

# The Weidmüller Catalogue System Industry 2002

Sectional catalogue 1:

## **Terminals 2002**

W-Series Ex Terminals - ATEX  
Z-Series Terminals in power supply applications  
IDC-Series KLBÜ shield connection  
SAK-Series Accessories

Sectional catalogue 5:

## **Enclosures 2002**

Mild steel enclosures Polystyrole enclosures  
Die cast aluminium enclosures Assembly service  
Polyester GRP enclosures Cable glands  
Polycarbonate enclosures Accessories

Sectional catalogue 2:

## **PCB Components 2002**

PCB Terminals  
PCB Connectors

Sectional catalogue 6:

## **Tools 2002**

Certification of tools Testers  
Cutting tools Automatic machines  
Stripping tools Ferrules  
Crimping tools Crimp sets  
Screw driving tools Special tools

Sectional catalogue 3:

## **Heavy Duty Connectors 2002**

HA, HE, HD, HDD, HVE, HSB, DSTVK plus DSTV-HD-Series  
ConCept  
ModuFlex  
HDC-Kits  
Single contacts  
Accessories  
Cable glands

Sectional catalogue 7:

## **Installation Products 2002**

Terminal markers  
Conductor and cable markers  
Equipment and installation markers  
Labels  
Marking systems  
Cable ties  
Installation products

Sectional catalogue 4:

## **Electronics 2002**

Terminal blocks with electronic components  
Interface units  
PLC system interface  
Digital signal processing  
Analogue signal processing  
Power supply units  
Overvoltage protection  
Modules for different functions  
Component holders and housings  
Markers

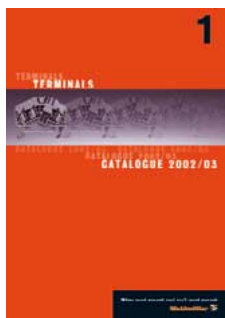
Sectional catalogue 8:

## **Fieldbus-Components 2002**

SAI - Sensor-Actuator-Integrator  
A well designed system for direct installation  
SAI for passive system-cabling  
SAI with plug-in connection hood  
Cable available as piece part  
SAI - Integrators in applications  
SAI - Actuator-Integrator PASSIVE  
SAI - Actuator-Integrator ACTIVE  
PROFIBUS-PA T-Connector  
Typical system layout  
Applications

For further information on our worldwide activities please refer to the last pages of this catalogue.

# The Weidmüller Catalogue System Industry 2002



Sectional catalogue 1:

## **Terminals 2002**

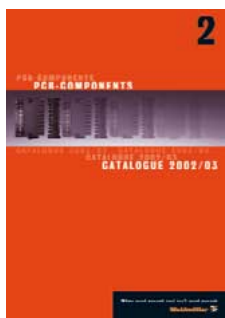
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Sectional catalogue 5:

## **Enclosures 2002**

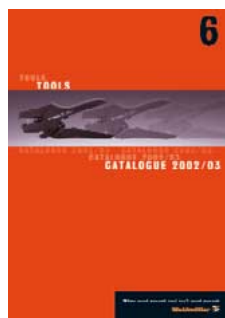
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Sectional catalogue 2:

## **PCB Components 2002**

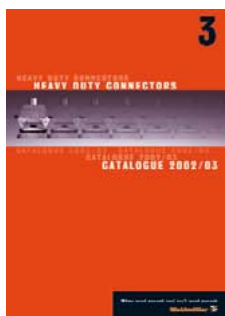
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Sectional catalogue 6:

## **Tools 2002**

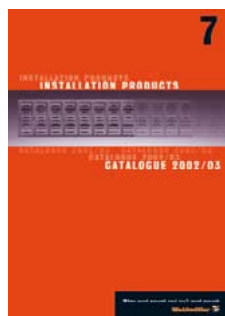
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Cat. No. english: 5629030000



Sectional catalogue 3:

## **Heavy Duty Connectors 2002**

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Cat. No. english: 5629000000



Sectional catalogue 7:

## **Installation Products 2002**

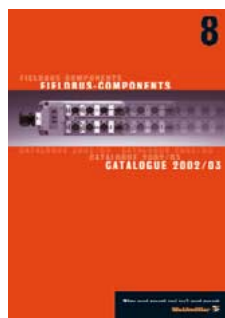
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Cat. No. english: 5629040000



Sectional catalogue 4:

## **Electronics 2002**

Cat. No. german: 5629120000  
Cat. No. english: 5629010000



Sectional catalogue 8:

## **Fieldbus-Components 2002**

Cat. No. german: 5629160000  
Cat. No. english: 5629050000



Catalogue

## **Core Assortment 2002**

Cat. No. german: 5629170000  
Cat. No. english: 5629060000

Complete set of 8 sectional catalogues. German: Cat.No. 5629200000 / English: Cat.No. 5629190000. Additional: Catalogue slip case only: 5619250000

### Ordering hint

We now only use 10-digit catalogue numbers.

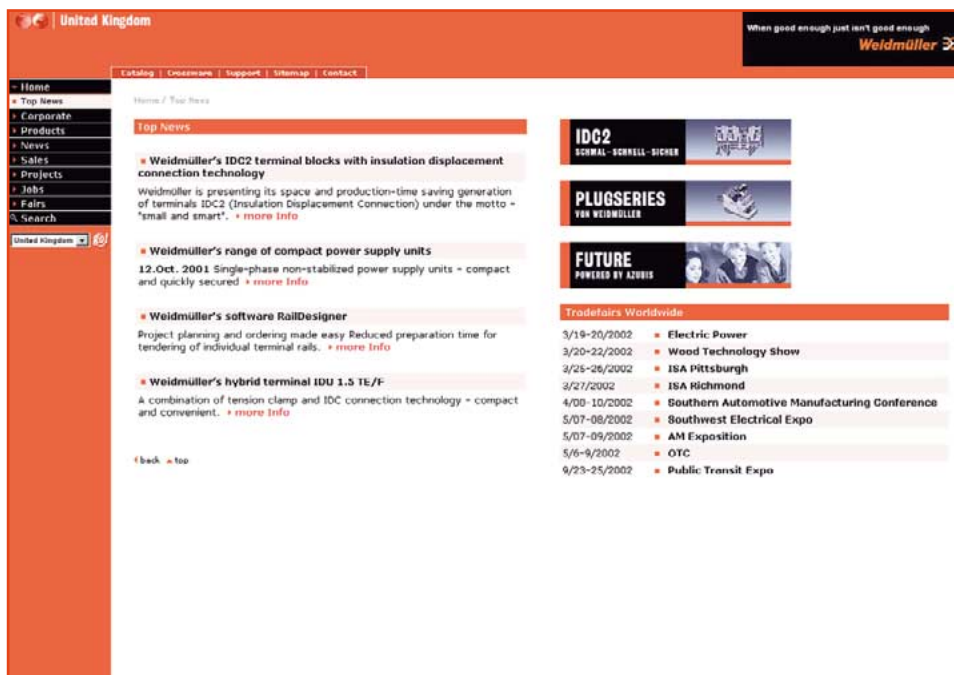
Please note: The four digits may refer to a product variation (for example: 102998 0000 = standard and 102998 1111 = associated variation).

Wherever possible, please utilise 10-digit numbers only.

The official Weidmüller-Website contains information about the latest innovations, trade-show dates, press reports, certifications, software demos and much more.

**www.weidmueller.com ...**

**... the address for up-to-date information**



## Active components - signal conditioning made easy

Weidmüller's product spectrum contains all the necessary electronics products for conditioning, switching, isolating, protecting and supplying tasks in and around the switchgear cabinet. Analogue and digital signals are to be found in a wide variety of forms. They are conditioned, before being made available, exactly and reliably, to the higher-level controls. The signals make it possible to draw conclusions concerning the "status" of the process or system. Weidmüller has the right design with the required functions for each and every application, no matter where this may be: in the switchgear cabinet or decentralized in a distribution box.

### The product spectrum includes:

#### PLC System Interfaces

Efficient, electrical connection systems between the inputs and outputs of the PLC and the process. The individual wiring between the control and the sensor/actuator is replaced by a pre-assembled, quickly installed interface system. Specific PLC front adapters, pre-assembled cables and passive/active components with varying functions form the basis of this system solution.

#### Analogue signal conditioning

Harsh industrial climates make the task of error-free transmitting of analogue signals very difficult. The signal isolating conditioners solve your problems in "the twinkle of an eye". The modules, in an extremely compact design, condition, isolate, and monitor analogue measurement signals, and guarantee maximum process reliability.

#### Relays and opto-couplers

Relays and opto-couplers, available in different designs ranging from terminal housings to sockets for mounting onto rails, switch, amplify and multiply binary signals used in automation technology.

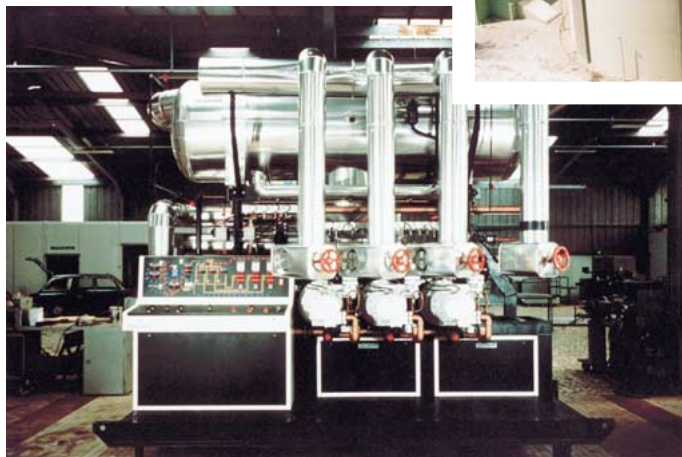
#### Power supplies

Transformers and switched-mode power supplies are important links in the supply of power to automation systems. They are the core of each and every switchgear cabinet. The correct model must be chosen with extreme care, because the power supply is decisive for the reliable functioning of the connected components.

#### Overvoltage protection

Weidmüller offers overvoltage protection for the supply of power, measurement and control circuits, as well as for industrial data interfaces. These products, perfectly adapted to suit your application, protect against overvoltages due to lightning strikes, transients and interferences.

### Possible applications are:

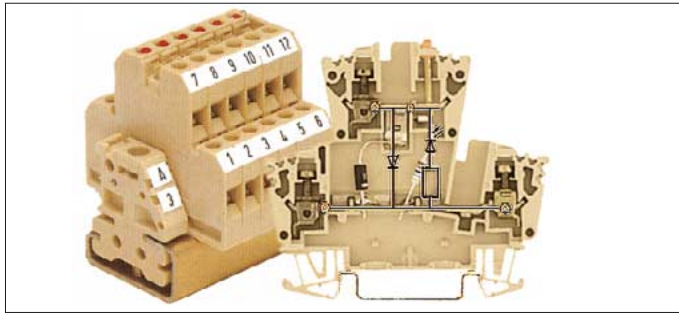




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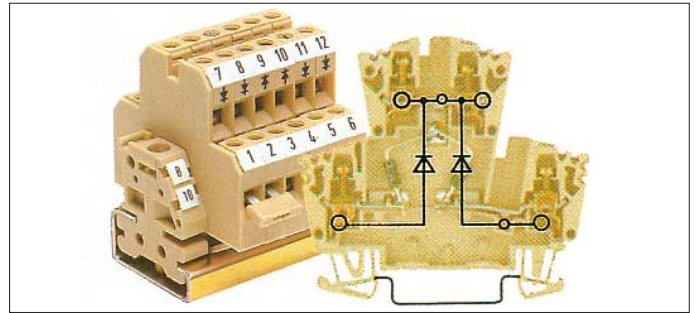
## Product overview



**Terminal blocks with indicators**

**DK and W series**

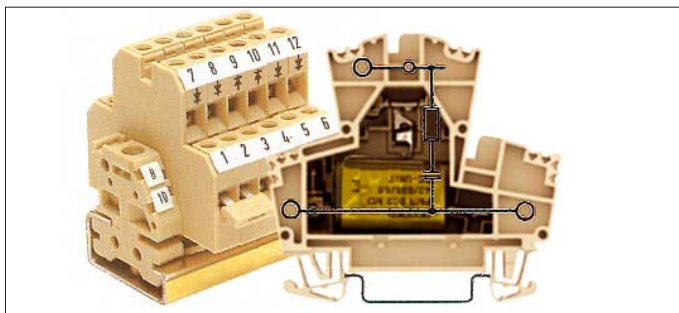
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**Terminal blocks with diodes**

**DK and W series**

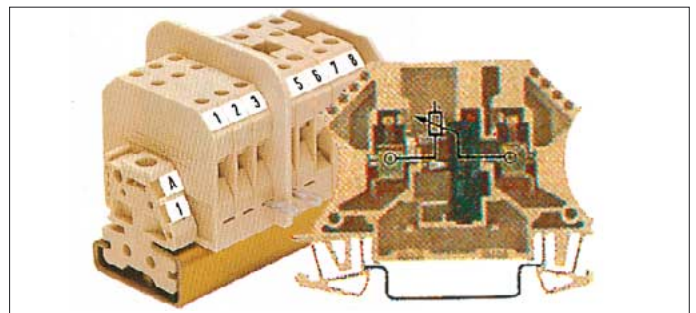
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**Terminal blocks with electronic components**

**DK series / AKZ series**

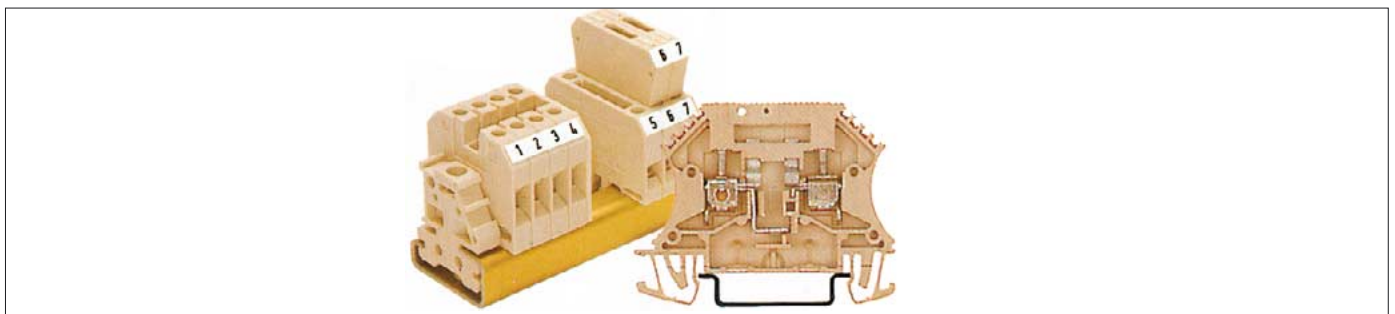
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**Compensating terminals**

**SAKL and WDUL series**

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**Diode plugs for**

**SAK and W series**

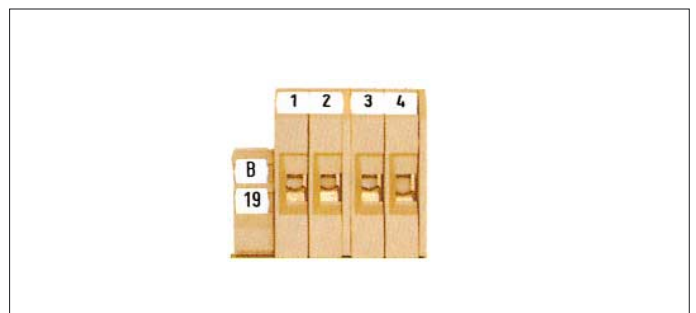
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**Terminal blocks with electronic components**

**DK and W series**

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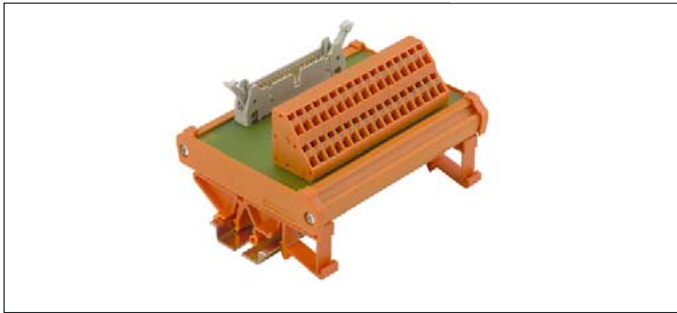


**Terminal blocks with electronic components**

**DK and W series**

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## Product overview



**Interface units for ribbon cables**

**RSF series**

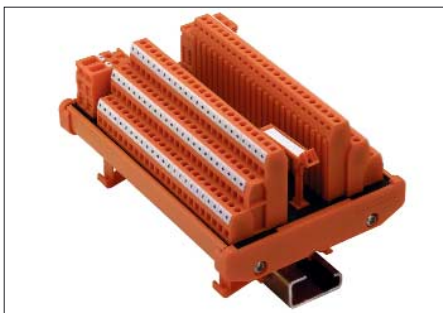
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**Interface units for SUB-D-plug connections**

**RSSD series**

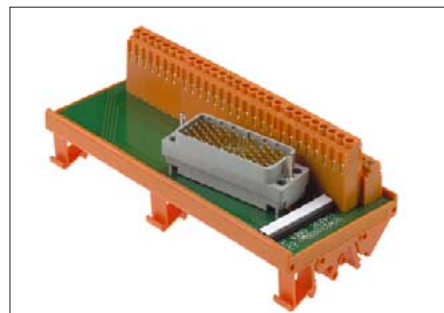
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**Interface units**

**Potential distributors**

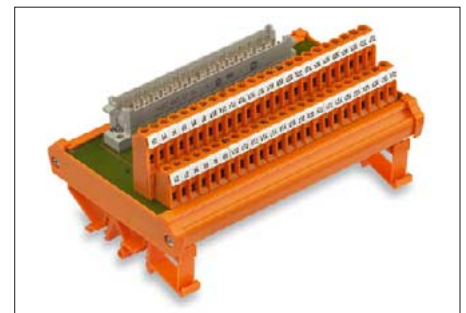
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**Interface units**

**RSELCO**

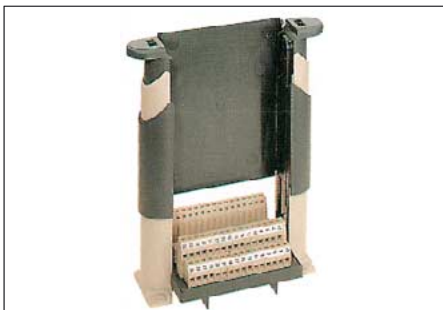
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**Interface units**

**RSDIN**

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**Card holders**

**SKH2 series**

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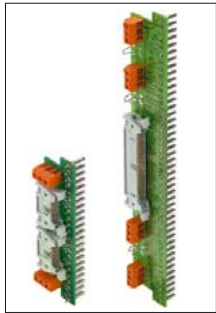
**Card holders**

**SKH series**

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## Product overview



**PLC**

**Front adapters**

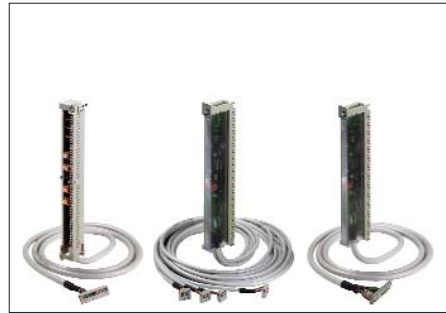
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**PLC**

**Front adapters**

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**PLC**

**Front adapters**

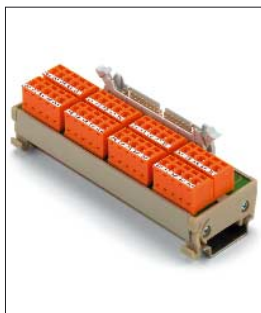
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**PLC**

**Front adapters**

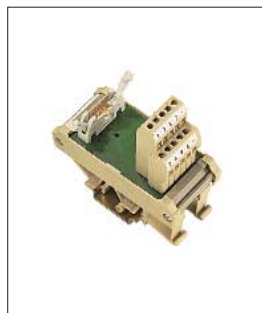
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**Input/output modules**

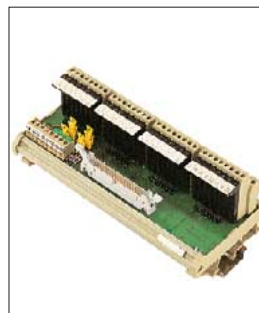
**RS 45 profile**

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**Input/output modules**

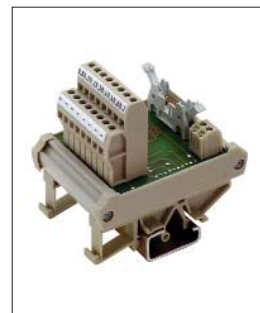
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**Input modules**

**Two-wire-system**

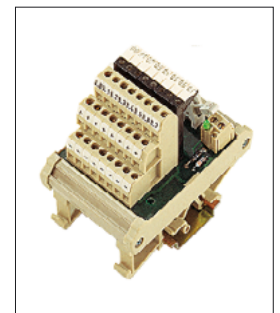
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**Output modules**

**Two-wire-system**

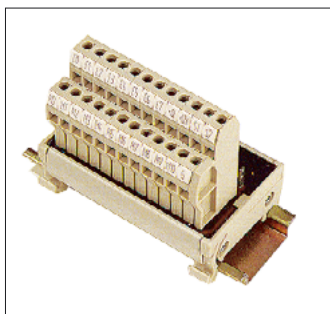
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**Input/output modules**

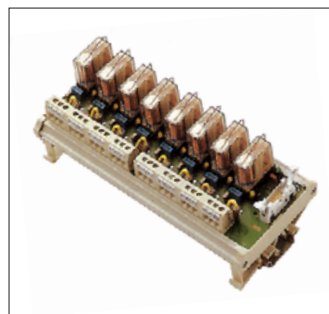
**Three-wire-system**

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**Interface for  
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**Input modules/  
Relay couplers**

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**Output modules/  
Relays**

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**Output modules/  
Opto-coupler**

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**Pre-assembled  
Round ribbon cable**

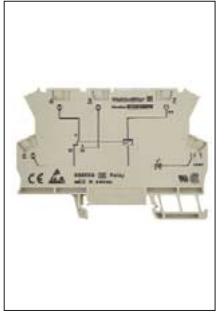
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**Accessories**

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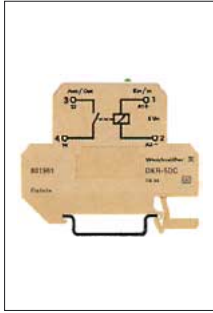
## Product overview



**Relay couplers**

**MCZR**

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**Relay couplers**

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**Relay couplers**

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**WAVESERIES**

**1 changeover contacts**

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**WAVESERIES**

**2 NO**

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**WAVESERIES**

**1 NC/1 NO**

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**WAVESERIES**

**2 changeover contacts**

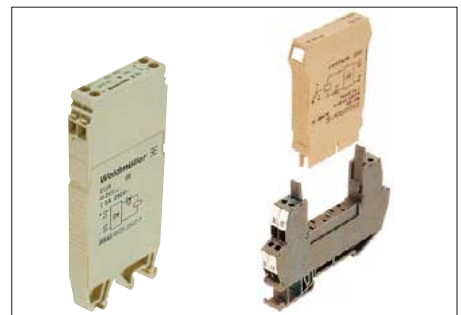
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**WAVESERIES**

**3 NO**

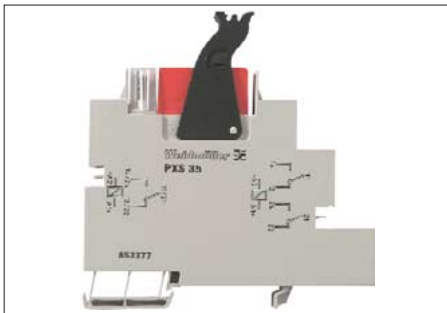
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**Relay couplers**

**1 NC/ 1 NO or 1 changeover contact**

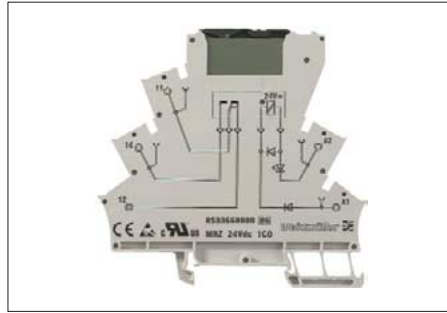
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**Relay coupler PLUGRELAY and Relay**

