Optocoupler – Overview

Owing to the increasing degree of automation, the separation of potential between control circuits (control side / field side) is becoming increasingly significant. The connection between the controller, which is the key component of every automated system, and the various sensors and actuators must be electrically safe and free of any feedback. Optocouplers are finding increasing use here. They provide the necessary degree of safety and feature other technical properties such as:

- Low power consumption on the controller side
- High switching frequency
- No contact bounce
- Wear-free switching
- Vibration resistance
- Use independent of positioning
- No need for mechanical parts
- Long service life
- High insulation voltage

Accordingly, optocouplers are a good alternative to the traditional, mechanical relay interfaces. Modules with different input voltages and enclosure technologies are available for industrial use.

CE marking

Weidmüller’s optocouplers carry the CE mark and comply with the requirements laid down by EN 50 081 part 1 and EN 50 082 part 2. They can be used in a wide range of applications and industries.

Suitable ESD measures must be taken during installation. Overvoltage protection must be provided for long leads as protection from lightning.
Optocoupler – Overview

Our highlight
MICROSERIES

Coupler modules in terminal format
The slot-in width of 6.1 mm allows space-saving installation of the MICROSERIES relays in industrial automation applications. The MICROSERIES is particularly suitable for the modification and extension of equipment and machinery, where it helps to make optimum use of the limited space available in switchgear cabinets.

Marking
The tab surfaces enable equipment to be clearly marked using a WS marker.

Relay and optocoupler module
Plug-in relay and optocoupler modules allow individual adjustment to function of the base module. Relay and optocouplers, are available with different power outputs, with either AgSnO and gold contacts.

Connection technology
Most of our relay couplers are available with screw or tension clamp connections.

Holding and ejecting mechanism
The innovative holding and ejecting mechanism clips the assembled module securely onto the base terminal. Using the reliable eject function, the coupler can be removed quickly and simply from the base.

Pluggable cross-connectors
The ZQV 4N plug-in cross-connectors are available in various colours and with different numbers of poles. They allow reliable and distinct cross-connections between the four input and output potentials.
### Optocoupler – Overview

#### Control side of the optocoupler interface

**Basic structure of the optocoupler interface:**
The key component is the actual opto-electronic unit (optocoupler) which is responsible for the coupling.

One important variable of this component is the current transfer rate (CTR). The CTR factor is stated as a percentage and describes the ratio between dispersed input current IF and the maximum available output current IC.

Example: IF = 10 mA; CTR = 100 % => IC = 10 mA.

However, the CTR variable is influenced by various parameters such as ambient temperature, degree of efficiency of the luminescence diode or geometric dimensions within the component, and itself declines over time. This means that the switching thresholds change over time, partly as a result of ageing.

In order to eliminate this effect as far as possible, Weidmüller optocouplers use almost exclusively optoelectronic semiconductors with high long-term stability in terms of CTR behaviour.

The insulation strength of the component is also important, because the actual coupling of the input and output circuits results from optical transfer. This means that even in the event of a fault, the optical component will guarantee separation of both circuits. By using optoelectronic coupling elements in accordance with DIN VDE 0884, Weidmüller’s optocouplers represent the ultimate in safety.

The circuitry within the module as a whole also deserves to be mentioned, with features including “protective separation” in accordance with DIN VDE 0106 part 101.

#### Optocouplers for galvanic isolation or “protective separation”

The partial discharge level test as per DIN VDE 0884 is the primary prerequisite for “protective separation” with optoelectronic coupler modules. Double or reinforced insulation for “protective separation” must be partially discharge-proof.

High-voltage testing, a standard procedure for relays, is not possible with semiconductors because it may actually destroy them. In the case of coupler modules with integrated optocouplers, “protective separation” for the specified rated voltage is achieved when the following requirements are satisfied:

- Testing of the optocouplers as per DIN VDE 0884
- Adherence to creepage and clearance path on circuit boards and connection elements in accordance with EN 50 178, DIN VDE 0106 and 0109.

A distinction is made between three basic circuits on the input side of the optocoupler interfaces:

- **Pure DC input**
  Here there is a reversed polarity protection diode which prevents damage to the module in the case of reversed input polarity

- **AC/DC input**
  Here it is not possible to reverse the polarity of the DC input signal. The disadvantage of the AC/DC input circuit (with DC signal trigger) is the lower switching frequency of the module, because the charge capacitor (CL, necessary for AC input signals) reduces the maximum switching frequency

#### Load side of the optocoupler interface

Weidmüller optocoupler modules have been dimensioned and developed for use in a wide range of applications and industries.

Possible demands made on the load side of the optocoupler modules include:

- power amplification
- AC/DC and DC/AC signal conditioning
- short-circuit protection
- interference immunity

To meet these requirements, the modules are assembled with additional electronic elements which then define the overall functioning of the optocoupler module.

Accordingly, there are always two versions for the load side of the optocoupler: output as a 2-pole or 3-pole circuit.
Optocoupler – Overview

Optocoupler

2-pole DC output

The 2-pole DC output can be compared with a conventional switch. In this version it does not matter where the load is located (in the output circuit), although the necessary output supply voltage must be available with the right polarity.

Optocoupler modules are usually indicated with an output supply voltage range of, for example, 5 … 48 Vdc. The voltage should on no account ever be lower or higher than these values. The load current should not be higher than the stated maximum output current. If current constantly exceeds this value, the output stage will be destroyed.

Derating diagrams show the relationship of output current to ambient temperature (indicated for the products on the following pages).

2-pole AC output

A special semiconductor module (TRIAC) is used for switching AC voltage in the output stage of the optocoupler. Here, as with the DC output, consideration must also be given to the key data such as voltage, frequency, maximum load current and ambient temperature.

3-pole DC output

Use of the zero voltage switch ensures that the load is only switched on at the zero crossover of the voltage. The modules are always equipped with suitable protection elements (varistor, RC combination) as protection from non-permissible voltage peaks.

Protection circuits

All optocoupler modules have a protection circuit in the output (usually with a freewheel diode). The load side must be protected to prevent interference signals from coupling into other lines.

Standards

The following standards are complied with:

- EN 50 178: Electronic equipment for use in high current installations
- DIN VDE 01206 part 101: Protection from dangerous body currents, basic requirements for “protective separation” in electrical equipment
- DIN VDE 0884: Optoelectronic couplers for “protective separation”
- DIN VDE 0109: Insulation coordination for equipment within low-voltage systems, including creepage and clearance distances for configured printed circuit boards
Enclosure types for relay couplers

**PLUGSERIES**

The modular component system represents a new generation of plug-in optocouplers. The key element is a PXS (screw clamp) or PXZ (tension clamp) innovative relay base. Both products reflect the functionality of relays or optos and Weidmüller's experience in their commercial use. PLUGSERIES is the ideal connection system between the Solid State Relay (SSR) and the application.

**Modular principle**

The new PLUGSERIES is extremely easy to handle. Commercially available SSRs are simply plugged in, retaining clips provide a firm hold, and LED displays with a recovery diode can be plugged in.

- SSRs simply plugged in: suitable for standard and TD designs
- Independent connection technology: screw or tension clamp technology, nominal cross-sectional area 0.5 … 2.5 mm²
- Robust design of the retaining/disman-tling hook
- Control voltage 24 Vac/Vdc
- Rated switching voltage 24 Vdc, 24 Vac/Vdc, 230 Vac
- Up to 5 A continuous current
- Minimum wiring workload thanks to ZQV 2.5N plug-in cross-connectors
- Modular system allows easy handling:
  - Relay base, LED display, retaining hook and SSR
  - Clips on to the TS 35
  - Marking with WS tabs on retaining hook
- Plug-in LED with recovery diode.

**MICROSERIES**

Relay and optocoupler versions in the MICROSERIES are used in industrial automation applications for separating and coupling digital input and output signals. The space saving design makes them perfectly suited for use in sub-dis- tributors or switchgear cabinets. With its compact shape, MICROSERIES combines the functions of the classical cou- pling level with the terminal level.

- Slot-in width 6.1 mm
- Pluggable cross-connection for four input and output potentials
- Tried and tested ZQV 4N cross-con- nector system
- Wide range of input voltage from 5 .. 230 V
- LED power light, reverse polarity protection diode, freewheel diode
- WEMID enclosure material (flammability V0 as per UL 94)
- Innovative holding and eject mecha-nism
- Marking surface to take standard WS 12/6 marking

**CE marking**

Weidmüller’s relay couplers carry the CE mark and comply with the requirements laid down by EN 50 081 part 1 and EN 50 082 part 2. They can be used in both industrial-scale and smaller-scale applications.

Suitable ESD measures must be taken during installation. Overvoltage protection must be provided for long leads as pro- tection from lightning.

**WAVESERIES**

Innovative electronic components require a housing or enclosure which reflects their specific functions. It must allow adjusting and control functions and support technical requirements, such as heat dissipation or electromagnetic compatibility. A compact design saves space in the switchgear cabinet and reduces assembly costs. Ergonomic design is increasingly important for top-quality relay coupler interfaces.

The WAVESERIES fulfils all these criteria, with outstanding features including:

- Assembly without tools
- Printed circuit board
- Pluggable PCB
- ZQV 2.5V pluggable cross-connection
- Hinged transparent cover
- Marking with WS tabs
- Clips onto TS 35

**Connection systems**

The user can choose between BLZ screw plug-in connectors and BLZF tension clamp plug-in sys- tems, up to 2.5 mm² and finely stranded, for the greatest possible flexibility when wiring up the cir- cuits.

