 26.2 mm
- Weight: 40 g
- Operating temperature range: -20 °C to +55 °C
- Storage temperature range: -25 °C to +70 °C

**KRA-M4/1 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 SPST-NO
- Output / contact material: AgNi
- 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: \(2 \times 10^5\) switching cycles
- Electrical endurance: \(1 \times 10^5\) switching cycles
- Cross-section: 2.5 mm²
- Display: Red LED

- Dimensions (W x H x D): 11.2 x 60 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** | **EAN**
---|---|---|---|---
11065013 | green | 24 V AC/DC | 1 SPST-NO | 4250184122845

**Page**

- Matching accessory for KRA-M4/1 LC: Page 140
- Labeling plate white: Page 140
- Connecting bridge, 10 pole: Page 139
- Matching accessory for KRA-M4/1 24 V AC/DC: Page 139
- Labeling plate white: Page 140
- Connecting bridge, 10 pole: Page 139
Interface modules | Electromechanic Coupling Modules

Matching accessory for KRA-M4/1 24 V DC
Labeling plate white 140
Connecting bridge, 10 pole 139

Matching accessory for KRA-M4/1 230 V AC
Labeling plate white 140
Connecting bridge, 10 pole 139

KRA-M4/1 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 SPST-NO
Output / contact material AgNi
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 2 x 10⁷ switching cycles
Electrical endurance 1 x 10⁷ switching cycles
Cross-section 2.5 mm²
Display Red LED
Dimensions (W x H x D) 11.2 x 60 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

KRA-M4/1 230 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 SPST-NO
Output / contact material AgNi
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 2 x 10⁷ switching cycles
Electrical endurance 1 x 10⁷ switching cycles
Cross-section 2.5 mm²
Display Red LED
Dimensions (W x H x D) 11.2 x 60 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 EAN
11061325 green 24 V DC 1 SPST-NO 4250184122609

P/N Color Feature 1 Feature 2 EAN
11061305 green 230 V AC 1 SPST-NO 4250184122586

Control cabinet components
Interface modules | Electromechanic Coupling Modules

KRA-M6/1-1 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

Operating voltage 24 V AC/DC
Current consumption 20 mA
Output / contacts 2 SPST-NO
Output / contact material AgPd + 5 μ Au
Output / switching voltage 250 V AC/DC
Output / continuous current 1.5 A
Output / switch-on current 2 A
Output / switching frequency 360 cycles/h
Response time 10 ms
Release time 15 ms
Mechanical endurance 2 x 10⁶ switching cycles
Electrical endurance 2 x 10⁶ switching cycles
Cross-section 2.5 mm²
Display Red LED

Dimensions (W x H x D) 11.2 x 60 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-M6/1-1 230 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

Operating voltage 230 V AC
Current consumption 5 mA
Output / contacts 2 SPST-NO
Output / contact material AgPd + 5 μ Au
Output / switching voltage 250 V AC/DC
Output / continuous current 1.5 A
Output / switch-on current 2 A
Output / switching frequency 360 cycles/h
Response time 10 ms
Release time 15 ms
Mechanical endurance 2 x 10⁶ switching cycles
Electrical endurance 2 x 10⁶ switching cycles
Cross-section 2.5 mm²
Display Red LED

Dimensions (W x H x D) 11.2 x 60 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

P/N Color Feature 1 Feature 2 EAN
11061613 green 24 V AC/DC 2 SPST-NO 4250184122678

P/N Color Feature 1 Feature 2 EAN
11061605 green 230 V AC 2 SPST-NO 4250184122661

Wiring/Circuit diagram
Coupling devices are used to secure electrical isolation between logic and load.

- Connection with screw-type terminals
- Closed compact series
- Integrated protective circuit

**KRA-M6/1-2 24 V AC/DC**

- Operating voltage: 24 V AC/DC
- Current consumption: 20 mA
- Output / contacts: 1 SPST-NO
- Output / contacts: 1 SPST-NC
- Output / contact material: AgPd + 5 μ Au
- Output / switching voltage: 250 V AC/DC
- Output / continuous current: 1.5 A
- Output / switch-on current: 2 A
- Output / switching frequency: 360 cycles/h
- Response time: 10 ms
- Release time AC: 15 ms
- Release time DC: 5 ms
- Mechanical endurance: 2 x 10⁷ switching cycles
- Electrical endurance: 2 x 10⁷ switching cycles
- Cross-section: 2.5 mm²
- Display: Red LED
- Dimensions (W x H x D): 11.2 x 60 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-M6/1-2 230 V AC**

- Operating voltage: 230 V AC
- Current consumption: 5 mA
- Output / contacts: 1 SPST-NO
- Output / contacts: 1 SPST-NC
- Output / contact material: AgPd + 5 μ Au
- Output / switching voltage: 250 V AC/DC
- Output / continuous current: 1.5 A
- Output / switch-on current: 2 A
- Output / switching frequency: 360 cycles/h
- Response time: 10 ms
- Release time AC: 15 ms
- Release time DC: 5 ms
- Mechanical endurance: 2 x 10⁷ switching cycles
- Electrical endurance: 2 x 10⁷ switching cycles
- Cross-section: 2.5 mm²
- Display: Red LED
- Dimensions (W x H x D): 11.2 x 60 x 60 mm
- Weight: 45 g
- Operating temperature range: -20 °C to +55 °C
- Storage temperature range: -25 °C to +70 °C
- Ingress protection for housing / terminal block: IP40 / IP20

**Wiring/Circuit diagram**

A1 - A2
18 - 14
21 - 22
output contact
1 NO contact
1 NC contact

A1 - A3
18 - 14
21 - 23
output contact
1 NO contact
1 NC contact
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

**KRA-M6/21 AC/DC**

- Operating voltage: 12 V or 24 V AC/DC
- Power consumption: 20 mA
- Power consumption: 13 mA
- Output / contacts: 1 changeover contact (1 DPST)
- Output / contact material: AgNi
- 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: 2 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 60 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-M6/21 24 V DC**

- Operating voltage: 24 V DC
- Current consumption: 13 mA
- Output / contacts: 1 changeover contact (1 DPST)
- Output / contact material: AgNi
- 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: 2 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 60 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-M6/21 230 V AC
Coupling devices are used to secure electrical isolation between logic and load.
- Connection with screw-type terminals
- Closed compact series
- Integrated protective circuit
- Safe separation

- Operating voltage: 230 V AC
- Current consumption: 5 mA
- Output / contacts: 1 changeover contact (1 DPST)
- Output / contact material: AgNi
- 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: 2 x 10⁷ switching cycles
- Electrical endurance: 1 x 10⁷ switching cycles
- Cross-section: 2.5 mm²
- Display: Red LED

- Dimensions (W x H x D): 11.2 x 60 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-S-M6/21
Coupling devices are used to secure electrical isolation between logic and load.
- Connection with screw-type terminals
- Closed compact series
- Integrated protective circuit

- Operating voltage (AC/DC): 24 V AC/DC
- Power consumption: 24 V AC/DC 13 mA
- Output / contacts: 1 changeover contact (1 DPST)
- Output / contact material: AgNi
- 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: 2 x 10⁷ switching cycles
- Electrical endurance: 1 x 10⁷ switching cycles
- Cross-section: 2.5 mm²
- Display: Red LED

- Dimensions (W x H x D): 11.2 x 60 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
KRA-SR-M8/21
Coupling devices are used to secure electrical isolation between logic and load.

- Connection with screw-type terminals
- Closed compact series
- Integrated protective circuit

Operating voltage (AC/DC) 24 V AC/DC
Power consumption: 24 V AC/DC 13 mA
Output / contacts 1 changeover contact (1 DPST)
Output / contact material AgNi
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 2 x 10⁷ switching cycles
Electrical endurance 1 x 10⁹ switching cycles
Cross-section 2.5 mm²
Display Red LED

Dimensions (W x H x D) 11.2 x 60 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 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

Operating voltage 12 V or 24 V AC/DC
Current consumption 20 mA
Output / contacts 2 changeover contacts (2 DPST)
Output / contact material AgPd + 5 μ Au
Output / switching voltage 250 V AC/DC
Output / continuous current 1.5 A
Output / switch-on current 2 A
Output / switching frequency 360 cycles/h
Response time 10 ms
Release time AC 15 ms
Release time DC 5 ms
Mechanical endurance 2 x 10⁷ switching cycles
Electrical endurance 1 x 10⁹ switching cycles
Cross-section 2.5 mm²
Display Red LED

Dimensions (W x H x D) 11.2 x 60 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
Interface modules | Electromechanic Coupling Modules

Matching accessory for KRA-M8/21-21 24 V DC
Labeling plate white 140
Connecting bridge, 10 pole 139

Matching accessory for KRA-M8/21-21 230 V AC
Labeling plate white 140
Connecting bridge, 10 pole 139

KRA-M8/21-21 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

Operating voltage 24 V DC
Current consumption 17 mA
Output / contacts 2 changeover contacts (2 DPST)
Output / contact material AgPd + 5 μ Au
Output / switching voltage 250 V AC/DC
Output / continuous current 1.5 A
Output / switch-on current 2 A
Output / switching frequency 360 cycles/h
Response time 10 ms
Release time AC 15 ms
Release time DC 5 ms
Mechanical endurance 2 x 10^7 switching cycles
Electrical endurance 1 x 10^6 switching cycles
Cross-section 2.5 mm²
Display Red LED

Dimensions (W x H x D) 11.2 x 60 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

KRA-M8/21-21 230 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

Operating voltage 230 V AC
Current consumption 5 mA
Output / contacts 2 changeover contacts (2 DPST)
Output / contact material AgPd + 5 μ Au
Output / switching voltage 250 V AC/DC
Output / continuous current 1.5 A
Output / switch-on current 2 A
Output / switching frequency 360 cycles/h
Response time 10 ms
Release time AC 15 ms
Release time DC 5 ms
Mechanical endurance 2 x 10^7 switching cycles
Electrical endurance 1 x 10^6 switching cycles
Cross-section 2.5 mm²
Display Red LED

Dimensions (W x H x D) 11.2 x 60 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
KRA-S12/21-21-21
Coupling devices are used to secure electrical isolation between logic and load.
- Connection with screw-type terminals

Operating voltage (AC/DC) 24 V AC/DC
Power consumption: 24 V AC/DC 50 mA
Output / contacts 3 changeover contacts (3 DPST)
Output / contact material AgNi
Output / switching voltage 250 V AC/DC
Output / continuous current 6 A
Output / switch-on current 8 A
Output / switching frequency 360 cycles/h
Response time 10 ms
Release time 5 ms
Mechanical endurance $2 \times 10^7$ switching cycles
Electrical endurance $1 \times 10^9$ switching cycles
Cross-section 2.5 mm²
Display Red LED

Dimensions (W x H x D) 22.5 x 75 x 100 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

RM21 24 V DC
Relay modules are used to secure 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 1 changeover contact (1 DPST)
Output / contact material AgNi 90/10
Output / switching voltage 250 V AC
Output / continuous current 12 A
Output / switching frequency 360 cycles/h
Mechanical endurance $1 \times 10^9$ switching cycles
Electrical endurance $1 \times 10^9$ 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

P/N Color Feature 1 Feature 2 EAN
11060913 green 24 V AC/DC 3 DPST 4250184122555

P/N Color Feature 1 Feature 2 EAN
11050625 black 24 V DC 1 DPST 4250184122241

| Wiring/Circuit diagram | Wiring/Circuit diagram |
Interface modules | Electromechanic Coupling Modules

**RM21 AC**

Relay modules are used to secure electrical isolation between logic and load.