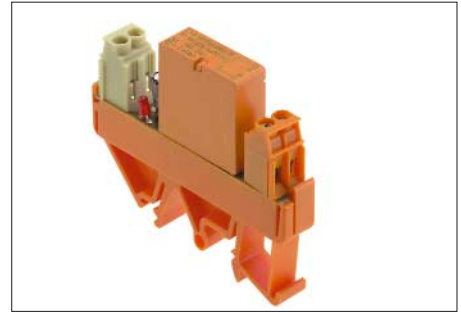
**1 changeover contact / 2 changeover contacts**

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**Relay coupler MICRORELAY and Relay**

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**Relay couplers**

**1 NC/ 1 NO or 1 changeover contact**

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**Relay couplers**

**1 changeover contact**

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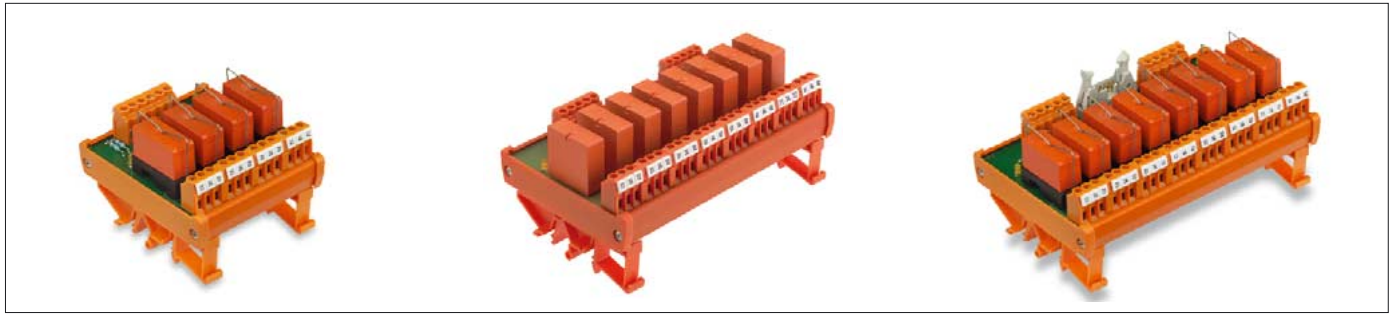


**Relay couplers**

**2 changeover contacts**

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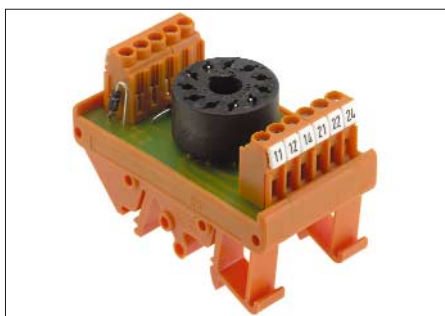
## Product overview



### Locking sockets

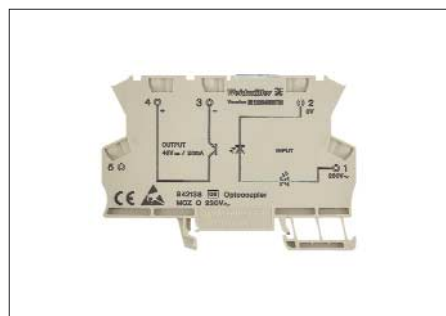
Multiple socket interface with one changeover contact each

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### Locking sockets - Modules for DC and AC voltage relays

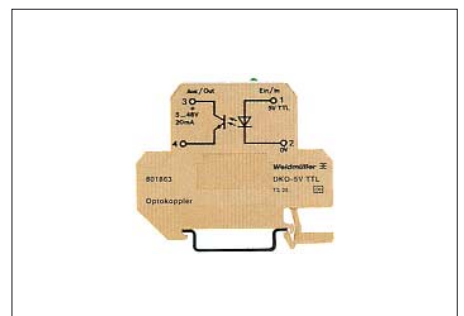
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### Opto-couplers

#### MCZO

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### Opto-couplers

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### Opto-couplers

#### for signal input

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### Opto-couplers/Power couplers

#### for signal input and output

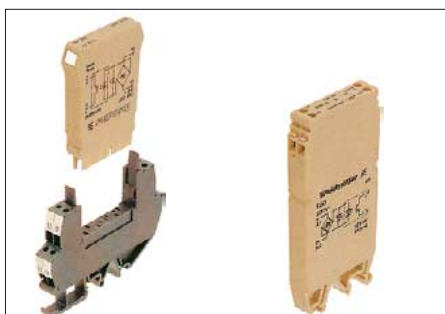
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### Power opto-couplers

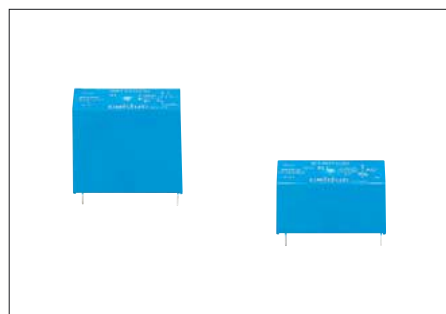
#### for signal output

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### Opto-couplers with combination foot pluggable or for mounting rail

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### Accessories

#### SSR

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### Opto-couplers

#### for signal input

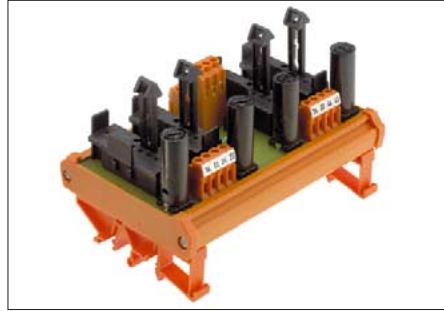
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## Product overview



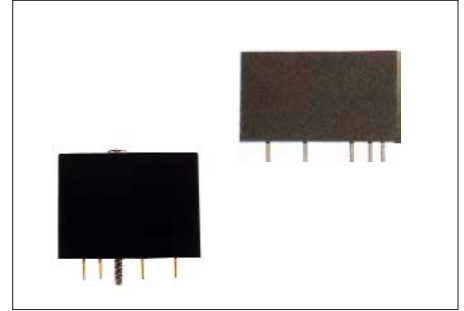
**Locking sockets  
with multiple interface**

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**Locking sockets  
for semi-conductor relays**

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**Semi-conductor relays**

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**ITM  
Multifunction timer relays**

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**ITTo turn-off delay  
without control input**

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**ITTw turn-off delay  
with control input**

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**ITWo wiping contacts  
without control input**

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**ITWw wiping contacts  
with control input**

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**ITTT  
Pulse generator**

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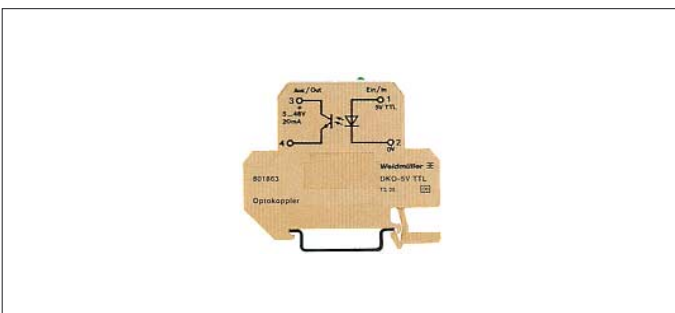
**ITMF  
Multifunction timer relay**

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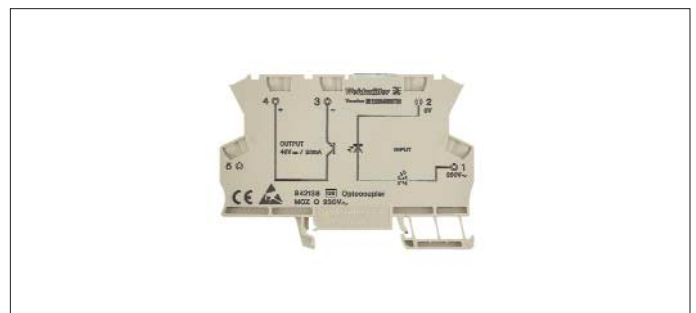
**ITR  
Response delay**

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**Timer relays  
DKZ/DKZA**

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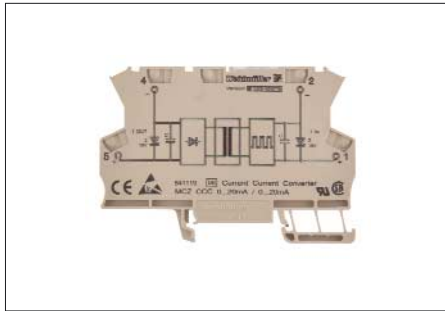


**Timer relays  
MCZ TO**

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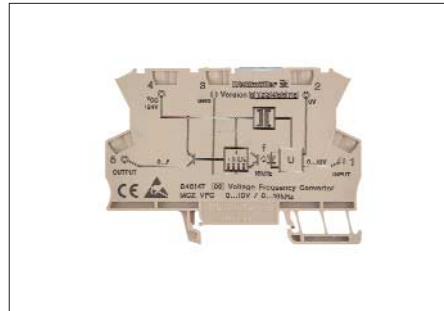
## Product overview



**Passive isolators**

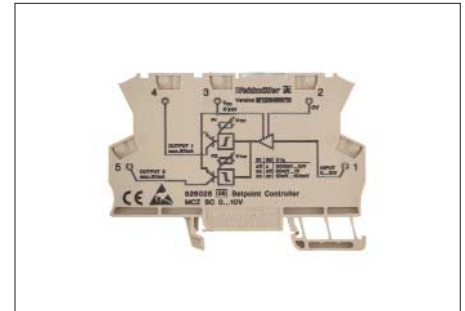
**RTD Thermocouple conditioners**

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**Frequency conditioners**

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**Threshold monitoring**

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**Passive isolators**

**1- and 2-channel WAVEANALOG DC/DC**

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**Signal isolating conditioners DC/DC**

**WAVEANALOG DC/DC**

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**Signal isolating conditioners DC/DC**

**WAVEANALOG PRO DC/DC**

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**RTD signal conditioners**

**WAVEANALOG RTD**

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**RTD signal isolating conditioners**

**WAVEANALOG PRO RTD**

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**Thermo-signal conditioners**

**WAVEANALOG Thermo**

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**Thermo-signal isolating conditioners**

**WAVEANALOG PRO Thermo**

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**Current monitoring**

**WAVECONTROL**

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## Product overview



**50 mA - 5 A current monitoring SMSI**

**Opto-coupler output**

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**50 mA - 5 A current monitoring SMSI**

**Relay output**

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**Voltage monitoring SMSU**

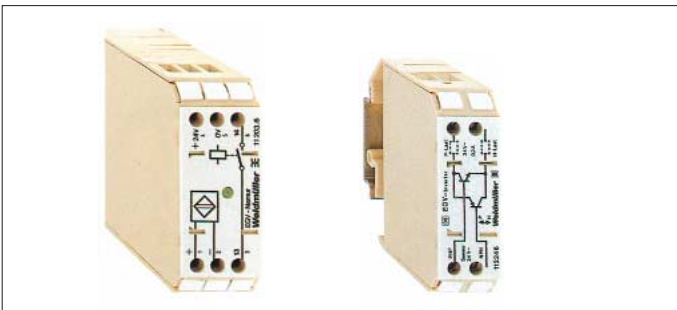
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**Movement and rotational speed monitoring**

**SMS/SIZA**

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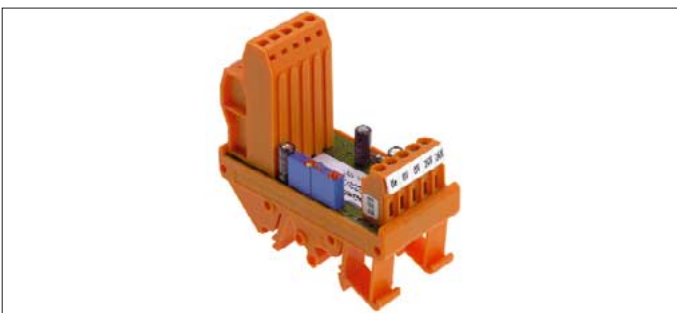
**Namur switch amplifiers**

Page 207



**Set point generator**

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**8 Bit A/D-D/A converters**

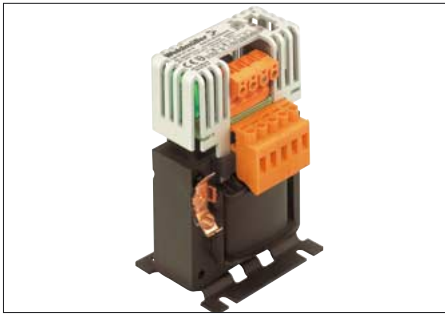
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**12 Bit A/D-D/A converters**

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## Product overview



**CompactPower**

**Single-phase non-stab. pow. supplies**

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**Power supplies system EG-T/AC**

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**Power supplies type CP-SNT**

**12W**

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**Power supplies type CP-SNT**

**24W**

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**Power supplies type CP-SNT**

**50W / 55W**

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**Power supplies type CP/SNT**

**300W**

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**Power supplies type CP-DCDC**

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**Power supplies system EMA/DC**

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**Power supplies system RS-T/AC**

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**Power supplies system EG-T/AC**

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## Product overview



**Overvoltage protection**

**PU 1 TSG**

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**Overvoltage protection**

**PU 1 TSG+**

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**Overvoltage protection**

**PU 3 B / PU 4 B**

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**Overvoltage protection**

**PU 3 C**

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**Overvoltage protection**

**PU 3 D**

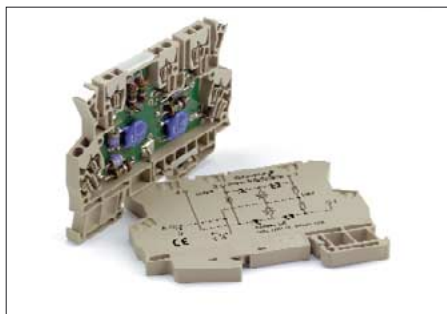
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**Overvoltage protection**

**PU DS**

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**Overvoltage protection**

**with TS-Kontakt**

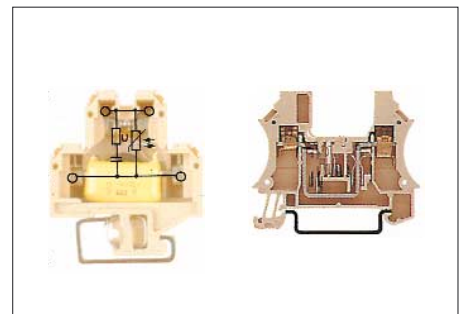
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**Overvoltage protection**

**DKU**

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**Terminals and feed-through terminals**

Page 262 - 263



**Overvoltage protection EGU 1**

**two-phase, one current path**

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**Overvoltage protection EGU 2**

**three-phase, one current path**

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**Overvoltage protection EGU 3**

**two-phase, two current paths**

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## Product overview



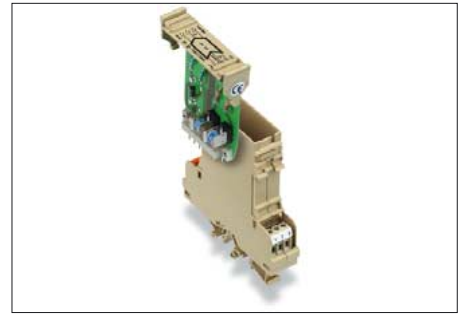
**Overvoltage protection EGU 4**  
three-phase, two current paths

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**Overvoltage protection RSU**  
three-phase, two current paths

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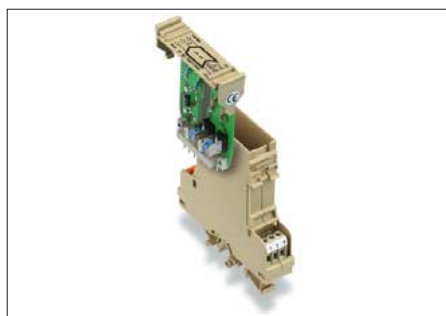


**Overvoltage protection LPU**  
pluggable, three-phase, two current paths

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**TGU**  
**Test case**  
Page 269



**Overvoltage protection LPU**  
**for data interfaces**  
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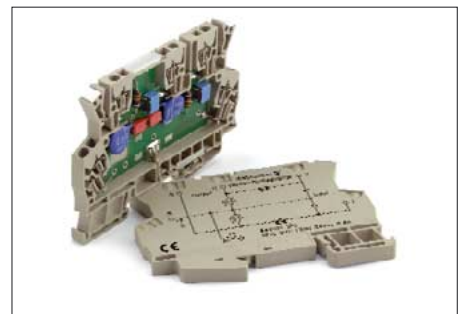
**Overvoltage protection RS**  
**for modulink**  
Page 270



**Fine overvoltage protection**  
**for RS-232 interfaces**  
Page 271



**Fine overvoltage protection**  
**Interface adapter**  
Page 271



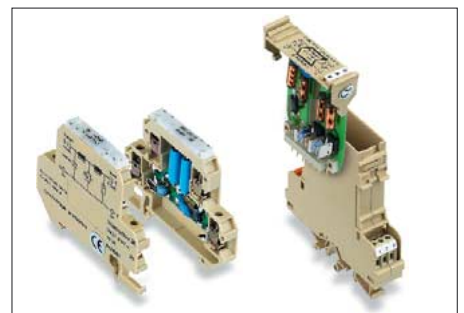
**Overvoltage protection**  
**for LonWorks® MCZ**  
Page 272



**Overvoltage protection**  
**for LonWorks® Dialoc Term**  
Page 272

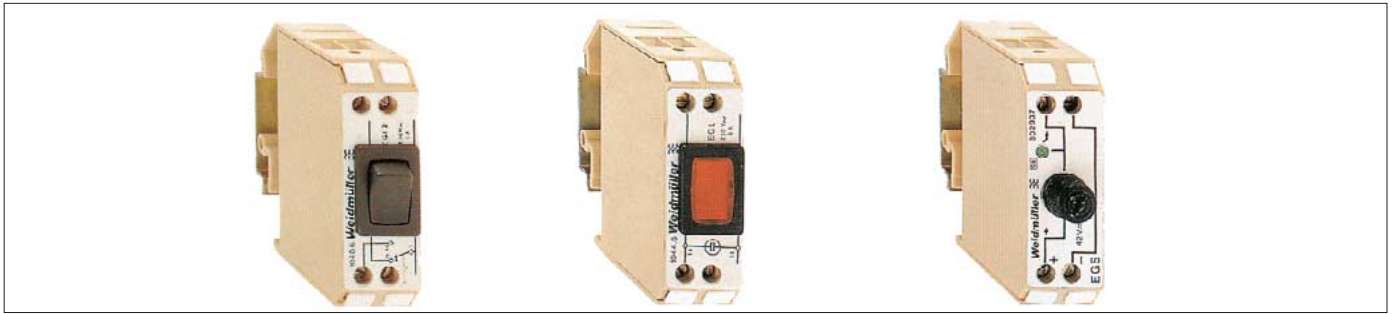


**Fine overvoltage protection**  
**WAVEFILTER**  
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**Overvoltage protection**  
**for intrinsically safe circuits**  
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## Product overview



Signaling and control modules

Page 286



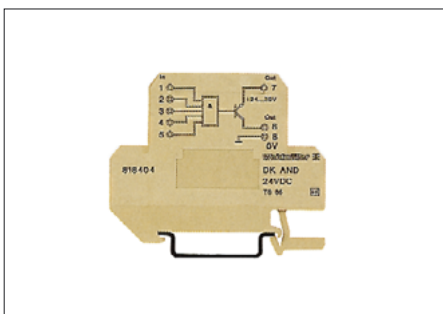
Rectifier modules

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Interface modules, modules without components and proximity switches

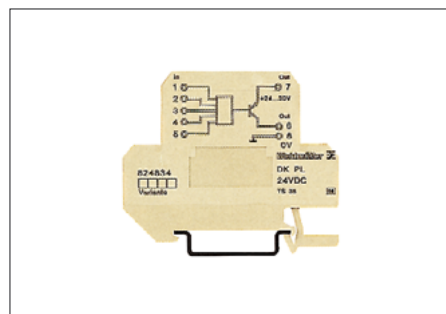
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Logic modules

Inverters DKLI/DKPI • Amplifiers DKV

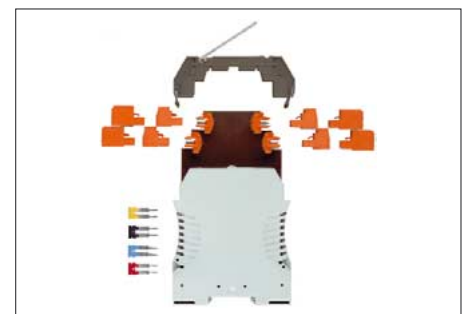
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Logic modules

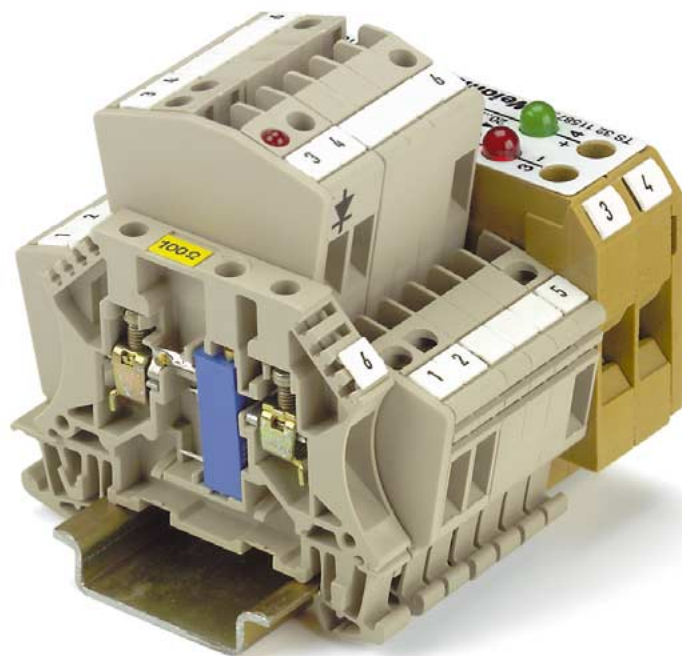
Pre-processing logic

Page 291



Housings

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## Terminal Blocks With Electronic Components

Fitting electronic components into a terminal block assembly turns the terminal point into an active part of the installation. The free space within the terminal carrier can be sensibly used for displaying signals, for suppressing sparks or for signal conditioning. The Weidmüller program focuses on

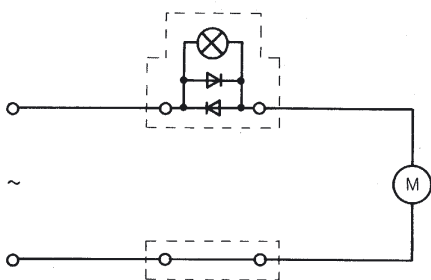
### Terminal blocks with LED indicators

to indicate switching statuses, messages and operating voltages. These signals simplify commissioning, monitoring operations, servicing and repairs of installations. Available are double terminals for monitoring voltages and currents, fuse terminals with failure indication and disconnect terminals which signalize open disconnect points. Different colored LEDs, glow lamps (low power consumption) or filament bulbs are used for signal indication.

Application example:

- **Monitoring of ventilation motors**

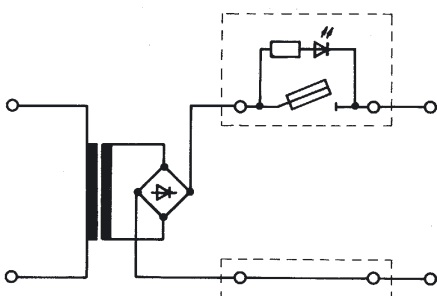
The indicated flow of current allows the operating status of the ventilator to be monitored.



Application example:

- **Fusing of a power supply module**

A lighted LED indicates the failure of the fuse, which causes a low residual current to flow through the terminal.



The fuse module EGS, page 286, enables status indication without residual currents.