**Printed circuit board**

If the lateral locking hook is squeezed on the head end, it can be pulled out of the enclosure together with the connection level and the circuit board. The circuit board can only be pulled out without current voltage.

**Cross-connection**

The ZQV 2.5 N/2 cross-connectors can be used to connect rows of Waveseries enclosures. The cross-connection can take up to 8 A of current. It can be used for bridging the supply voltage from one electronic module to another. The voltage at the cross-connection must not exceed 50 V.

**Ventilation slits**

Diagonal ventilation slits ventilate the lower parts of the enclosures and keep temperatures moder- ate.
DK SERIES
All components in the DKO mini-coupler are of an extremely slim design: use of advanced surface-mounted parts (SMD) allows the width to be kept to just 6 mm. The range includes 4 or 5 screw connections for conductor cross-section of 0.5 … 4 mm². The mini couplers offer a wide range of applications for coupling digital sensor/actuators or signals with automation devices and the process field. DKO optocouplers can be used to pick up and standardise signals from the field with different voltages.

MCZ SERIES
The MCZ enclosure is only 6 mm wide and one of the narrowest of its kind. Its outstanding technical features include:
- Tension clamp connection to reduce assembly costs
- Integrated input/output cross-connection to reduce wiring workload

MCZO mini-conditioners (optocouplers) have 4 or 5 tension spring connections. The cross-section of the clamping conductor is 0.5 … 1.5 mm².

EG SERIES
The EG7 integral housing has a special status because it is suited only for the installation of 10 mm compact optocouplers. EG7 optocouplers can be mounted on either the TS 32 or TS 35. An RS EG7 snap-in base is also available for the OST plug-in optocouplers.

The closed EG 7 enclosures are equipped with tension clamp unit for screw connection.
Conductors with the following cross-sections can be connected:
- Integral housing EG 7: 0.5 … 1.5 mm²
- OST clip-in base: 0.5 … 2.5 mm²
**PLUGSERIES**

**Output current 24 Vdc / 2.5A**

**Output**
- Output voltage: 0 V ... 30 Vdc
- Output current (max.): 2.5 A
- Voltage drop at max. load: < 0.4 V
- Switch-on delay/switch-off delay: 2ms/10ms
- Short-circuit proof/protective circuit: No/integrated freewheel diode

**General data**
- Ambient temp., fitted w/o distance: -40 °C ... +50 °C
- Ambient temp., fitted w/ distance: -40 °C ... +50 °C
- Storage temperature: -40 °C ... +50 °C
- Approvals: cUL, UL recognized

**Insulation coordinates (EN 50 178)**
- Standards: EN 50178
- Rated voltage: 300 V
- Rated impulse voltage: 2.5 kV
- Creepage and clearance path input - output: 8 mm
- Overvoltage category: III
- Pollution severity: 2

**Dimensions**

<table>
<thead>
<tr>
<th>Screw connection</th>
<th>Tension clamp connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clamping range (rating / min. / max.)</td>
<td>mm²</td>
</tr>
<tr>
<td>Length x width x height</td>
<td>mm</td>
</tr>
</tbody>
</table>

**Ordering data**

**24VDC/24VDC 2.5A**

<table>
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<th>Input</th>
<th>15 Vdc ... 30 Vdc</th>
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</thead>
<tbody>
<tr>
<td>Rated voltage</td>
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<tr>
<td>Power rating</td>
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<tr>
<td>Auxiliary voltage</td>
<td>No</td>
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<tr>
<td>Status indicator</td>
<td>LED green</td>
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**Ordering data**

**Complete module**

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<tr>
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<th>Type</th>
<th>Order No.</th>
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</thead>
<tbody>
<tr>
<td>POS 24VDC/24VDC 2A</td>
<td>8610840000</td>
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**Spare relay, pluggable**

<table>
<thead>
<tr>
<th>Type</th>
<th>Order No.</th>
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</thead>
<tbody>
<tr>
<td>SSR 24V ACDG/24 VDC 3A</td>
<td>8576340000</td>
</tr>
</tbody>
</table>

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### PLUGSERIES

**Output current 24 Vdc / 5A**

* Free-wheeling diode for inductive loads

#### Output
- **Output voltage**: 0 V ... 30 Vdc
- **Output current (max.)**: 5 A
- **Voltage drop at max. load**: < 0.3 V
- **Switch-on delay/switch-off delay**: 2ms/10ms
- **Short-circuit proof/Protective circuit**: No/Integrated free-wheel diode

#### General data
- **Ambient temp., fitted w/o distance**: -40 °C ... +50 °C
- **Ambient temp., fitted w. distance**: -40 °C ... +50 °C
- **Storage temperature**: -40 °C ... +50 °C
- **Approvals**: cUL, UL recognized
- **Insulation coordinates (EN 60178)**
- **Rated voltage**: 300V
- **Rated impulse voltage**: 2.5 kV
- **Creepage and clearance path input - output**: 8 mm
- **Overvoltage category**: II
- **Pollution severity**: 2

#### Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Screw connection</th>
<th>Tension clamp connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length x width x height</td>
<td>mm</td>
<td>92.0 / 15.3 / 95.0</td>
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<table>
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<tr>
<th>Ordering data</th>
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<tbody>
<tr>
<td>Input</td>
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<tr>
<td>Rated voltage</td>
<td>15 Vdc ... 30 Vdc</td>
</tr>
<tr>
<td>Rated current</td>
<td>approx. 10mA</td>
</tr>
<tr>
<td>Power rating</td>
<td>250 mW</td>
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<tr>
<td>Auxiliary voltage</td>
<td>No</td>
</tr>
<tr>
<td>Status indicator</td>
<td>LED green</td>
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</tbody>
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<table>
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<th>Complete module</th>
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<tbody>
<tr>
<td>Screw connection</td>
<td>Type</td>
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<tr>
<td>Order No.</td>
<td>PCB 24VDC/24VDC 5A</td>
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<tr>
<td>Tension clamp connection</td>
<td>Type</td>
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<tr>
<td>Order No.</td>
<td>PCB 24VDC/24VDC 5A</td>
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<table>
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<tr>
<th>Ordering data</th>
<th>Spare relay, pluggable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td></td>
</tr>
<tr>
<td>Order No.</td>
<td>SSR 24V AC/DC/24 VDC 5A</td>
</tr>
</tbody>
</table>

**Input**

- **Rated voltage**: 24 Vdc
- **Rated current**: 5 A
- **Power rating**: approx. 10mA
- **Auxiliary voltage**: 15 Vdc...
- **Status indicator**: LED green

**Ordering data**

- **Complete module**
  - **Type**: PCB 24VDC/24VDC 5A
  - **Order No.**: 8810900000
- **Tension clamp connection**
  - **Type**: PCB 24VDC/24VDC 5A
  - **Order No.**: 8810970000
- **Spare relay, pluggable**
  - **Type**: SSR 24V AC/DC/24 VDC 5A
  - **Order No.**: 8576350000

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**PLUGSERIES**

Output current 24 Vuc / 1A

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**Output**
- **Output voltage**: 0 V ... 30 Vac
- **Output current (max.)**: 1 A
- **Voltage drop at max. load**: < 0.9 V
- **Isolated current (closed circuit curr.)**: < 1 mA
- **Switch-on delay/Switch-off delay**: 5ms/12ms
- **Short-circuit proof/Protective circuit**: No/Integrated freewheel diode

**General data**
- **Ambient temp., fitted w/o distance**: -40 °C…+50 °C
- **Ambient temp., fitted w. distance**: -40 °C…+50 °C
- **Storage temperature**: -40 °C…+50 °C
- **Approvals**: cUL, UL recognized

**Insulation coordinates (EN 50 178)**

**Standards**: EN 50178
- **Rated voltage**: 300V
- **Rated impulse voltage**: 4.0kV
- **Creepage and clearance path input - output**: 8mm
- **Overvoltage category**: II
- **Pollution severity**: 2

**Dimensions**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Screw connection</th>
<th>Tension clamp connection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Clamping range (rating - / min. / max.)</strong></td>
<td>2.5 / 0.5 / 2.5</td>
<td>2.5 / 0.5 / 2.5</td>
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<td><strong>Length x width x height</strong></td>
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<td>92.0 / 15.3 / 87.0</td>
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</tbody>
</table>

**Information**

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**Ordering data**

<table>
<thead>
<tr>
<th><strong>24VDC/24VUC 1A</strong></th>
</tr>
</thead>
</table>

**Input**
- **Rated voltage**: 15 Vdc...30 Vdc
- **Power rating**: approx. 10mA
- **Auxiliary voltage**: 250 mW
- **Status indicator**: LED green

---

**Ordering data**

<table>
<thead>
<tr>
<th><strong>Complete module</strong></th>
</tr>
</thead>
</table>

**Screw connection**
- **Type**: POS 24VDC24VUC 1A
- **Order No.**: 8810890000

**Tension clamp connection**
- **Type**: POS 24VDC24VUC 1A
- **Order No.**: 8810960000

**Spare relay, pluggable**
- **Type**: SSR 24V ACDC24VACDC
- **Order No.**: 8576380000

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Optocoupler

Output current 230 Vac / 2A

Output voltage: 12 V ... 275 Vac
Output current (max.): 2 A
Voltage drop at max. load: < 1 V
Auto-off current (closed circuit current): < 1 mA
Switch-on delay/switch-off delay: 12ms/20ms
Short-circuit proof/protection circuit: No/RC-element

General data
Ambient temp., fitted w/o distance: -40 °C ... +50 °C
Ambient temp., fitted w. distance: -40 °C ... +50 °C
Storage temperature: -40 °C ... +50 °C
Approvals: cUL, UL recognized