- Connection with screw-type terminals
- Pluggable relay
- With labeling field

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage (AC/DC)</td>
<td>24 V or 230 V AC</td>
</tr>
<tr>
<td>Current consumption (24 V AC)</td>
<td>32 mA</td>
</tr>
<tr>
<td>Current consumption (230 V AC)</td>
<td>3.3 mA</td>
</tr>
<tr>
<td>Output / contacts</td>
<td>1 changeover contact (1 DPST)</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>12 A</td>
</tr>
<tr>
<td>Output / switching frequency</td>
<td>360 cycles/h</td>
</tr>
<tr>
<td>Mechanical endurance</td>
<td>1 x 10^4 switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10^4 switching cycles</td>
</tr>
<tr>
<td>Cross-section</td>
<td>2 x 2.5 mm²</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

---

**RM21-21 24 V DC**

Relay modules are used to secure electrical isolation between logic and load.

- Connection with screw-type terminals
- Pluggable relay
- With labeling field

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage (DC)</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 (2 DPST)</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 x 10^4 switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10^4 switching cycles</td>
</tr>
<tr>
<td>Cross-section</td>
<td>2 x 2.5 mm²</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**

**RM21 AC**

- **A1 - A2**
  - Operating voltage: 230 V AC
  - Output contact: 1 changeover

**RM21-21 24 V DC**

- **A1 - A2**
  - Operating voltage: 24 V DC
  - Output contacts: 2 changeover contacts

**Matching accessory**

- **for RM21 AC**
  - RC Module 230 V AC
  - RC Module 24 V AC

- **for RM21-21 24 V DC**
  - RC Module 230 V AC
  - RC Module 24 V AC
### Interface modules | Electromechanic Coupling Modules

**RM21-21 AC**

Relay modules are used to secure electrical isolation between logic and load.

- Connection with screw-type terminals
- Pluggable relay
- With labeling field

<table>
<thead>
<tr>
<th>Operating voltage AC</th>
<th>24 V or 230 V AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption 24 V AC</td>
<td>32 mA</td>
</tr>
<tr>
<td>Current consumption 230 V AC</td>
<td>3.3 mA</td>
</tr>
<tr>
<td>Output / contacts</td>
<td>2 changeover contacts (2 DPST)</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 x 10⁶ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10⁶ switching cycles</td>
</tr>
<tr>
<td>Cross-section</td>
<td>2 x 2.5 mm²</td>
</tr>
<tr>
<td>Display</td>
<td>Red LED</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>15.5 x 75 x 65 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>95 g</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-20 °C to +55 °C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-25 °C to +70 °C</td>
</tr>
</tbody>
</table>

**RM3-2W 24 V DC**

Relay modules are used to secure electrical isolation between logic and load.

- Connection with screw-type terminals
- Pluggable relay
- With labeling field

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>24 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption</td>
<td>17 mA</td>
</tr>
<tr>
<td>Output / contacts</td>
<td>2 changeover contacts (2 DPST)</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgNi</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 x 10⁶ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10⁶ switching cycles</td>
</tr>
<tr>
<td>Cross-section</td>
<td>2 x 2.5 mm²</td>
</tr>
<tr>
<td>Display</td>
<td>Red LED</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>15.5 x 75 x 65 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>95 g</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-20 °C to +55 °C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-25 °C to +70 °C</td>
</tr>
</tbody>
</table>

### Wiring/Circuit diagram

**Wiring/Circuit diagram for RM21-21 AC**

- A1 - A2
- Operating voltage
- 11 - 12 - 14
- 21 - 32 - 34
- Output contacts
- 2 changeover contacts

**Wiring/Circuit diagram for RM3-2W 24 V DC**

- A1 - A2
- Operating voltage
- 11 - 12 - 14
- 31 - 23 - 24
- Output contacts
- 2 changeover contacts

### P/N

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>11050705</td>
<td>black</td>
<td>230 V AC</td>
<td>2 DPST</td>
<td>4250184122258</td>
</tr>
<tr>
<td>11050710</td>
<td>black</td>
<td>24 V AC</td>
<td>2 DPST</td>
<td>4250184122265</td>
</tr>
<tr>
<td>11051025</td>
<td>black</td>
<td>24 V DC</td>
<td>2 DPST</td>
<td>4250184122233</td>
</tr>
</tbody>
</table>
Interface modules | Electromechanic Coupling Modules

RM3-2W AC
Relay modules are used to secure electrical isolation between logic and load.

- Connection with screw-type terminals
- Pluggable relay
- With labeling field

<table>
<thead>
<tr>
<th>Operating voltage AC</th>
<th>24 V or 230 V AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption 24 V AC</td>
<td>32 mA</td>
</tr>
<tr>
<td>Current consumption 230 V AC</td>
<td>3.3 mA</td>
</tr>
<tr>
<td>Output / contacts</td>
<td>2 changeover contacts (2 DPST)</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgNi</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 x 10⁶ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10⁶ switching cycles</td>
</tr>
<tr>
<td>Cross-section</td>
<td>2 x 2.5 mm²</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
**KRE-M4/1 DC**

Transistor couplers are used for switching DC loads.

- Connection with screw-type terminals
- Protective diode

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input / operating voltage</td>
<td>24 V DC</td>
</tr>
<tr>
<td>Input / power consumption</td>
<td>10 mA</td>
</tr>
<tr>
<td>Output / switching voltage</td>
<td>4 to 48 V DC</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>0.8 A</td>
</tr>
<tr>
<td>Output / current pulse</td>
<td>2 A / 1 s</td>
</tr>
<tr>
<td>Cross-section</td>
<td>2.5 mm</td>
</tr>
<tr>
<td>Display</td>
<td>Green LED</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>11.2 x 60 x 43 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>35 g</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>0 °C to +50 °C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-10 °C to +70 °C</td>
</tr>
<tr>
<td>Ingress protection for housing</td>
<td>IP40 / IP20</td>
</tr>
</tbody>
</table>

**KRE-M4/1 AC**

Triac couplers are used for switching AC loads.

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input / operating voltage</td>
<td>24 V DC</td>
</tr>
<tr>
<td>Input / power consumption</td>
<td>10 mA</td>
</tr>
<tr>
<td>Output / switching voltage</td>
<td>26 to 250 V AC</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>0.8 A</td>
</tr>
<tr>
<td>Output / current pulse</td>
<td>2 A / 1 s</td>
</tr>
<tr>
<td>Cross-section</td>
<td>2.5 mm²</td>
</tr>
<tr>
<td>Display</td>
<td>Green LED</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>11.2 x 60 x 43 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>35 g</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>0 °C to +50 °C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-10 °C to +70 °C</td>
</tr>
<tr>
<td>Ingress protection for housing</td>
<td>IP40 / IP20</td>
</tr>
</tbody>
</table>
KMA-F8

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

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

<table>
<thead>
<tr>
<th>Input / operating voltage</th>
<th>24 V AC/DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input / power consumption AC</td>
<td>30 mA</td>
</tr>
<tr>
<td>Input / power consumption DC</td>
<td>19 mA</td>
</tr>
<tr>
<td>Input / voltage</td>
<td>0 V to 10 V DC</td>
</tr>
<tr>
<td>Output / voltage</td>
<td>0 V to 10 V DC</td>
</tr>
<tr>
<td>Display</td>
<td>Red LED</td>
</tr>
</tbody>
</table>

Dimensions (W x H x D) | 11.2 x 88 x 60 mm
Weight | 43 g
Operating temperature range | -5 °C to +55 °C
Storage temperature range | -20 °C to +70 °C
Ingress protection for housing / terminal block | IP40 / IP20

KMAi-F8

The analog encoder KMAi-F8 is used as encoder for manual control variable definition, e.g. mixing valves, valve positions, temperature values, etc. The module can be operated in three modes, which can be commuted by means of integrated three-level switches (ON, OFF, automatic). The switch position is signalized by external control contact terminals B1 and B2. The control variable can be set on the potentiometer at the front. If the switch is in “AUTO” position, the control variable is looped through over the YR terminal to the Y output without change.

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

<table>
<thead>
<tr>
<th>Input / operating voltage</th>
<th>24 V AC/DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input / power consumption AC</td>
<td>30 mA</td>
</tr>
<tr>
<td>Input / power consumption DC</td>
<td>19 mA</td>
</tr>
<tr>
<td>Input / voltage</td>
<td>0 V to 20 mA DC</td>
</tr>
<tr>
<td>Output / voltage</td>
<td>0 V to 20 mA DC</td>
</tr>
<tr>
<td>Display</td>
<td>Red LED</td>
</tr>
</tbody>
</table>

Dimensions (W x H x D) | 11.2 x 88 x 60 mm
Weight | 43 g
Operating temperature range | -5 °C to +55 °C
Storage temperature range | -20 °C to +70 °C
Ingress protection for housing / terminal block | IP40 / IP20

P/N | Color | Feature 1 | Feature 2 | EAN
---|------|----------|----------|------
110730 | green | 24 V AC/DC | 0 - 10 V | 4250184123224
110731 | green | 24 V AC/DC | 0 - 20 mA | 4250184123231

Control cabinet components
**KMA-E08**

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

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

<table>
<thead>
<tr>
<th>Input / operating voltage</th>
<th>24 V AC/DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input / power consumption AC</td>
<td>24 mA</td>
</tr>
<tr>
<td>Input / power consumption DC</td>
<td>19 mA</td>
</tr>
<tr>
<td>Input / voltage</td>
<td>0 V to 10 V DC</td>
</tr>
<tr>
<td>Output / voltage</td>
<td>0 V to 10 V DC</td>
</tr>
<tr>
<td>Display</td>
<td>Red LED</td>
</tr>
</tbody>
</table>

Dimensions (W x H x D) | 22.5 x 60 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 |

---

**KMAi-E08**

The analog encoder is used as encoder for manual control variable definition, e.g. mixing valves, valve positions, temperature values, etc. The module can be operated in two modes, which can be commuted by means of integrated two-level switches (manual, automatic). The switch position is signalized by external control contact terminals S1 and S2. The control variable can be set on the potentiometer at the front. The output signal 0 to 20 mA is available on the Y terminal. The control variable is looped through over the YR terminal to the Y output without change.