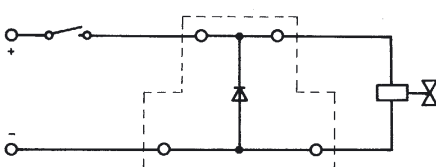
### Terminal blocks with diodes

for suppressing inductivity or linking signals.

Application example:

- **Spark suppression when DC valve is switched**

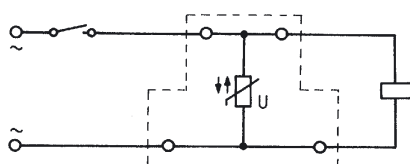
The electromagnetic energy stored in the coil fades through the diode on opening the contact.



Application example:

- **Protects contacts when an inductive AC load is switched**

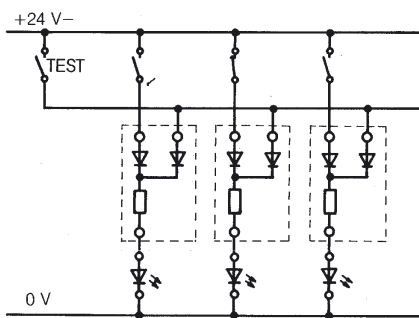
A varistor limits the peak voltage when load is switched off. This prevents arcing and related burning of the contacts.



Application example:

- **Test switch for LED display panels**

The series resistors for the LED are integrated in the terminal. Two diodes decouple control and test signals.

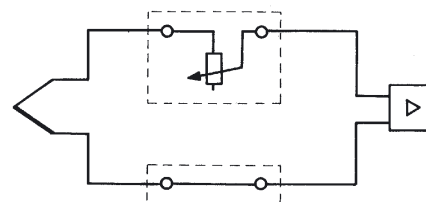


### Compensating Terminals

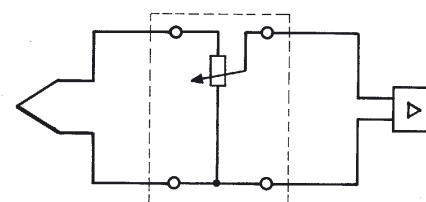
Different cable lengths and tolerances for the sensors in measurement, control and regulation technology require compensation of the circuits. A combination of a rail-mounted terminal and potentiometer is the solution: Type SAKL 4.

Application example:

- **Temperature measurement**



A further variation with a terminal block combination as voltage divider is available.



### Standards:

The following standards are fulfilled:

**DIN VDE EN 50178:**

Equipping power installations with electronic equipment

**DIN VDE 0110/79:**

Rated insulation voltage

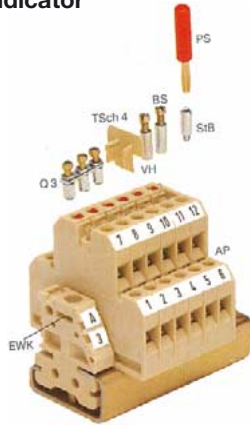
**DIN VDE 0611 T.1/IEC 60 947-7-1:**

Requirements placed on terminal blocks with or without screw terminal points.



# Terminal Blocks

## With indicator



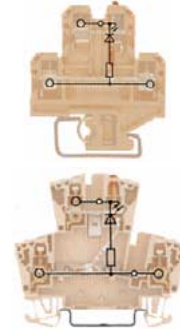
## DK 4 LD WDK 2.5 LD

DC voltage indicator



## DK 4 LD WDK 2.5 LD

DC voltage indicator



Dimension details DK 4/WDK 2.5									
Length	mm	50/69				50/69			
Height (incl. TS 32/TS 35x7.5)	mm	56.5/63				56.5/63			
Terminal width (+ assembly tolerance 0.2)	mm	6/5				6/5			
Insulation stripping length	mm	9/10				9/10			
Connection data									
Screw connection, flexible	DK 4	0.5...4 mm <sup>2</sup>				0.5...4 mm <sup>2</sup>			
Screw connection, flexible	WDK 2.5	0.5...2.5 mm <sup>2</sup>				0.5...2.5 mm <sup>2</sup>			
Conductor cross-section	DK 4	AWG 22...12				AWG 22...12			
Conductor cross-section	WDK 2.5	AWG 26...12				AWG 26...12			
VDE rated data									
Current of one-piece busbar		10 A				10 A			
Cross-section	DK 4	4 mm <sup>2</sup>				4 mm <sup>2</sup>			
Cross-section	WDK 2.5	2.5 mm <sup>2</sup>				2.5 mm <sup>2</sup>			
LED current		< 5 mA				< 5 mA			
Voltage									
		6 V-	24 V-	24 V-	60 V-	6 V-	24 V-	24 V-	60 V-
Indicator (other versions on request)									
	LED	red	red	green	red	red	red	green	red
Ordering data									
Type		DK 4 LD/32	DK 4 LD/32	DK 4 LD/32	DK 4 LD/32	DK 4 LD/32	DK 4 LD/32	DK 4 LD/32	DK 4 LD/32
Cat. No.	for TS 32	<b>0582860000</b>	<b>0495360000</b>	<b>0686360000</b>	<b>0643360000</b>	<b>0582960000</b>	<b>0474460000</b>	<b>0646560000</b>	<b>0639660000</b>
Type		DK 4 LD/35	DK 4 LD/35	DK 4 LD/35	DK 4 LD/35	DK 4 LD/35	DK 4 LD/35	DK 4 LD/35	DK 4 LD/35
Cat. No.	for TS 35	<b>0395360000</b>	<b>0539060000</b>	<b>0395460000</b>	<b>0395560000</b>	<b>0395660000</b>	<b>0539160000</b>	<b>0395760000</b>	<b>0395860000</b>
Type			WDK 2.5 LD	WDK 2.5 LD			WDK 2.5 LD	WDK 2.5 LD	
Cat. No.	for TS 35		<b>8023630000</b>	<b>8010040000</b>			<b>1023600000</b>	<b>8023610000</b>	
Accessories DK 4		Type	Cat. No.	Qty.	Type	Cat. No.	Qty.		
Mounting rail (2 m lengths)	<b>TS 32</b>	TS 32	<b>0122800000</b>	-	TS 32	<b>0122800000</b>	-		
	<b>TS 35</b>	TS 35	<b>0383400000</b>	-	TS 35	<b>0383400000</b>	-		
End bracket (thickness mm)	for TS 32 <b>EWK 1</b> (8.5)	EWK 1	<b>0206160000</b>	50	EWK 1	<b>0206160000</b>	50		
	for TS 35 <b>EW 35</b> (8.5)	EW 35	<b>0383560000</b>	50	EW 35	<b>0383560000</b>	50		
End plate (thickness mm)	<b>AP PA</b> (1.5)	AP PA	<b>0359260000</b>	20	AP PA	<b>0359260000</b>	20		
Small partition	<b>TSch 4</b>	TSch4	<b>0363360000</b>	100	TSch4	<b>0363360000</b>	100		
Socket contact for test plug		StB 8.5	<b>0215700000</b>	50	StB 8.5	<b>0215700000</b>	50		
Test plug (pin diameter ø 2.3 mm)		PS	<b>0180400000</b>	20	PS	<b>0180400000</b>	20		
Cross-connector (pre-assembled)	2-pole	Q 2	<b>0336400000</b>	50	Q 2	<b>0336400000</b>	50		
	3-pole	Q 3	<b>0336500000</b>	50	Q 3	<b>0336500000</b>	50		
	4-pole	Q 4	<b>0336600000</b>	50	Q 4	<b>0336600000</b>	50		
	10-pole	Q 10	<b>0368600000</b>	20	Q 10	<b>0368600000</b>	20		
Switchable cross-connecting link		VL 2	<b>0446700000</b>	50	VL 2	<b>0446700000</b>	50		
Connection sleeve		VH 10	<b>0446600000</b>	100	VH 10	<b>0446600000</b>	100		
Fixing screw		BS M 2.5x14	<b>0266800000</b>	100	BS M 2.5x14	<b>0266800000</b>	100		
Cross-connecting bridge		QB 2 <sup>1)</sup>	<b>0482700000</b>	100	QB 2 <sup>1)</sup>	<b>0482700000</b>	100		
		QB 3 <sup>1)</sup>	<b>0482800000</b>	50	QB 3 <sup>1)</sup>	<b>0482800000</b>	50		
		QB 4 <sup>1)</sup>	<b>0482900000</b>	50	QB 4 <sup>1)</sup>	<b>0482900000</b>	50		
		QB 75 bare	<b>0526400000</b>	10	QB 75 bare	<b>0526400000</b>	10		
		Insulating profile	<b>0526700000</b>	-	Insulating profile	<b>0526700000</b>	-		

<sup>1)</sup>When using QB conductor connection, max. 2.5 mm<sup>2</sup>

**DK 4 LD**

DC voltage indicator



50
56.5
6
9
0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>
AWG 22...12
-
10 A
4 mm <sup>2</sup>
-
< 5 mA
24 V~
24 V~
red
green

DK 4 LD/32 **0210160000** DK 4 LD/32 **0210360000**

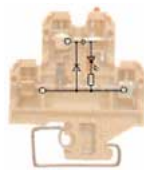
DK 4 LD/35 **0210260000** DK 4 LD/35 **0210460000**

WDK 2.5 LD **8019050000** WDK 2.5 LD **8161430000**

Type	Cat. No.	Qty.
TS 32	<b>0122800000</b>	-
TS 35	<b>0383400000</b>	-
EWK 1	<b>0206160000</b>	50
EW 35	<b>0383560000</b>	50
AP PA	<b>0359260000</b>	20
TSch 4	<b>0363360000</b>	100
StB 8.5	<b>0215700000</b>	50
PS	<b>0180400000</b>	20
Q 2	<b>0336400000</b>	50
Q 3	<b>0336500000</b>	50
Q 4	<b>0336600000</b>	50
Q 10	<b>0368600000</b>	20
VL 2	<b>0446700000</b>	50
VH 10	<b>0446600000</b>	100
BS M 2.5x14	<b>0266800000</b>	100
QB 2 <sup>1)</sup>	<b>0482700000</b>	100
QB 3 <sup>1)</sup>	<b>0482800000</b>	50
QB 4 <sup>1)</sup>	<b>0482900000</b>	50
QB 75 bare	<b>0526400000</b>	10
Insulation profile	<b>0526700000</b>	-

**DK 4 LD**

DC voltage indicator



50
56.5
6
9
0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>
AWG 22...12
-
10 A
4 mm <sup>2</sup>
-
< 5 mA
24 V~
24 V~
red
green

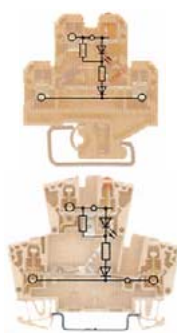
DK 4 LD/32 **0209760000** DK 4 LD/32 **0209960000**

DK 4 LD/35 **0209860000** DK 4 LD/35 **0210060000**

Type	Cat. No.	Qty.
TS 32	<b>0122800000</b>	-
TS 35	<b>0383400000</b>	-
EWK 1	<b>0206160000</b>	50
EW 35	<b>0383560000</b>	50
AP PA	<b>0359260000</b>	20
TSch 4	<b>0363360000</b>	100
StB 8.5	<b>0215700000</b>	50
PS	<b>0180400000</b>	20
Q 2	<b>0336400000</b>	50
Q 3	<b>0336500000</b>	50
Q 4	<b>0336600000</b>	50
Q 10	<b>0368600000</b>	20
VL 2	<b>0446700000</b>	50
VH 10	<b>0446600000</b>	100
BS M 2.5x14	<b>0266800000</b>	100
QB 2 <sup>1)</sup>	<b>0482700000</b>	100
QB 3 <sup>1)</sup>	<b>0482800000</b>	50
QB 4 <sup>1)</sup>	<b>0482900000</b>	50
QB 75 bare	<b>0526400000</b>	10
Insulation profile	<b>0526700000</b>	-

**DK 4 LD  
WDK 2.5 LD**

Alternating voltage indicator



50/69
56.5/63
6/5
9/10
0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>
AWG 22...12
AWG 26...12
10 A
4 mm <sup>2</sup>
2.5 mm <sup>2</sup>
< 5 mA
24 V~
48 V~
115 V~
230 V~
red
red
red
red

DK 4 LD/32 **0495460000** DK 4 LD/32 **0632860000** DK 4 LD/32 **0586560000** DK 4 LD/32 **1111460000**

DK 4 LD/35 **0395960000** DK 4 LD/35 **0396060000** DK 4 LD/35 **0396160000** DK 4 LD/35 **1111560000**

WDK 2.5 LD **8006320000** WDK 2.5 LD **8013140000**

Type	Cat. No.	Qty.
TS 32	<b>0122800000</b>	-
TS 35	<b>0383400000</b>	-
EWK 1	<b>0206160000</b>	50
EW 35	<b>0383560000</b>	50
AP PA	<b>0359260000</b>	20
TSch 4	<b>0363360000</b>	100
StB 8.5	<b>0215700000</b>	50
PS	<b>0180400000</b>	20
Q 2	<b>0336400000</b>	50
Q 3	<b>0336500000</b>	50
Q 4	<b>0336600000</b>	50
Q 10	<b>0368600000</b>	20
VL 2	<b>0446700000</b>	50
VH 10	<b>0446600000</b>	100
BS M 2.5x14	<b>0266800000</b>	100
QB 2 <sup>1)</sup>	<b>0482700000</b>	100
QB 3 <sup>1)</sup>	<b>0482800000</b>	50
QB 4 <sup>1)</sup>	<b>0482900000</b>	50
QB 75 bare	<b>0526400000</b>	10
Insulating profile	<b>0526700000</b>	-

**DK 4 LD  
WDK 2.5 GL**

Alternating voltage indicator



50/69
56.5/63
6/5
9/10
0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>
AWG 22...12
AWG 26...12
10 A
4 mm <sup>2</sup>
2.5 mm <sup>2</sup>
< 5 mA
115 V~
230 V~
Glow lamp

DK 4GL/32 **0569560000** DK 4 GL/32 **0509560000**

DK 4 GL/35 **0396260000** DK 4 GL/35 **0663160000**

WDK 2.5 GL **8013840000**

Type	Cat. No.	Qty.
TS 32	<b>0122800000</b>	-
TS 35	<b>0383400000</b>	-
EWK 1	<b>0206160000</b>	50
EW 35	<b>0383560000</b>	50
AP PA	<b>0359260000</b>	20
TSch 4	<b>0363360000</b>	100
QB 2 <sup>1)</sup>	<b>0482700000</b>	100
QB 3 <sup>1)</sup>	<b>0482800000</b>	50
QB 4 <sup>1)</sup>	<b>0482900000</b>	50
QB 75 bare	<b>0526400000</b>	10
Insulation profile	<b>0526700000</b>	-

**DK 4 Q GL**

Alternating voltage indicator



50
56.5
6
9
0.5...4 mm <sup>2</sup>
0.5...4 mm <sup>2</sup>
AWG 22...12
-
10 A
4 mm <sup>2</sup>
-
< 5 mA
230~
Glow lamp

DK 4 Q GL/35 **1120260000**

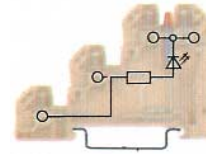
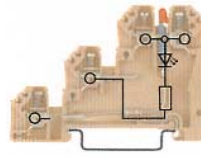
Type	Cat. No.	Qty.
TS 35	<b>0383400000</b>	-
EWK 1	<b>0206160000</b>	50
EW 35	<b>0383560000</b>	50
TSch 4	<b>0363360000</b>	100
QB 2 <sup>1)</sup>	<b>0482700000</b>	100
QB 3 <sup>1)</sup>	<b>0482800000</b>	50
QB 4 <sup>1)</sup>	<b>0482900000</b>	50
QB 75 bare	<b>0526400000</b>	10
Insulation profile	<b>0526700000</b>	-


# Terminal Blocks

## With indicator

## DLI 2.5 LD/35 PNP

## DLI 2.5 LD/35 NPN

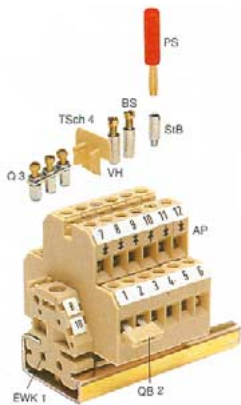


Dimensions							
Length	mm	65		65			
Height (incl. TS 32/TS 35x7.5)	mm	-/49		-/49			
Terminal width (+ assembly tolerance 0.2)	mm	6		6			
Insulation stripping length	mm	7		7			
Connection data							
Screw connection, solid core		0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>			
Screw connection, flexible		0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>			
Conductor cross-section		AWG 22...14		AWG 22...14			
VDE rated data							
Current of through-busbar		20 A		20 A			
Cross-section		2.5 mm <sup>2</sup>		2.5 mm <sup>2</sup>			
Permissible current range		-		-			
LED current		< 5 mA		< 5 mA			
<b>Voltage</b> other versions on request		5...30 V-		5...30 V-			
Ordering data		Type	Cat. No.	Type	Cat. No.		
	for TS 35 	DLI 2.5 LD/35 PNP		DLI 2.5 LD/35 NPN			
	LED red	<b>1578510000</b>		<b>1578550000</b>			
	LED green	<b>1578520000</b>		<b>1578560000</b>			
Block of 10 (with built-in cross-connections)							
	LED red	<b>1578530000</b>					
	LED green	<b>1578540000</b>					
Accessories		Type	Cat. No.	Qty.	Type	Cat. No.	Qty.
Mounting rail (2 m lengths)		-	-	-	-	-	-
End bracket (thickness mm)		TS 35	<b>0383400000</b>	-	TS 35	<b>0383400000</b>	-
	for TS 35 <b>EW 35</b> (8.5)	EW 35 (8.5)	<b>0383560000</b>	50	EW 35 (8.5)	<b>0383560000</b>	50
End plate (thickness mm)	<b>AP PA</b> (1.5)	AP PA	<b>1313260000</b>	20	AP PA	<b>1313260000</b>	20
Cross-connector (pre-assembled)	2-pole	Q 2	<b>1312500000</b>	50	Q 2	<b>1312500000</b>	50
	3-pole	Q 3	<b>1312600000</b>	50	Q 3	<b>1312600000</b>	50
	4-pole	Q 4	<b>1312700000</b>	50	Q 4	<b>1312700000</b>	50
	10-pole	Q 10	<b>1313100000</b>	20	Q 10	<b>1313100000</b>	20
Connection sleeve		VH 3.8	<b>1345800000</b>	100	VH 3.8	<b>1345800000</b>	100
Cross-connection bracket		QL 2	<b>029720</b>	100	QL 2	<b>0297200000</b>	100

# Terminal Blocks

## With diodes

(other versions on request)



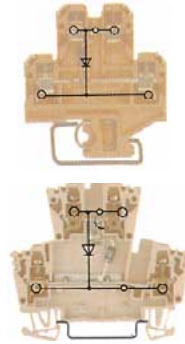
### DK 4 D WDK 2.5 D

Diode terminal, i.e. as reverse voltage protection



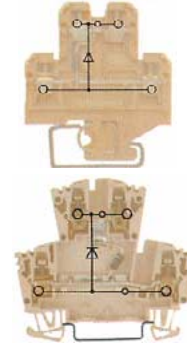
### DK 4 D WDK 2.5 D

Arc suppression circuit for contactors and solenoid (valves DC)



### DK 4 D WDK 2.5 D

Arc suppression circuit for contactors and solenoid (valves DC)



#### Dimension details DK 4/WDK 2.5

Length	mm	50/69
Height (incl. TS 32/TS 35x7.5)	mm	56.5/63
Terminal width (+ assembly tolerance 0.2)	mm	6/5
Insulation stripping length	mm	9/10

Connection data	
Screw connection, flexible	DK 4
Screw connection, flexible	WDK 2.5
Conductor cross-section	DK 4
Conductor cross-section	WDK 2.5

VDE rated data	
Voltage	380 V~
Diode reverse voltage	1000 V
Diode current	1 A
Current of through-basbar	10 A

Diode	1 N 4007
-------	----------

#### Terminal colour

#### Ordering data

Type	DK 4 D/32
Cat. No.	for TS 32 <b>0544660000</b>

Type	DK 4 D/35
Cat. No.	for TS 35 <b>0396360000</b>

Type	WDK 2.5 D
Cat. No.	for TS 35 <b>8025610000</b>

#### Accessories DK 4<sup>1)</sup>

Mounting rail (2 m lengths)	<b>TS 32</b>
	<b>TS 35</b>
End bracket (thickness mm)	for TS 32 <b>EWK 1</b> (8.5)
	for TS 35 <b>EW 35</b> (8.5)
End plate (thickness mm)	<b>AP PA</b> (1.5)
Small partition	<b>TSch 4</b>
Socket contact for test plug	
Test plug (pin diameter ø 2.3 mm)	
Cross-connector (pre-assembled)	2-pole
	3-pole
	4-pole
	10-pole
Switchable cross-connecting link	
Connection sleeve	
Fixing screw	
Cover plate	
Fixing screw (plastic)	
Cross-connecting bridge	

Length	mm	50/69
Height (incl. TS 32/TS 35x7.5)	mm	56.5/63
Terminal width (+ assembly tolerance 0.2)	mm	6/5
Insulation stripping length	mm	9/10

Connection data	
Screw connection, flexible	DK 4
Screw connection, flexible	WDK 2.5
Conductor cross-section	DK 4
Conductor cross-section	WDK 2.5

VDE rated data	
Voltage	380 V~
Diode reverse voltage	1000 V
Diode current	1 A
Current of through-basbar	10 A

Diode	1 N 4007
-------	----------

#### Terminal colour

#### Ordering data

Type	DK 4 D/32
Cat. No.	<b>0544660000</b>

Type	DK 4 D/35
Cat. No.	<b>0396360000</b>

Type	WDK 2.5 D
Cat. No.	<b>8025610000</b>

Type	Cat. No.	Qty.
TS 32	<b>0122800000</b>	-
TS 35	<b>0383400000</b>	-
EWK 1	<b>0206160000</b>	50
EW 35	<b>0383560000</b>	-
AP PA	<b>0359260000</b>	20
WAP/DK 2.5	<b>1059100000</b>	20
TSch 4	<b>0363360000</b>	100
StB 8.5	<b>0215700000</b>	50
PS	<b>0180400000</b>	20
Q 2	<b>0336400000</b>	50
Q 3	<b>0336500000</b>	50
Q 4	<b>0336600000</b>	50
Q 10	<b>0368600000</b>	20
VL 2	<b>0446700000</b>	50
VH 10	<b>0446600000</b>	100
BSM 2.5x14	<b>0266800000</b>	100
AD 4 (4 term.)	<b>0303400000</b>	50
BSKM 2.5x18	<b>0303300000</b>	100
QB 2 <sup>2)</sup>	<b>0482700000</b>	100
QB 3 <sup>2)</sup>	<b>0482800000</b>	50
QB 4 <sup>2)</sup>	<b>0482900000</b>	50
QB 75 bare	<b>0526400000</b>	10
Insul. profile	<b>0526700000</b>	-

Length	mm	50/69
Height (incl. TS 32/TS 35x7.5)	mm	56.5/63
Terminal width (+ assembly tolerance 0.2)	mm	6/5
Insulation stripping length	mm	9/10

Connection data	
Screw connection, flexible	DK 4
Screw connection, flexible	WDK 2.5
Conductor cross-section	DK 4
Conductor cross-section	WDK 2.5

VDE rated data	
Voltage	380 V~
Diode reverse voltage	1000 V
Diode current	1 A
Current of through-basbar	10 A