Insulation coordinates (EN 50 178)
Standards: EN 50178
Rated voltage: 300V
Rated impulse voltage: 4.0kV
Creepage and clearance path input - output: 8mm
Overvoltage category: II
Pollution severity: 2

Dimensions
<table>
<thead>
<tr>
<th>Screw connection</th>
<th>Tension clamp connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clamping range (rating - min. / max.)</td>
<td>mm²</td>
</tr>
<tr>
<td>Length x width x height</td>
<td>mm</td>
</tr>
</tbody>
</table>

Ordering data

24VDC/230VAC 2A

Rated voltage: 15 Vdc ... 30 Vdc
Rated current: approx. 10mA
Power rating: 250 mW
Auxiliary voltage: No
Status indicator: LED green

Options

Ordering data

Complete module
Screw connection Type: PCE 24VDC/230VAC 2A, Order No.: 8610800000
Tension clamp connection Type: PCE 24VDC/230VAC 2A, Order No.: 8610930000

Ordering data

Spare relay, pluggable
Type: SSR 24V ACDC/230VAC 2A, Order No.: 8576370000

Information

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**PLUGSERIES**

**Output current 230 Vac / 4A**

<table>
<thead>
<tr>
<th>Output</th>
<th>12 V ... 275 Vac</th>
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<tbody>
<tr>
<td>Output voltage (max.)</td>
<td>3 A (4 A at 20°C)</td>
</tr>
<tr>
<td>Voltage drop at max. load</td>
<td>&lt; 1.1 V</td>
</tr>
<tr>
<td>Switch-on delay/Switch-off delay</td>
<td>12ms/20ms</td>
</tr>
<tr>
<td>Short-circuit proof/Protective circuit</td>
<td>No/RC-element</td>
</tr>
</tbody>
</table>

**General data**

- Ambient temp., fitted w/o distance: -40 °C ... +50 °C
- Ambient temp., fitted w. distance: -40 °C ... +50 °C
- Storage temperature: -40 °C ... +50 °C
- Approvals: cUL, UL recognized

**Insulation coordinates (EN 50 178)**

- Standards: EN 50178
- Rated voltage: 300V
- Rated impulse voltage: 4.0kV
- Creepage and clearance path input - output: 8mm
- Overvoltage category: III
- Pollution severity: 2

**Dimensions**

<table>
<thead>
<tr>
<th>Screw connection</th>
<th>Tension clamp connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clamping range (rating)</td>
<td>mm²</td>
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<tr>
<td>2.5 / 0.5 / 2.5</td>
<td>92.0 / 15.3 / 95.0</td>
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<td>92.0 / 15.3 / 87.0</td>
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**Spare relay, pluggable**

<table>
<thead>
<tr>
<th>Type</th>
<th>Order No.</th>
</tr>
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<tbody>
<tr>
<td>POS 24VDC/230VAC 4A</td>
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<tr>
<td>POZ 24VDC/230VAC 4A</td>
<td>8810980000</td>
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<tr>
<td>SSR 24V ACDC/230VAC 4A</td>
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**Ordering data**

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<tr>
<th>Input</th>
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</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>15 Vdc ... 30 Vdc</td>
</tr>
<tr>
<td>Rated current</td>
<td>approx. 10mA</td>
</tr>
<tr>
<td>Auxiliary voltage</td>
<td>No</td>
</tr>
<tr>
<td>Status indicator</td>
<td>LED green</td>
</tr>
<tr>
<td>Power rating</td>
<td>250 mW</td>
</tr>
<tr>
<td>Status indicator</td>
<td>approx. 10mA</td>
</tr>
<tr>
<td>Power rating</td>
<td>250 mW</td>
</tr>
<tr>
<td>Status indicator</td>
<td>LED green</td>
</tr>
</tbody>
</table>

**Clearwater Tech**

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### Technical data

| Empty base | Rated current | 16 A |
| Rated voltage | 250 V |
| Voltage strength coil / contacts | >4 kV |
| Protection | IP 20 |
| Rated cross-sectional area | 2.5 mm² |
| Stripping length | 8 mm |
| Tension clamp | 10 mm |
| Ambient temperature | –40°C ... +60°C |
| Flammability class as per UL 94 | V-0 |

### Order data

<table>
<thead>
<tr>
<th>Type</th>
<th>Qty</th>
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<tr>
<td>FRC</td>
<td>100</td>
<td>8536700000</td>
</tr>
<tr>
<td>LED 24 Vdc</td>
<td>20</td>
<td>8536710000</td>
</tr>
<tr>
<td>LED 3 x 24 Vdc</td>
<td>20</td>
<td>8611010000</td>
</tr>
<tr>
<td>LED 48 Vdc</td>
<td>20</td>
<td>8536720000</td>
</tr>
<tr>
<td>LED 115 Vdc</td>
<td>20</td>
<td>8536730000</td>
</tr>
<tr>
<td>LED 12 Vac</td>
<td>20</td>
<td>8536740000</td>
</tr>
<tr>
<td>LED 115 Vac</td>
<td>20</td>
<td>8536750000</td>
</tr>
<tr>
<td>LED 230 Vac</td>
<td>20</td>
<td>8536760000</td>
</tr>
<tr>
<td>LED 230 Vac</td>
<td>20</td>
<td>8536770000</td>
</tr>
<tr>
<td>FCH 200 mF/200μF</td>
<td>20</td>
<td>8566550000</td>
</tr>
<tr>
<td>FCH 2.5 N/4-2SW</td>
<td>60</td>
<td>1784270000</td>
</tr>
<tr>
<td>FCH 2.5 N/4-2RT</td>
<td>60</td>
<td>1784280000</td>
</tr>
<tr>
<td>FCH 2.5 N/4-2SL</td>
<td>60</td>
<td>1784290000</td>
</tr>
<tr>
<td>WS 10/5</td>
<td>200</td>
<td>1060960000</td>
</tr>
<tr>
<td>WS 15/5</td>
<td>96</td>
<td>1060980000</td>
</tr>
</tbody>
</table>

### Schematic diagrams

#### Relay for high switch-on current

- Marking field
- Retaining clip

#### Cross-connection channel

- A1 / A2

#### Tension clamp connection

- 11/21

#### Screw connection

- 15.3

#### Operating control display

- DC version
- AC version

---

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**Output current 24 Vdc / 0.1A**

- Universal interface between control and sensor/actuator
- Pluggable cross-connection ZQV 4N
- Solid-state relay interchangeable
- Width 6.1 mm
- Screw or tension clamp connection technology
- Mounting on TS35

### Technical data

#### Input
- Rated voltage: 24 Vdc +/- 20%
- Rated current: 0.1 A
- Power rating: 140 mW
- Max. input frequency: No
- Auxiliary voltage: LED green
- Status indicator: 3 V…48 Vdc
- Output voltage: 0.1 A
- Dropout: < 1 V
- Short-circuit current: No
- No integrated freewheel diode
- Switch-off delay: No
- Switch-on delay: < 1 mA
- Short-circuit proof: No
- Protective circuit: < 6.5 ms

#### Output
- Rated voltage: 3 V…48 Vdc
- Rated current: 0.1 A
- Dropout: < 1 V
- Short-circuit current: No
- No integrated freewheel diode
- Switch-off delay: No
- Switch-on delay: < 1 mA
- Short-circuit proof: No
- Protective circuit: < 6.5 ms

#### General data
- Ambient temp., fitted w. distance: -25 °C…+50 °C
- Ambient temp., fitted w/o distance: -25 °C…+50 °C
- Storage temperature: -40 °C…+60 °C

#### Approvals
- CE, UL/UR
- Mounting on TS35

#### Insulation coordinates (EN 50178)
- Rated voltage: EN 50178
- Rated impulse voltage: EN 50178

#### Overvoltage category
- Pollution severity: III

### Ordering data

<table>
<thead>
<tr>
<th>Connection technology</th>
<th>Type</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screw connection</td>
<td>MOS 24Vac / 24Vdc 0.1A</td>
<td>8607340000</td>
</tr>
<tr>
<td>Tension clamp c.</td>
<td>MOS 230Vac / 24Vdc 0.1A</td>
<td>8607710000</td>
</tr>
</tbody>
</table>

### Information

<table>
<thead>
<tr>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clamping range (rating / min. / max.)</td>
</tr>
<tr>
<td>Length x width x height</td>
</tr>
<tr>
<td>90.0 x 6.1 x 92.0</td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pluggable cross-connection ZQV 4N</td>
</tr>
<tr>
<td>Pluggable cross-connection 230Vac / 24Vdc 0.1A</td>
</tr>
<tr>
<td>Pluggable cross-connection 24Vac</td>
</tr>
</tbody>
</table>

---

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MICROSERIES

Output current 24 Vdc / 2A

Universal interface between control and sensor/actuator

- Plugable cross-connection ZQV 4N
- Solid-state relay interchangeable
- Width 6.1 mm
- Screw or tension clamp connection technology
- Mounting on TS35

Technical data

Input
- Rated voltage: 24 Vdc +/- 20 %
- Rated current: 2.6 mA
- Power rating: 140 mW
- Max. input frequency: 300 Hz
- Status indicator: LED green

Output
- Output voltage: 3 V…33 Vdc
- Output current (max.): 2 A
- Voltage drop at max. load: < 120 mV
- Block-state cur. (closed circuit cur.): approx. 10 µA
- Switch-on delay/Switch-off delay: No/integrated freewheel diode
- Short-circuit proof/Protective circuit: No/integrated freewheel diode

General data
- Ambient temp., fitted w. distance: -25 °C…+50 °C
- Ambient temp., fitted w/o distance: -25 °C…+50 °C
- Storage temperature: -40 °C…+60 °C
- Approvals: CE, UL/UR

Insulation coordinates (EN 50178)
- Rated voltage: 230 Vac +/- 10 %
- Rated impulse voltage: 740V
- Creepage and clearance path input - output: 5.5 mm
- Overvoltage category: III
- Pollution severity: 2

Dimensions
- Clamping range (rating- / min. / max.): 2.50 / 0.50 / 4
- Length x width x height: 93.0 x 6.1 x 92.0

Information
- Mounting on TS35

Ordering data

Connection technology
- Screw connection
- Tension clamp c.