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

<table>
<thead>
<tr>
<th>Input / operating voltage</th>
<th>24 V AC/DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input / power consumption AC</td>
<td>50 mA</td>
</tr>
<tr>
<td>Input / power consumption DC</td>
<td>30 mA</td>
</tr>
<tr>
<td>Input / current</td>
<td>0 V to 20 mA DC</td>
</tr>
<tr>
<td>Output / current</td>
<td>0 V to 20 mA DC</td>
</tr>
<tr>
<td>Display</td>
<td>Red LED</td>
</tr>
</tbody>
</table>

Dimensions (W x H x D) | 22.5 x 60 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 |
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
- Test contacts for each terminal

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>250 V AC/DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total current</td>
<td>16 A AC/DC</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>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions (W x H x D)</th>
<th>11.2 x 88 x 60 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>30 g</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-20 °C to +55 °C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-25 °C to +70 °C</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP20</td>
</tr>
</tbody>
</table>

### Wiring/Circuit diagram

![Wiring diagram](image)

### Table

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>110720</td>
<td>green</td>
<td>250 V AC/DC</td>
<td></td>
<td>4250184123187</td>
</tr>
</tbody>
</table>

...
**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 (1 DPST)
Output / contact material: AgNi
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 10⁵ switching cycles
Cross-section: 2.5 mm²
Display: 2 red LEDs
Dimensions (W x H x D): 22.5 x 60 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

**KRZ-E08/HR2**

The coupling module is designed for three-point 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 (1 DPST)
Output / contact material: AgNi
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 10⁵ switching cycles
Cross-section: 2.5 mm²
Display: 2 red LEDs
Dimensions (W x H x D): 22.5 x 60 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

---

**P/N** | **Color** | **Feature 1** | **Feature 2** | **EAN**
--- | --- | --- | --- | ---
110668132722 | green | switchover | 0-1-2 | 4250184122982

---

**P/N** | **Color** | **Feature 1** | **Feature 2** | **EAN**
--- | --- | --- | --- | ---
110676132722 | green | switchover | 1-0-2 | 4250184123057

---

**Interface modules**

Motor control (two-stage + three-stage)
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

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>24 V AC/DC, 230 V AC/DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power consumption</td>
<td>24 V AC/DC 20 mA</td>
</tr>
<tr>
<td>Power consumption</td>
<td>230 V AC/DC 20 mA</td>
</tr>
<tr>
<td>Output / contact</td>
<td>1 changeover contact (1 DPST)</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgNi</td>
</tr>
<tr>
<td>Output / switching voltage</td>
<td>250 V</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>4 A</td>
</tr>
<tr>
<td>Output / switching frequency</td>
<td>1200 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 10⁷ switching cycles</td>
</tr>
<tr>
<td>Cross-section</td>
<td>2.5 mm²</td>
</tr>
</tbody>
</table>

| Dimensions (W x H x D) | 22.5 x 60 x 60 mm |
| Weight | 70 g |
| Operating temperature range | -10 °C to +55 °C |
| Storage temperature range | -25 °C to +70 °C |

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.

- Acknowledge horn output
- Connection with screw-type terminals

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>24 V AC/DC, 230 V AC/DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption</td>
<td>less than 60 mA</td>
</tr>
<tr>
<td>Output / contact</td>
<td>3 relay outputs</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgNi</td>
</tr>
<tr>
<td>Output / switching voltage</td>
<td>250 V</td>
</tr>
<tr>
<td>Output / continuous current</td>
<td>4 A</td>
</tr>
<tr>
<td>Output / switching frequency</td>
<td>360 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 10⁷ switching cycles</td>
</tr>
<tr>
<td>Cross-section</td>
<td>2.5 mm²</td>
</tr>
<tr>
<td>Display</td>
<td>Yellow LED</td>
</tr>
</tbody>
</table>

| Dimensions (W x H x D) | 35 x 68 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:

- 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: greater than or equal to 3.5 A

Dimensions (W x H x D): 22.5 x 60 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>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>110280</td>
<td>green</td>
<td></td>
<td></td>
<td>4250184121022</td>
</tr>
</tbody>
</table>
KRS-E06 - manual control

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

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>24 V AC/DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption</td>
<td>80 mA</td>
</tr>
<tr>
<td>Current consumption 24 V AC</td>
<td>16 mA</td>
</tr>
<tr>
<td>Threshold voltage</td>
<td>3.0 V DC</td>
</tr>
<tr>
<td>Switch-off voltage</td>
<td>2.5 V DC</td>
</tr>
<tr>
<td>Output / voltage</td>
<td>250 V AC</td>
</tr>
<tr>
<td>Output / contact</td>
<td>1 changeover contact (1 DPST)</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgNi</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 10^7 switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10^7 switching cycles</td>
</tr>
<tr>
<td>Display</td>
<td>Yellow LED</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>17.5 x 60 x 60 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>70 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>

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

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>24 V AC/DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption</td>
<td>80 mA</td>
</tr>
<tr>
<td>Current consumption 24 V AC</td>
<td>16 mA</td>
</tr>
<tr>
<td>Threshold voltage</td>
<td>3.0 V DC</td>
</tr>
<tr>
<td>Switch-off voltage</td>
<td>2.5 V DC</td>
</tr>
<tr>
<td>Output / voltage</td>
<td>250 V AC</td>
</tr>
<tr>
<td>Output / contact</td>
<td>1 changeover contact (1 DPST)</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgNi</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 10^7 switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10^7 switching cycles</td>
</tr>
<tr>
<td>Display</td>
<td>Yellow LED</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>17.5 x 60 x 60 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>70 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>
**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

<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/DC</td>
</tr>
<tr>
<td>80 mA</td>
<td></td>
</tr>
<tr>
<td>Current consumption</td>
<td>16 mA</td>
</tr>
<tr>
<td>Threshold voltage</td>
<td>3.0 V DC</td>
</tr>
<tr>
<td>Switch-off voltage</td>
<td>2.5 V DC</td>
</tr>
<tr>
<td>Output / voltage</td>
<td>250 V AC</td>
</tr>
<tr>
<td>Output / contact</td>
<td>1 changeover contact</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgNi</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 10⁶ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10⁶ switching cycles</td>
</tr>
<tr>
<td>Display</td>
<td>Yellow LED</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>22.5 x 60 x 60 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>70 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>

**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

<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/DC</td>
</tr>
<tr>
<td>80 mA</td>
<td></td>
</tr>
<tr>
<td>Current consumption</td>
<td>20 mA</td>
</tr>
<tr>
<td>Threshold voltage</td>
<td>1 to 10 V DC</td>
</tr>
<tr>
<td>Adjustable hysteresis</td>
<td>5 to 75 %</td>
</tr>
<tr>
<td>Switch-off voltage</td>
<td>2.5 V DC</td>
</tr>
<tr>
<td>Output / voltage</td>
<td>250 V AC</td>
</tr>
<tr>
<td>Output / contact</td>
<td>1 changeover contact</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgNi</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 10⁶ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10⁶ switching cycles</td>
</tr>
<tr>
<td>Display</td>
<td>Green LED</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>22.5 x 60 x 60 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>70 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>
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: 100 mA
Current consumption 24 V AC: 35 mA
Output / voltage: 250 V AC
Output / contact: 1 changeover contact
(1 DPST)
Output / material: AgNi
Output / current: 4 A
Output / switching frequency: 1200 cycles/h
Mechanical endurance: 1 x 10^7 switching cycles
Electrical endurance: 1 x 10^9 switching cycles
Display: Yellow and red LED
Dimensions (W x H x D): 22.5 x 60 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>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>110673</td>
<td>green</td>
<td>2.5 V, 7 V off</td>
<td>3 V, 7.5 V on</td>
<td>4250184123002</td>
</tr>
</tbody>
</table>

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 = 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: 100 mA
Current consumption 24 V AC: 35 mA
Output / voltage: 250 V AC
Output / contact: 2 levels with 0 position
Output / material: AgNi
Output / current: 4 A
Output / switching frequency: 1200 cycles/h
Mechanical endurance: 1 x 10^7 switching cycles
Electrical endurance: 1 x 10^9 switching cycles
Display: Yellow and red LED
Dimensions (W x H x D): 22.5 x 60 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>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>110672</td>
<td>green</td>
<td>2.5 V, 7 V off</td>
<td>3 V, 7.5 V on</td>
<td>4250184122999</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
Output / contact material AgNi
Output / continuous current 4 A
Output / switching frequency 1200 cycles/h
Mechanical endurance 1 x 10^7 switching cycles
Electrical endurance 1 x 10^7 switching cycles
Display Yellow and red LED

Dimensions (W x H x D) 22.5 x 60 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

---

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 (3PST) 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
Output / contact material AgNi
Output / continuous current 4 A
Output / switching frequency 360 cycles/h
Mechanical endurance 1 x 10^7 switching cycles
Electrical endurance 1 x 10^7 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
PT-C12 / PTi-C12
The potential divider is used for dividing analog signals in a range from 0 to 10 V DC or 0 to 20 mA. The input and output signals and the supply are mutually isolated. An input signal (0 to 10 V DC or 0 to 20 mA) can be applied optionally to the potential divider. Independently of the type of signal on the input, a voltage of 0 to 10 V DC or a current of 0 to 20 mA can be measured on the output proportionally to the input signal. In addition, a manual emergency operation level with checkback is integrated. A fix 10 V DC signal can be scanned for anti-frost or similar equipment. An external signal (0 to 10 V DC) can be applied to the LED control input Y. Without external signal, the proportional output signal can be indicated by means of the integrated LED by connecting a bridge between Ua and Y. If a voltage signal is used on input and output, use PT-C12. If a current signal is used on input and output, use PTi-C12.