Diode	1 N 4007
-------	----------

#### Terminal colour

#### Ordering data

Type	DK 4 D/32	DK 4 D/32
Cat. No.	<b>0484060000</b>	<b>0484080000</b>

Type	DK 4 D/35	DK 4 D/35
Cat. No.	<b>0538960000</b>	<b>0538980000</b>

Type	WDK 2.5 D
Cat. No.	<b>1023400000</b>

Type	Cat. No.	Qty.
TS 32	<b>0122800000</b>	-
TS 35	<b>0383400000</b>	-
EWK 1	<b>0206160000</b>	50
EW 35	<b>0383560000</b>	-
AP PA	<b>0359260000</b>	20
WAP/DK 2.5	<b>1059100000</b>	20
TSch 4	<b>0363360000</b>	100
StB 8.5	<b>0215700000</b>	50
PS	<b>0180400000</b>	20
Q 2	<b>0336400000</b>	50
Q 3	<b>0336500000</b>	50
Q 4	<b>0336600000</b>	50
Q 10	<b>0368600000</b>	20
VL 2	<b>0446700000</b>	50
VH 10	<b>0446600000</b>	100
BSM 2.5x14	<b>0266800000</b>	100
AD 4 (4 term.)	<b>0303400000</b>	50
BSKM 2.5x18	<b>0303300000</b>	100
QB 2 <sup>2)</sup>	<b>0482700000</b>	100
QB 3 <sup>2)</sup>	<b>0482800000</b>	50
QB 4 <sup>2)</sup>	<b>0482900000</b>	50
QB 75 bare	<b>0526400000</b>	10
Insul. profile	<b>0526700000</b>	-

Length	mm	50/69
Height (incl. TS 32/TS 35x7.5)	mm	56.5/63
Terminal width (+ assembly tolerance 0.2)	mm	6/5
Insulation stripping length	mm	9/10

Connection data	
Screw connection, flexible	DK 4
Screw connection, flexible	WDK 2.5
Conductor cross-section	DK 4
Conductor cross-section	WDK 2.5

VDE rated data	
Voltage	380 V~
Diode reverse voltage	1000 V
Diode current	1 A
Current of through-basbar	10 A

Diode	1 N 4007
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#### Terminal colour

#### Ordering data

Type	DK 4 D/32	DK 4 D/32
Cat. No.	<b>0467960000</b>	<b>0467980000</b>

Type	DK 4 D/35	DK 4 D/35
Cat. No.	<b>0538860000</b>	<b>0538880000</b>

Type	WDK 2.5 D
Cat. No.	<b>1023300000</b>

Type	Cat. No.	Qty.
TS 32	<b>0122800000</b>	-
TS 35	<b>0383400000</b>	-
EWK 1	<b>0206160000</b>	50
EW 35	<b>0383560000</b>	-
AP PA	<b>0359260000</b>	20
WAP/DK 2.5	<b>1059100000</b>	20
TSch 4	<b>0363360000</b>	100
StB 8.5	<b>0215700000</b>	50
PS	<b>0180400000</b>	20
Q 2	<b>0336400000</b>	50
Q 3	<b>0336500000</b>	50
Q 4	<b>0336600000</b>	50
Q 10	<b>0368600000</b>	20
VL 2	<b>0446700000</b>	50
VH 10	<b>0446600000</b>	100
BSM 2.5x14	<b>0266800000</b>	100
AD 4 (4 term.)	<b>0303400000</b>	50
BSKM 2.5x18	<b>0303300000</b>	100
QB 2 <sup>2)</sup>	<b>0482700000</b>	100
QB 3 <sup>2)</sup>	<b>0482800000</b>	50
QB 4 <sup>2)</sup>	<b>0482900000</b>	50
QB 75 bare	<b>0526400000</b>	10
Insul. profile	<b>0526700000</b>	-

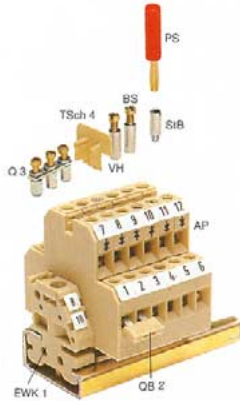
<sup>1)</sup> Accessories for WDK 2.5 see sectional catalogue: Terminals

<sup>2)</sup> When using QB conductor connection, max. 2.5 mm<sup>2</sup>

# Terminal Blocks

## With diodes

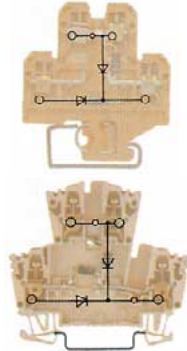
(other versions on request)



## DK 4 D

### WDK 2.5 D

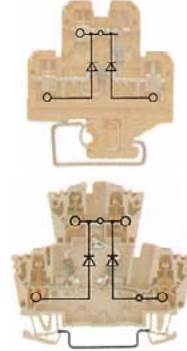
Diode terminals for lamp test circuits



## DK 4 D

### WDK 2.5 D

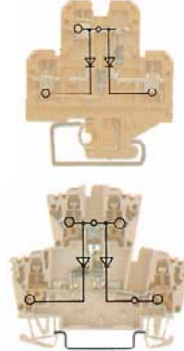
Diode terminals for lamp test circuits



## DK 4 D

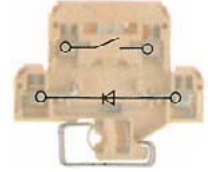
### WDK 2.5 D

Diode terminals for lamp test circuits



## DKT 4 D

Diode terminal for central control circuits



Dimension details DK 4/WDK 2.5					
Length	mm	50/69	50/69	50/69	65
Height (incl. TS 32/TS 35x7.5)	mm	56.5/63	56.5/63	56.5/63	56.5
Terminal width (+ assembly tolerance 0.2)	mm	6/5	6/5	6/5	6
Insulation stripping length	mm	9/10	9/10	9/10	9
Connection data					
Screw connection, flexible	DK 4	0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>
Screw connection, flexible	WDK 2.5	0.5...2.5 mm <sup>2</sup>	0.5...2.5 mm <sup>2</sup>	0.5...2.5 mm <sup>2</sup>	-
Conductor cross-section	DK 4	AWG 22...12	AWG 22...12	AWG 22...12	AWG 22...12
Conductor cross-section	WDK 2.5	AWG 26...12	AWG 26...12	AWG 26...12	-
VDE rated data					
Voltage		380 V~	380 V~	380 V~	380 V~
Diode reverse voltage		1000 V	1000 V	1000 V	1000 V
Diode current		1 A	1 A	1 A	1 A
Current of through-basbar		10 A	10 A	10 A	10 A
Diode		1 N 4007	1 N 4007	1 N 4007	1 N 4007

Terminal colour					
		beige	beige	beige	beige
Ordering data					
Type		DK 4 D/32	DK 4 D/32	DK 4 D/32	DK 4 D/32
Cat. No.	for TS 32	<b>0642760000</b>	<b>0523760000</b>	<b>0663960000</b>	<b>1161260000</b>
Type		DK 4 D/35	DK 4 D/35	DK 4 D/35	DK 4 D/35
Cat. No.	for TS 35	<b>0396660000</b>	<b>0396860000</b>	<b>0396760000</b>	<b>1159060000</b>
Type		WDK 2.5 D	WDK 2.5 D	WDK 2.5 D	
Cat. No.	for TS 35	<b>1023500000</b>	<b>1022600000</b>	<b>8014670000</b>	

Accessories DK 41)		Type	Cat. No.	Qty.	Type	Cat. No.	Qty.	Type	Cat. No.	Qty.	Type	Cat. No.	Qty.
Mounting rail (2 m lengths)	<b>TS 32</b>	TS 32	<b>0122800000</b>	-	TS 32	<b>0122800000</b>	-	TS 32	<b>0122800000</b>	-	TS 32	<b>0122800000</b>	-
	<b>TS 35</b>	TS 35	<b>0383400000</b>	-	TS 35	<b>0383400000</b>	-	TS 35	<b>0383400000</b>	-	TS 35	<b>0383400000</b>	-
End bracket (thickness mm)	for TS 32 <b>EWK 1</b> (8.5)	EWK 1	<b>0206160000</b>	50	EWK 1	<b>0206160000</b>	50	EWK 1	<b>0206160000</b>	50	EWK 1	<b>0206160000</b>	50
	for TS 35 <b>EW 35</b> (8.5)	EW 35	<b>0383560000</b>	-	EW 35	<b>0383560000</b>	-	EW 35	<b>0383560000</b>	-	EW 35	<b>0383560000</b>	-
End plate (thickness mm)	<b>AP PA</b> (1.5)	AP PA	<b>0359260000</b>	20	AP PA	<b>0359260000</b>	20	AP PA	<b>0359260000</b>	20	AP PA	<b>0359260000</b>	20
		WAP/DK 2.5	<b>1059100000</b>	20	WAP/DK 2.5	<b>1059100000</b>	20	WAP/DK 2.5	<b>1059100000</b>	20	WAP/DK 2.5	<b>1059100000</b>	20
Small partition	<b>TSch 4</b>	TSch 4	<b>0363360000</b>	100	TSch 4	<b>0363360000</b>	100	TSch 4	<b>0363360000</b>	100	TSch 4	<b>0363360000</b>	100
Socket contact for test plug		StB 8.5	<b>0215700000</b>	50	StB 8.5	<b>0215700000</b>	50	StB 8.5	<b>0215700000</b>	50	StB 8.5	<b>0215700000</b>	50
Test plug (pin diameter ø 2.3 mm)		PS	<b>0180400000</b>	20	PS	<b>0180400000</b>	20	PS	<b>0180400000</b>	20	PS	<b>0180400000</b>	20
Cross-connector (pre-assembled)	2-pole	Q 2	<b>0336400000</b>	50	Q 2	<b>0336400000</b>	50	Q 2	<b>0336400000</b>	50	Q 2	<b>0336400000</b>	50
	3-pole	Q 3	<b>0336500000</b>	50	Q 3	<b>0336500000</b>	50	Q 3	<b>0336500000</b>	50	Q 3	<b>0336500000</b>	50
	4-pole	Q 4	<b>0336600000</b>	50	Q 4	<b>0336600000</b>	50	Q 4	<b>0336600000</b>	50	Q 4	<b>0336600000</b>	50
	10-pole	Q 10	<b>0368600000</b>	20	Q 10	<b>0368600000</b>	20	Q 10	<b>0368600000</b>	20	Q 10	<b>0368600000</b>	20
		VL 2	<b>0446700000</b>	50	VL 2	<b>0446700000</b>	50	VL 2	<b>0446700000</b>	50	VL 2	<b>0446700000</b>	50
Switchable cross-connecting link		VH 10	<b>0446600000</b>	100	VH 10	<b>0446600000</b>	100	VH 10	<b>0446600000</b>	100	VH 10	<b>0446600000</b>	100
Connection sleeve		BS M 2.5x14	<b>0266800000</b>	100	BS M 2.5x14	<b>0266800000</b>	100	BS M 2.5x14	<b>0266800000</b>	100	BS M 2.5x14	<b>0266800000</b>	100
Fixing screw		AD 4 (4 term.)	<b>0303400000</b>	50	AD 4 (4 term.)	<b>0303400000</b>	50	AD 4 (4 term.)	<b>0303400000</b>	50	AD 4 (4 term.)	<b>0303400000</b>	50
Cover plate		BSKM 2.5x18	<b>0303300000</b>	100	BSKM 2.5x18	<b>0303300000</b>	100	BSKM 2.5x18	<b>0303300000</b>	100	BSKM 2.5x18	<b>0303300000</b>	100
Fixing screw (plastic)		QB 2 <sup>2)</sup>	<b>0482700000</b>	100	QB 2 <sup>2)</sup>	<b>0482700000</b>	100	QB 2 <sup>2)</sup>	<b>0482700000</b>	100	QB 2 <sup>2)</sup>	<b>0482700000</b>	100
Cross-connecting bridge		QB 3 <sup>2)</sup>	<b>0482800000</b>	50	QB 3 <sup>2)</sup>	<b>0482800000</b>	50	QB 3 <sup>2)</sup>	<b>0482800000</b>	50	QB 3 <sup>2)</sup>	<b>0482800000</b>	50
		QB 4 <sup>2)</sup>	<b>0482900000</b>	50	QB 4 <sup>2)</sup>	<b>0482900000</b>	50	QB 4 <sup>2)</sup>	<b>0482900000</b>	50	QB 4 <sup>2)</sup>	<b>0482900000</b>	50
		QB 75 bare	<b>0526400000</b>	10	QB 75 bare	<b>0526400000</b>	10	QB 75 bare	<b>0526400000</b>	10	QB 75 bare	<b>0526400000</b>	10
		Insul. profile	<b>0526700000</b>	-	Insul. profile	<b>0526700000</b>	-	Insul. profile	<b>0526700000</b>	-	Insul. profile	<b>0526700000</b>	-

<sup>1)</sup> Accessories for WDK 2.5 see sectional catalogue: Terminals

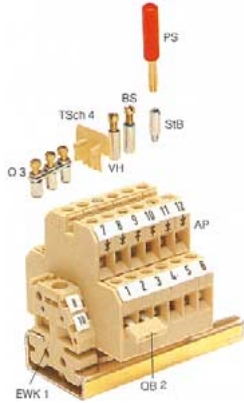
<sup>2)</sup> When using QB conductor connection, max. 2.5 mm<sup>2</sup>



## Terminal Blocks

### With electronic components

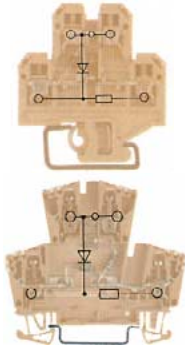
(other versions on request)



Dimension details DK 4/WDK 2.5	
Length	mm
Height (incl. TS 32/TS 35x7.5)	mm
Terminal width (+ assembly tolerance 0.2)	mm
Insulation stripping length	mm
Connection data	
Screw connection, flexible	DK 4
Screw connection, flexible	WDK 2.5
Conductor cross-section	DK 4
Conductor cross-section	WDK 2.5
VDE rated data	
Voltage	24 V-
Diode current	1 A
Current of through-busbar	10 A
Operating temperature range	
Diode	1 N 4007
Resistance	1.5 kΩ
Capacitor	-
Ordering data	
Type	DK 4 D/32
Cat. No.	for TS 32 <b>0685260000</b>
Type	DK 4 D/35
Cat. No.	for TS 35 <b>0396960000</b>
Type	WDK 2.5 D
Cat. No.	for TS 35 <b>8016940000</b>
Accessories DK 4 <sup>1)</sup>	
Mounting rail (2 m lengths)	<b>TS 32</b>
	<b>TS 35</b>
End bracket (thickness mm)	for TS 32 <b>EWK 1</b> (8.5)
	for TS 35 <b>EW 35</b> (8.5)
End plate (thickness mm)	<b>AP PA</b> (1.5)
Small partition	<b>TSch 4</b>
Partition (thickness mm)	
Socket for test plug	
Test plug (pin diameter ø 2.3 mm)	
Contact sleeve	
Cross-connector (pre-assembled)	2-pole
	3-pole
	4-pole
	10-pole
Switchable cross-connecting link	
Connection sleeve	
Fixing screw	
Cover plate	
Fixing screw (plastic)	
Cross-connecting bridge	

### DK 4 D WDK 2.5 D

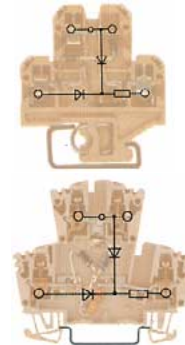
Diode terminal for lamp test circuits, with series resistor



Length	50/69	
Height (incl. TS 32/TS 35x7.5)	56.5/63	
Terminal width (+ assembly tolerance 0.2)	6/5	
Insulation stripping length	9/10	
Connection data		
Screw connection, flexible	0.5...4 mm <sup>2</sup>	
Screw connection, flexible	0.5...2.5 mm <sup>2</sup>	
Conductor cross-section	AWG 22...12	
Conductor cross-section	AWG 26...12	
VDE rated data		
Voltage	24 V-	
Diode current	1 A	
Current of through-busbar	10 A	
Operating temperature range		
Diode	1 N 4007	
Resistance	1.5 kΩ	
Capacitor	-	
Ordering data		
Type	DK 4 D/32	
Cat. No.	<b>0685260000</b>	
Type	DK 4 D/35	
Cat. No.	<b>0396960000</b>	
Type	WDK 2.5 D	
Cat. No.	<b>8016940000</b>	
Accessories DK 4 <sup>1)</sup>		
Type	Cat. No.	Qty.
TS 32	<b>0122800000</b>	-
TS 35	<b>0383400000</b>	-
EWK 1	<b>0206160000</b>	50
EW 35	<b>0383560000</b>	-
AP PA	<b>0359260000</b>	20
TSch 4	<b>0363360000</b>	100
StB 8.5	<b>0215700000</b>	50
PS	<b>0180400000</b>	20
Q 2	<b>0336400000</b>	50
Q 3	<b>0336500000</b>	50
Q 4	<b>0336600000</b>	50
Q 10	<b>0368600000</b>	20
VL 2	<b>0446700000</b>	50
VH 10	<b>0446600000</b>	100
BS M 2.5x14	<b>0266800000</b>	100
AD 4 (4 term.)	<b>0303400000</b>	50
BSKM 2.5x18	<b>0303300000</b>	100
QB 2 <sup>2)</sup>	<b>0482700000</b>	100
QB 3 <sup>2)</sup>	<b>0482800000</b>	50
QB 4 <sup>2)</sup>	<b>0482900000</b>	50
QB 75 bare	<b>0526400000</b>	10
Insul. profile	<b>0526700000</b>	-

### DK 4 D WDK 2.5 D

Diode terminal for lamp test circuits, with series resistor



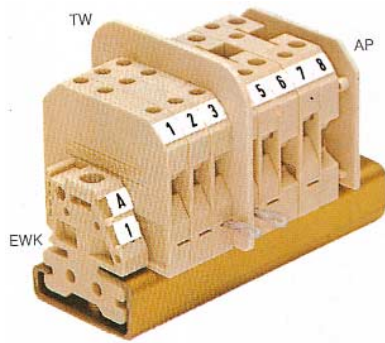
Length	50/69	
Height (incl. TS 32/TS 35x7.5)	56.5/63	
Terminal width (+ assembly tolerance 0.2)	6/5	
Insulation stripping length	9/10	
Connection data		
Screw connection, flexible	0.5...4 mm <sup>2</sup>	
Screw connection, flexible	0.5...2.5 mm <sup>2</sup>	
Conductor cross-section	AWG 22...12	
Conductor cross-section	AWG 26...12	
VDE rated data		
Voltage	24 V-	
Diode current	1 A	
Current of through-busbar	10 A	
Operating temperature range		
Diode	1 N 4007	
Resistance	1.5 kΩ	
Capacitor	-	
Ordering data		
Type	DK 4 D/32	
Cat. No.	<b>0159160000</b>	
Type	DK 4 D/35	
Cat. No.	<b>0181560000</b>	
Type	WDK 2.5 D	
Cat. No.	<b>8012260000</b>	
Accessories DK 4 <sup>1)</sup>		
Type	Cat. No.	Qty.
TS 32	<b>0122800000</b>	-
TS 35	<b>0383400000</b>	-
EWK 1	<b>0206160000</b>	50
EW 35	<b>0383560000</b>	-
AP PA	<b>0359260000</b>	20
TSch 4	<b>0363360000</b>	100
StB 8.5	<b>0215700000</b>	50
PS	<b>0180400000</b>	20
Q 2	<b>0336400000</b>	50
Q 3	<b>0336500000</b>	50
Q 4	<b>0336600000</b>	50
Q 10	<b>0368600000</b>	20
VL 2	<b>0446700000</b>	50
VH 10	<b>0446600000</b>	100
BS M 2.5x14	<b>0266800000</b>	100
AD 4 (4 term.)	<b>0303400000</b>	50
BSKM 2.5x18	<b>0303300000</b>	100
QB 2 <sup>2)</sup>	<b>0482700000</b>	100
QB 3 <sup>2)</sup>	<b>0482800000</b>	50
QB 4 <sup>2)</sup>	<b>0482900000</b>	50
QB 75 bare	<b>0526400000</b>	10
Insul. profile	<b>0526700000</b>	-

<sup>1)</sup> Accessories for WDK 2.5 see sectional catalogue: Terminals

<sup>2)</sup> When using QB conductor connection, max. 2.5 mm<sup>2</sup>



# Compensating Terminals

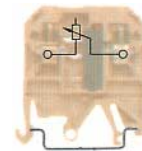


## SAKL 4/ ...

## SAKL 4/ ... L

## SAKL 4/ ... R

## SAKL 4/ ... EN



### Dimensions

Length	mm
Height (incl. TS 32/TS 35x7.5)	mm
Terminal width (+ assembly tolerance 0.2)	mm
Insulation stripping length	mm

### Connection data

Screw connection, solid core	0.5...4 mm <sup>2</sup>
Screw connection, flexible	0.5...4 mm <sup>2</sup>

### Conductor cross-section

AWG 22...12
-------------

### VDE rated data

Power	1 W
Cross-section	4 mm <sup>2</sup>

### Approvals

### Ordering data

Resistance	
30 Ω	SAKL 4/10 PA 0649160000 10
50 Ω	SAKL 4/30 PA 0524060000 10
100 Ω	SAKL 4/50 PA 0649060000 10
500 Ω	SAKL 4/100 PA 0643260000 10
1 kΩ	SAKL 4/500 PA 0643860000 10
5 kΩ	SAKL 4/1 k PA 0648960000 10
10 kΩ	SAKL 4/5 k PA 0648860000 10
100 kΩ	SAKL 4/10 k PA 0632260000 10
500 kΩ	SAKL 4/50 k PA 0647860000 10
2 MΩ	SAKL 4/100 k PA 0649260000 10
	SAKL 4/500 k PA 0649560000 10

### Accessories

Mounting rail (2 m lengths)	
End bracket (thickness mm)	for TS 32 <b>EWK 1</b> (8.5) for TS 35 <b>EW 35</b> (8.5)
End plate (thickness mm)	<b>AP PA</b> (1.5)
End plate (thickness mm)	
Partition (thickness mm)	
Shielding rail	
Solder lug	

### Technical data for the 30 Ω compensating resistor

Resistor material:	"Cermet"
Resistor setting range:	0...30 Ω
Wave form:	linear
Temperature coefficient:	± 100 ppm/°C
Mechanical lifespan:	200 operations without permissible deviations through the entire resistance range
Resistance change per spindle turn:	≈ 1.2 Ω
Rated output for total resistance:	1 Watt at 70 °C
Rated current:	120 mA
Ambient temperature:	-55 °C bis +70 °C
Sealing:	1) Leak tested in water at 70 °C without bubble formation 2) Storage in SFW 2.0 S i.a.w. DIN 50018, 9 cycles

### Dimensions

Length	mm
Height (incl. TS 32/TS 35x7.5)	mm
Terminal width (+ assembly tolerance 0.2)	mm
Insulation stripping length	mm

Screw connection, solid core	0.5...4 mm <sup>2</sup>
Screw connection, flexible	0.5...4 mm <sup>2</sup>

### Conductor cross-section

AWG 22...12
-------------

### VDE rated data

Power	1 W
Cross-section	4 mm <sup>2</sup>

### Approvals

### Ordering data

Type	Cat. No.	Qty.
SAKL 4/10 PA	0649160000	10
SAKL 4/30 PA	0524060000	10
SAKL 4/50 PA	0649060000	10
SAKL 4/100 PA	0643260000	10
SAKL 4/500 PA	0643860000	10
SAKL 4/1 k PA	0648960000	10
SAKL 4/5 k PA	0648860000	10
SAKL 4/10 k PA	0632260000	10
SAKL 4/50 k PA	0647860000	10
SAKL 4/100 k PA	0649260000	10
SAKL 4/500 k PA	0649560000	10
SAKL 4/32	0643760000	10 (without potentiometer)

### Accessories

Mounting rail (2 m lengths)	
End bracket (thickness mm)	for TS 32 <b>EWK 1</b> (8.5) for TS 35 <b>EW 35</b> (8.5)
End plate (thickness mm)	<b>AP PA</b> (1.5)
End plate (thickness mm)	
Partition (thickness mm)	
Shielding rail	
Solder lug	

### Technical data for the 30 Ω compensating resistor

Resistor material:	"Cermet"
Resistor setting range:	0...30 Ω
Wave form:	linear
Temperature coefficient:	± 100 ppm/°C
Mechanical lifespan:	200 operations without permissible deviations through the entire resistance range
Resistance change per spindle turn:	≈ 1.2 Ω
Rated output for total resistance:	1 Watt at 70 °C
Rated current:	120 mA
Ambient temperature:	-55 °C bis +70 °C
Sealing:	1) Leak tested in water at 70 °C without bubble formation 2) Storage in SFW 2.0 S i.a.w. DIN 50018, 9 cycles

### Dimensions

Length	mm
Height (incl. TS 32/TS 35x7.5)	mm
Terminal width (+ assembly tolerance 0.2)	mm
Insulation stripping length	mm