Type | Qty. | Order No.
--- | --- | ---
MOS 24Vac / 24Vdc 2A | 8607350000 |
MOZ 24Vac / 24Vdc 2A | 8607370000 |

Accessories

Pluggable cross-connection ZQV 4N

24VDC/24VDC 2A

120VUC/24VDC 2A

230VAC/24VDC 2A
## MICROSERIES

### Plug-in solid state relay

**SSS Relay**  
Switching current 100 mA  
Switching current 2 A

### Technical data

<table>
<thead>
<tr>
<th>Input</th>
<th>Nominal control voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control voltage</td>
<td>24 Vdc / 60 Vdc</td>
</tr>
<tr>
<td>Control current at U&lt;sub&gt;i&lt;/sub&gt; = 24 V</td>
<td>7 mA ± 10 % / 2 A ± 10 %</td>
</tr>
<tr>
<td>Release voltage</td>
<td>10 Vdc / 40 Vdc</td>
</tr>
<tr>
<td>Control circuit resistance</td>
<td>ca. 4 kΩ / ca. 20 kΩ</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Switching voltage</td>
<td></td>
</tr>
<tr>
<td>Switching/continuous current at U&lt;sub&gt;s&lt;/sub&gt; = 6 Vdc</td>
<td>100 mA/60 mA</td>
</tr>
<tr>
<td>Conducting-state voltage</td>
<td>&lt; 1 V</td>
</tr>
</tbody>
</table>

| Insulation | |
| Test voltage between control circuit / switching circuit | 2.5 kV |

| Other data | |
| Operation temperature range | –20°C ... +60°C / –40°C ... +70°C |
| Storage temperature range | |
| Weight | 3.65 g |
| Approvals | |
| Main-line setting diagram | |

*For other data see also [http://em.tycoelectronics.com](http://em.tycoelectronics.com)*

### Order data

<table>
<thead>
<tr>
<th>Type</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSS Relay 24 V / 24 V 0.1 Adc</td>
<td>4061180000</td>
</tr>
<tr>
<td>SSS Relay 60 V / 24 V 0.1 Adc</td>
<td>4061230000</td>
</tr>
<tr>
<td>SSS Relay 24 V / 24 V 2 Adc</td>
<td>4061190000</td>
</tr>
<tr>
<td>SSS Relay 60 V / 24 V 2 Adc</td>
<td>4061200000</td>
</tr>
</tbody>
</table>

### Dimensional drawings

**Print picture**

---

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**Accessories**

### Pluggable cross-connection

<table>
<thead>
<tr>
<th>Type</th>
<th>No. of poles</th>
<th>Qty</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZOV 4N / 2 GE</td>
<td>2</td>
<td>60</td>
<td>1756250000</td>
</tr>
<tr>
<td>ZOV 4N / 3 GE</td>
<td>3</td>
<td>60</td>
<td>1756260000</td>
</tr>
<tr>
<td>ZOV 4N / 4 GE</td>
<td>4</td>
<td>60</td>
<td>1756270000</td>
</tr>
<tr>
<td>ZOV 4N / 10 GE</td>
<td>10</td>
<td>20</td>
<td>1756260000</td>
</tr>
<tr>
<td>ZOV 4N / 41 GE</td>
<td>41</td>
<td>10</td>
<td>1756270000</td>
</tr>
<tr>
<td>Red</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZOV 4N / 2 RT</td>
<td>2</td>
<td>60</td>
<td>1793950000</td>
</tr>
<tr>
<td>ZOV 4N / 3 RT</td>
<td>3</td>
<td>60</td>
<td>1793960000</td>
</tr>
<tr>
<td>ZOV 4N / 4 RT</td>
<td>4</td>
<td>60</td>
<td>1794010000</td>
</tr>
<tr>
<td>ZOV 4N / 10 RT</td>
<td>10</td>
<td>20</td>
<td>1794040000</td>
</tr>
<tr>
<td>ZOV 4N / 41 RT</td>
<td>41</td>
<td>10</td>
<td>1794070000</td>
</tr>
<tr>
<td>Blue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZOV 4N / 2 BL</td>
<td>2</td>
<td>60</td>
<td>1793980000</td>
</tr>
<tr>
<td>ZOV 4N / 3 BL</td>
<td>3</td>
<td>60</td>
<td>1793990000</td>
</tr>
<tr>
<td>ZOV 4N / 4 BL</td>
<td>4</td>
<td>60</td>
<td>1794020000</td>
</tr>
<tr>
<td>ZOV 4N / 10 BL</td>
<td>10</td>
<td>20</td>
<td>1794050000</td>
</tr>
<tr>
<td>ZOV 4N / 41 BL</td>
<td>41</td>
<td>10</td>
<td>1794080000</td>
</tr>
<tr>
<td>Black</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZOV 4N / 2 SW</td>
<td>2</td>
<td>60</td>
<td>1793970000</td>
</tr>
<tr>
<td>ZOV 4N / 3 SW</td>
<td>3</td>
<td>60</td>
<td>1794030000</td>
</tr>
<tr>
<td>ZOV 4N / 4 SW</td>
<td>4</td>
<td>60</td>
<td>1794090000</td>
</tr>
<tr>
<td>ZOV 4N / 10 SW</td>
<td>10</td>
<td>20</td>
<td>1794060000</td>
</tr>
<tr>
<td>ZOV 4N / 41 SW</td>
<td>41</td>
<td>10</td>
<td>1794090000</td>
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### Technical data

<table>
<thead>
<tr>
<th>Clamping conductor</th>
<th>Tension clamp connection</th>
<th>Screw connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid H07V-U</td>
<td>mm²</td>
<td>0.5 ... 2.5</td>
</tr>
<tr>
<td>Flexible H07V-K</td>
<td>mm²</td>
<td>0.5 ... 2.5</td>
</tr>
<tr>
<td>“T” with wire and ferrule as per DIN 46 228 / 1</td>
<td>mm²</td>
<td>0.5 ... 1.5</td>
</tr>
<tr>
<td>“T” with wire end ferrule with plastic collar</td>
<td>mm²</td>
<td>0.5 ... 1.5</td>
</tr>
<tr>
<td>Max. clamping range</td>
<td>mm²</td>
<td>0.13 ... 2.5</td>
</tr>
</tbody>
</table>

**Plug gauge as per IEC 60 947-1**

- Size: A 2
- Size: A 3

### General technical data

- Rated torque: 0.6
- Constant current of the cross-connection 2 pole: A 10
- Constant current of the cross-connection multi-pole: A 10
- Stripping length: mm 10
- Protection: IP 20
- Enclosure material: Wemid
- Flammability class as per UL 94: V-0
- Rated current: A 6
- Rated voltage: V 250

### Other accessories

<table>
<thead>
<tr>
<th>Type</th>
<th>Qty</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>WS 12/6</td>
<td>12 x 6 mm</td>
<td>200</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Labels, laser mark</th>
<th>Qty</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LM MT 300 15/6 ge</td>
<td>484 labels/Bogen</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Screwdriver</th>
<th>Qty</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD 0.6 x 3.5 x 100</td>
<td>10</td>
<td>9008330000</td>
</tr>
</tbody>
</table>

### Dimensioned drawing

- Tension clamp connection
- Screw connection

---

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WAVESERIES

Output voltage 24 Vdc, negative switching, wide input range

Input
Rated voltage
4.0 Vdc...5 Vdc...6.0 Vdc
Rated current
7.5...10mA
Power rating
30...114 mW
Auxiliary voltage
No
Status indicator
LED green in input

Output
Output voltage
18 Vdc...24 Vdc...30 Vdc
Output current (max.)
2A, negative switching
Voltage drop at max. load
Steel-state curr. (closed circuit curr.)
Switch-on delay/ Switch-off delay
1 ms/6 ms
Short-circuit proof/Protective circuit
No/varistor

General data
Ambient temp., fitted w/o distance
-25 °C...+50 °C
Ambient temp., fitted w. distance
-25 °C...+50 °C
Storage temperature
-40 °C...+85 °C
Approvals
UL/CSA

Insulation coordinates (EN 50 178)
Standards
EN 50178
Rated voltage
300V
Rated impulse voltage
6.0kV
Creepage and clearance path input - output
=> 5.5 mm
Overvoltage category
II
Pollution severity
2

Dimensions
Clamping range (rating - min./ max.) mm²
1.5 / 0.5 / 2.5
Length x width x height mm
72.0 / 22.5 / 92.4

Information

Ordering data
Complete module
Type
WDS1 5VDC
Order No.
8275430000
Tension clamp connection
Type
Order No.

Ordering data
Spare relay, pluggable
Type
Order No.

Ordering data
Complete module
Screw connection
Type
WDS1 5VDC
Order No.
8275430000

Ordering data
Complete module
Tension clamp connection
Type
Order No.