- Operating voltage: 24 V AC/DC
- Test voltage / separation: 1000 V DC
- Input / voltage: 0 V to 10 V DC
- Input / current: 0 V 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 68 x 60 mm
- Weight: 78 g
- Operating temperature range: 0 °C to +55 °C
- Storage temperature range: -20 °C to +70 °C
- Ingress protection for housing / terminal block: IP40 / IP20

Wiring/Circuit diagram

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
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</thead>
<tbody>
<tr>
<td>110501</td>
<td>green</td>
<td>24 V AC/DC voltage balanced</td>
<td></td>
<td>4250184122173</td>
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<tr>
<td>11050108</td>
<td>green</td>
<td>24 V AC/DC current balanced</td>
<td></td>
<td>4250184122180</td>
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</table>

PT-C12 230 / PTi-C12 230
The potential divider is used for dividing analog signals in a range from 0 to 10 V DC or 0 to 20 mA. The input and output signals and the supply are mutually isolated. An input signal (0 to 10 V DC or 0 to 20 mA) can be applied optionally to the potential divider. Independently of the type of signal on the input, a voltage of 0 to 10 V DC or a current of 0 to 20 mA can be measured on the output proportionally to the input signal. In addition, a manual emergency operation level with checkback is integrated. A fix 10 V DC signal can be scanned for anti-frost or similar equipment. If a voltage signal is used on input and output, use PT-C12, 230. If a current signal is used on input and output, use PTi-C12, 230.

- Operating voltage: 230 V AC
- Test voltage / separation: 1000 V DC
- Input / voltage: 0 V to 10 V DC
- Input / current: 0 V 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 68 x 60 mm
- Weight: 78 g
- Operating temperature range: 0 °C to +55 °C
- Storage temperature range: -20 °C to +70 °C
- Ingress protection for housing / terminal block: IP40 / IP20

Wiring/Principle diagram

<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>110502</td>
<td>green</td>
<td>230 V AC voltage balanced</td>
<td></td>
<td>4250184122197</td>
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<tr>
<td>11050208</td>
<td>green</td>
<td>230 V AC current balanced</td>
<td></td>
<td>4250184122203</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 connected to digital/analog converter terminals.

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

**Performance Specifications**

- **Operating voltage**: 24 V AC/DC
- **Current consumption**: 60 mA
- **Current consumption (24 V DC)**: 50 mA
- **Input / voltage**: 0 to 10 V
- **Input / scanning**: 0.5 V steps
- **Output / voltage**: 0 V to 7.5 V DC
- **Display**: Yellow LED

**Dimensions (W x H x D)**: 35 x 68 x 65 mm

**Weight**: 30 g

**Operating temperature range**: -10 °C to +50 °C

**Storage temperature range**: -25 °C to +70 °C

**Ingress protection for housing / terminal block**: IP40 / IP20

---

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 signaled by means of an LED.

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

**Performance Specifications**

- **Operating voltage**: 24 V AC
- **Current consumption**: 35 mA
- **Current consumption (24 V DC)**: 16 mA
- **Input / voltage**: 0 to 10 V
- **Input / scanning**: 0.5 V steps
- **Output / voltage**: up to 40 V AC/DC
- **Output / power consumption**: max. 100 mA / channel
- **Display**: Green and yellow LED

**Dimensions (W x H x D)**: 35 x 68 x 65 mm

**Weight**: 30 g

**Operating temperature range**: -10 °C to +50 °C

**Storage temperature range**: -25 °C to +70 °C

**Ingress protection for housing / terminal block**: IP40 / IP20

---

**Wiring/Circuit Diagram**

- **A1 - A2**: V 1 1 S1
- **A1**: operating voltage 24 V AC/DC
- **V**: +
- **A2**: analog output S1... S4 +
- **L**: digital input

**Wiring/Circuit Diagram**

- **A1 - A2**: V 1 1 S1
- **A1**: operating voltage 24 V AC/DC
- **V**: +
- **A2**: analog output S1... S4 +
- **L**: digital input

**P/N Color**

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<tr>
<th>P/N</th>
<th>Color</th>
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<th>EAN</th>
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<td>4 x D/A converter</td>
<td>- 7.5 V output</td>
<td>4250184122869</td>
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**P/N Color**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>110656</td>
<td>green</td>
<td>4 x A/D converter</td>
<td>0 - 7.5 V output</td>
<td>4250184121985</td>
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</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>Feature</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>greater 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 60 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>Feature</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>greater 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 60 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>
**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**

<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>greater 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 60 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>

**KD-S12/11K**

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 (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>greater than or equal to 3.2 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>22.5 x 75 x 100 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>

### Wiring/Circuit diagram

#### KD-M8/7A

![Wiring diagram for KD-M8/7A](image)

#### KD-S12/11K

![Wiring diagram for KD-S12/11K](image)

### P/N | Color  | Feature 1       | Feature 2       | EAN               |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>110640</td>
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<td>common anode</td>
<td>7 diodes</td>
<td>4250184122814</td>
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</table>

### P/N | Color  | Feature 1       | Feature 2       | EAN               |
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<thead>
<tr>
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<tbody>
<tr>
<td>110629</td>
<td>green</td>
<td>common cathode</td>
<td>11 diodes</td>
<td>4250184122760</td>
</tr>
</tbody>
</table>
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: greater 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 100 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
RTM-C12
The timer relay is used for pulse prolongation. When the control contact is closed min. 5 ms, the relay is activated and releases after the adjusted pulse time has lapsed. Further control pulses during the pulse time do not have any effect.

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

Operating voltage: 24 V AC/DC
Current consumption: less than or equal to 15 mA
Continuous current: 8 A
Output / contact: 2 changeover contacts (2 DPST)
Output / contact material: AgNi
Response time: 20 ms
Release time: 20 ms
Recovery time: greater than or equal to 20 ms
Minimum switch-on duration: greater than or equal to 20 ms
Mechanical endurance: 3 x 10⁷ switching cycles
Electrical endurance: 1 x 10⁷ switching cycles
Dimensions (W x H x D): 35 x 68 x 65 mm
Weight: 160 g
Operating temperature range: -10 °C to +50 °C
Storage temperature range: -25 °C to +70 °C
Ingress protection for housing / terminal block: IP40 / IP20

RTM-C12 230 V
The timer relay is used for pulse prolongation. When the control contact is closed min. 5 ms, the relay is activated and releases after the adjusted pulse time has lapsed. Further control pulses during the pulse time do not have any effect.

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

Operating voltage: 230 V AC
Current consumption: less than or equal to 15 mA
Continuous current: 8 A
Output / contact: 2 changeover contacts (2 DPST)
Output / contact material: AgNi
Response time: 20 ms
Release time: 20 ms
Recovery time: greater than or equal to 20 ms
Minimum switch-on duration: greater than or equal to 20 ms
Mechanical endurance: 3 x 10⁷ switching cycles
Electrical endurance: 1 x 10⁷ switching cycles
Dimensions (W x H x D): 35 x 68 x 65 mm
Weight: 160 g
Operating temperature range: -10 °C to +50 °C
Storage temperature range: -25 °C to +70 °C
Ingress protection for housing / terminal block: IP40 / IP20

Interface modules | Pulse shaper

P/N | Color | Feature 1 | Feature 2 | EAN
---|---|---|---|---
11027613 | green | 24 V AC/DC | 2 DPST | 4250184121015

P/N | Color | Feature 1 | Feature 2 | EAN
---|---|---|---|---
11027605 | green | 230 V AC | 2 DPST | 4250184121008
HF10FH

Sturdy power relay for industrial use.
- Internationally standardized 11-pole plug-in socket
- Insulated parts made from self-extinguishing plastics
- With manual test button

Operating voltage 24 V AC, 24 V DC, 230 V AC
Current consumption 24 V AC 145 mA
Current consumption 24 V DC 65 mA
Current consumption 230 V AC 12 mA
Continuous current 10 A
Output / contact 3 changeover contacts
(3 DPST)
Output / contact material AgSnO2
Output / switching capacity 2500 VA / 300 W
Mechanical endurance 1 x 10^7 switching cycles
Electrical endurance 1 x 10^6 switching cycles
Display Red LED and mechanical
Dimensions (W x H x D) 35.5 x 56 x 35.7 mm
Weight 85 g
Operating temperature range -40 °C to +55 °C
Storage temperature range -40 °C to +70 °C

R274 - 2 changeover contacts (2 DPST)

Compact, pluggable relay for industrial use.
- Socket pins as soldering lugs
- Mechanical switch position display
- With manual test button
- Cadmium-free contacts

Operating voltage 24 V AC, 24 V DC, 230 V AC
Current consumption 24 V AC 50 mA
Current consumption 24 V DC 36.9 mA
Current consumption 230 V AC 5.21 mA
Continuous current 7 A
Output / contact 2 changeover contacts
(2 DPST)
Output / contact material Silver alloy
Output / switching capacity 1540 VA / 210 W
Mechanical endurance 1 x 10^7 switching cycles
Electrical endurance 1 x 10^6 switching cycles
Display LED and mechanical
Dimensions (W x H x D) 21.5 x 35 x 28 mm
Weight 37 g
Operating temperature range 0 °C to +55 °C
Storage temperature range -20 °C to +70 °C

Wiring
Interface modules | Industrial relays

R274 - 4 changeover contact (4 DPST)
Compact, pluggable relay for industrial use.
- Socket pins as soldering lugs
- Mechanical switch position display
- With manual test button
- Cadmium-free contacts

Operational conditions:
- Operating voltage AC: 24 V AC, 230 V AC
- Operating voltage DC: 12 V DC, 24 V DC
- Current consumption 12 V AC: 75 mA
- Current consumption 24 V AC: 50 mA
- Current consumption 24 V DC: 36.9 mA
- Current consumption 230 V AC: 5.21 mA
- Continuous current: 5 A
- Output / contact: 4 changeover contacts (4 DPST)
- Output / contact material: Silver alloy
- Output / switching capacity: 1 x 10^7 switching cycles
- Electrical endures: 1 x 10^7 switching cycles
- Display: LED and mechanical
- Dimensions (W x H x D): 21.5 x 35 x 28 mm
- Weight: 37 g
- Operating temperature range: 0 °C to +55 °C
- Storage temperature range: -20 °C to +70 °C