Screw connection, solid core	0.5...4 mm <sup>2</sup> /solder 1.5 mm <sup>2</sup>
Screw connection, flexible	0.5...4 mm <sup>2</sup> /solder 1.5 mm <sup>2</sup>

### Conductor cross-section

AWG 22...12
-------------

### VDE rated data

Power	1 W
Cross-section	4 mm <sup>2</sup>

### Approvals

### Ordering data

Type	Cat. No.	Qty.
SAKL 4/10 LPA	0572860000	10
SAKL 4/30 LPA	0526260000	5
SAKL 4/50 LPA	0643160000	10
SAKL 4/100 LPA	0643160000	10
SAKL 4/500 LPA	0643160000	10
SAKL 4/1 k LPA	0648960000	10
SAKL 4/5 k LPA	0648860000	10
SAKL 4/10 k LPA	0632260000	10
SAKL 4/50 k LPA	0647860000	10
SAKL 4/100 k LPA	0649260000	10
SAKL 4/500 k LPA	0649560000	10
SAKL 4/32	0643760000	10 (without potentiometer)

### Accessories

Mounting rail (2 m lengths)	
End bracket (thickness mm)	for TS 32 <b>EWK 1</b> (8.5) for TS 35 <b>EW 35</b> (8.5)
End plate (thickness mm)	<b>AP PA</b> (1.5)
End plate (thickness mm)	
Partition (thickness mm)	
Shielding rail	
Solder lug	

### Technical data for the 30 Ω compensating resistor

Resistor material:	"Cermet"
Resistor setting range:	0...30 Ω
Wave form:	linear
Temperature coefficient:	± 100 ppm/°C
Mechanical lifespan:	200 operations without permissible deviations through the entire resistance range
Resistance change per spindle turn:	≈ 1.2 Ω
Rated output for total resistance:	1 Watt at 70 °C
Rated current:	120 mA
Ambient temperature:	-55 °C bis +70 °C
Sealing:	1) Leak tested in water at 70 °C without bubble formation 2) Storage in SFW 2.0 S i.a.w. DIN 50018, 9 cycles

### Dimensions

Length	mm
Height (incl. TS 32/TS 35x7.5)	mm
Terminal width (+ assembly tolerance 0.2)	mm
Insulation stripping length	mm

Screw connection, solid core	0.5...4 mm <sup>2</sup>
Screw connection, flexible	0.5...4 mm <sup>2</sup>

### Conductor cross-section

AWG 22...12
-------------

### VDE rated data

Power	1 W
Cross-section	4 mm <sup>2</sup>

### Approvals

### Ordering data

Type	Cat. No.	Qty.
SAKL 4/30 R PA	0526260000	5
SAKL 4/50 R PA	0643160000	10
SAKL 4/100 R PA	0643160000	10
SAKL 4/500 R PA	0643160000	10
SAKL 4/1 k R PA	0648960000	10
SAKL 4/5 k R PA	0648860000	10
SAKL 4/10 k R PA	0632260000	10
SAKL 4/50 k R PA	0647860000	10
SAKL 4/100 k R PA	0649260000	10
SAKL 4/500 k R PA	0649560000	10
SAKL 4/32	0643760000	10 (without potentiometer)

### Accessories

Mounting rail (2 m lengths)	
End bracket (thickness mm)	for TS 32 <b>EWK 1</b> (8.5) for TS 35 <b>EW 35</b> (8.5)
End plate (thickness mm)	<b>AP PA</b> (1.5)
End plate (thickness mm)	
Partition (thickness mm)	
Shielding rail	
Solder lug	

### Technical data for the 30 Ω compensating resistor

Resistor material:	"Cermet"
Resistor setting range:	0...30 Ω
Wave form:	linear
Temperature coefficient:	± 100 ppm/°C
Mechanical lifespan:	200 operations without permissible deviations through the entire resistance range
Resistance change per spindle turn:	≈ 1.2 Ω
Rated output for total resistance:	1 Watt at 70 °C
Rated current:	120 mA
Ambient temperature:	-55 °C bis +70 °C
Sealing:	1) Leak tested in water at 70 °C without bubble formation 2) Storage in SFW 2.0 S i.a.w. DIN 50018, 9 cycles

### Dimensions

Length	mm
Height (incl. TS 32/TS 35x7.5)	mm
Terminal width (+ assembly tolerance 0.2)	mm
Insulation stripping length	mm

Screw connection, solid core	0.5...4 mm <sup>2</sup>
Screw connection, flexible	0.5...4 mm <sup>2</sup>

### Conductor cross-section

AWG 22...12
-------------

### VDE rated data

Power	1 W
Cross-section	4 mm <sup>2</sup>

### Approvals

### Ordering data

Type	Cat. No.	Qty.
SAKL 4/10 EN	1108360000	10
SAKL 4/30 EN	1108460000	10
SAKL 4/50 EN	1108560000	10
SAKL 4/100 EN	1108660000	10
SAKL 4/500 EN	1108860000	10
SAKL 4/1 k EN	1108960000	10
SAKL 4/5 k EN	1109160000	10
SAKL 4/10 k EN	1109260000	10
SAKL 4/50 k EN	1109560000	10
SAKL 4/100 k EN	1109660000	10
SAKL 4/500 k EN	1109960000	10
SAKL 4/2 M EN	1110160000	10
SAKL 4 EN	1305160000	(without potentiometer)

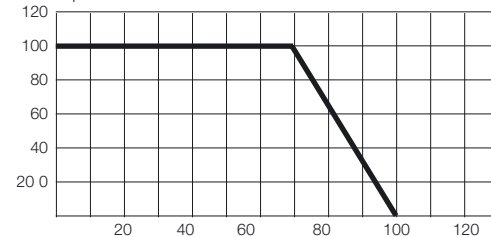
### Accessories

Mounting rail (2 m lengths)	
End bracket (thickness mm)	for TS 32 <b>EWK 1</b> (8.5) for TS 35 <b>EW 35</b> (8.5)
End plate (thickness mm)	<b>AP PA</b> (1.5)
End plate (thickness mm)	
Partition (thickness mm)	
Shielding rail	
Solder lug	

### Technical data for the 30 Ω compensating resistor

Resistor material:	"Cermet"
Resistor setting range:	0...30 Ω
Wave form:	linear
Temperature coefficient:	± 100 ppm/°C
Mechanical lifespan:	200 operations without permissible deviations through the entire resistance range
Resistance change per spindle turn:	≈ 1.2 Ω
Rated output for total resistance:	1 Watt at 70 °C
Rated current:	120 mA
Ambient temperature:	-55 °C bis +70 °C
Sealing:	1) Leak tested in water at 70 °C without bubble formation 2) Storage in SFW 2.0 S i.a.w. DIN 50018, 9 cycles

Capacity expressed in % of rated output

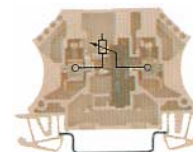
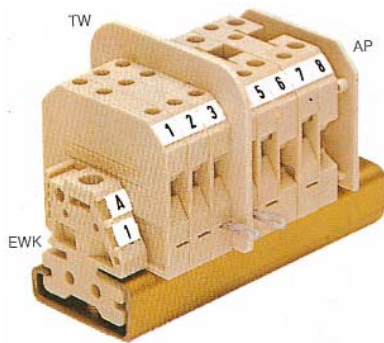


Ambient temperature in °C

# Compensating Terminals

## SAKL 4/EN T

## WDUL 4/...



### Dimensions

Length	mm
Height (incl. TS 32/TS 35x7.5)	mm
Terminal width (+ assembly tolerance 0.2)	mm
Insulation stripping length	mm

### Connection data

Screw connection, solid core	0.5...4 mm <sup>2</sup>
Screw connection, flexible	0.5...4 mm <sup>2</sup>

### Conductor cross-section

AWG 22...12	
-------------	--

### VDE rated data

Power	1 W
Cross-section	4 mm <sup>2</sup>

### Approvals

### Ordering data

Resistance	10 Ω
	30 Ω
	50 Ω
	100 Ω
	500 Ω
	1 kΩ
	5 kΩ
	10 kΩ
	100 kΩ
	500 kΩ
	2 MΩ

### Accessories

Mounting rail (2 m lengths)	
End bracket (thickness mm)	for TS 32 <b>EWK 1</b> (8.5)
	for TS 35 <b>EW 35</b> (8.5)
End plate (thickness mm)	<b>AP PA</b> (1.5)
End plate (thickness mm)	
Partition (thickness mm)	
Shielding rail	
Solder lug	

### Technical data for the 30 Ω compensating resistor

Resistor material:	"Cermet"
Resistor setting range:	0...30 Ω
Wave form:	linear
Temperature coefficient:	± 100 ppm/°C
Mechanical lifespan:	200 operations without permissible deviations through the entire resistance range
Resistance change per spindle turn:	≈ 1.2 Ω
Rated output for total resistance:	1 Watt at 70 °C
Rated current:	120 mA
Ambient temperature:	-55 °C bis +70 °C
Sealing:	1) Leak tested in water at 70 °C without bubble formation 2) Storage in SFW 2.0 S i.a.w. DIN 50018, 9 cycles

### Dimensions

Length	mm
Height (incl. TS 32/TS 35x7.5)	mm
Terminal width (+ assembly tolerance 0.2)	mm
Insulation stripping length	mm

### Connection data

Screw connection, solid core	0.5...4 mm <sup>2</sup>
Screw connection, flexible	0.5...4 mm <sup>2</sup>

### Conductor cross-section

AWG 22...12	
-------------	--

### VDE rated data

Power	1 W
Cross-section	4 mm <sup>2</sup>

### Approvals

### Ordering data

Type	Cat. No.	Qty.
SAKL 4/10 EN T	<b>1166360000</b>	5
SAKL 4/100 EN T	<b>1166460000</b>	5
SAKL 4/1 kENT	<b>1166560000</b>	5
SAKL 4/10 kENT	<b>1166660000</b>	5
SAKL 4/100 EN T	<b>1166760000</b>	5

### Accessories

TS 32	<b>0122800000</b>	-
TS 35	<b>0383400000</b>	-
EWK 1 (8.5)	<b>0206160000</b>	50
EW 35 (8.5)	<b>0383560000</b>	50
AP PA (1.5)	<b>0117960000</b>	20
TW PA (1.5)	<b>0130160000</b>	20

### Dimensions

Length	mm
Height (incl. TS 32/TS 35x7.5)	mm
Terminal width (+ assembly tolerance 0.2)	mm
Insulation stripping length	mm

### Connection data

Screw connection, solid core	0.5...4 mm <sup>2</sup>
Screw connection, flexible	0.5...4 mm <sup>2</sup>

### Conductor cross-section

AWG 22...12	
-------------	--

### VDE rated data

Power	1 W
Cross-section	4 mm <sup>2</sup>

### Approvals

### Ordering data

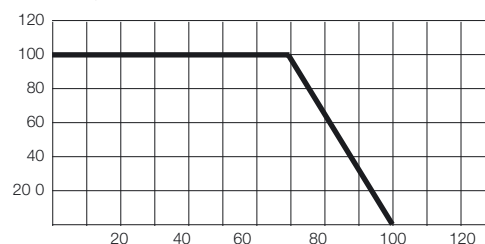
Type	Cat. No.	Qty.
WDUL 4/10	<b>1027000000</b>	10
WDUL 4/30	<b>1027100000</b>	10
WDUL 4/50	<b>1027200000</b>	10
WDUL 4/100	<b>1027300000</b>	10
WDUL 4/500	<b>1027400000</b>	10
WDUL 4/1K	<b>1027500000</b>	10
WDUL 4/5K	<b>1027600000</b>	10
WDUL 4/10K	<b>1027700000</b>	10
WDUL 4/50K	<b>1027800000</b>	10
WDUL 4/100K	<b>1027900000</b>	10
WDUL 4/500K	<b>1028000000</b>	10
WDUL 4/2M	<b>1028100000</b>	10
WDUL 4	<b>8161820000</b>	10

(without potentiometer)

### Accessories

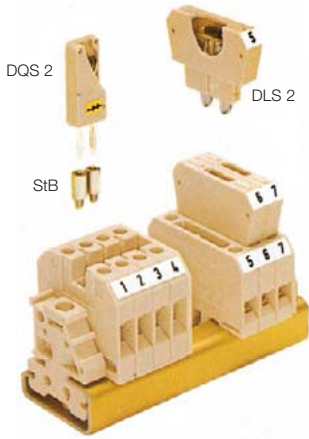
TS 35	<b>0383400000</b>	-
EW 35 (8.5)	<b>0383560000</b>	50
WAP 2.5-10	<b>1050000000</b>	50
TW PA (1.5)	<b>1050100000</b>	20
LS 2.8	<b>1056400000</b>	100

Capacity expressed in % of rated nominal power



Ambient temperature in °C

# Diode Plug



## DLS 2

for SAKR-D



## DLS 2

for SAKR-D



## WSD 2.5



## WTR 2.5 D

## SAKR-D



## SAKR-D



## WTR 2.5 D

with diode plug  
with test sockets



### Dimensions

Terminal width (+ assembly tolerance 0.2)	mm
Insulation stripping length	mm

### Connection data

Screw connection, solid	0.5...4 mm <sup>2</sup>
Screw connection, flexible	0.5...4 mm <sup>2</sup>
Conductor cross-section	AWG 22...12

### VDE rated data

Diode current	1 A
Diode reverse voltage	1000 V
Cross-section	4 mm <sup>2</sup>

### Ordering data

**DLS 2** = Diode plug  
for lateral disconnection  
**DQS 2** = Diode plug  
for cross-connection

Type	Cat. No.	Qty.
<b>DLS 2</b>	<b>0321060000</b>	
without components		50
<b>DLS 2</b>	<b>0547660000</b>	
with wire link		50
<b>DLS 2</b>	<b>0630160000</b>	
with diode		50
1 N 4007		
<b>DLS 2</b>	<b>0547760000</b>	
with diode		50
1 N 4007		
<b>SAKR-D, TS 32</b>	<b>0263660000</b>	
with <b>DLS 2</b>		25
054776		
<b>SAKR-D, TS 32</b>	<b>0413060000</b>	
with <b>DLS 2</b>		50
without components		
<b>SAKR-D, TS 32</b>	<b>0413160000</b>	
with test sockets		50
and <b>DLS 2</b> without components		
Special design		
<b>SAKR-D, TS 32</b>	<b>0606560000</b>	
with test socket		25
and 2 antiparallel diodes		
1 N 4007, <b>without</b> DLS 2		
<b>SAKR-D, TS 32</b>	<b>0412960000</b>	
without components		100
<b>SAKR-D, TS 32</b>	<b>0546460000</b>	
with test sockets		100

Type	Cat. No.	Qty.
<b>DLS 2</b>	<b>0321060000</b>	
without components		50
<b>DLS 2</b>	<b>0547660000</b>	
with wire link		50
<b>DLS 2</b>	<b>0630160000</b>	
with diode		10
1 N 4007		
<b>DLS 2</b>	<b>0547760000</b>	
with diode		50
1 N 4007		
<b>SAKR-D, TS 35</b>	<b>0299560000</b>	
with <b>DLS 2</b>		25
054776		
<b>SAKR-D, TS 35</b>	<b>0185760000</b>	
with <b>DLS 2</b>		50
without components		
<b>SAKR-D, TS 35</b>	<b>1175360000</b>	
with test sockets		-
and <b>DLS 2</b> without components		
Special design		
<b>SAKR-D, TS 35</b>	<b>1175460000</b>	
with test socket		-
and 2 antiparallel diodes		
1 N 4007, <b>without</b> DLS 2		
<b>SAKR-D, TS 35</b>	<b>0299960000</b>	
without components		25

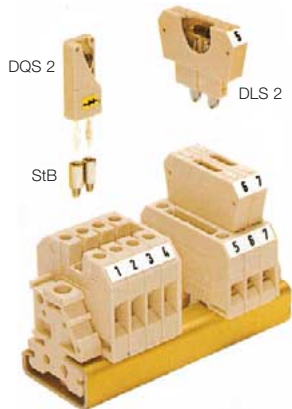
Type	Cat. No.	Qty.
<b>WSD 2.5</b>	<b>1058760000</b>	
without components		-
<b>WSD 2.5</b>	<b>1058660000</b>	
with wire link		-
<b>WSD 2.5</b>	<b>1058560000</b>	
with diode		-
1 N 4007		
<b>WSD 2.5</b>	<b>1058460000</b>	
with diode		-
1 N 4007		
<b>WTR 2.5 D</b>	<b>1013500000</b>	
with WSD 2.5		100
105856		
<b>WTR 2.5 D</b>	<b>1013600000</b>	
with WSD 2.5		100
105846		
<b>WTR 2.5 D</b>	<b>1013700000</b>	
with WSD 2.5		-
105866		
<b>WTR 2.5 D</b>	<b>1013200000</b>	
with test sockets		-
and WSD 2.5		
105856		
<b>WTR 2.5 D</b>	<b>1013300000</b>	
with test sockets		-
and WSD 2.5		
105846		
<b>WTR 2.5 D</b>	<b>1013400000</b>	
with test sockets		-
and WSD 2.5		
105866		

Type	Cat. No.	Qty.
<b>WTR 2.5 D</b>	<b>8017050000</b>	
with diode 1 N 4007		100
<b>WTR 2.5 D</b>	<b>8016820000</b>	
with diode 1 N 4007		100
<b>WTR 2.5 D</b>	<b>on request</b>	
with diode 1 N 4007		100
<b>WTR 2.5 D</b>	<b>1014600000</b>	
with 2 antiparallel diodes 1 N 4007		25
<b>WTR 2.5 D</b>	<b>1014700000</b>	
with test sockets and Diode 1 N 4007		25
<b>WTR 2.5 D</b>	<b>1014800000</b>	
with test sockets and Diode 1 N 4007		25
<b>WTR 2.5 D</b>	<b>1014800000</b>	
with test sockets and 2 antiparallel diodes 1 N 4007		25

Maximum values for built-in components: Length 23 mm, diameter 3.5 mm, output 0.5 Watt, limit temperature 100 °C



# Diode Plug



## DQS 2

for terminals with 6 mm width



### Dimensions

Terminal width (+ assembly tolerance 0.2)	mm
Insulation stripping length	mm

### Connection data

Screw connection, solid	
Screw connection, flexible	
Conductor cross-section	

### VDE rated data

Diode current	
Diode reverse voltage	
Cross-section	

### Ordering data

**DLS 2** = Diode plug  
for lateral disconnection

**DQS 2** = Diode plug  
for cross-connection

DQS 2	
1 A	-
1000 V	24 V
-	-

Type	Cat. No.	Qty.
DQS 2	0471460000	
with diode		20
1 N 4007		
DQS 2	0471560000	
with wire bridge		20
DQS 2	0471660000	
without components		20

### Note:

To maintain the clearance and creepage distances, an end plate must be mounted between the groups of different potentials!

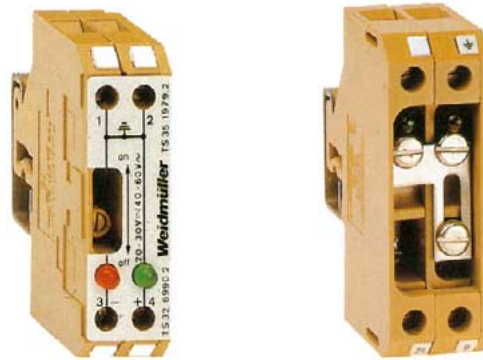
Maximum values for built-in components:

- Length 10 mm
- Diameter 4 mm
- Power 0.5 Watt
- Limit temperature 100 °C



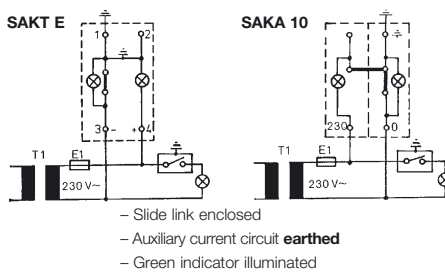
# Earth Test/Disconnect Terminals

## SAKT E/SAKA 10



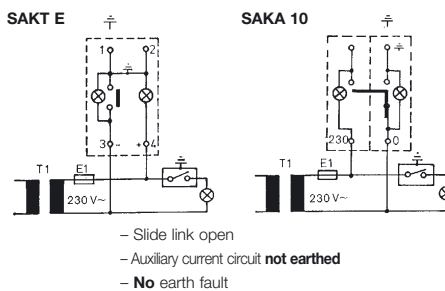
### Mode of operation

#### Operating status



#### Test mode

For insulation measurements with voltages  $>U_{rated}$ , earth must be disconnected.

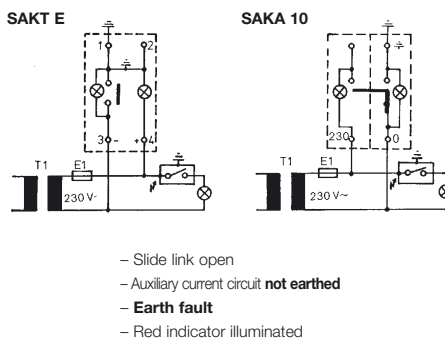


– Green and red indicators light up with reduced intensity

– Earth connection disconnected

For insulation measurements with voltages  $>U_{rated}$ , earth must be disconnected.

#### Operating status



#### Dimensions

Length mm 19/27  
Height (incl. TS 32/TS 35x7.5)mm 55/82

Insulation stripping length mm 12

#### Connection data

Screw connection, solid 0.5...10 mm<sup>2</sup>/16 mm<sup>2</sup>  
Screw connection, flexible 0.5...6 mm<sup>2</sup>/10 mm<sup>2</sup>  
Conductor cross-section AWG 20...8

#### VDE rated data

Wechselspannung 20...30 V~  
Gleichspannung 10...15 V~  
Current 27 A  
Cross-section 6 mm<sup>2</sup>

#### Ordering data

Type SAKT E KrG  
Cat. No. (6 mm<sup>2</sup>) for TS 32 Type SAKT E/35 KrG  
Cat. No. (6 mm<sup>2</sup>) for TS 35 Type SAKA 10  
Cat. No. (10 mm<sup>2</sup>) for TS 32 Type SAKA 10  
Cat. No. (10 mm<sup>2</sup>) for TS 32 Y/TS 35

#### Accessories

Mounting rail (2 m lengths)  
TS 32 EWK 1  
TS 35 EW 35  
End bracket (Thickn. 8.5 mm)  
for TS 32 EWK 1  
for TS 35 EW 35

#### SAKT E/SAKA 10

Length mm 19/27  
Height (incl. TS 32/TS 35x7.5)mm 55/82

Insulation stripping length mm 12

#### Connection data

Screw connection, solid 0.5...10 mm<sup>2</sup>/16 mm<sup>2</sup>  
Screw connection, flexible 0.5...6 mm<sup>2</sup>/10 mm<sup>2</sup>  
Conductor cross-section AWG 20...8

#### VDE rated data

Wechselspannung	20...30 V~	40...60 V~	80...120 V~	115 V~	230 V~
Gleichspannung	10...15 V~	20...30 V~	40...60 V~	115 V~	230 V~
Current	27 A	27 A/47 A	27 A	27 A/47 A	27 A/47 A
Cross-section	6 mm <sup>2</sup>	6/10 mm <sup>2</sup>	6 mm <sup>2</sup>	6/10 mm <sup>2</sup>	6/10 mm <sup>2</sup>

#### Ordering data

Type	SAKT E KrG	SAKT E KrG	SAKT E KrG	SAKT E KrG	SAKT E KrG
Cat. No. (6 mm <sup>2</sup> ) for TS 32	<b>1158720000</b>	<b>0699020000</b>	<b>0699220000</b>	<b>0698920000</b>	<b>0606820000</b>
Type SAKT E/35 KrG	SAKT E/35 KrG	SAKT E/35 KrG	SAKT E/35 KrG	SAKT E/35 KrG	SAKT E/35 KrG
Cat. No. (6 mm <sup>2</sup> ) for TS 35	<b>1166820000</b>	<b>0197920000</b>	<b>0198220000</b>	<b>0198020000</b>	<b>0198120000</b>
Type SAKA 10					SAKA 10
Cat. No. (10 mm <sup>2</sup> ) for TS 32					(only 230 V~) <b>1175020000</b>
Type SAKA 10					SAKA 10
Cat. No. (10 mm <sup>2</sup> ) for TS 32 Y/TS 35					(115 V~) (230 V~) <b>1128820000</b> <b>8109130000</b>

#### Accessories

Type	Cat. No.	Qty.
Mounting rail (2 m lengths) TS 32	<b>0122800000</b>	–
TS 35	<b>0383400000</b>	–
End bracket (Thickn. 8.5 mm) for TS 32	EWK 1 <b>0206160000</b>	50
for TS 35	EW 35 <b>0383560000</b>	50

### Earthing auxiliary circuits

Earth faults in control current circuits must not lead to unintentional start-up or dangerous movements of a machine, or prevent its shut-down. In order to fulfill this requirement, one side of the control current circuits should be connected to the protective conductor system, with the coils and switching elements mounted accordingly.