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### WAVESERIES

**Output voltage 5-48 Vdc**

- **Output voltage**: 5 Vdc…48 Vdc
- **Output current (max.)**: 100 mA
- **Voltage drop at max. load**: 8 mA/55 ms
- **Switch-on delay/Switch-off delay**: 8 ms/35 ms
- **Short-circuit proof/Protective circuit**: Nonvaristor, integral free-wheeling diode

### General data

- **Ambient temp., fitted w/o distance**: -25 °C…+60 °C
- **Ambient temp., fitted w. distance**: -25 °C…+60 °C
- **Storage temperature**: -40 °C…+85 °C
- **Approvals**: UL/CSA

### Insulation coordinates (EN 50 178)

- **Standards**: EN 50178
- **Rated voltage**: 300V
- **Rated impulse voltage**: 6.0kV
- **Creepage and clearance path input - output**: => 5.5 mm
- **Overvoltage category**: II
- **Pollution severity**: 2

### Dimensions

<table>
<thead>
<tr>
<th>Screw connection</th>
<th>Tension clamp connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm²</td>
<td>1.5 / 0.5 / 2.5</td>
</tr>
<tr>
<td>Length x width x height</td>
<td>72.0 / 22.5 / 92.4</td>
</tr>
</tbody>
</table>

### Information

#### Ordering data

**Input**

- **Rated voltage**: 3.5 Vdc…15 Vdc
- **Rated current**: 10…25mA
- **Power rating**: 32…375 mW
- **Auxiliary voltage**: No
- **Status indicator**: LED green in input

**Ordering data**

- **Complete module**: WGIS 3.5-15VDC 5KHZ
- **Order No.**: 827590000
- **Spare relay, pluggable**: Type
- **Order No.**: Type

---

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**WAVESERIES**

Output voltage 24 Vdc, 0.5 A, short-circuit proof

---

**Ordering data**

<table>
<thead>
<tr>
<th>Input</th>
<th>12VUC/24VDC 0.5A</th>
<th>15-60VDC 1KHZ</th>
<th>115VUC/24VDC 0.5A</th>
<th>230VUC/24VDC 0.5A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>10 Vdc...12 Vdc...14 Vdc</td>
<td>15 Vdc...60 Vdc</td>
<td>115 Vuc, max. 130 Vuc</td>
<td>230 Vuc, max. 250 Vac</td>
</tr>
<tr>
<td>Rated current</td>
<td>0.18 VA / 0.14 W</td>
<td>21...246 mW</td>
<td>0.16 VA / 0.23 W</td>
<td>2.6 VA / 0.4 W</td>
</tr>
<tr>
<td>Power rating</td>
<td>15mA ac/12mA dc</td>
<td>1.4...4.1mA</td>
<td>11.5mA ac/7.8mA dc</td>
<td>11.5mA ac/7.8mA dc</td>
</tr>
<tr>
<td>Auxiliary voltage</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Status indicator</td>
<td>LED green in output</td>
<td>LED green in output</td>
<td>LED green in output</td>
<td>LED green in output</td>
</tr>
</tbody>
</table>

---

**Ordering data**

<table>
<thead>
<tr>
<th>Complete module</th>
<th>Screw connection Type</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WOS1 12VUC</td>
<td>8275500000</td>
</tr>
<tr>
<td></td>
<td>WOS1 15-60VDC 1KHZ</td>
<td>8237780000</td>
</tr>
<tr>
<td></td>
<td>WOS1 115VUC</td>
<td>8235180000</td>
</tr>
<tr>
<td></td>
<td>WOS1 230VUC</td>
<td>8275380000</td>
</tr>
</tbody>
</table>

---

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**WAVESERIES**

**Output voltage 24 Vdc, 5 A, short-circuit proof**

**Derating curve**

- Clearing distance 10 mm

**Output**
- Output voltage: 19.2 Vdc...24 Vdc...38.8 Vdc
- Output current (max.): 5 A

**Voltage drop at max. load**
- Block-state curr. (closed circuit curr.): approx. 8 ms/25 ms

**Switch-on delay/Switch-off delay**
- approx. 8 ms/25 ms

**Short-circuit proof/Protective circuit**
- Yes

**General data**
- Ambient temp., fitted w/o distance: -25 °C...+50 °C
- Ambient temp., fitted w. distance: -25 °C...+50 °C
- Storage temperature: -40 °C...+85 °C
- Approvals: UL/CSA

**Insulation coordinates (EN 50 178)**
- Standards: EN 50178
- Rated voltage: 300 V
- Rated impulse voltage: 6.0 kV
- Creepage and clearance path input - output: => 5.5 mm
- Overvoltage: category III
- Pollution severity: 2

**Dimensions**
- Screw connection:
  - Clamping range (rating- / min. / max.) mm: 1.5 / 0.5 / 2.5
  - Length x width x height mm: 92.4 / 22.5 / 112.4
- Tension clamp connection:

**Ordering data**

**24VUC/24VDC 5A**
- Rated voltage: 24 Vuc +/- 10 %
- Rated current: 16.3 mA ac/13.5 mA dc
- Power rating: 0.39 VA / 0.32 W
- Auxiliary voltage: No
- Status indicator: LED green in output

**115VUC/24VDC 5A**
- Rated voltage: 115 Vuc, max. 130 Vuc
- Rated current: 3.1 mA ac/2.8 mA dc
- Power rating: 0.35 VA / 0.32 W
- Auxiliary voltage: No
- Status indicator: LED green in output

**230VUC/24VDC 5A**
- Rated voltage: 230 Vuc, max. 250 Vuc
- Rated current: 12 mA ac/18 mA dc
- Power rating: 2.7 VA / 0.4 W
- Auxiliary voltage: No
- Status indicator: LED green in output

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WAVESERIES

Output voltage 230 Vac, 3.5 A

- **Output voltage:** 24 Vac...250 Vac
- **Output current (max.):** 3.5 A
- **Voltage drop at max. load:**
  - Steel wire: clear circuit current
  - Switch-on delay/switch-off delay: max. 20 ms/ max. 20 ms
- **Short-circuit proof/Protective circuit:** No/RC-combination with resistor

**General data**
- **Ambient temp., fitted w/o distance:** -25 °C...+50 °C
- **Ambient temp., fitted w. distance:** -25 °C...+50 °C
- **Storage temperature:** -40 °C...+85 °C
- **Approvals:** UL/CeSa

**Insulation coordinates (EN 50 178)**
- **Standards:** EN 50178
- **Rated voltage:** 300V
- **Rated impulse voltage:** 6.0kV
- **Output voltage (clearance path):** => 5.5 mm
- **Overvoltage category:** III
- **Pollution severity:** 2

**Dimensions**
- **Screw connection (rating / min. / max.)** mm: 1.5 / 0.5 / 2.5
- **Length x width x height:** mm: 92.4 / 22.5 / 112.4

**Ordering data**

<table>
<thead>
<tr>
<th>Input</th>
<th>15-60VUC/24VDC 5A</th>
<th>115VUC/230VAC 3.5A</th>
<th>230VUC/230VAC 3.5A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rated voltage</strong></td>
<td>15 Vac...60 Vac/66 Vac</td>
<td>115 Vac, max. 130 Vac</td>
<td>230 Vac, max. 250 Vac</td>
</tr>
<tr>
<td><strong>Rated current</strong></td>
<td>3.3...5.3 mA ac/3.5...5.6 mA dc</td>
<td>3.8 mA ac/7.2 mA dc</td>
<td>11.8 mA ac/3.3 mA dc</td>
</tr>
<tr>
<td><strong>Power rating</strong></td>
<td>0.31 VA / 0.33 W</td>
<td>0.44 VA / 0.82 W</td>
<td>2.7 VA / 0.75 W</td>
</tr>
<tr>
<td><strong>Auxiliary voltage</strong></td>
<td>15 Vuc...60 Vac/66 Vac</td>
<td>115 Vuc, max. 130 Vac</td>
<td>230 Vuc, max. 250 Vac</td>
</tr>
<tr>
<td><strong>Status indicator</strong></td>
<td>LED green in input</td>
<td>LED green in input</td>
<td>LED green in input</td>
</tr>
</tbody>
</table>

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WAVESERIES

Output volt. 24 Vdc, 0.5 A,
short-circuit proof, 4 channels

Ordering data

<table>
<thead>
<tr>
<th>24VUC/24VDC 0.5A</th>
<th>115VUC/24VDC 0.5A</th>
<th>230VUC/24VDC 0.5A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated voltage</td>
<td>16 Vuc...30 Vuc</td>
<td>115 Vuc, max. 130 Vuc</td>
</tr>
<tr>
<td>Rated current</td>
<td>2.8mA ac/3.7mA dc</td>
<td>1.4mA ac/2mA dc</td>
</tr>
<tr>
<td>Power rating</td>
<td>0.4 VA / 0.3 W</td>
<td>0.16 VA / 0.23 W</td>
</tr>
<tr>
<td>Auxiliary voltage</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Status indicator</td>
<td>LED green in output</td>
<td>LED green in output</td>
</tr>
</tbody>
</table>

Information

Ordering data

Complete module

<table>
<thead>
<tr>
<th>Screw connection Type</th>
<th>WOB2 24VUC 4C</th>
<th>WOB2 115VUC 4C</th>
<th>WOB2 230VUC 4C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order No.</td>
<td>827720000</td>
<td>827536000</td>
<td>827534000</td>
</tr>
</tbody>
</table>

Ordering data

Tension clamp connection

<table>
<thead>
<tr>
<th>Type</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ordering data

Spare relay, pluggable

<table>
<thead>
<tr>
<th>Type</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Information
WAVE SERIES