R274 - 4 changeover contacts (4 DPST) gold plated contacts
Compact, pluggable relay for industrial use.
- Socket pins as soldering lugs
- Mechanical switch position display
- With manual test button
- Cadmium-free contacts

Operational conditions:
- Operating voltage AC: 24 V AC, 24 V DC, 230 V AC
- Current consumption 24 V AC: 50 mA
- Current consumption 24 V DC: 36.9 mA
- Current consumption 230 V AC: 5.21 mA
- Continuous current: 5 A
- Output / contact: 4 changeover contacts (4 DPST)
- Output / contact material: Au
- Output / switching capacity: 1 x 10^7 switching cycles
- Mechanical endures: 1 x 10^7 switching cycles
- Display: LED and mechanical
- Dimensions (W x H x D): 21.5 x 35 x 28 mm
- Weight: 37 g
- Operating temperature range: 0 °C to +55 °C
- Storage temperature range: -20 °C to +70 °C

Wiring
### Interface modules | Industrial relays

**Socket 11 poles**
- 11-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 HF10FH(JQX-10FH).
  - Undecal plug-in socket
  - Integrated quick fastening for DIN rail
  - Cadmium-free contacts

### Application class
- HMF to DIN 40040
- \(-25^\circ C / +100^\circ C / \pm 75\%\)

### Ambient temperature
- +80°C

### Protection against contact
- VBG 4

### Cross-section
- 2 x 2.5 mm²

### Ampacity
- 10 A

### Operating voltage
- 300 V AC

### Isolation group
- C 250 to VDE 0110

### Test voltage
- 3.5 kV eff. / 60 s

### Leakage resistance
- >1010 Ω

### Creepage distance
- 4 mm to VDE 0110

### Air gap
- 2.5 mm to VDE 0110

### Creep resistance
- CTI 300

### Housing dimensions (W x H x D)
- 38.2 x 61.6 x 26 mm

### Weight
- 55 g

### Operating temperature range
- 0°C to +55°C

### Storage temperature range
- -20°C to +70°C

### Matching accessory
- R274 - 2 changeover contacts (2 DPST)
- R274 - 4 changeover contacts (4 DPST)

### Nominal current
- 10 A

### Nominal voltage
- 300 V AC

### Electric strength
- 4000 V / 50 Hz / 1min

### Solid wire cross-section
- 2 x 2.5 mm²

### Stranded wire with end sleeve
- 2 x 1.5 mm²

### Screw torque
- max. 0.8 Nm

### Housing dimensions (W x H x D)
- 27.2 x 75 x 61.2 mm

### Weight
- 63 g

### Operating temperature range
- 0°C to +55°C

### Storage temperature range
- -20°C to +70°C

### Ingress protection
- IP20

### P/N Table

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>110117</td>
<td>black</td>
<td></td>
<td></td>
<td>4250184120254</td>
</tr>
</tbody>
</table>

### Wiring

![Wiring Diagram](#)

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**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 R274.
  - 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
- 4000 V / 50 Hz / 1min

### Isolation group
- VDE 0110b C250

### Ambient temperature
- +70°C

### Protection against contact
- VBG 4

### Solid wire cross-section
- 2 x 2.5 mm²

### Stranded wire with end sleeve
- 2 x 1.5 mm²

### Screw torque
- max. 0.8 Nm

### Housing dimensions (W x H x D)
- 27.2 x 75 x 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

### P/N Table

<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>EAN</th>
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---

### Wiring

![Wiring Diagram](#)
Matching accessory for Socket 14 poles for electronic modules

<table>
<thead>
<tr>
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<th>Feature 1</th>
<th>Feature 2</th>
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Electronic timer relays  |  Multi-time

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 230 V AC / 24 V AC/DC
Output / contact 1 changeover contact (1 DPST)
Output / contact material AgNi
Output / switching voltage 250 V
Output / continuous current 6 A
Output / switching frequency 1200 cycles/h
Recovery time greater than 50 ms
Mechanical endurance 1 x 10^7 switching cycles
Electrical endurance 1 x 10^5 switching cycles
Cross-section 2.5 mm²
Display Green and red LED

Dimensions (W x H x D) 11.2 x 88 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 (1 DPST)
Output / contact material AgNi
Output / switching voltage 250 V
Output / continuous current 6 A
Output / switching frequency 1200 cycles/h
Recovery time greater than 50 ms
Mechanical endurance 1 x 10^7 switching cycles
Electrical endurance 1 x 10^5 switching cycles
Cross-section 2.5 mm²
Display Green and red LED

Dimensions (W x H x D) 11.2 x 88 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

Control cabinet components

Table: P/N, Color, Feature 1, Feature 2, EAN
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<th>Feature 2</th>
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Table: P/N, Color, Feature 1, Feature 2, EAN
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<th>Feature 2</th>
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<tr>
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</table>
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 0.15 s to 10 h.
- Six selectable functions
- On-delays
- Making-pulse interval
- Off-delay
- Breaking-pulse interval
- Flashing for pause start
- Flashing for pulse start

Operating voltage: 230 V AC / 24 V AC/DC
Output / contact: 1 changeover contact
(1 DPST)
Output / contact material: AgNi
Output / switching voltage: 250 V AC/DC
Output / continuous current: 6 A
Output / switching frequency: 1200 switching cycles
Mechanical endurance: 1 x 10^4 switching cycles
Electrical endurance: 1 x 10^4 switching cycles
Recovery time: MFRk-E08 / MFRk-E08 F
at 24 V AC: 60 ms / 10 to 30 ms
at 24 VDC: 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): 11.2 x 88 x 60 mm
Weight: 70 g
Operating temperature range: -10 °C to +55 °C
Storage temperature range: -25 °C to +70 °C
Ingress protection for housing / terminal block: IP40 / IP20

Wiring/Circuit diagram

A1+ - A3
operating voltage: 230 V AC
A1+ - A3
operating voltage: 24 V AC/DC
A1+ - B1
potentiometer
control contact: 16 - 10
output contact: 1 changeover

Caution! Contact B1 is not isolated.

P/N | Color | Feature 1 | Feature 2 | EAN
--- | --- | --- | --- | ---
110658 | green | Recovery time: 60 - 100 ms | 4250184122906
110658412814 | green | Recovery time: 10 - 30 ms | 4250184122913

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
- On-delays
- Making-pulse interval
- Off-delay
- Breaking-pulse interval
- Flashing for pause start
- Flashing for pulse start

Operating voltage: 230 V AC / 24 V AC/DC
Output / contact: 2 changeover contacts
(2 DPST)
Output / contact material: AgNi
Output / switching voltage: 250 V
Output / continuous current: 4 A
Output / switching frequency: 1200 cycles/h
Mechanical endurance: 1 x 10^4 switching cycles
Electrical endurance: 1 x 10^4 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 100 mm
Weight: 150 g
Operating temperature range: -10 °C to +55 °C
Storage temperature range: -25 °C to +70 °C
Ingress protection for housing / terminal block: IP40 / IP20

Wiring/Circuit diagram

P/N | Color | Feature 1 | Feature 2 | EAN
--- | --- | --- | --- | ---
110310412230 | green | Time Ranges: 0.15 s - 800 s | 4250184121268
110310412231 | green | Time Ranges: 0.1 min - 10 h | 4250184121275

110310412232 | green | Time Ranges: 0.1 min - 10 h | 4250184121275
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: 2 changeover contacts (2 DPST)
Output / contact material: AgNi
Output / switching voltage: 250 V
Output / continuous current: 6 A
Output / switching frequency: 1200 cycles/h
Mechanical endurance: 1 x 10⁵ switching cycles
Electrical endurance: 1 x 10⁶ 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: IP40 / IP20

Wiring/Function diagram

RTLk-E10
On-delayed timer relay with time setting. The time is set by means of a linear potentiometer on a relative scale.

- On-delayed

Operating voltage: 230 V AC / 24 V AC/DC
Output / contact: 1 changeover contact (1 DPST)
Output / contact material: AgNi
Output / switching voltage: 250 V
Output / continuous current: 6 A
Output / switching frequency: 1200 cycles/h
Mechanical endurance: 1 x 10⁵ switching cycles
Electrical endurance: 1 x 10⁶ 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: IP40 / IP20

Wiring/Function diagram
**RKAk-E10**

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

- Off-delayed

### Specifications

**Operating voltage:** 230 V AC / 24 V AC/DC  
**Output / contact:** 1 changeover contact (1 DPST)  
**Output / contact material:** AgCdO  
**Output / switching voltage:** 250 V  
**Output / continuous current:** 6 A  
**Output / switching frequency:** 1200 cycles/h  
**Mechanical endurance:** 1 x $10^6$ switching cycles  
**Electrical endurance:** 1 x $10^5$ switching cycles  
**Cross-section:** 2.5 mm$^2$  
**Display:** Green LED  
**Dimensions (W x H x D):** 22.5 x 70 x 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

### Options

- **P/N:** 110304412003  
  **Color:** green  
  **Time Ranges:** 0.5 - 10 s  
  **EAN:** 4250184121190

- **P/N:** 110304412004  
  **Color:** green  
  **Time Ranges:** 1.5 - 30 s  
  **EAN:** 4250184121206

- **P/N:** 110304412005  
  **Color:** green  
  **Time Ranges:** 3 - 60 s  
  **EAN:** 4250184121213

- **P/N:** 110304412008  
  **Color:** green  
  **Time Ranges:** 15 - 300 s  
  **EAN:** 4250184121220

- **P/N:** 110304412011  
  **Color:** green  
  **Time Ranges:** 9 - 60 min  
  **EAN:** 4250184121237

**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

### Specifications

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

### Options

- **P/N:** 110296412002  
  **Color:** green  
  **Time Ranges:** 0.15 - 3 s  
  **EAN:** 4250184121145

- **P/N:** 110296412003  
  **Color:** green  
  **Time Ranges:** 0.5 - 10 s  
  **EAN:** 4250184121152

- **P/N:** 110296412004  
  **Color:** green  
  **Time Ranges:** 1.5 - 30 s  
  **EAN:** 4250184121169

- **P/N:** 110296412009  
  **Color:** green  
  **Time Ranges:** 0.5 - 10 min  
  **EAN:** 4250184121176
TERk-E08
Clock generator with separately adjustable delay and pulse times. The time ranges can be programmed by means of the coding switches incorporated in the front.