An insulation monitoring device must be planned for control current circuits that are supplied by a transformer but not connected to the protective conductor system. The device should report an earth fault or automatically disconnect the circuit following an earth fault. (VDE 01136.2.2)

Our earth test/disconnect terminals have been specially designed for use in control circuits. They have been designed to guarantee both a reliable and safe disconnection of the earth connection as well as to indicate the exact operating status. This terminal differentiates between the following modes of operation:

#### 1. Operating mode

In the operating mode, the control circuit is securely connected to earth via the closed slide link. A possible earth fault can be detected with the help of a fuse or an r.c.c.b., because in the event of a fault the leakage current can be discharged to earth.

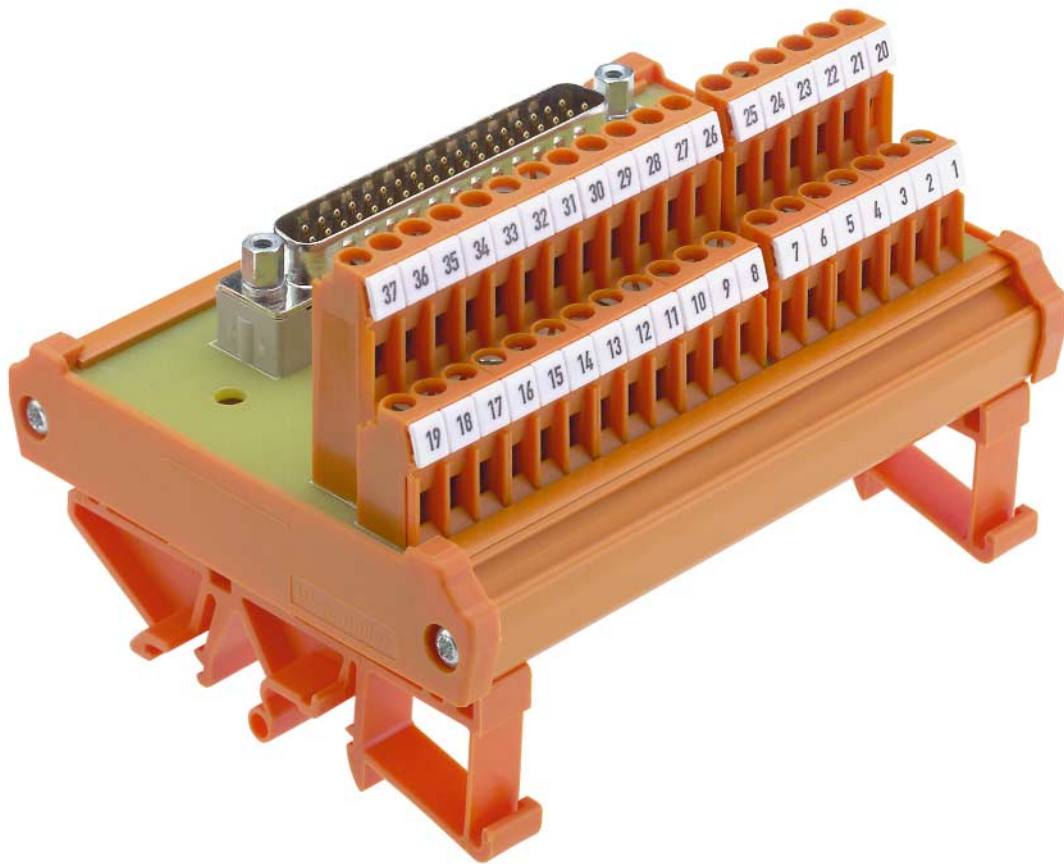
#### 2. Test mode

In this mode, it is possible to check the isolation status of the installation. The earth connection must be disconnected for insulation measurements with voltages greater than the rated voltage of the earth conductor disconnect unit.

#### 3. Fault mode

If an earth fault occurs during operation in an earthed control circuit, our earth conductor disconnect unit makes it possible to switch to a non-earthed control circuit. This bridges the time required to correct the fault, i.e. the machine can continue to operate.







## Weidmüller Interface Units

From the point of view of saving costs when producing switchgear cabinets, interface units offer an alternative concept to the wiring of single conductors. The main task of interface units is the trouble-free conversion of standardised plug-in connector systems to single conductor wiring or to another connection system.

Interface units are composed of the following components:

- extrusion profile for insertion of the card
- end plate for mounting rail installation
- mounting feet for installing onto standardised TS 32 and TS 35 mounting rails
- printed-circuit board with connection and indicating elements, preassembled DIN plug-in connectors and tag carriers for marking electrical equipment

The plug-in connectors used in the interface units are divided into the following groups:

- ribbon cable plug-in connectors according to IEC 603-1/DIN 41 651.
- subminiature connectors (SUB-D) according to IEC 807-2/DIN 41 652.
- connectors for printed circuits according to IEC 603/DIN 41 612 and 41 617.
- ELCO connectors for EXi applications in the processing industry

Pre-assembled cables with corresponding plug-in connector systems are used for connections between higher-level controls and interface units.

This is where the user has the largest potential for saving costs. The use of system cables with large numbers of poles considerably reduces wiring costs, consisting of wage and material costs. The conversion to single conductor wiring is made directly at the interface unit. The user is offered screw / tension clamp or plug-in connections to connect actuators and sensors. Optional additional functions such as status indicators, signal separation, fuses or shielding can be integrated. Marking systems ease the task of assigning signals to the respective elements.

Advantages of interface units:

- space-saving mounting by using two and three tier card connection elements.
- cost saving, unilateral conventional single conductor wiring.
- more protection against faulty wiring.
- additional options: Status indication by integrating LEDs on the interface unit.
- faster troubleshooting thanks to additional test and measurement devices.
- simplified commissioning and documentation.

Using interface units allows trend-setting rationalisation concepts to be carried out in switchgear cabinet manufacturing. Not only do they reduce the share of pure labour costs of wiring tasks, but also the share of costs for materials, such as cable and conductors, cable ducts, terminal blocks and terminal boxes.

Customer-specific wiring concepts are efficiently put into practice by the use of special interface units.

### Interface unit RSF for ribbon cables in accordance with IEC 603-1/DIN 41 651



Passive interface for 10...64 signals to adapt pre-assembled ribbon cable plug-in connectors to a screw or tension clamp connection in accordance with IEC 603-1/ DIN 41 651.

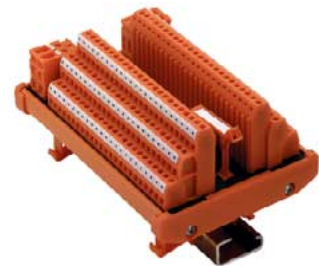
Combined with an LED status indicator, the modules provide rapid information on the switching status of incoming and outgoing signals within a control unit.

### Interface unit RSSD for subminiature plug-in connectors (SUB-D) in accordance with IEC 807-2/DIN 41 652



Passives interface for 9 ... 50 signals for conversion of preassembled cables with SUB-D connectors in accordance with IEC 807-2/DIN 41 652 to screw or tension clamp connection technology. The modules are delivered with either socket strips (female) or pin headers (male). A spacer block between the plug-in connectors and the card takes up the mechanical forces created by the connected cable. RSSD interface units are optionally available with a frame terminal for connecting shielded conductors. An additional potential connection eases testing and measuring during commissioning and maintenance tasks.

### RS VERT interface units as potential distributors



Passive interface for distributing DC supply voltages. The interface units are available in three versions for distribution to 8, 16 and 72 connection elements for the positive and negative potentials.

- 8- 16-channel distributors in 45-mm, 72-channel distributors in 100-mm widths.
- power supply via two connection elements respectively for positive and negative potentials.
- Mount on to TS 32/35 mounting rails.

RS VERT potential distributors can be installed in small distributor boxes, and provide a clearly arranged potential distribution.

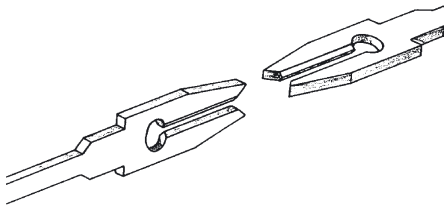
## Interface Units

### Interface units RSELCO for hermaphroditic plugs



Passive interface to convert hermaphroditic ELCO multipole connectors to input and output with screw connections.

Hermaphroditic contacts are achieved by a fork that is identical at both ends of the connection.



The advantage of this type of connector is essentially the large contact area (making it suitable for low currents), the long operational lifetime, and the high resistance to shock and vibration.

An adjustment screw eases insertion, and ensures a reliable interlock of the pair of connectors.

All types are available as "left" and "right" versions.

All interface units are supplied individually marked with consecutive numbering, and can be fitted with 6-digit group markers. The universal foot allows all modules to be assembled onto TS 32, TS 35x7.5 and TS 35x15 mounting rails in accordance with the European standards EN 50 035 and EN 50 022.

### Interface unit RSDIN for plug-in connectors according to IEC 603/ DIN 41 612 and 41 617



Passive interface for adapting the female and male connector blocks in the design versions B, C, D and F with screw connections.

### Card holders for adapting rack cards in Euro format to plug-in connectors according to IEC603 / DIN 41612 and DIN 41617



Card holders enable the fast conversion of electronic components.

As with interface units, IEC 803/ DIN 41612/617 plug-in connectors on card holders are converted to screw /push-on connection technology.

The card holders are constructed as follows:

- card with PCB terminals and standardised plug-in connector for mounting an electronic module in 19" Euro format: 160x100 or 233x160 mm
- retention pillars and interlock for securing the card
- mounting plate and mounting foot for mounting directly or onto mounting rails.

The SKH2 card holder range is distinguished by its design and functionality

- 19" Euro card completely protected at the rear against foreign bodies.
- eject mechanism guarantees one-hand operation
- electronic module can be secured to the front, similar to the 19" rack

Card holders are used in industrial applications where individual 19" modules need to be quickly adapted, but the costs for 19" card racks are too high. Card racks are voluminous, and are generally only accessible from the rear. As a rule, they do not have screw / tension clamp connections for external wiring, which makes them difficult to handle for wiring purposes.

Card holders are considered in the first place

- if only a few cards are to be installed and connected
- if the conductor card is placed decentralized, i.e., favourable for wiring
- if older installations are to be extended with additional electronic modules

Other typical applications are test equipment and testing modules in production processes and laboratories.

This is where a fast exchange of the card and an optimum handling of the connection level are of a premium.

### Standards

The following standards are fulfilled:

EN 50178 Fitting heavy voltage installations with electronic equipment

DIN VDE 0109 Coordination of insulation in low voltage installations including clearance and creepage distances for assembled cards.

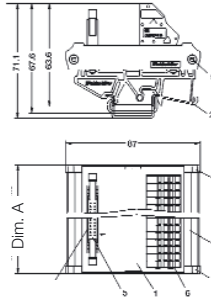
# Interface Units

## For ribbon cable connections according to IEC 603-1/DIN 41 651

- With fixing foot for TS 32, TS 35 x 7.5 and TS 35 x 15
- Male connector block with interlock for female connector block with strain relief according to DIN 41 651/ Parts1 and 2
- RSF on FS 45 profile is equipped with an additional potential connection for test purposes
- Optionally available with tension clamp or Screw connection

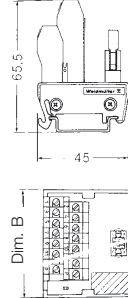
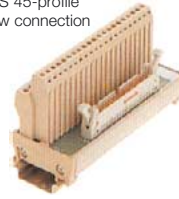
### RSF ... Z

Interface units for ribbon cables  
Tension clamp



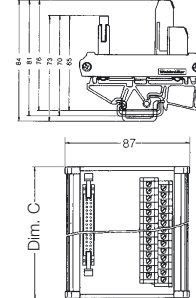
### RSF

Interface units for ribbon cables on RS 45-profile  
Screw connection



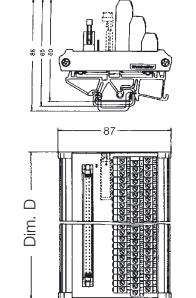
### RSF

Without status indicator  
Screw connection



### RSF

Without status indicator  
Screw connection



#### Ordering data/dimensions (mm)

Poles	Dim. A	Dim. B	Dim. C	Dim. D
10	50	49	50	40
14	50	56	50	45
16	55	64	55	50
20	65	71	65	50
26	80	86	80	55
34	110	106	110	70
40	115	121	115	80
50	145	151	145	95
60	180	180	180	115
64	180	186	180	120

On TS 35 x 7.5

#### Dimensions

Insulation stripping length  
Overall width

#### Connection cross-section

max. terminal range in mm<sup>2</sup>  
Screw connection, solid H07V-U  
Screw connection, flexible H07V-U  
Screw connection, flexible H07V-U with AEH/DIN 46228/1/4

#### Conductor cross-section

Conversion connection level/plug connection  
Housing/socket type  
Connection type

#### Rated data

Rated voltage  
Rated current per contact  
Rated cross-section  
Test voltage  
Ambient temperature  
Storage temperature

#### Insulation coordination according to EN 50 178

Overvoltage category  
Pollution degree

#### Accessories

Mounting rail  
End bracket

#### Tag carrier type

Insert tag (unprinted)  
Protective strip, transparent

Type	Cat. No.
RSF 10 Z	8537190000
RSF 14 Z	8537200000
RSF 16 Z	8537210000
RSF 20 Z	8537110000
RSF 26 Z	8537180000
RSF 34 Z	8537130000
RSF 40 Z	8537140000
RSF 50 Z	8537150000
RSF 60 Z	8537160000
RSF 64 Z	8537170000

Type	Cat. No.
RSF 10	8155610000
RSF 14	8258980000
RSF 16	8265540000
RSF 20	8155600000
RSF 26	8213470000
RSF 34	8155590000
RSF 40	8155580000
RSF 50	8155570000
RSF 60	8259000000
RSF 64	8155550000

Type	Cat. No.
RSF 10	0224961001
RSF 14	0225061001
RSF 16	0225161001
RSF 20	0224261001
RSF 26	0224861001
RSF 34	0224361001
RSF 40	0224461001
RSF 50	0224561001
RSF 60	0224661001
RSF 64	0224761001

Type	Cat. No.
RSF 10	8012850000
RSF 14	8012860000
RSF 16	8012870000
RSF 20	8012910000
RSF 26	8012920000
RSF 34	8012930000
RSF 40	8012940000
RSF 50	8012950000
RSF 60	8012960000
RSF 64	8012970000

Intended for tag carrier  
Type SchT 7/2  
Cat. No. 1359360000

7.5 mm  
See table, dim. A

AWG 26...16  
1: 1  
RS 80 profile/TS 32 and TS35  
Tension clamp  
LM2NZF terminal  
Plug connection  
Ribbon connector i.a.w. to DIN 41 651 / IEC 603-1

Type	Cat. No.	Qty.
TS 32	0122800000	-
TS 35 x 7.5	0383400000	-
TS 35 x 15	0498000000	-
EWK 2	0199360000	50
EW 35	0383560000	50

7 mm  
See table, dim. B

AWG 26...16  
1: 1  
RS 45 profile/TS 35  
Screw connection  
LPK 2 H terminal  
Plug connection  
Ribbon connector i.a.w. to DIN 41 651 / IEC 603-1

Type	Cat. No.	Qty.
TS 32	0122800000	-
TS 35 x 7.5	0383400000	-
TS 35 x 15	0498000000	-
EWK 2	0199360000	50
EW 35	0383560000	50

7 mm  
See table, dim. C

AWG 26...14  
1: 1  
RS 80 profile/TS 32 and 35  
Screw connection  
LP2N terminal  
Plug connection  
Ribbon connector i.a.w. to DIN 41 651 / IEC 603-1

Type	Cat. No.	Qty.
TS 32	0122800000	-
TS 35 x 7.5	0383400000	-
TS 35 x 15	0498000000	-
EWK 2	0199360000	50
EW 35	0383560000	50

7 mm  
See table, dim. D

AWG 26...16  
1: 1  
RS 80 profile/TS 32 and 35  
Screw connection  
LPK 3 terminal  
Plug connection  
Ribbon connector i.a.w. to DIN 41 651 / IEC 603-1

Type	Cat. No.	Qty.
TS 32	0122800000	-
TS 35 x 7.5	0383400000	-
TS 35 x 15	0498000000	-
EWK 2	0199360000	50
EW 35	0383560000	50

SchT 7/2 1359360000 20  
ESO 7 0515200000 10  
STR 7 0515300000 10

<sup>1)</sup> The additional clause in EN 50 178 and in IEC 807-2/DIN 41 652 are to be observed when used in industrial installations.

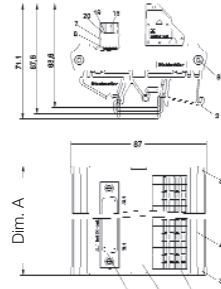
# Interface Units

## For sub miniature plug-in connectors according to IEC 807-2/DIN 41 652

- With fixing foot for TS 32, TS 35 x 7.5 and TS 35 x 15
- Male and female connectors with screw/locking system UNC 4/40
- RSF on FS 45 profile is equipped with an additional potential connection for test purposes
- Optionally available with tension clamp or screw connection

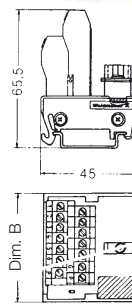
### RSSD

Male and female connector  
Tension clamp



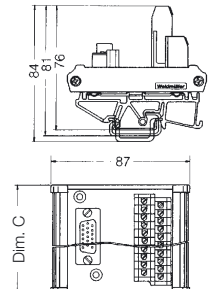
### RSSD

Interface units  
for male and female connectors on RS 45-profile  
Screw connection



### RSSD S

Male connector  
**without** status indicator  
Screw connection



### RSSD B

Female connector  
**without** status indicator  
Screw connection

Ordering data/Dimensions (mm)			
Poles	Dim. A	Dim. B	Dim. C
9	45	50	45
15	60	61	60
25	80	86	80
37	110	116	110
50	145	154	145

On TS 35 x 7.5

Type	Cat. No.
<b>Male connector</b>	
RS SD 9 S	8537260000
RS SD 15 S	8537390000
RS SD 25 S	8537370000
RS SD 37 S	8537240000
RS SD 50 S	8537350000
<b>Female connector</b>	
RS SD 9 B	8537320000
RS SD 15 B	8537400000
RS SD 25 B	8537380000
RS SD 37 B	8537250000
RS SD 50 B	8537360000

Type	Cat. No.
<b>Male connector</b>	
RSSD 9 S	8259010000
RSSD 15 S	8233350000
RSSD 25 S	8155650000
RSSD 37 S	8155660000
RSSD 50 S	8155670000
<b>Female connector</b>	
RSSD 9 B	8216480000
RSSD 15 B	8209730000
RSSD 25 B	8155620000
RSSD 37 B	8155630000
RSSD 50 B	8155640000

Type	Cat. No.
<b>Male connector</b>	
RSSD 9 S	8003901001
RSSD 15 S	8005201001
RSSD 25 S	8005181001
RSSD 37 S	8003881001
RSSD 50 S	8005161001

Type	Cat. No.
<b>Female connector</b>	
RSSD 9 B	8003911001
RSSD 15 B	8005211001
RSSD 25 B	8005191001
RSSD 37 B	8003891001
RSSD 50 B	8005171001

### Dimensions

Insulation stripping length

Overall width

### Connection cross-section

Max. terminal range in mm<sup>2</sup>

Screw connection, solid H07V-U

Screw connection, flexible H07V-U

Screw connection, flexible H07V-U with AEH/DIN 46228/1/4

Conductor cross-section

Conversion connection level/plug connection

Housing/socket type

Connection type

- Process side

- Type

- Control side

- Type

### Rated data

Rated voltage

Rated current per contact

Rated cross-section

Test voltage

Ambient temperature

Storage temperature

### Insulation coordination according to EN 50 178

Overvoltage category

Pollution degree

### Accessories

Mounting rail

End bracket

for TS 32

for TS 35

Screw lock

Tag carrier type

Insert tag (unprinted)

Protective strip, transparent

### With UNC 4/40 interlock

7.5 mm

See table, dim. A

0.5...2.5 mm<sup>2</sup>

0.5...1.5 mm<sup>2</sup>

0.25...1.5 mm<sup>2</sup>

AWG 26...16

1 : 1

RS 80 profile/TS 32 and TS 35

Tension clamp connection

LM2NZF terminal

Plug connection

Sub-D i.a.w. DIN 41 652

IEC 807-2

125 V~, 150 V<sup>-1</sup>)

1.5 A

1.5 mm<sup>2</sup>

1 kV~eff

0 °C...+55 °C

-40 °C...+70 °C

III

2

Type	Cat. No.	Qty.
TS 32	0122800000	-
TS 35 x 7.5	0383400000	-
TS 35 x 15	0498000000	-
EWK 2	0199360000	50
EW 35	0383560000	50
SUB-D/4/40	1155000000	2

### With UNC 4/40 interlock

7 mm

See table, dim. B

0.5...2.5 mm<sup>2</sup>

0.5...1.5 mm<sup>2</sup>

AWG 26...16

1 : 1

RS 45 profile/TS 35

Screw connection

LPK 2 H terminal

Plug connection

Sub-D i.a.w. DIN 41 652

IEC 807-2

125 V~, 150 V<sup>-1</sup>)

1.5 A

1.5 mm<sup>2</sup>

1 kV~eff

0 °C...+55 °C

-40 °C...+70 °C

III

2

Type	Cat. No.	Qty.
TS 35 x 7.5	0383400000	-
TS 35 x 15	0498000000	-
EWK 2	0199360000	50
EW 35	0383560000	50
SUB-D/4/40	1155000000	2

### With UNC 4/40 interlock

7 mm

See table, dim. C

0.5...4 mm<sup>2</sup>

0.5...4 mm<sup>2</sup>

AWG 26...14

1 : 1

RS 80 profile/TS 32 and 35

Screw connection

LP2N terminal

Plug connection

Sub-D i.a.w. DIN 41 652

IEC 807-2

125 V~, 150 V<sup>-1</sup>)

1.5 A (max. 45 °C amb. temp.)

2.5 mm<sup>2</sup>

1 kV~eff

0 °C...+55 °C

-40 °C...+70 °C

III

2

Type	Cat. No.	Qty.
TS 32	0122800000	-
TS 35 x 7.5	0383400000	-
TS 35 x 15	0498000000	-
EWK 2	0199360000	50
EW 35	0383560000	50
SUB-D 4/40	1155000000	2

### With UNC 4/40 interlock

7 mm

See table, dim. C

0.5...4 mm<sup>2</sup>

0.5...4 mm<sup>2</sup>

AWG 26...14

1 : 1

RS 80 profile/TS 32 and 35

Screw connection

LP2N terminal

Plug connection

Sub-D i.a.w. DIN 41 652

IEC 807-2

125 V~, 150 V<sup>-1</sup>)

1.5 A (max. 45 °C amb. temp.)

2.5 mm<sup>2</sup>

1 kV~eff

0 °C...+55 °C

-40 °C...+70 °C

III

2

Type	Cat. No.	Qty.
TS 32	0122800000	-
TS 35 x 7.5	0383400000	-
TS 35 x 15	0498000000	-
EWK 2	0199360000	50
EW 35	0383560000	50
SUB-D 4/40	1155000000	2
SchT 7/2	1359360000	20
ESO 7	0515200000	10
STR 7	0515300000	10

1) The additional clause in EN 50 178 and in IEC 807-2/DIN 41 652 are to be observed when used in industrial installations