For high switching frequency up to 100kHz

Output
- Output voltage: 21.6 Vdc...24 Vdc...26.4 Vdc
- Output current (max.): 50 mA
- Voltage drop at max. load
- Switch-on delay/switch-off delay: 1 µs/7 µs
- Short-circuit proof/protective circuit: Non-wirable, polarity reversal protection

General data
- Ambient temp., fitted w/o distance: -25 °C...+60 °C
- Ambient temp., fitted w. distance: -25 °C...+60 °C
- Storage temperature: -40 °C...+85 °C
- Approvals: UL/CUL

Insulation coordinates (EN 50 178)

Standards
- EN 50178

Rated voltage
- 300V

Rated impulse voltage
- 6.0kV

Creepage and clearance path input - output
- => 5.5 mm

Overvoltage category
- III

Pollution severity
- 2

Dimensions
- Screw connection: 1.5 / 0.5 / 2.5
- Tension clamp connection: 2 / 2 / 2.5

Length x width x height
- 72.0 / 22.5 / 92.4

Information

Ordering data

<table>
<thead>
<tr>
<th>Input</th>
<th>5VTTL 50KHZ</th>
<th>12-28VDC 100KHZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>5 V TTL</td>
<td>12 Vdc...28 Vdc</td>
</tr>
<tr>
<td>Rated current</td>
<td>13mA</td>
<td>8mA</td>
</tr>
<tr>
<td>Power rating</td>
<td>65 mW</td>
<td>190 mW</td>
</tr>
<tr>
<td>Auxiliary voltage</td>
<td>5 V</td>
<td>No</td>
</tr>
<tr>
<td>Status indicator</td>
<td>LED green in input</td>
<td>LED green in input</td>
</tr>
</tbody>
</table>

Ordering data

<table>
<thead>
<tr>
<th>Complete module</th>
<th>Type</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screw connection</td>
<td>WOS1 5VTTL 50KHZ</td>
<td>827520000</td>
</tr>
<tr>
<td>Tension clamp connection</td>
<td>WOS1 12-28VDC 100KHZ</td>
<td>827540000</td>
</tr>
</tbody>
</table>

Ordering data

<table>
<thead>
<tr>
<th>Spare relay, pluggable</th>
<th>Type</th>
<th>Order No.</th>
</tr>
</thead>
</table>

Information
MCZ-SERIES

MiniConditioner MCZ O

Universal interface between control and sensor/actuator

Direct switching of load currents up to 2A

MCZ O with following features:

• Tension clamp connection technology
• Pluggable cross-connection
• Width 6mm

Technical data

Input
- Rated voltage: 24 Vuc +/- 20% 13mA ac/12mA dc
- Rated current: 200mA ac/200mA dc: 10 Hz ac: 5 Hz
- Power rating: dc: 10.5W, ac: 0.28W
- Status indicator: LED green

Output
- Output voltage: 5…48Vdc
- Output current (max.): 20 mA
- Voltage drop at max. load: < 1 V
- Short-circuit proof: Protective circuit

General data
- Ambient temp., fitted w. distance: -25°C...+40°C
- Ambient temp., fitted w/o distance: -40°C...+60°C
- Storage temperature: -25°C...+60°C
- Approvals: CE, UL, CSA

Insulation coordinates (EN 50 178)
- Rated voltage: 300V
- Rated impulse voltage: 6.0kV
- Creepage and clearance path input - output: >= 5.5 mm
- Overvoltage category: III

Dimensions
- Clamping range (rating / min. / max.): 1.50 / 1.00 / 1.50
- Length x width x height: 91.0 x 6.0 x 64.0 mm
- Approvals: CE, UL, CSA

Ordering data

Connection technology
- Type: MCZ O 24VUC
- Qty: 10
- Order No.: 8365940000

Accessories
- End plate: AP MCZ/S 8389030000

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MiniConditioner MCZ O

Universal interface between control and sensor/actuator

MCZ O with following features:
- Tension clamp connection technology
- Pluggable cross-connection
- Width 6mm

Technical data

<table>
<thead>
<tr>
<th>Input</th>
<th>120 Vac ±5 % -15 %</th>
<th>230 Vac ±5 % -15 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>350Vac</td>
<td>10 mA</td>
</tr>
<tr>
<td>Rated current</td>
<td>400mA</td>
<td>2.3 VA</td>
</tr>
<tr>
<td>Power rating</td>
<td>50 mA</td>
<td>Ac: 5 Hz duty factor 1.2, dc: 20 Hz duty factor 1.2</td>
</tr>
<tr>
<td>Max. input frequency</td>
<td>Ac: 5 Hz duty factor 1.2, dc: 20 Hz duty factor 1.2</td>
<td></td>
</tr>
<tr>
<td>Auxiliary voltage</td>
<td>LED green</td>
<td>No</td>
</tr>
<tr>
<td>Status indicator</td>
<td>No</td>
<td>LED green</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output</th>
<th>5…48 Vdc</th>
<th>5…48 Vdc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage drop at max. load</td>
<td>&lt; 1.6 V</td>
<td>&lt; 1.6 V</td>
</tr>
<tr>
<td>Block-state curr. (closed circuit curr.)</td>
<td>0.16 mA</td>
<td>0.16 mA</td>
</tr>
<tr>
<td>Switch-on delay/Switch-off delay</td>
<td>50 mA</td>
<td>50 mA</td>
</tr>
<tr>
<td>Short-circuit proof/Protective circuit</td>
<td>No/integrated freewheel diode</td>
<td>No/integrated freewheel diode</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General data</th>
<th>-25 °C…+50 °C</th>
<th>-25 °C…+50 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temp., fitted w. distance</td>
<td>GE, UL, CSA</td>
<td>GE, UL, CSA</td>
</tr>
<tr>
<td>Ambient temp., fitted w/o distance</td>
<td>EN 50178</td>
<td>EN 50178</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>300V</td>
<td>300V</td>
</tr>
<tr>
<td>Insulation coordinates (EN 50 178)</td>
<td>6.0kV</td>
<td>6.0kV</td>
</tr>
<tr>
<td>Standards</td>
<td>III</td>
<td>III</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>&gt;= 5.5 mm</td>
<td>&gt;= 5.5 mm</td>
</tr>
<tr>
<td>Rated impulse voltage</td>
<td>II</td>
<td>II</td>
</tr>
<tr>
<td>Clearance and clearance path input - output</td>
<td>CE, UL, CSA</td>
<td>CE, UL, CSA</td>
</tr>
<tr>
<td>Overvoltage category</td>
<td>Mounting on TS35</td>
<td>Mounting on TS35</td>
</tr>
<tr>
<td>Pollution severity</td>
<td>CE, UL, CSA</td>
<td>CE, UL, CSA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Clamping range (rating- / min. / max.) mm</th>
<th>1.50 / 0.50 / 1.50</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length x width x height mm</td>
<td>91.0 x 6.0 x 64.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ordering data</th>
<th>Type</th>
<th>Qty.</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection technology</td>
<td>MCZ O 120VUC</td>
<td>10</td>
<td>8421060000</td>
</tr>
<tr>
<td></td>
<td>MCZ O 230VAC</td>
<td>10</td>
<td>8421380000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accessories</th>
<th>Information</th>
<th>End plate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A/F MCZ</td>
<td>83890300000</td>
</tr>
<tr>
<td></td>
<td>End plate</td>
<td>83890300000</td>
</tr>
</tbody>
</table>
**MiniConditioner MCZ O**

Module can be used as an universal interface:

- Between control and actuator, to convert signals from 24 Vdc to 5 VTTL
- Between control and actuator, to convert signals from 5 VTTL to 5...48 Vdc

### Technical data

#### Input
- **Rated voltage**: 24 Vdc +/- 16 %
- **Rated current**: 4.7mA
- **Power rating**: 1.12 mW
- **Max. input frequency**: 100 kHz duty factor 1:2, 50 kHz duty factor 1:10
- **Auxiliary voltage**: 5 V TTL
- **Status indicator**: LED green

#### Output
- **Output voltage**: 5 V TTL (4.75...5.25 V)
- **Output current (max.)**: 8 mA, fan out = 20 LS-TTL
- **Voltage drop at max. load**: 1 µs (at 20 Vdc)/2.5 µs (at 28 Vdc)
- **Block-state curr. (short-circuit proof)**: /diode
- **Protection circuit**: -

#### General data
- **Ambient temp., fitted w. distance**: -25 °C...+50 °C
- **Ambient temp., fitted w/o distance**: -25 °C...+40 °C
- **Storage temperature**: -40 °C...+85 °C

#### Approvals
- **CE, UL, CSA**: EN 50178
- **Insulation coordinates (EN 50 178)**: 300 V
- **Overvoltage category**: III
- **Pollution severity**: 2

### Dimensions
- **Clamping range (rating- / min. / max.) mm**: 1.50 / 0.50 / 1.50
- **Length x width x height mm**: 91.0 x 6.0 x 64.0

### Ordering data

#### Connection technology
- **Tension clamp c.**: CE, UL, CSA
- **Mounting on T35**:

#### Type | Qty. | Order No. | Type | Qty. | Order No.
--- | --- | --- | --- | --- | ---
MCZ O 24VDC | 10 | 8324610000 | MCZ O 5VTTL | 10 | 8389400000

### Accessories
- **End plate**
  - **AP MCZ**: 8398940000

---

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Minicoupler DKO

- Coupling of digital sensor-/actuator signals between PLC and process
- Low-cost solution for adaption of level and potential
- Low input power
- Screw connection technology
- 6 mm width
- Mounting on TS35