- Clock generating
- Adjustable time ranges

Operating voltage: 230 V AC / 24 V AC/DC
Recovery time: greater than or equal to 50 ms
Output / contact: 1 changeover contact (1 DPST)
Output / contact material: AgNi
Output / switching voltage: 250 V
Output / continuous current: 6 A
Output / switching frequency: 1200 cycles/h
Mechanical endurance: 3 x 10⁸ switching cycles
Electrical endurance: 1 x 10⁴ switching cycles
Cross-section: 2.5 mm²
Display: Green and red LED

Dimensions (W x H x D): 22.5 x 60 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>
<th>EAN</th>
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<td>green</td>
<td>tp 0.15 - 800 s</td>
<td>tp 0.15 - 800 s</td>
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<td>11067441203130</td>
<td>green</td>
<td>tp 0.15 - 800 s</td>
<td>tp 0.1 min - 10h</td>
<td>42501841230260</td>
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<tr>
<td>11067441203130</td>
<td>green</td>
<td>tp 0.1 min - 10h</td>
<td>tp 0.15 - 800 s</td>
<td>42501841230331</td>
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<tr>
<td>11067441203130</td>
<td>green</td>
<td>tp 0.1 min - 10h</td>
<td>tp 0.1 min - 10h</td>
<td>42501841230402</td>
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</table>
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 (1 DPST)
- Output / contact material: AgNi
- 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 10⁴ 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

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 (1 DPST)
- Output / contact material: AgNi
- 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 10⁴ 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
Electronic timer relays | 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

<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 to 250 ms</td>
</tr>
<tr>
<td>Switching time</td>
<td>50 ms</td>
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<tr>
<td>Output / contact</td>
<td>1 changeover contact (1 DPST)</td>
</tr>
<tr>
<td>Output / contact material</td>
<td>AgNi</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>
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<tr>
<td>Mechanical endurance</td>
<td>3 x 10⁶ switching cycles</td>
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<tr>
<td>Electrical endurance</td>
<td>1 x 10⁶ 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) | 22.5 x 70 x 95 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**

**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

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>230 V AC / 24 V AC/DC</th>
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</thead>
<tbody>
<tr>
<td>Recovery time</td>
<td>greater than or equal to 250 ms</td>
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<tr>
<td>Switching time</td>
<td>50 ms</td>
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<tr>
<td>Output / contact</td>
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<td>Output / contact material</td>
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<tr>
<td>Output / switching voltage</td>
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</tr>
<tr>
<td>Output / continuous current</td>
<td>6 A</td>
</tr>
<tr>
<td>Output / switching frequency</td>
<td>1200 cycles/h</td>
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<tr>
<td>Mechanical endurance</td>
<td>3 x 10⁶ switching cycles</td>
</tr>
<tr>
<td>Electrical endurance</td>
<td>1 x 10⁶ 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) | 22.5 x 70 x 95 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**
Well-tried and functional

Today's analogous telecommunication cabilities must again and again be able to integrate additional devices such as telephones or more signalling devices.

METZ CONNECT offers well-tried and functional solutions to these issues.

**Power switching relay**
to control additional signalling devices such as buzzers and flashing beacons with separate voltage supply in production and warehousing areas that are equipped with only one single central phone. They are controlled by the call signal of the phone line.

**Multiple Changeover Switches**
to connect 2 to 4 analogous phones to a telecommunication connection. All connected phones will have equal access to the telecommunication connection.

**Secondary call signaller**
to additionally signal acoustically and visually an incoming call at the telecommunication line.
### Power switching relay | DIN rail / surface mount

<table>
<thead>
<tr>
<th>Page</th>
<th>P/N</th>
<th>PU</th>
<th>PU measures (W<em>H</em>L)</th>
<th>PU gross weight</th>
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<tbody>
<tr>
<td>125</td>
<td>130283-I</td>
<td>10 pcs</td>
<td>228 x 170 x 80 mm</td>
<td>876 g</td>
</tr>
<tr>
<td>125</td>
<td>130284-I</td>
<td>10 pcs</td>
<td>228 x 170 x 80 mm</td>
<td>845 g</td>
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<tr>
<td>125</td>
<td>130280-I</td>
<td>10 pcs</td>
<td>195 x 170 x 68 mm</td>
<td>759 g</td>
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### Multiple Changeover Switches | Automatic Changeover Switches

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<tr>
<td>126</td>
<td>130383-E</td>
<td>1 pcs</td>
<td>145 x 83 x 31 mm</td>
<td>178 g</td>
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</table>

### Additional Equipment | Secondary call signaler

<table>
<thead>
<tr>
<th>Page</th>
<th>P/N</th>
<th>PU</th>
<th>PU measures (W<em>H</em>L)</th>
<th>PU gross weight</th>
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</thead>
<tbody>
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<td>127</td>
<td>130592-I</td>
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<td>180 x 90 x 70 mm</td>
<td>327 g</td>
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<tr>
<td>127</td>
<td>130593-I</td>
<td>5 pcs</td>
<td>315 x 120 x 90 mm</td>
<td>375 g</td>
</tr>
</tbody>
</table>
SAR 4 / SAR 5
The SAR4 and SAR5 can be connected to a telecommunications access line or separate control voltage source (AC/DC) and are activated by the call voltage or control voltage. The SAR reacts either only to the call voltage or to the control voltage. It activates an external signal emitter with its own or separate power supply (e.g. bell, horn, or lamp).

Operating voltage SAR4: 230 V AC / 50 Hz
Operating voltage SAR5 DC: 24 V DC / 10 mA
Operating voltage SAR5 AC: 24 V AC / 10 mA
Input / a/b telecommunications access line
Input / call voltage: 32 to 80 V AC
Input / frequency range: 23 to 54 Hz
Input / impedance: 10 kOhm at 75 V, 25 Hz
Input / insertion loss: less than 0.5 dB
Input / leakage resistance: more than 5 MOhm at 100 V
Input / a/c external voltage
Input / control voltage DC: 5 to 40 V
Input / control voltage AC: 5 to 40 V, 50 Hz
Input / resistance: approx. 6 kOhm
Output / switching current: max. 8 A
Output / continuous current: max. 6 A
Output / switching voltage: max. 250 V AC
Output / switching capacity: 2400 VA (AC)
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): 65 x 80 x 27 mm
Operating temperature range: -5 °C to + 55 °C
Storage temperature range: -25 °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.

Input / call voltage: 32 to 80 V AC
Input / frequency range: 23 to 54 Hz
Input / impedance: 10 kOhm at 75 V, 25 Hz
Input / insertion loss: less than 0.5 dB
Input / leakage resistance: more than 5 MOhm at 100 V
Output / switching current: max. 8 A
Output / continuous current: max. 6 A
Output / switching voltage: max. 250 V AC
Output / switching capacity: 2000 VA (AC)
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
AMS 1/4 F AP

Up to four terminals can be connected to the AMS 1/4 AP. All terminals have equal access to the access line when the AMS is in non-operative mode. When the access line is used by a terminal, all other terminals are automatically deactivated to prevent unwanted overhearing. Additional devices, such as answering machines, can be connected upstream to the connected terminals.

- Protection against overvoltage and electromagnetic interference in the access line
- Incoming calls are signaled at each phone
- Suitable for main terminals and telephone systems
- No additional mains connection required
- Also for telephones with electronic hookswitch
- Additional alarm clock can be connected to the first communication terminal via W-base on the terminal

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 / front: 2 x TAE-F jacks
Output / internal: 2 x terminals

Dimensions (W x H x D): 142 x 80 x 27 mm
Operating temperature range: -5 °C to +55 °C
Storage temperature range: -20 °C to +70 °C

### Wiring

```
<table>
<thead>
<tr>
<th>P/N</th>
<th>Color</th>
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<tr>
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<td>pure white</td>
<td>AP 1/4 F</td>
<td></td>
<td>4230184101996</td>
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</table>
```

* connect E only together with a second alarm

**La Lb a1 b1**
**E**
**a2 b2**
**a3 b3**
**a4 b4**

input
output 1
1st phone
output 2
2nd phone
output 3
3rd phone
output 4
4th phone
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)** 65 x 80 x 27 mm
**Operating temperature range** -5 °C to + 55 °C
**Storage temperature range** -20 °C to + 70 °C

---

**Additional Equipment**

<table>
<thead>
<tr>
<th>Secondary Call Signaler</th>
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**Dimensional drawing/Wiring**

---

**Table 1**

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**Table 2**

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</table>
Accessories and additional equipment for devices of the following ranges of products:

Components/building automation
• Power supply and switch-on devices
• Jumper plug and terminal blocks
• Module frames 3RU and label sheets

Measuring and monitoring relays
• Current converter

Interface modules/industrial relays
• Connecting bridges
• Labeling plates

<table>
<thead>
<tr>
<th>Accessories</th>
<th>Page</th>
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<tbody>
<tr>
<td>1 Packing Details</td>
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<tr>
<td>2 I/O components</td>
<td>131</td>
</tr>
<tr>
<td>3 Cabinet Doors/Panels 3RU</td>
<td>134</td>
</tr>
<tr>
<td>4 Current Converter</td>
<td>137</td>
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<tr>
<td>5 Interface modules</td>
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### I/O components

<table>
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<tr>
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<th>P/N</th>
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<tr>
<td>130</td>
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<td>1 pcs</td>
<td>74 x 51 x 80 mm</td>
<td>129 g</td>
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<tr>
<td>130</td>
<td>110561-01</td>
<td>1 pcs</td>
<td>74 x 51 x 80 mm</td>
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### Connection aids

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### Cabinet Doors / Panels 3RU | Subassembly frame

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### Cabinet Doors / Panels 3RU | Blind module / Labeling

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### Current Converter | DIN rail

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### Interface modules | Coupling modules

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<td>140</td>
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### Interface modules | Industrial sockets

<table>
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<tr>
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## NG4 green

The NG4 power supply supplies regulated direct voltages for supplying power to the respective devices of the Intelligent Components product family. The device supplies regulated direct voltage 24 V DC at a power of 16 watts. A parallel operation of various power supply units is not allowed. The secondary voltage can only be tapped at the right side of the plug connector and at the screw-type terminals on the top of the module. The bus communication is looped through on both sides of the plug connectors.