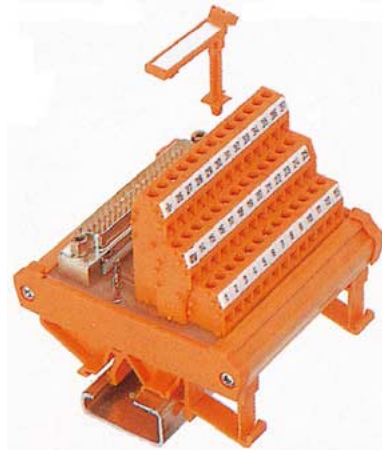


# Interface Units

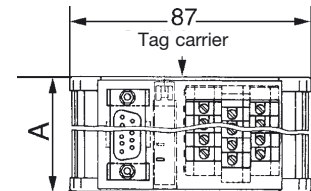
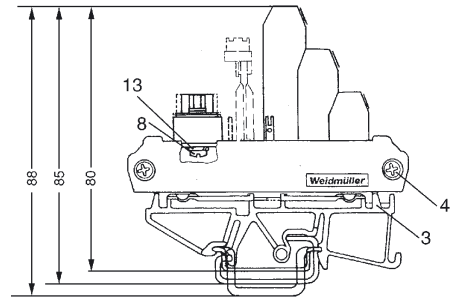
## For sub miniature plug-in connectors according to IEC 807-2/DIN 41 652

- With fixing foot for TS 32, TS 35 x 7.5 and TS 35 x 15
- Male and female connectors with screw/locking system UNC 4/40
- 3-tier connection elements reduce module size
- Ground connection for shielded cables
- Test connection for measurement purposes

**RSSD S**  
Male connector  
without status indicator  
Screw connection



**RSSD B**  
Female connector  
without status indicator  
Screw connection



Interface Units

Ordering data/dimensions (mm)	
Poles	Dim. A
9	40
15	45
25	60
37	80
50	100

Type	Cat. No.	Type	Cat. No.
Male connector		Female connector	
RSSD 9 S	8019930000	RSSD 9 B	8019880000
RSSD 15 S	8019940000	RSSD 15 B	8019890000
RSSD 25 S	8019950000	RSSD 25 B	8019900000
RSSD 37 S	8019960000	RSSD 37 B	8019910000
RSSD 50 S	8019970000	RSSD 50 B	8019920000

designed for  
tag carrier SchT 7/2  
Cat. No. 1359360000

designed for  
tag carrier SchT 7/2  
Cat. No. 1359360000

Lock to UNC 4/40

Lock to UNC 4/40

Dimensions	
Insulation stripping length	7 mm
Overall width	See table, dim. A
Connection cross-section	
Screw connection, solid	0.5...2.5 mm <sup>2</sup>
Screw connection, flexible	0.5...1.5 mm <sup>2</sup>
Conductor cross-section	AWG 26...16
Conversion connection level/plug connection	1 : 1
Housing/socket type	RS 80 profile/TS 32 and 35
Connection type	Screw connection
	LPK 3 terminal
	Plug connection
	Sub-D i.a.w. DIN 41 652
	IEC 807-2

7 mm	7 mm
See table, dim. A	See table, dim. A
0.5...2.5 mm <sup>2</sup>	0.5...2.5 mm <sup>2</sup>
0.5...1.5 mm <sup>2</sup>	0.5...1.5 mm <sup>2</sup>
AWG 26...16	AWG 26...16
1 : 1	1 : 1
RS 80 profile/TS 32 and 35	RS 80 profile/TS 32 and 35
Screw connection	Screw connection
LPK 3 terminal	LPK 3 terminal
Plug connection	Plug connection
Sub-D i.a.w. DIN 41 652	Sub-D i.a.w. DIN 41 652
IEC 807-2	IEC 807-2

Rated data	
Rated voltage	125 V~, 150 V~ <sup>1)</sup>
Rated current per contact	1.5 A
Rated cross-section	1.5 mm <sup>2</sup>
Test voltage	1 kV~eff
Ambient temperature	0 °C...+55 °C
Storage temperature	-40 °C...+70 °C
Insulation coordination according to EN 50 178	
Overvoltage category	III
Pollution degree	2

125 V~, 150 V~ <sup>1)</sup>	125 V~, 150 V~ <sup>1)</sup>
1.5 A	1.5 A
1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>
1 kV~eff	1 kV~eff
0 °C...+55 °C	0 °C...+55 °C
-40 °C...+70 °C	-40 °C...+70 °C
III	III
2	2

Accessories	
Mounting rail	
End bracket	for TS 32 for TS 35
Screw lock	
Tag carrier type	
Insert tag (unprinted)	
Protective strip, transparent	

Type	Cat. No.	Qty.	Type	Cat. No.	Qty.
TS 32	0122800000	-	TS 32	0122800000	-
TS 35 x 7.5	0383400000	-	TS 35 x 7.5	0383400000	-
TS 35 x 15	0498000000	-	TS 35 x 15	0498000000	-
EWK 2	0199360000	50	EWK 2	0199360000	50
EW 35	0383560000	50	EW 35	0383560000	50
SUB-D 4/40	1155000000	2	SUB-D 4/40	1155000000	2
SchT 7/2	1359360000	20	SchT 7/2	1359360000	20
ESO 7	0515200000	10	ESO 7	0515200000	10
STR 7	0515300000	10	STR 7	0515300000	10

<sup>1)</sup> The additional clause in EN 50 178 and in IEC 807-2/DIN 41 652 are to be observed when used in industrial installations



# Interface Units

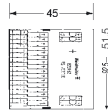
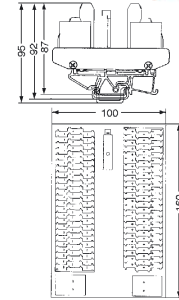
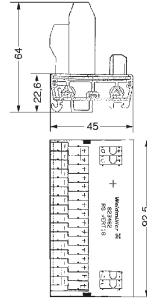
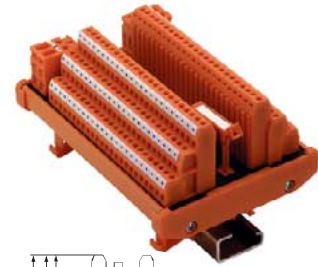
## Distributors for 8, 16 and 72 positive and negative potentials

- Adapts 2 supply connections to 8/16 or 72 potential distribution terminals
- Potential distributor designed as two- or three-tier connection element
- RS VERT8 and RS VERT16 offer clearly arranged potential distribution in tight spaces. They are designed for residual currents of 10 A.
- RS LPK3/144 VERT is designed for residual currents of 20A.

### RS VERT8 LPK2

### RS VERT16 LPK2

### RS LPK3/144 VERT



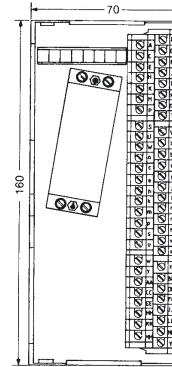
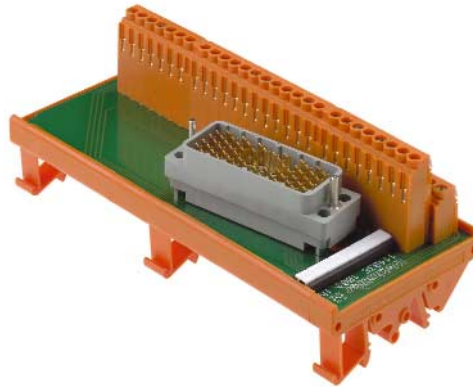
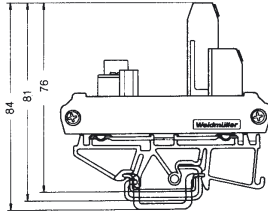
Ordering data/Dimensions (mm)	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
	RS VERT 8 LPK2	<b>8252010000</b>	RS VERT 16 LPK2	<b>8234620000</b>	RS LPK3/144 VERT	<b>8199510000</b>
<b>Dimensions</b>						
Insulation stripping length	7 mm		7 mm		7 mm	
Overall width	51.5 mm		92.5 mm		160 mm	
<b>Connection cross-section</b>						
Screw connection, solid core	0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>	
Screw connection, flexible	0.5..0.1.5 mm <sup>2</sup>		0.5..0.1.5 mm <sup>2</sup>		0.5..0.1.5 mm <sup>2</sup>	
Conductor cross-section	AWG 26...16		AWG 26...16		AWG 26...16	
Housing/socket type	RS 45 profile/TS 35		RS 45 profile/TS 35		RS 100 profile/TS 32 and 35	
<b>Rated data</b>						
Rated voltage	24 V0		24 V0		250 V-	
Max. residual current supply	10 A		10 A		20 A	
Potential distribution "plus"/"minus"	8		16		72	
Rated cross-section	1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>	
Max. output current per terminal	5 A		5 A		10 A	
Ambient temperature	0 °C...+55 °C		0 °C...+55 °C		0 °C...+55 °C	
Storage temperature	-40 °C...+70 °C		-40 °C...+70 °C		-40 °C...+70 °C	
<b>Insulation coordination according to EN 50 178</b>						
Overvoltage category	III		III		III	
Pollution degree	2		2		2	
<b>Accessories</b>						
Mounting rail						
	TS 35 x 7.5	<b>0383400000</b> -	TS 35 x 7.5	<b>0383400000</b> -	TS 32	<b>0122800000</b> -
	TS 35 x 15	<b>0498000000</b> -	TS 35 x 15	<b>0498000000</b> -	TS 35 x 7.5	<b>0383400000</b> -
End bracket	for TS 32		EW 35	<b>0383560000</b> -	TS 35 x 15	<b>0498000000</b> -
	for TS 35				EWK 2	<b>0199360000</b> -
					EW 35	<b>0383560000</b> -
Tag carrier type						
Insert tag (unprinted)					SchT 7/2	<b>1359360000</b> -
Protective strip, transparent					ESO 7	<b>0515200000</b> -
					STR 7	<b>0515300000</b> -

# Interface Units

For hermaphroditic plugs

## RSELCO

Short, 56-pole



Pin assignment:  
LP2N screw terminal

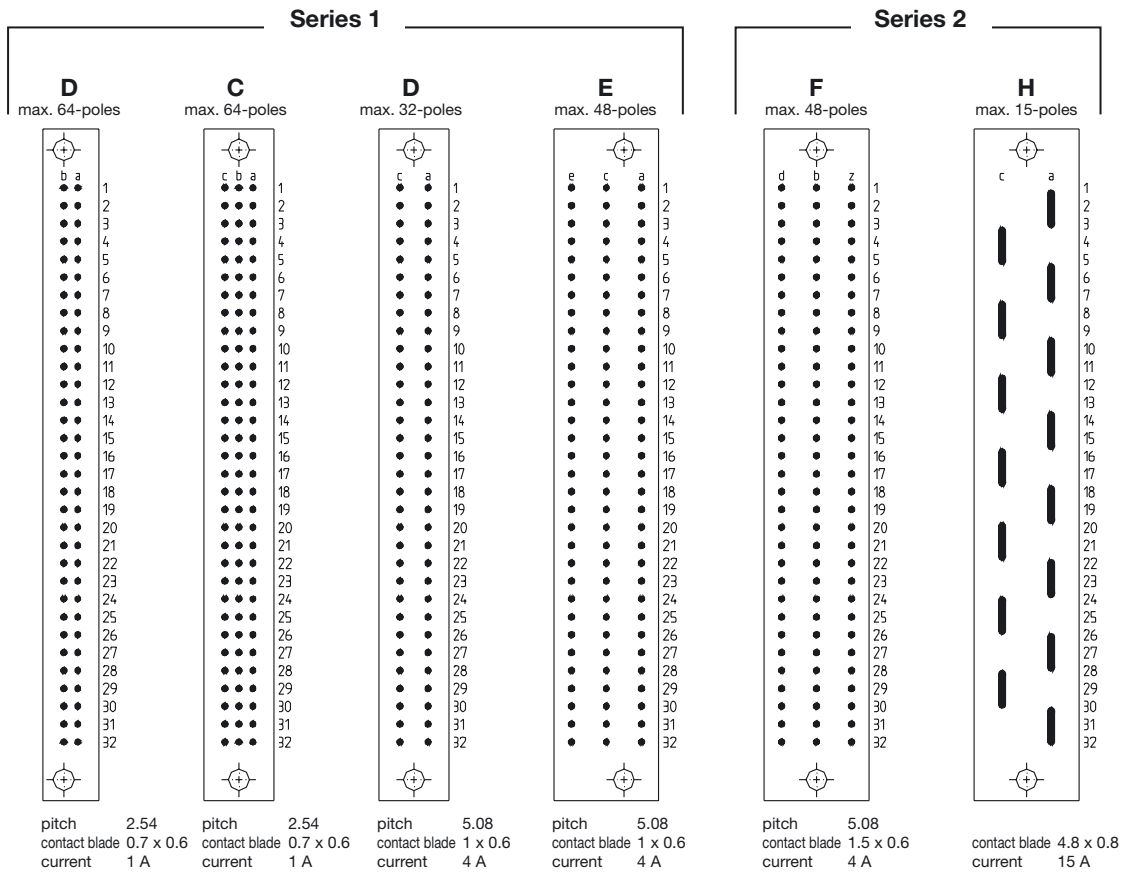
ELCO plug

1	A
2	B
•	•
•	•
19	W
20	X
Y	Y
21	a
22	b
•	•
•	•
42	z
43	AA
44	BB
•	•
•	•
32	n
33	p
34	r
•	•
•	•
42	z
43	AA
44	BB
•	•
•	•
53	MM
54	NN
Y	Y

Ordering data		Type	Cat. No.
		RSELCO, left	<b>1149361001</b>
		RSELCO, right	<b>1149461001</b>
Dimensions			
Insulation stripping length		7 mm	
Overall width		160 mm	
Connection cross-section			
Screw connection, solid		0.5...4 mm <sup>2</sup>	
Screw connection, flexible		0.5...2.5 mm <sup>2</sup>	
Conductor cross-section		AWG 26...14	
Conversion connection level/plug connection		1 : 1	
Housing/socket type		RS 70 profile/TS 32 and 35	
Connection type		- Process side - Type - Control side - Type	Plug connection ELCO type 8016 Screw connection LP2N terminal
Rated data			
Rated voltage		125 V~	
Rated current per contact		1.5 A	
Rated cross-section		2.5 mm <sup>2</sup>	
Test voltage		1.5 kV~eff	
Ambient temperature		0 °C...+55 °C	
Storage temperature		-40 °C...+70 °C	
Insulation coordination according to EN 50 178			
Overvoltage category		III	
Pollution degree		2	
Accessories		Cat. No.	Cat. No.
Mounting rail		TS 32	<b>0122800000</b> -
		TS 35 x 7.5	<b>0383400000</b> -
		TS 35 x 15	<b>0498000000</b> -
End bracket		for TS 32	EWK 2 <b>0199360000</b> 50
		for TS 35	EW 35 <b>0383560000</b> 50
Screw lock			
Insert tag (unprinted)		DEK5	page 312

# Interface Units

## Plug-in connectors designs in accordance with IEC 603/DIN 41612



### Production series 1

Plug-in connectors from this production series are of conventional, high-pole design with low contact distances and a max. current carrying capacity of 1 A. In addition, there are versions commercially available on the market with up to 4 A contact currents in 5.08-mm grid with less poles (up to 48).

#### Design B

A 64-pole plug-in connector with row assignment a and b, and a contact current capacity of max. 1A. The rated voltage is defined in accordance with IEC 664/ EN 50178 as 125 V. A variant is a 32-pole version, where only the odd number poles are assembled.

#### Design C

An extension of design B; the addition of contact row c results in a 96-pole plug-in connector. An alternative design is type C 64, with which the outer rows c and a are assembled. A further reduction of the assembly results in the design C 32, with a vertical and horizontal contact grid dimension of 5.08 mm.

#### Design D

The dimensions and contact arrangement are identical with the C 32 design. The strengthened contacts can be loaded with up to 4 A.

#### Design E

An extension of the design D 32; the addition of the contact row e results in the 48-pole version of design E. With 4 A contact current in 5.08-mm grid dimension, this plug-in connector has been designed for heavy current loads. All even numbered poles are assembled in the contact rows e, c and a.

### Production series 2

This design differs from that of the design 1 with its differing grid dimensions of the rear connections of 5.08 mm and the contact rows of 3.81 mm on the mating face. The plastic housing has been designed to be higher at the back in order to increase the creepage distances (metal plate, PCB etc.). This results in an altered wiring level when compared with production series 1. The contacts have fundamentally been designed for a current carrying capacity of 4 A. These plug-in connectors are largely used for applications in power electronics. The fixing holes are arranged on the outside of the blocks in the middle.

#### Design F

48-pole, fully assembled contact rows d, b and z. Variants with part assembly of the rows z and b or z and d in 32-pole design are commercially available. The distinguishing feature of the designs with the contact variation z/d is their larger insulating distances.

#### Design H

These have the same dimensions as design F, and are assembled 11- or 15-pole high-current contacts. The plugging geometry differs from the other designs. The contacts have a current carrying capacity of max. 15 A.

# Interface Units

## For converting IEC 603/DIN 41 612 plug-in connectors

to LP connection elements for mounting rail or 19" rack installation

### RSDIN F 64 B

Female/male connector block

### RSDIN C 64

Female/male connector block

### RSDIN F 48 B

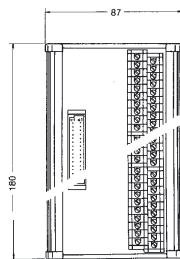
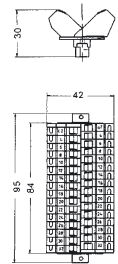
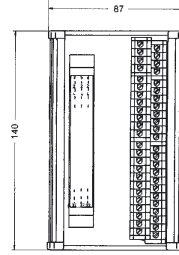
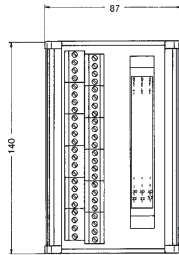
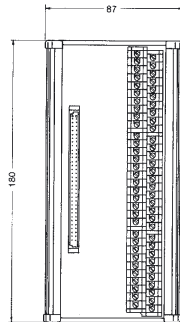
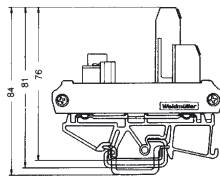
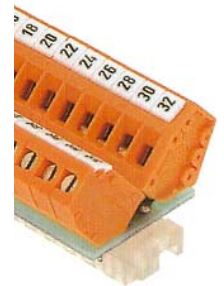
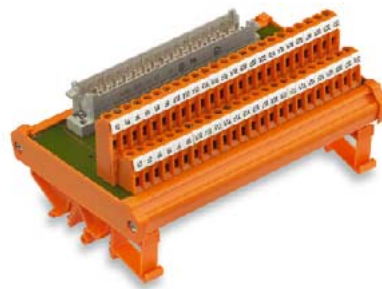
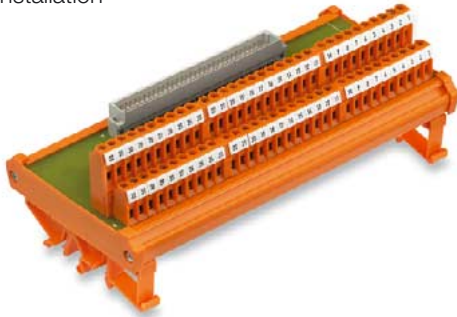
Female connector block

### RSDIN F 48 S

Male connector block

### RSDIN 19"

Female connector block



#### Ordering data

Type	RSDIN C 64 B*
Cat. No.	1127461001
Type	RSDIN B 64 S** RSDIN C 64 S**
Cat. No.	1178061001 1178161001

#### Technical data

Block	B 64	C 64
Plug-in connector	DIN 41 612	DIN 41 612
Assembly	a and b	a 1 and c 1
Connection type (screw connection)	LP2N	LP2N
<b>Dimensions</b>		
Insulation stripping length	7 mm	
Overall width	180 mm	
<b>Clampable conductors</b>		
Max. clamping range	0.13...4 mm <sup>2</sup>	
„e“ solid HO7V-U	0.5...4 mm <sup>2</sup>	
„f“ flexible HO7V-K	0.5...2.5 mm <sup>2</sup>	
„f“ with ferrules		
According to DIN 46228/1	0.5...2.5 mm <sup>2</sup>	
With plastic collar	0.5...2.5 mm <sup>2</sup>	
Conductor cross-section	AWG 26...14	
Plug gauge according to DIN/EN 50027	Size A3	

#### Rated data

Rated voltage	125 V~
Rated current per contact	1.5 A (max. 45 °C amb. temp.)
Rated cross-section	2.5 mm <sup>2</sup>
Test voltage	0.5 kV~eff
Test torque	0.4 Nm
Ambient temperature	0 °C...+55 °C
Storage temperature	-40 °C...+70 °C

#### Insulation coordination according to EN 50 178

Overvoltage category	III
Pollution degree	2

Type	RSDIN F 48 B
Cat. No.	1177960000

Block	F 48
Plug-in connector	DIN 41 612
Assembly	d 2, b 2 and z 2
Connection type (screw connection)	GSD 5
<b>Dimensions</b>	
Insulation stripping length	7 mm
Overall width	140 mm
<b>Clampable conductors</b>	
Max. clamping range	0.13...1.5 mm <sup>2</sup>
„e“ solid HO7V-U	0.5...1.5 mm <sup>2</sup>
„f“ flexible HO7V-K	0.5...1.5 mm <sup>2</sup>
„f“ with ferrules	
According to DIN 46228/1	0.5...1.5 mm <sup>2</sup>
With plastic collar	0.5...1.5 mm <sup>2</sup>
Conductor cross-section	AWG 26...16
Plug gauge according to DIN/EN 50027	Size A1

Rated voltage	125 V~
Rated current per contact	1.5 A (max. 45 °C amb. temp.)
Rated cross-section	1.5 mm <sup>2</sup>
Test voltage	0.5 kV~eff
Test torque	0.4 Nm
Ambient temperature	0 °C...+55 °C
Storage temperature	-40 °C...+70 °C

Overvoltage category	III
Pollution degree	2

\* Female connector block

Type	RSDIN F 48 S
Cat. No.	1178360000

Block	F 48
Plug-in connector	DIN 41 612
Assembly	d 2, b 2 and z 2
Connection type (screw connection)	LP2N
<b>Dimensions</b>	
Insulation stripping length	7 mm
Overall width	140 mm
<b>Clampable conductors</b>	
Max. clamping range	0.13...4 mm <sup>2</sup>
„e“ solid HO7V-U	0.5...4 mm <sup>2</sup>
„f“ flexible HO7V-K	0.5...2.5 mm <sup>2</sup>
„f“ with ferrules	
According to DIN 46228/1	0.5...2.5 mm <sup>2</sup>
With plastic collar	0.5...2.5 mm <sup>2</sup>
Conductor cross-section	AWG 26...14
Plug gauge according to DIN/EN 50027	Size A3

Rated voltage	125 V~
Rated current per contact	1.5 A (max. 45 °C amb. temp.)
Rated cross-section	1.5 mm <sup>2</sup>
Test voltage	0.5 kV~eff
Test torque	0.4 Nm
Ambient temperature	0 °C...+55 °C
Storage temperature	-40 °C...+70 °C

Overvoltage category	III
Pollution degree	2

\*\* Male connector block

Type	RSDIN 19"
Cat. No.	8019730000

Block	D 32
Plug-in connector	DIN 41 612
Assembly	a and c
Connection type (screw connection)	Screw connection
<b>Dimensions</b>	
Insulation stripping length	7 mm
Overall width	84 mm
<b>Clampable conductors</b>	
Max. clamping range	0.13...4 mm <sup>2</sup>
„e“ solid HO7V-U	0.5...4 mm <sup>2</sup>
„f“ flexible HO7V-K	0.5...2.5 mm <sup>2</sup>
„f“ with ferrules	
According to DIN 46228/1	0.5...2.5 mm <sup>2</sup>
With plastic collar	0.5...2.5 mm <sup>2</sup>
Conductor cross-section	AWG 26...14
Plug gauge according to DIN/EN 50027	Size A3

Rated voltage	125 V~
Rated current per contact	4 A (max. 45 °C amb. temp.)
Rated cross-section	1.5 mm <sup>2</sup>
Test voltage	2 kV~eff
Test torque	0.4 Nm
Ambient temperature	0 °C...+55 °C
Storage temperature	-40 °C...+70 °C