**Technical data**

<table>
<thead>
<tr>
<th>Input</th>
<th>Rated voltage</th>
<th>5 V DC +/- 5 %</th>
<th>10 mA</th>
<th>150 mW</th>
<th>20 Hz</th>
<th>&lt; 1.6 V</th>
<th>50 µA</th>
<th>&lt;= 15 µA</th>
<th>20 Hz</th>
<th>No/No/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>Output voltage</td>
<td>5...48 V dc</td>
<td>20 mA</td>
<td>100 mA</td>
<td>&lt;= 1.6 V</td>
<td>&lt;= 50 µA</td>
<td>&lt;= 50 µA</td>
<td>&lt;= 1.6 V</td>
<td>&lt;= 50 µA</td>
<td>No/No/No</td>
</tr>
<tr>
<td></td>
<td>Voltage drop at max. load</td>
<td>50 V</td>
<td>&lt;= 15 µA</td>
<td>&lt;= 15 µA</td>
<td>&lt;= 15 µA</td>
<td>&lt;= 15 µA</td>
<td>&lt;= 15 µA</td>
<td>&lt;= 15 µA</td>
<td>&lt;= 15 µA</td>
<td>No/No/No</td>
</tr>
<tr>
<td></td>
<td>Block-state curr.</td>
<td>&lt;= 15 µA</td>
<td>&lt;= 15 µA</td>
<td>&lt;= 15 µA</td>
<td>&lt;= 15 µA</td>
<td>&lt;= 15 µA</td>
<td>&lt;= 15 µA</td>
<td>&lt;= 15 µA</td>
<td>&lt;= 15 µA</td>
<td>No/No/No</td>
</tr>
</tbody>
</table>

**General data**

- Ambient temp., fitted w. distance: -25 °C...+50 °C
- Ambient temp., fitted w/o distance: -25 °C...+40 °C
- Storage temperature: -40 °C...+85 °C

**Approvals**

- CE
- EN 50178
- 150 V
- 1000 V
- 250 V
- 400 V

**Dimensions**

- Clamping range (rating -/ min. / max.): 4 / 0.50 / 4
- Length x width x height: 65.0 x 6.0 x 57.0 mm

**Ordering data**

<table>
<thead>
<tr>
<th>Type</th>
<th>Qty.</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DKO 36 5VDC</td>
<td>10</td>
<td>8016630000</td>
</tr>
<tr>
<td>DKO DKS 5VTL</td>
<td>10</td>
<td>8236600000</td>
</tr>
<tr>
<td>DKO 36 12VDC 10KHZ</td>
<td>10</td>
<td>8184030000</td>
</tr>
</tbody>
</table>

**Accessories**

- End plate: AP DKA 0687000000

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Minicoupler DKO

- Coupling of digital sensor-/actuator signals between PLC and process
- Low-cost solution for adaption of level and potential
- Low input power
- Screw connection technology
- 6 mm width
- Mounting on TS35

Technical data

<table>
<thead>
<tr>
<th>Input</th>
<th>24VUC</th>
<th>24VDC 3KHZ</th>
<th>24VDC 3KHZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>24 Vdc +/− 10 %</td>
<td>≤ 15 mA</td>
<td>24 Vdc +/− 10 %</td>
</tr>
<tr>
<td>Rated current</td>
<td>≤ 15 mA</td>
<td>≤ 15 mA</td>
<td>≤ 15 mA</td>
</tr>
<tr>
<td>Power rating</td>
<td>200 mW / 230 mW</td>
<td>max. 360 mW</td>
<td>max. 360 mW</td>
</tr>
<tr>
<td>Max. input frequency</td>
<td>10 Hz at dc</td>
<td>3 kHz</td>
<td>3 kHz</td>
</tr>
<tr>
<td>Auxiliary voltage</td>
<td>No</td>
<td>LED green</td>
<td>No</td>
</tr>
<tr>
<td>Status indicator</td>
<td>No</td>
<td>LED green</td>
<td>No</td>
</tr>
</tbody>
</table>

General data

- Ambient temp., fitted w. distance: -25 °C...+50 °C
- Ambient temp., fitted w/o distance: -25 °C...+40 °C
- Storage temperature: -40 °C...+85 °C
- CE
- EN 50178
- 300V
- 4.0kV
- ≥ 4 mm
- III
- Screw connection
- 4 / 0.50 / 4
- 65.0 x 6.0 x 57.0

Ordering data

<table>
<thead>
<tr>
<th>Type</th>
<th>(Qty.=10)</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DKO 35 24VUC</td>
<td></td>
<td>800160000</td>
</tr>
<tr>
<td>DKO 35 24VDC 3KHZ E U</td>
<td></td>
<td>802830000</td>
</tr>
<tr>
<td>DKO 35 24VDC 3KHZ E O</td>
<td></td>
<td>821564000</td>
</tr>
</tbody>
</table>

Information

- End plate
  - AP DIA: 0687520000
  - AP DIA: 0687520000
  - AP DIA: 0687520000
Minicoupler DKO

- Coupling of digital sensor-/actuator signals between PLC and process
- Low-cost solution for adaption of level and potential
- Low input power
- Screw connection technology
- 6 mm width
- Mounting on TS35

Technical data

<table>
<thead>
<tr>
<th>Input</th>
<th>Rated voltage</th>
<th>Rated current</th>
<th>Power rating</th>
<th>Max. input frequency</th>
<th>Auxiliary voltage</th>
<th>Status indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>24 Vdc ±10%</td>
<td>85 mA</td>
<td>max. 204 mW</td>
<td>3 kHz</td>
<td>No</td>
<td>LED green</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output</th>
<th>Output voltage</th>
<th>Voltage drop at max. load</th>
<th>Block-state cur. (closed circuit cur.)</th>
<th>Switch-on delay/Switch-off delay</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5…48 Vdc</td>
<td>≤ 900 mV</td>
<td>approx. 50 µs/approx. 80 µs</td>
<td>No/diode</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General data</th>
<th>Ambient temp., fitted w. distance</th>
<th>Ambient temp., fitted w/o distance</th>
<th>Storage temperature</th>
<th>Approvals</th>
<th>Insulation coordinates (EN 50 178)</th>
<th>Standards</th>
<th>Rated voltage</th>
<th>Rated impulse voltage</th>
<th>Clearance and clearance path input - output</th>
<th>Overvoltage category</th>
<th>Pollution severity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-25 °C…+50 °C</td>
<td>-25 °C…+40 °C</td>
<td>-40 °C…+85 °C</td>
<td>CE</td>
<td>EN 50178</td>
<td>300V</td>
<td>4.0kV</td>
<td>III</td>
<td>&gt;= 4 mm</td>
<td>III</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Clamping range (rating - min. / max. / max.)</th>
<th>Length x width x height mm</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 / 0.50 / 4</td>
<td>65.0 x 6.0 x 57.0</td>
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Ordering data

<table>
<thead>
<tr>
<th>Connection technology</th>
<th>Screw connection</th>
<th>Type</th>
<th>(Qty.=10)</th>
<th>Order No.</th>
<th>Screw connection</th>
<th>Type</th>
<th>(Qty.=10)</th>
<th>Order No.</th>
<th>Screw connection</th>
<th>Type</th>
<th>(Qty.=10)</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DKO 35 24VDC (3KHZ)</td>
<td></td>
<td></td>
<td></td>
<td>DKO 35 24VDC</td>
<td></td>
<td></td>
<td></td>
<td>DKO 35 24VDC</td>
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<td></td>
<td></td>
<td>DKO 35 24VDC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>E:U</td>
<td></td>
<td></td>
<td></td>
<td>E:U</td>
<td></td>
<td></td>
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<td>E:O</td>
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Accessories

<table>
<thead>
<tr>
<th>Information</th>
<th>End plate</th>
<th>AP DIA:</th>
<th>0657600000</th>
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</thead>
<tbody>
<tr>
<td>Input bottom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input top</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Minicoupler DKO

- Coupling of digital sensor-/actuator signals between PLC and process
- Low-cost solution for adaption of level and potential
- Low input power
- Screw connection technology
- 6 mm width
- Mounting on TS35

### Technical data

#### Input
- Rated voltage
- Rated current
- Power rating
- Max. input frequency
- Auxiliary voltage
- Status indicator

#### Output
- Output voltage
- Output current (max.)
- Voltage drop at max. load
- Block-state current (closed circuit current)
- Switch-on delay/Switch-off delay

#### General data
- Ambient temp., fitted w. distance
- Ambient temp., fitted w/o distance
- Storage temperature

#### Approvals
- Insulation coordinates (EN 50 178)
- Standards
- Rated voltage
- Rated impulse voltage
- Clearance and creepage path input - output
- Overvoltage category
- Pollution severity

#### Dimensions
- Clamping range (rating- / min. / max.) mm²
- Length x width x height mm

#### Ordering data
- Type (Qty.=10) Order No.
- Connection technology
- Screw connection

#### Accessories
- End plate

---

### Technical Specifications

**DKO Series**

- **24VDC 200Hz**
  - Input: 24 Vdc ±10 %
  - Output: 48 V dc, 500 mA
  - Voltage drop: < 800 mV
  - Status: LED green

- **24VDC 200Hz**
  - Input: 24 Vdc ±10 %
  - Output: 24 Vdc, 0.5 A
  - Voltage drop: < = 800 mV
  - Status: LED green

- **24VDC 50KHZ**
  - Input: 24 Vdc ±20 %
  - Output: TTL
  - Voltage drop: < = 800 mV
  - Status: LED green