### Field of application
- Intelligent components

- Operating voltage: 110 - 240 V AC, 50 / 60 Hz
- Internal fuse, soldered fuse: T 1 A / 250 V
- Output / power: 16 W
- Output / voltage: + 24 V DC
- Output / current: 700 mA
- Load and control accuracy: +/- 3 %
- Mains failure backup: greater than 40 ms
- Display: Green LED

### Dimensions (W x H x D)
- 50 x 70 x 65 mm

### Weight
- 108 g

### Operating temperature range
- -10 °C to +50 °C

### Storage temperature range
- -20 °C to +70 °C

### Ingress protection for housing / terminal block
- IP40 / IP20

### Wiring/Principle diagram

### P/N | Color | Feature 1 | Feature 2 | EAN
--- | --- | --- | --- | ---
110561 | green | +24 V (green) | with jumper plug | 4250184122470

## NG4 gray

The NG4 power supply supplies regulated direct voltages for supplying power to the respective devices of the Intelligent Components product family. The device supplies regulated direct voltage 24 V DC at a power of 16 watts. A parallel operation of various power supply units is not allowed. The secondary voltage can only be tapped at the right side of the plug connector and at the screw-type terminals on the top of the module. The bus communication is looped through on both sides of the plug connectors.

### Field of application
- Intelligent components

- Operating voltage: 110 - 240 V AC, 50 / 60 Hz
- Internal fuse, soldered fuse: T 1 A / 250 V
- Output / power: 16 W
- Output / voltage: + 24 V DC
- Output / current: 700 mA
- Load and control accuracy: +/- 3 %
- Mains failure backup: greater than 40 ms
- Display: Green LED

### Dimensions (W x H x D)
- 50 x 70 x 65 mm

### Weight
- 108 g

### Operating temperature range
- -10 °C to +50 °C

### Storage temperature range
- -20 °C to +70 °C

### Ingress protection for housing / terminal block
- IP40 / IP20

### Wiring/Principle diagram

### P/N | Color | Feature 1 | Feature 2 | EAN
--- | --- | --- | --- | ---
110561-01 | gray | +24 V (gray) | with jumper plug | 4250184131571
Jumper plug for I/O components is matching accessory for

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Page</th>
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<tbody>
<tr>
<td>Ethernet I/Os</td>
<td>20</td>
</tr>
<tr>
<td>BACnet I/Os</td>
<td>26</td>
</tr>
<tr>
<td>Modbus I/Os</td>
<td>31</td>
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<tr>
<td>LON I/Os</td>
<td>36</td>
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<tr>
<td>CAN-Bus I/Os</td>
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</table>

Terminal block for I/O components is matching accessory for

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet I/Os</td>
<td>20</td>
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<td>BACnet I/Os</td>
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<td>Modbus I/Os</td>
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<td>LON I/Os</td>
<td>36</td>
</tr>
<tr>
<td>CAN-Bus I/Os</td>
<td>55</td>
</tr>
</tbody>
</table>

Jumper plug for I/O components

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

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

- Rated voltage UL: 150 V
- Rated voltage SEV: 125 V AC/DC eff.
- Rated current: max. 4 A
- Wire diameter: 0.9 mm
- Wire 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
Terminal block for door installation modules
Terminal block to feed bus and power supply of door installation modules.

- Spring-clamp terminal block, pluggable, 4-pole
- Grid dimension 5.0 mm, connection direction 90°
- Sequencing possible without pole loss
- Gray

<table>
<thead>
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<th>Rated voltage UL/CSA</th>
<th>300 V</th>
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<td>Rated current UL/CSA</td>
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<tr>
<td>Conductor connection UL/CSA</td>
<td>AWG 28 to AWG 16</td>
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<tr>
<td>Rated voltage SEV</td>
<td>250 V</td>
</tr>
<tr>
<td>Rated current SEV</td>
<td>10 A</td>
</tr>
<tr>
<td>Wire diameter SEV</td>
<td>0.32 mm to 1.38 mm</td>
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<tr>
<td>Cross-section (solid wire)</td>
<td>1.5 mm²</td>
</tr>
<tr>
<td>Cross-section (finely stranded wire)</td>
<td>0.75 mm²</td>
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</table>

Insulation coordination to EN 60664-1
Minimum air gap and creepage min. 3.7 mm
Overvoltage category III / III / II
Degree of pollution 3 / 2 / 2
Rated voltage V 250 / 500 / 500
Rated surge voltage 2.5 / 4 / 2.5

Ingress protection to IEC 60529 IP20
Stripping length min. 4 mm

Dimensional drawing

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</table>
## Cabinet Doors / Panels 3RU

### Subassembly frame 3RU 19"

19" assembly frame for 10 BTR door installation modules.

### Subassembly frame 3RU 10"

10" assembly frame for 5 BTR door installation modules.

### Matching accessory for Subassembly frame 3RU 19"

<table>
<thead>
<tr>
<th>Mounting Set for 19&quot; Frames</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
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### Subassembly frame 3RU 19" is matching accessory for

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<th>LM2</th>
<th>LS1</th>
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### Matching accessory for Subassembly frame 3RU 10"

<table>
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### Subassembly frame 3RU 10" is matching accessory for

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### Accessories

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### Dimensional drawing/Cut-out

![Dimensional drawing/Cut-out for Subassembly frame 3RU 19"

![Dimensional drawing/Cut-out for Subassembly frame 3RU 10"

### Dimensional drawing/Cut-out

![Dimensional drawing/Cut-out for Subassembly frame 3RU 19"

![Dimensional drawing/Cut-out for Subassembly frame 3RU 10"

<table>
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Fastening kit for assembly frames is matching accessory for

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</table>

Fastening kit for assembly frames

Fastening kit for 19" assembly frames.

- 4 oval-head screws M6x16, cross recess
- 4 black plastic disks

<table>
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Cabinet Doors / Panels 3RU | Blind module / Labeling

Labeling Sheet for door installation modules is matching accessory for Logline Accessory.

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<tbody>
<tr>
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</tr>
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<tr>
<td>LT1</td>
</tr>
<tr>
<td>LT2</td>
</tr>
<tr>
<td>LT3</td>
</tr>
</tbody>
</table>

Blind module
Blind module for filling for 19” assembly frames. Suitable as labeling plate.

- Dimensions (W x H x D) 40 x 128.7 x 35 mm
- Dimensions RU/TP 3RU, 8TP
- Weight 23 g
- Installation position any
- Mounting in assembly frame in 19” to IEC 297-3
- Housing material ABS

Labeling Sheet for door installation modules
Pre-cut DIN A4 paper sheets for individually labeling door installation modules. Suitable for LM1, LM2, LS1, LT1, LT2, LT3 and LA1.

- Suitable for all printers
- Gray
- The print template is available for download in various formats (Visio, PDF, Word, Corel Draw)

Dimensions RU/TP
Dimensions RU/TP

<table>
<thead>
<tr>
<th>P/N</th>
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<th>Feature 1</th>
<th>Feature 2</th>
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TAmini 50 A / 5 A is matching accessory for
EIW-C18 79
CPW-E12 72

TAmini 100 A / 5 A is matching accessory for
EIW-C18 79
CPW-E12 72

**TAmini 50 A / 5 A**

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

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

<table>
<thead>
<tr>
<th>Transformer ratio</th>
<th>50 A / 5 A</th>
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<tbody>
<tr>
<td>Nominal frequency</td>
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<tr>
<td>Operating frequency</td>
<td>47 to 63 Hz</td>
</tr>
<tr>
<td>Secondary nominal current</td>
<td>5 A</td>
</tr>
<tr>
<td>Max. switch-on current</td>
<td>60 x nominal current smaller than 1 s</td>
</tr>
<tr>
<td>Max. internal consumption</td>
<td>less than 3 VA</td>
</tr>
<tr>
<td>Classification</td>
<td>UL-94 V0</td>
</tr>
</tbody>
</table>

**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**

---

**TAmini 100 A / 5 A**

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

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

<table>
<thead>
<tr>
<th>Transformer ratio</th>
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<tbody>
<tr>
<td>Nominal frequency</td>
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<td>47 to 63 Hz</td>
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<td>Secondary nominal current</td>
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<tr>
<td>Max. switch-on current</td>
<td>60 x nominal current smaller than 1 s</td>
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<td>Max. internal consumption</td>
<td>less than 3 VA</td>
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<tr>
<td>Classification</td>
<td>UL-94 V0</td>
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</table>

**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**
Connecting bridge Series KRA-F8/F10 is matching accessory for
KRA-F8/21 80
KRA-F10/21-21 82
KRA-S-F8/21 80
KRA-S-F10/21-21 82
KRA-SR-F10/21 81
KRA-SRA-F10/21 81
PV10 F10 98

Labeling plate Series KRA-F8/F10 is matching accessory for
KRA-F8/21 80
KRA-F10/21-21 82
KRA-S-F8/21 80
KRA-S-F10/21-21 82
KRA-SR-F10/21 81
KRA-SRA-F10/21 81
PV10 F10 98

Connecting bridge Series KRA-F8/F10
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 11.25 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 11.25 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>
<th>Feature 2</th>
<th>EAN</th>
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**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

**Specifications**

| 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

---

**P/N | Color | Feature 1 | Feature 2 | EAN**
---|---|---|---|---
110727 | Trans-parent | | | 4250184123194 |
850349-02 | Black | 10 poles | | 4250184119302 |
Labeling plate Series KRA-M4/M6/M8 is matching accessory for

- KRA-S-M6/21 88
- KRA-M4/1 84
- KRA-M4/1 83
- KRA-M4/1 84
- KRA-M6/21 88
- KRA-M6/21 87
- KRA-M6/21 87
- KRA-M6/21 87
- KRA-M6/1-1 85
- KRA-M6/1-1 85
- KRA-M6/1-2 86
- KRA-M6/1-2 86
- KRA-M8/21-21 90
- KRA-M8/21-21 89
- KRA-M8/21-21 90
- KRA-M8/21-21 12V AC/DC 89
- KRA-SR-M8/21 89
- KRA-M4/1 LC 83

End Mount for connecting bridge is matching accessory for

- Connecting bridge, 10 pole 139
- Connecting bridge, 5 pole 141

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
**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

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<th>Rated voltage</th>
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<td>Number of poles</td>
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<tr>
<td>Grid dimension</td>
<td>28.1 mm</td>
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<tr>
<td>Upper temperature limit</td>
<td>100 °C</td>
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<tr>
<td>Lower temperature limit</td>
<td>-40 °C</td>
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<tr>
<td>Material / jumper</td>
<td>CuZN 37 F54</td>
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<td>Ingress protection</td>
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**Interface modules**

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**Matching accessory for connecting bridge for industrial sockets**

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<th>Socket 14 poles for electronic modules</th>
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<tbody>
<tr>
<td>End Mount</td>
<td>142</td>
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**Connecting bridge for industrial sockets**

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**socket 14 poles for electronic modules**

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<tbody>
<tr>
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</table>
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

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

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<td>holder</td>
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</table>
Holding bracket plastic
Holding bracket plastic is matching accessory for Industrial sockets. It avoids that the relay gets loose due to vibrations.