**Ordering Information**

- **DKO 35 24VDC E:U**
  - Type (Qty.=10) Order No.: 8019590000
  - Connection technology: Screw connection

- **DKO 35 24VDC E:O**
  - Type (Qty.=10) Order No.: 8215630000

- **DKO DK5 24VDC 50KHZ**
  - Type (Qty.=10) Order No.: 8228640000
  - Connection technology: Screw connection

---

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**Minicoupler DKO**

- Coupling of digital sensor-/actuator signals between PLC and process
- Low-cost solution for adaption of level and potential
- Low input power
- Screw connection technology
- 6 mm width
- Mounting on TS35

### Technical data

#### Input
- Rated voltage: 24 Vuc +/- 20 %, 13 mA ac / 12 mA dc
- Power rating: max. 120 mA / 106 mW
- Max. input frequency: < 10 Hz
- Auxiliary voltage: +24 V

#### Output
- Output voltage: 24 Vdc +/- 20 %
- Output current (max.): 2 A
- Voltage drop at max. load: 2 mV/7 ms
- Status indicator: LED green

#### General data
- Ambient temp., fitted w. distance: -25 °C...+60 °C
- Ambient temp., fitted w/o distance: -25 °C...+40 °C
- Storage temperature: -40 °C...+85 °C

#### Insulation coordinates (EN 50178)
- Rated voltage: 2000 V
- Impulse voltage: 3000 V
- Creepage and clearance path: input - output: 5 mm
- Overvoltage category: IV
- Pollution severity: II

### Ordering data

#### Connection technology
- Screw connection

#### Accessories
- End plate AP DKO

### DK-SERIES

#### 24VUC

- Output voltage: 24 Vuc +/- 20 %
- Output current (max.): 2 A
- Voltage drop at max. load: 2 mV/7 ms
- Status indicator: LED green

#### 115VUC

- Output voltage: 115 Vuc +/- 15 %
- Output current (max.): 50 mA
- Voltage drop at max. load: 77.4 mV/27.4 ms
- Status indicator: LED green

#### 230VUC

- Output voltage: 230 Vuc +/- 15 %
- Output current (max.): 20 mA
- Voltage drop at max. load: 2 ms/10 ms
- Status indicator: LED green

### Screw connection

<table>
<thead>
<tr>
<th>Type</th>
<th>(Qty.=10)</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DKO DKO 24VUC</td>
<td>8238630000</td>
<td></td>
</tr>
<tr>
<td>DKO 35 115VUC</td>
<td>8077800000</td>
<td></td>
</tr>
<tr>
<td>DKO 35 230VUC</td>
<td>8098160000</td>
<td></td>
</tr>
</tbody>
</table>
**EG-SERIES**

**EG 7**
- Combination foot for TS15, TS32 or TS35
- Optional pluggable on clip-in base RS EG7
- Width 10 mm
- Protective separation according to VDE 0884

---

### Technical data

**Input**
- Rated voltage
- Rated current
- Power rating
- Max. input frequency
- Auxiliary voltage
- Status indicator

**Output**
- Output voltage
- Output current (max.)
- Voltage drop at max. load
- Block-state curr. (closed circuit curr.)
- Switch on / delay / off delay
- Short-circuit proof / Protective circuit

**General data**
- Ambient temp., fitted with distance
- Ambient temp., fitted w/o distance
- Storage temperature
- Approvals
- Insulation coordinates (EN 50 178)
- Standards
- Rated voltage
- Rated impulse voltage
- Creepage and clearance path input - output
- Overvoltage category
- Pollution severity

### Dimensions

- Clamping range (rating / min. / max.) mm²
- Length x width x height mm

### Ordering data

**Article description**
- Complete module
- Pluggable

**Type**
- Complete module
- Pluggable

**Order No.**
- Complete module
- Pluggable

### Accessories

**Information**
- Locking socket

---

**Optocoupler**

**5VDC**
- 5 Vdc +/- 20% 6.8 mA 46 mW 15 Hz

**12VUC**
- 12 Vuc +/- 20% 33 mW ac/30 mW dc 40 mW / 50 mW 16 Hz

**24VUC**
- 24 Vuc +/- 20% 3.4 mA ac/2.8 mA dc 70 mW / 96 mW 15 Hz

---

**Optocoupler**

**5VDC**
- LED green
- 5…48 Vdc
- 100 mA
- ≤ 50 µA
- 6 ms/12 ms
- No integrated freewheel diode
- -25 °C…+60 °C
- CE

**12VUC**
- LED green
- 5…48 Vdc
- 100 mA
- ≤ 50 µA
- 6 ms/12 ms
- No integrated freewheel diode
- -25 °C…+60 °C
- CE

**24VUC**
- LED green
- 5…48 Vdc
- 100 mA
- ≤ 50 µA
- 6 ms/12 ms
- No integrated freewheel diode
- -25 °C…+60 °C
- CE

---

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**EG 7**

- Combination foot for TS15, TS32 or TS35
- Optional pluggable on clip-in base RS EG7
- Width 10 mm
- Protective separation according to VDE 0884

### Technical data

**Input**
- Rated voltage
- Rated current
- Power rating
- Max. input frequency
- Auxiliary voltage
- Status indicator

**Output**
- Output voltage
- Output current (max.)
- Voltage drop at max. load
- Block-state curr. (closed circuit curr.)
- Short-circuit proof
- Protective circuit

**General data**
- Ambient temp., fitted w. distance
- Ambient temp., fitted w/o distance
- Storage temperature

**Approvals**
- Insulation coordinates (EN 50 178)
- Standards
- Rated voltage
- Rated impulse voltage
- Creepage and clearance path input - output
- Overvoltage category
- Pollution severity

**Dimensions**
- Clamping range (rating - / min. / max.) mm²
- Length x width x height mm

### Ordering data

<table>
<thead>
<tr>
<th>Type</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGO EGT 48VUC K-FU</td>
<td>8909550000</td>
</tr>
<tr>
<td>EGT EGT 48VUC</td>
<td>823460000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGO EGT 115VUC K-FU</td>
<td>8909570000</td>
</tr>
<tr>
<td>EGT EGT 115VUC</td>
<td>823460000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGO EGT 230VAC K-FU</td>
<td>8892390000</td>
</tr>
<tr>
<td>EGT EGT 230VAC</td>
<td>823461000</td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locking socket RS EG7</td>
</tr>
</tbody>
</table>

### EG-SERIES

**48VUC**
- 48 Vuc +/- 20 %
- 100 mA
- > 1.5 V
- LED green
- 4.4 x 4.4 x 33.3
- No integrated freewheel diode
- 15°C...+60 °C
- CE

**115VUC**
- 115 Vuc +/- 20 %
- 100 mA
- > 1.5 V
- LED green
- 4.4 x 4.4 x 33.3
- No integrated freewheel diode
- 15°C...+60 °C
- CE

**230VAC**
- 230 Vac +/- 15 %
- 100 mA
- > 1.5 V
- LED green
- 4.4 x 4.4 x 33.3
- No integrated freewheel diode
- 15°C...+60 °C
- CE

---

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EG-SERIES

For long control wires

For long control wires

- RC-Input circuit to disable interfering signals
- Safe switching behavior in case of interfering pulses on the control side

Technical data

<table>
<thead>
<tr>
<th>Input</th>
<th>230 Vac +6/-15 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>3.8kVA</td>
</tr>
<tr>
<td>Rated current</td>
<td>670 mA</td>
</tr>
<tr>
<td>Power rating</td>
<td>12Hz</td>
</tr>
<tr>
<td>Max. input frequency</td>
<td></td>
</tr>
<tr>
<td>Auxiliary voltage</td>
<td>No</td>
</tr>
<tr>
<td>Status indicator</td>
<td>LED green</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output</th>
<th>5…60Vac</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output current (max.)</td>
<td>100 mA</td>
</tr>
<tr>
<td>Voltage drop at max. load</td>
<td>&lt;= 1.5 V</td>
</tr>
<tr>
<td>Block-state curr. (closed circuit curr.)</td>
<td>&lt;=50 µA</td>
</tr>
<tr>
<td>Switch-on delay/ Switch-off delay</td>
<td>5ms/1ms</td>
</tr>
<tr>
<td>Short-circuit proof/ Protective circuit</td>
<td>No or transistor, integral freewheeling diode</td>
</tr>
</tbody>
</table>

General data

- Ambient temp., fitted w. distance: -25 °C…+60 °C
- Ambient temp., fitted w/o distance: -25 °C…+60 °C
- Storage temperature: -40 °C…+60 °C
- Approvals: CE
- Insulation coordinates (EN 50 178)
  - Rated voltage: 300V
  - Rated impulse voltage: 6.0kV
  - Creepage and clearance path input - output: >= 5.5 mm
  - Overvoltage category: II
  - Pollution severity: 2

Dimensions

- Clamping range (rating- / min. / max.) mm²: 1.50 / 0.50 / 1.50 2.50 / 0.50 / 2.50
- Length x width x height mm: 44.0 x 10.0 x 96.0 95.0 x 10.0 x 99.0

Ordering data

<table>
<thead>
<tr>
<th>Article description</th>
<th>Complete module</th>
<th>Pluggable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>(Qty.=10)</td>
<td>Order No.</td>
</tr>
<tr>
<td>EG07 EG7 RC 230VAC</td>
<td></td>
<td>8387500000</td>
</tr>
<tr>
<td>GST EG7 230VAC RC</td>
<td></td>
<td>8394900000</td>
</tr>
</tbody>
</table>

Accessories

- Locking socket
  - Type: RS EG2
  - Order No.: 8193830000