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Socket 14 poles
Socket 14 poles for electronic modules
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A powerful team!
Always there for you

The success of METZ CONNECT is based on competence and the commitment of their worldwide active personnel. Out of their knowledge, qualification and experience that they contribute in the different areas result the successful, reliable and high-quality solutions for your networks. In our sales teams work excellent professionals with profound knowledge of the different product ranges, technologies and markets. They do not want to be just sales people but your contact and consultant to work out together with you the ideal solution for your networks. Your demands mean challenge to us and to offer you the matching solution will be the confirmation for our work.

So just put the rules to the test – give us a challenge!
Contact

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General Information

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

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I. Sphere of application, validity

1. The Terms and Conditions of Sale, Delivery and Payment shall apply to all transactions and deliveries between ourselves and undertakings (Section 14 BGB [Civil Code]) and with legal entities under public law and public-law special trust assets.

2. Our Terms and Conditions of Sale, Delivery and Payment shall also apply to transactions with consumers (Section 13 BGB).

3. The provisions which are contrary or which vary from our own Terms and Conditions of Sale, Delivery and Payment, unless we have explicitly approved their validity in writing or in text format. Our Terms and Conditions of Sale, Delivery and Payment shall still apply, even if we execute delivery to the customer in the course of the conditions of delivery or undertake to vary from our own Terms and Conditions of Sale, Delivery and Payment.

4. In the context of business relations between ourselves and foreign customers, it is agreed that the law of the Federal Republic of Germany shall apply to all business relations, irrespective of the language used. For business relations with a foreign customer in whose language either German or English, at our option. The choice will be made on the basis of the language we use when dealing with the customer.

5. If the goods which are exported are not for ensuring that they are capable of being exported, nor are we responsible for the procuring of official authorizations, nor for the compliance with any regulations which the designated land of exportation requires. The customer is responsible for verifying and ensuring that all national regulations of the specific country are complied with, where applicable.

6. If one or several provisions of these terms and conditions should be void regardless of the legal basis of the validity of the other provisions shall not be affected thereby.

II. Contract conclusion, scope of delivery

2. Our quotations shall be without commitment.

2. A contract shall be deemed to have been concluded exclusively on the basis of our order confirmation which shall be drawn up in writing or in text format. The order confirmation shall contain our delivery commitments and shall specify the conditions of the products to be delivered. A confirmation of order in advance of the specific delivery shall be made in agreement with the specifications of the catalogue valid at the time of our order confirmation. Ancillary agreements and conditions of sale not set out in writing, or not in text format, shall be ineffective.

2.3 If we fail to provide the customer any confirmation of its order, then forwarding of the delivery with an invoice and/or delivery note shall equate to acceptance of the order.

2.4 The condition of the product to be delivered shall additionally be determined by means of the article number and article description to which reference is made in the order confirmation or in the delivery note or the invoice.

2.5 The customer must check all dimensional and product requirements. We are not obliged to notify the dimensions, the product data and the specifications given by the customer. The customer must check the functionality of this component together with our products when he uses our products together with other components (e.g. plugs for our power socket) and is likewise responsible for ensuring that these uses comply with national and EU standards and guidelines.

III. Delivery time, transfer of risk

3.1 The delivery time shall be deemed to have been agreed as approximate. It shall be deemed to be a fixed date only where it has been explicitly designated as such.

3.2 If we are prevented from or hindered in performance of our assignment through the occurrence of unforeseen events, which we were unable to avoid despite applying the best due care and which could be expected of us in the circumstances, irrespective of whether such events occur at our company premises or in the performance of our assignment e.g. breakdown of key vendor parts, official measures, embargo, risk of war, force majeure or strike, then the performance of our assignment shall fail. In such case, we may extend the delivery period, or if delivery or performance is impossible as a result of the circumstances listed, then we shall be exempted from all obligations under the contract.

3.3 The risk for individual deliveries shall pass to the customer at the time of dispatch of the goods or their delivery to the carrier/freighter ex works Blumberg (EXW Incoterms 2000).

3.4 The customer must take delivery of and accept goods, also in case of obvious defects. These are defective in doing so, the customer does not waive his rights to give notice of and claim for defects.

3.5 Part deliveries and part performances shall be admissible. These shall be deemed to be independent deliveries and may be charged immediately.

3.6 In the case of special production orders, we reserve the right to under-/over-deliver by up to 10 % of the delivery quantities ordered and/or for which the order has been confirmed.

IV. Prices, payments

4.1 Unless otherwise agreed, our prices shall be held to be ex works Blumberg in euro. VAT at the statutory rate shall be added to the prices.

4.2 Unless explicitly agreed otherwise, payments shall fall due within 14 days of the invoice date unless otherwise agreed in writing or in text form. The term of the payment shall be in no case after the due date. Late payments shall be subject to interest according to the current interest rate of the credit institution to which we are affiliated, and is likewise responsible for ensuring that these uses comply with national and EU standards and guidelines.

4.3.5 In the event that we are obliged to pay damages on the basis of negligent culpability, our liability shall be restricted to gross negligence.

4.3.3 We accept no liability towards our customers in the event of breaches of non-essential duties, unless we have approved their validity in writing or in text format. Our choice will be made based on the language we use when dealing with the customer.

4.3.1 In the event of serious breaches of duty and default with respect to “cardinal” duties and duties of performance and/or material defects, we shall be absolutely liable in the event of:

- gross culpability
- seriously negligent culpability on the part of our Managing Directors and/or senior executives
- culpable injury to the life, limb or health of individuals
- material defects which have been fraudulently concealed
- guarantees explicitly given in writing
- defects in products, insofar as there is liability for personal injury or material damage under the Product Liability Act.

4.3.2 In the event of negligent breach of duty, performance problems or material defects caused, we shall be liable in the event of:

- gross culpability
- seriously negligent culpability on the part of our Managing Directors and/or senior executives
- culpable injury to the life, limb or health of individuals
- material defects which have been fraudulently concealed
- guarantees explicitly given in writing
- defects in products, insofar as there is liability for personal injury or material damage under the Product Liability Act.

4.3.3 In the event of negligent breach of duty, performance problems or material defects caused, we shall be liable in the event of:

- gross culpability
- seriously negligent culpability on the part of our Managing Directors and/or senior executives
- culpable injury to the life, limb or health of individuals
- material defects which have been fraudulently concealed
- guarantees explicitly given in writing
- defects in products, insofar as there is liability for personal injury or material damage under the Product Liability Act.

4.3.4 Claims of the customer based on claims for defects or breaches of duty contrary to contract shall not be entitled to assert claims against us originating from the supply chain, unless we have directly caused the defects or unless we have been in breach of our own special duty to pay indemnity and/or for expenses shall be restricted to 5 times the product price and/or damages and in the event of seizable losses, to 3 times the product price and/or damages, respectively.

4.3.5 Claims of the customer based on claims for defects or breaches of duty contrary to contract shall not be entitled to assert claims against us originating from the supply chain, unless we have directly caused the defects or unless we have been in breach of our own special duty to pay indemnity and/or for expenses shall be restricted to 5 times the product price and/or damages and in the event of seizable losses, to 3 times the product price and/or damages, respectively.

4.3.6 Claims of the customer based on claims for defects or breaches of duty contrary to contract shall not be entitled to assert claims against us originating from the supply chain, unless we have directly caused the defects or unless we have been in breach of our own special duty to pay indemnity and/or for expenses shall be restricted to 5 times the product price and/or damages and in the event of seizable losses, to 3 times the product price and/or damages, respectively.

4.3.7 Claims of the customer based on claims for defects or breaches of duty contrary to contract shall not be entitled to assert claims against us originating from the supply chain, unless we have directly caused the defects or unless we have been in breach of our own special duty to pay indemnity and/or for expenses shall be restricted to 5 times the product price and/or damages and in the event of seizable losses, to 3 times the product price and/or damages, respectively.

4.3.8 Claims of the customer based on claims for defects or breaches of duty contrary to contract shall not be entitled to assert claims against us originating from the supply chain, unless we have directly caused the defects or unless we have been in breach of our own special duty to pay indemnity and/or for expenses shall be restricted to 5 times the product price and/or damages and in the event of seizable losses, to 3 times the product price and/or damages, respectively.

4.3.9 Claims of the customer based on claims for defects or breaches of duty contrary to contract shall not be entitled to assert claims against us originating from the supply chain, unless we have directly caused the defects or unless we have been in breach of our own special duty to pay indemnity and/or for expenses shall be restricted to 5 times the product price and/or damages and in the event of seizable losses, to 3 times the product price and/or damages, respectively.

4.3.10 Claims of the customer based on claims for defects or breaches of duty contrary to contract shall not be entitled to assert claims against us originating from the supply chain, unless we have directly caused the defects or unless we have been in breach of our own special duty to pay indemnity and/or for expenses shall be restricted to 5 times the product price and/or damages and in the event of seizable losses, to 3 times the product price and/or damages, respectively.

4.3.11 Claims of the customer based on claims for defects or breaches of duty contrary to contract shall not be entitled to assert claims against us originating from the supply chain, unless we have directly caused the defects or unless we have been in breach of our own special duty to pay indemnity and/or for expenses shall be restricted to 5 times the product price and/or damages and in the event of seizable losses, to 3 times the product price and/or damages, respectively.

4.3.12 Claims of the customer based on claims for defects or breaches of duty contrary to contract shall not be entitled to assert claims against us originating from the supply chain, unless we have directly caused the defects or unless we have been in breach of our own special duty to pay indemnity and/or for expenses shall be restricted to 5 times the product price and/or damages and in the event of seizable losses, to 3 times the product price and/or damages, respectively.

4.3.13 Claims of the customer based on claims for defects or breaches of duty contrary to contract shall not be entitled to assert claims against us originating from the supply chain, unless we have directly caused the defects or unless we have been in breach of our own special duty to pay indemnity and/or for expenses shall be restricted to 5 times the product price and/or damages and in the event of seizable losses, to 3 times the product price and/or damages, respectively.
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We realize ideas

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