Overvoltage category	III
Pollution degree	2

# Card Holders

For inserting 19" rack cards in Euro format

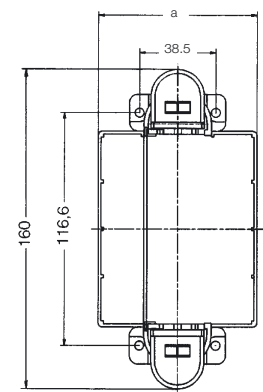
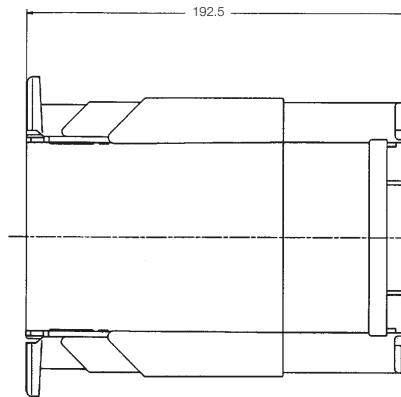
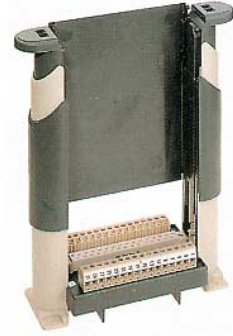
- Convert IEC 603/DIN 41 612 and 41 617 plug-in connectors to LP connection elements
- Mechanical lever reliably releases and ejects card
- 19" inserts secured from the front
- Protective cover on rear side of card
- Mount direct in switchgear cabinet or on TS 35 mounting rail

**SKH2 31**  
**SKH2B 64**

**SKH2C 64 (a/c)**  
**SKH2B 32**

**SKH2E 48**  
**SKH2F 32 (z/b)**

**SKH2F 32 (z/d)**  
**SKH2F 48**

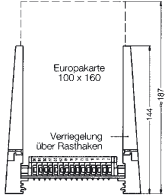


Ordering data	SKH2 31 SKH2B 64		SKH2C 64 (a/c) SKH2D 32		SKH2E 48 SKH2F 32 (z/b)		SKH2F 32 (z/d) SKH2F 48	
Cat. No.	<b>8174800000</b>	<b>8174810000</b>	<b>8174820000</b>	<b>8174830000</b>	<b>8174840000</b>	<b>8174850000</b>	<b>8174860000</b>	<b>8174880000</b>
<b>Technical data</b>	<b>31-pole B 64</b>		<b>C 64 D 32</b>		<b>E 48 F 32</b>		<b>F 32 F 48</b>	
Female connector block	DIN 41,617		DIN 41 612		DIN 41 612		DIN 41 612	
Plug-in connector	Screws		Screws		Screws		Screws	
Connection type	Screws		Screws		Screws		Screws	
Mechanical characteristics	Screws		Screws		Screws		Screws	
<b>Dimensions</b>	Max. permissible weight on card = 0.55 kg.							
Insulation stripping length	7 mm	7 mm	7 mm	7 mm	7 mm	7 mm	7 mm	7 mm
Terminal screw	M 2.5	M 2.5	M 2.5	M 2.5	M 2.5	M 2.5	M 2.5	M 2.5
Mounting width a	60.7 mm	80.7 mm	80.7 mm	55.0 mm	70.7 mm	80.7 mm	80.7 mm	80.7 mm
<b>Clampable conductors</b>								
Max. clamping range	0.13...2.5 mm <sup>2</sup>		0.13...2.5 mm <sup>2</sup>		0.13...2.5 mm <sup>2</sup>		0.13...2.5 mm <sup>2</sup>	
„e“ solid HO7V-U	0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>	
„f“ flexible HO7V-K	0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>	
„f“ with ferrules according to DIN 46228/1	0.5...1.5 mm <sup>2</sup>		0.5...1.5 mm <sup>2</sup>		0.5...1.5 mm <sup>2</sup>		0.5...1.5 mm <sup>2</sup>	
With plastic collar	0.5...1.5 mm <sup>2</sup>		0.5...1.5 mm <sup>2</sup>		0.5...1.5 mm <sup>2</sup>		0.5...1.5 mm <sup>2</sup>	
Conductor cross-section	AWG 26...14		AWG 26...14		AWG 26...14		AWG 26...14	
Plug gauge according to DIN/EN 50027	A1		A1		A1		A1	
Conversion connection terminal/plug-in connector	1 : 1		1 : 1		1 : 1		1 : 1	
<b>Rated data</b>								
Rated voltage	125 V~ 160 V~		160 V~ 250 V~		250 V~ 250 V~		250 V~ 250 V~	
Rated current	4 A 2 A		2 A 4 A		4 A 4 A		4 A 4 A	
Rated cross-section	1.5 mm <sup>2</sup> 1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup> 1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup> 1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup> 1.5 mm <sup>2</sup>	
Test voltage	0.9 kV~eff 1.0 kV~eff		1.0 kV~eff 1.0 kV~eff		1.0 kV~eff 1.0 kV~eff		1.0 kV~eff 1.0 kV~eff	
Test torque	0.4 Nm 0.4 Nm		0.4 Nm 0.4 Nm		0.4 Nm 0.4 Nm		0.4 Nm 0.4 Nm	
Ambient temperature	0 °C...+55 °C		0 °C...+55 °C		0 °C...+55 °C		0 °C...+55 °C	
Storage temperature	-40 °C...+70 °C		-40 °C...+70 °C		-40 °C...+70 °C		-40 °C...+70 °C	
<b>Insulation coordination according to EN 50 178</b>								
Overvoltage category	III III		III III		III III		III III	
Pollution degree	2 2		2 2		2 2		2 2	
<b>Accessories</b>	Type Cat. No. Qty.		Type Cat. No. Qty.		Type Cat. No. Qty.		Type Cat. No. Qty.	
Assembly material for mounting on TS 35	SKH2/35 <b>8209340000</b> 1		SKH2/35 <b>8209340000</b> 1		SKH2/35 <b>8209340000</b> 1		SKH2/35 <b>8209340000</b> 1	
Mounting rail	TS 35 x 7.5 <b>0383400000</b> -		TS 35 x 7.5 <b>0383400000</b> -		TS 35 x 7.5 <b>0383400000</b> -		TS 35 x 7.5 <b>0383400000</b> -	
	TS 35 x 15 <b>0498000000</b> -		TS 35 x 15 <b>0498000000</b> -		TS 35 x 15 <b>0498000000</b> -		TS 35 x 15 <b>0498000000</b> -	

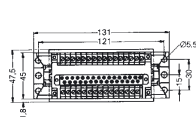


# Card Holders

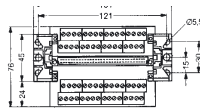
- For inserting cards in Euro and double Euro format
- Convert IEC 603/DIN 41 612 and 41 617 plug-in connectors to LP connection elements



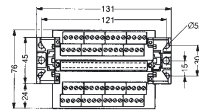
**SKH 31**  
**SKH 31 250 V**



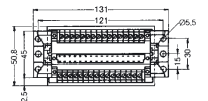
**SKHB 64**



**SKHC 64**



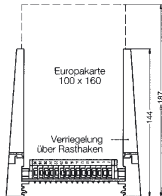
**SKHD 32**



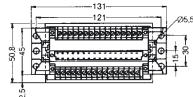
Ordering data	Type	Cat. No.	Qty.	Type	Cat. No.	Qty.	Type	Cat. No.	Qty.	Type	Cat. No.	Qty.
	SKH 31	0586661001	1	SKHB 64	0577360000	1	SKHC 64	0178960000	1	SKHD 32	0586761001	1
	SKH 31 250 V	0648661001	1				SKHC 64	0646660000	1			
							with 2 latch clips					
Technical data												
<b>Female connector block</b>	<b>31-pole</b> (i.a.w. DIN 41617)			<b>B 64</b> (i.a.w. DIN 41612)			<b>C 64</b> (i.a.w. DIN 41612)			<b>D 32</b> (i.a.w. DIN 41612)		
Assembly	Screws			a and b			a and c			a and c		
Connection type	Screws			Screws			Screws			Screws		
Dimensions												
Insulation stripping length	7 mm			7 mm			7 mm			7 mm		
Terminal screw	M 2.5			M 2.5			M 2.5			M 2.5		
Clampable conductors												
Max. clamping range	0.13...4 mm <sup>2</sup>			0.13...1.5 mm <sup>2</sup>			0.13...1.5 mm <sup>2</sup>			0.13...4 mm <sup>2</sup>		
„e“ solid HO7V-U	0.5...4 mm <sup>2</sup>			0.5...1.5 mm <sup>2</sup>			0.5...1.5 mm <sup>2</sup>			0.5...4 mm <sup>2</sup>		
„f“ flexible HO7V-U	0.5...2.5 mm <sup>2</sup>			0.5...1.5 mm <sup>2</sup>			0.5...1.5 mm <sup>2</sup>			0.5...2.5 mm <sup>2</sup>		
„f“ with ferrules												
According to DIN 46228/1	0.5...2.5 mm <sup>2</sup>			0.5...1.5 mm <sup>2</sup>			0.5...1.5 mm <sup>2</sup>			0.5...2.5 mm <sup>2</sup>		
With plastic collar	0.5...2.5 mm <sup>2</sup>			0.5...1.5 mm <sup>2</sup>			0.5...1.5 mm <sup>2</sup>			0.5...2.5 mm <sup>2</sup>		
Conductor cross-section	AWG 26...14			AWG 26...16			AWG 26...16			AWG 26...14		
Conversion connection level/	1 : 1			1 : 1			1 : 1			1 : 1		
Plug-in connector												
Plug gauge according to DIN/EN 50027 Size	A3			A1			A1			A3		
Rated data												
Rated voltage	125 V~ (0586660000) 250 V~ (0648660000)			125 V~			125 V~			250 V~		
Rated current	5 A			2 A			2 A			6 A		
Rated cross-section	2.5 mm <sup>2</sup>			1.5 mm <sup>2</sup>			1.5 mm <sup>2</sup>			2.5 mm <sup>2</sup>		
Test voltage	1.25 kV~eff (0586660000) 1.5 kV~eff (0648660000)			0.5 kV~eff			0.5 kV~eff			2.0 kV~eff		
Test torque	0.4 Nm			0.4 Nm			0.4 Nm			0.4 Nm		
Ambient temperature	0 °C...+55 °C			0 °C...+55 °C			0 °C...+55 °C			0 °C...+55 °C		
Storage temperature	-40 °C...+70 °C			-40 °C...+70 °C			-40 °C...+70 °C			-40 °C...+70 °C		
<b>Insulation coordination according to EN 50 178</b>												
Overvoltage category	III			III			III			III		
Pollution degree	2			2			2			2		
Accessories	Type	Cat. No.	Qty.	Type	Cat. No.	Qty.	Type	Cat. No.	Qty.	Type	Cat. No.	Qty.
Support plate	HP	0137100000	20	HP	0137100000	20	HP	0137100000	20	HP	0137100000	20
(To increase mechanical stability. Included in range of supply).												
Grip	white	ZG	0128000000	-	ZG	0128000000	-	ZG	0128000000	-	ZG	0128000000
	black	ZG	0128060000	-	ZG	0128060000	-	ZG	0128060000	-	ZG	0128060000
Mounting foot for TS 35 (metal)	FM 4	0687900000	40	FM 4	0687900000	40	FM 4	0687900000	40	FM 4	0687900000	40
Mounting bracket for mounting on TS 32	MB (M 3+M 5)	0503500000	100	MB (M 3+M 5)	0503500000	100	MB (M 3+M 5)	0503500000	100	MB (M 3+M 5)	0503500000	100
	MB (M 4+M 6)	0334900000	20	MB (M 4+M 6)	0334900000	20	MB (M 4+M 6)	0334900000	20	MB (M 4+M 6)	0334900000	20
Mounting plate	MP	2054280000	-	MP	2054280000	-	MP	2054280000	-	MP	2054280000	-
Mounting rail	TS 32	0122800000	-	TS 32	0122800000	-	TS 32	0122800000	-	TS 32	0122800000	-
	TS 35 x 7.5	0383400000	-	TS 35 x 7.5	0383400000	-	TS 35 x 7.5	0383400000	-	TS 35 x 7.5	0383400000	-
	TS 35 x 15	0498000000	-	TS 35 x 15	0498000000	-	TS 35 x 15	0498000000	-	TS 35 x 15	0498000000	-

# Card Holders

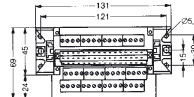
- For inserting cards in Euro and double Euro format
- Convert IEC 603/DIN 41 612 and 41 617 plug-in connectors to LP connection elements



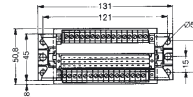
## SKHD 32



## SKHE 48



## SKHF 32



### Ordering data

Type	Cat. No.	Qty.
SKHD 32	<b>0107661001</b>	1
With mounting foot		
on <b>TS 35 horizontal</b>		
SKHD 32	<b>0106161001</b>	1
With mounting foot		
on <b>TS 35 vertical</b>		

### Technical data

#### Female connector block

Assembly	a and c
Connection type	Screws

### Dimensions

Insulation stripping length	7 mm
Terminal screw	M 2.5

### Clampable conductors

Max. clamping range	0.13...4 mm <sup>2</sup>
„e“ solid HO7V-U	0.5...4 mm <sup>2</sup>
„f“ flexible HO7V-U	0.5...2.5 mm <sup>2</sup>
„f“ with ferrules	
according to DIN 46228/1	0.5...2.5 mm <sup>2</sup>
With plastic collar	0.5...2.5 mm <sup>2</sup>
Conductor cross-section	26...14 mm <sup>2</sup>
Conversion connection level/	1 : 1
Plug-in connector	
Plug gauge according to DIN/EN 50027 Size	A3

### Rated data

Rated voltage	380 V~
Rated current	6 A
Rated cross-section	2.5 mm <sup>2</sup>
Test voltage	2.0 kV~eff
Test torque	0.4 Nm
Ambient temperature	0 °C...+55 °C
Storage temperature	-40 °C...+70 °C

### Insulation coordination according to EN 50 178

Overvoltage category	III
Pollution degree	2

### Accessories

Support plate (To increase mechanical stability. Included in range of supply).	HP	<b>0137100000</b>	20
Grip	ZG	<b>0128000000</b>	-
	ZG	<b>0128060000</b>	-
Mounting foot for TS 35 (metal)			
Mounting bracket for mounting on TS 32			
Mounting plate	MP	<b>2054280000</b>	-
Mounting rail	TS 32	<b>0122800000</b>	-
	TS 35 x 7,5	<b>0383400000</b>	-
	TS 35 x 15	<b>0498000000</b>	-

### Ordering data

Type	Cat. No.	Qty.
SKHE 48	<b>0690660000</b>	1
With mounting foot		
on <b>TS 35 horizontal</b>		
SKHE 48	<b>0106161001</b>	1
With mounting foot		
on <b>TS 35 vertical</b>		

#### D 32 (i.a.w. DIN 41612)

Assembly	a and c
Connection type	Screws

Insulation stripping length	7 mm
Terminal screw	M 2.5

Max. clamping range	0.13...1.5 mm <sup>2</sup>
„e“ solid HO7V-U	0.5...1.5 mm <sup>2</sup>
„f“ flexible HO7V-U	0.5...1.5 mm <sup>2</sup>
„f“ with ferrules	
according to DIN 46228/1	0.5...1.5 mm <sup>2</sup>
With plastic collar	0.5...1.5 mm <sup>2</sup>
Conductor cross-section	AWG 26...16
Conversion connection level/	1 : 1
Plug-in connector	
Plug gauge according to DIN/EN 50027 Size	A1

Rated voltage	125 V~
Rated current	5 A
Rated cross-section	1.5 mm <sup>2</sup>
Test voltage	1.25 kV~eff
Test torque	0.4 Nm
Ambient temperature	0 °C...+55 °C
Storage temperature	-40 °C...+70 °C

Overvoltage category	III
Pollution degree	2

Support plate (To increase mechanical stability. Included in range of supply).	HP	<b>0137100000</b>	20
Grip	ZG	<b>0128000000</b>	-
	ZG	<b>0128060000</b>	-
Mounting foot for TS 35 (metal)			
Mounting bracket for mounting on TS 32			
Mounting plate	MP	<b>2054280000</b>	-
Mounting rail	TS 32	<b>0122800000</b>	-
	TS 35 x 7,5	<b>0383400000</b>	-
	TS 35 x 15	<b>0498000000</b>	-

### Ordering data

Type	Cat. No.	Qty.
SKHF 32 (z/b)	<b>0586861001</b>	1
SKHF 32 (z/d)	<b>0586961001</b>	1

#### E 48 (i.a.w. DIN 41612)

Assembly	e, c and a
Connection type	Screws

Insulation stripping length	7 mm
Terminal screw	M 2.5

Max. clamping range	0.13...1.5 mm <sup>2</sup>
„e“ solid HO7V-U	0.5...1.5 mm <sup>2</sup>
„f“ flexible HO7V-U	0.5...1.5 mm <sup>2</sup>
„f“ with ferrules	
according to DIN 46228/1	0.5...1.5 mm <sup>2</sup>
With plastic collar	0.5...1.5 mm <sup>2</sup>
Conductor cross-section	AWG 26...16
Conversion connection level/	1 : 1
Plug-in connector	
Plug gauge according to DIN/EN 50027 Size	A3

Rated voltage	250 V~
Rated current	6 A
Rated cross-section	2.5 mm <sup>2</sup>
Test voltage	1.25 kV~eff
Test torque	0.4 Nm
Ambient temperature	0 °C...+55 °C
Storage temperature	-40 °C...+70 °C

Overvoltage category	III
Pollution degree	2

Support plate (To increase mechanical stability. Included in range of supply).	HP	<b>0137100000</b>	20
Grip	ZG	<b>0128000000</b>	-
	ZG	<b>0128060000</b>	-
Mounting foot for TS 35 (metal)			
Mounting bracket for mounting on TS 32			
Mounting plate	MP	<b>2054280000</b>	-
Mounting rail	TS 32	<b>0122800000</b>	-
	TS 35 x 7,5	<b>0383400000</b>	-
	TS 35 x 15	<b>0498000000</b>	-

### Ordering data

Type	Cat. No.	Qty.
SKHF 32 (z/b)	<b>0586861001</b>	1
SKHF 32 (z/d)	<b>0586961001</b>	1

#### F 32 (i.a.w. DIN 41612)

Assembly	z and b ( <b>0586860000</b> ) /z and d ( <b>0586960000</b> )
Connection type	Screws

Insulation stripping length	7 mm
Terminal screw	M 2.5

Max. clamping range	0.13...4 mm <sup>2</sup>
„e“ solid HO7V-U	0.5...4 mm <sup>2</sup>
„f“ flexible HO7V-U	0.5...2.5 mm <sup>2</sup>
„f“ with ferrules	
according to DIN 46228/1	0.5...2.5 mm <sup>2</sup>
With plastic collar	0.5...2.5 mm <sup>2</sup>
Conductor cross-section	AWG 26...14
Conversion connection level/	1 : 1
Plug-in connector	
Plug gauge according to DIN/EN 50027 Size	A3

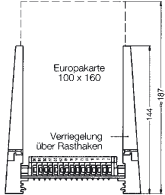
Rated voltage	250 V~
Rated current	6 A
Rated cross-section	2.5 mm <sup>2</sup>
Test voltage	1.25 kV~eff
Test torque	0.4 Nm
Ambient temperature	0 °C...+55 °C
Storage temperature	-40 °C...+70 °C

Overvoltage category	III
Pollution degree	2

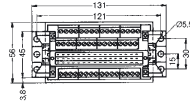
Support plate (To increase mechanical stability. Included in range of supply).	HP	<b>0137100000</b>	20
Grip	ZG	<b>0128000000</b>	-
	ZG	<b>0128060000</b>	-
Mounting foot for TS 35 (metal)			
Mounting bracket for mounting on TS 32			
Mounting plate	MP	<b>2054280000</b>	-
Mounting rail	TS 32	<b>0122800000</b>	-
	TS 35 x 7,5	<b>0383400000</b>	-
	TS 35 x 15	<b>0498000000</b>	-

# Card Holders

- For inserting cards in Euro and double Euro format
- Convert IEC 603/DIN 41 612 and 41 617 plug-in connectors to LP connection elements



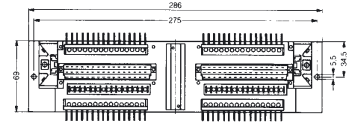
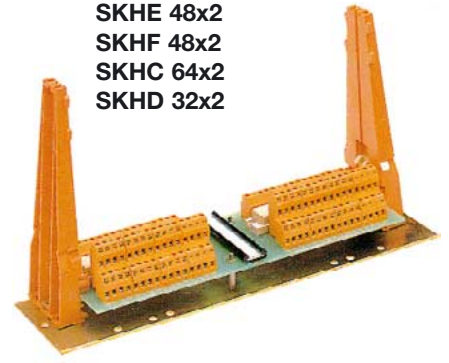
**SKHF 48**



**SKHH 15**



**SKHE 48x2  
SKHF 48x2  
SKHC 64x2  
SKHD 32x2**



**Ordering data**


**Type Cat. No. Qty.**

SKHF 48	<b>0587060000</b>	1

**Type Cat. No. Qty.**

SKHH 15	<b>8051300000</b>	1

**Type Cat. No. Qty.**

SKHE 48 x 2	<b>0645760000</b>	1
SKHF 48 x 2	<b>8009260000</b>	1
SKHC 64 x 2	<b>8013120000</b>	1
SKHD 32 x 2	<b>8050981001</b>	1

**Technical data**

**Female connector block**  
 Assembly  
 Connection type

**F 48** (i.a.w. DIN 41612)  
 z, b and d  
 Screws

**H 15** (i.a.w. DIN 41612)  
 a and c  
 Screws

**For double Euro cards** 233 x 160 mm (i.a.w. DIN 41612)  
 Screws (S)

**Dimensions**

Insulation stripping length  
 Terminal screw

7 mm  
 M 2.5

7 mm  
 M 2.5

7 mm  
 M 2.5

**Clampable conductors**

Max. clamping range  
 „e“ solid HO7V-U  
 „f“ flexible HO7V-U  
 „f“ with ferrules  
 According to DIN 46228/1  
 With plastic collar  
 Conductor cross-section  
 Conversion connection level/  
 Plug-in connector  
 Plug gauge according to DIN/EN 50027 Size

0.13...1.5 mm<sup>2</sup>  
 0.5...1.5 mm<sup>2</sup>  
 0.5...1.5 mm<sup>2</sup>  
 0.5...1.5 mm<sup>2</sup>  
 0.5...1.5 mm<sup>2</sup>  
 AWG 26...16  
 1 : 1  
 A1

0.13...1.5 mm<sup>2</sup>  
 0.5...1.5 mm<sup>2</sup>  
 0.5...1.5 mm<sup>2</sup>  
 0.5...1.5 mm<sup>2</sup>  
 0.5...1.5 mm<sup>2</sup>  
 AWG 26...16  
 1 : 1  
 A1

0.13...1.5 mm<sup>2</sup>  
 0.5...1.5 mm<sup>2</sup>  
 0.5...1.5 mm<sup>2</sup>  
 0.5...1.5 mm<sup>2</sup>  
 0.5...1.5 mm<sup>2</sup>  
 AWG 26...16  
 1 : 1  
 A1

**Rated data**

Rated voltage  
 Rated current  
 Rated cross-section  
 Test voltage  
 Test torque  
 Ambient temperature  
 Storage temperature

125 V~  
 5 A  
 1.5 mm<sup>2</sup>  
 1.25 kV~eff  
 0.4 Nm  
 0 °C...+55 °C  
 -40 °C...+70 °C

250 V~  
 10 A  
 2.5 mm<sup>2</sup>  
 2.0 kV~eff  
 0.4 Nm  
 0 °C...+55 °C  
 -40 °C...+70 °C

125 V~  
 5 A  
 1.5 mm<sup>2</sup>  
 1.25 kV~eff  
 0.4 Nm  
 0 °C...+55 °C  
 -40 °C...+70 °C

**Insulation coordination according to EN 50 178**

Overvoltage category  
 Pollution degree

III  
 2

III  
 2

III  
 2

**Accessories**

Support plate  
 (To increase mechanical stability. Included in range of supply).

Type Cat. No. Qty.  
 HP **0137100000** 20

Type Cat. No. Qty.  
 HP **0137100000** 20

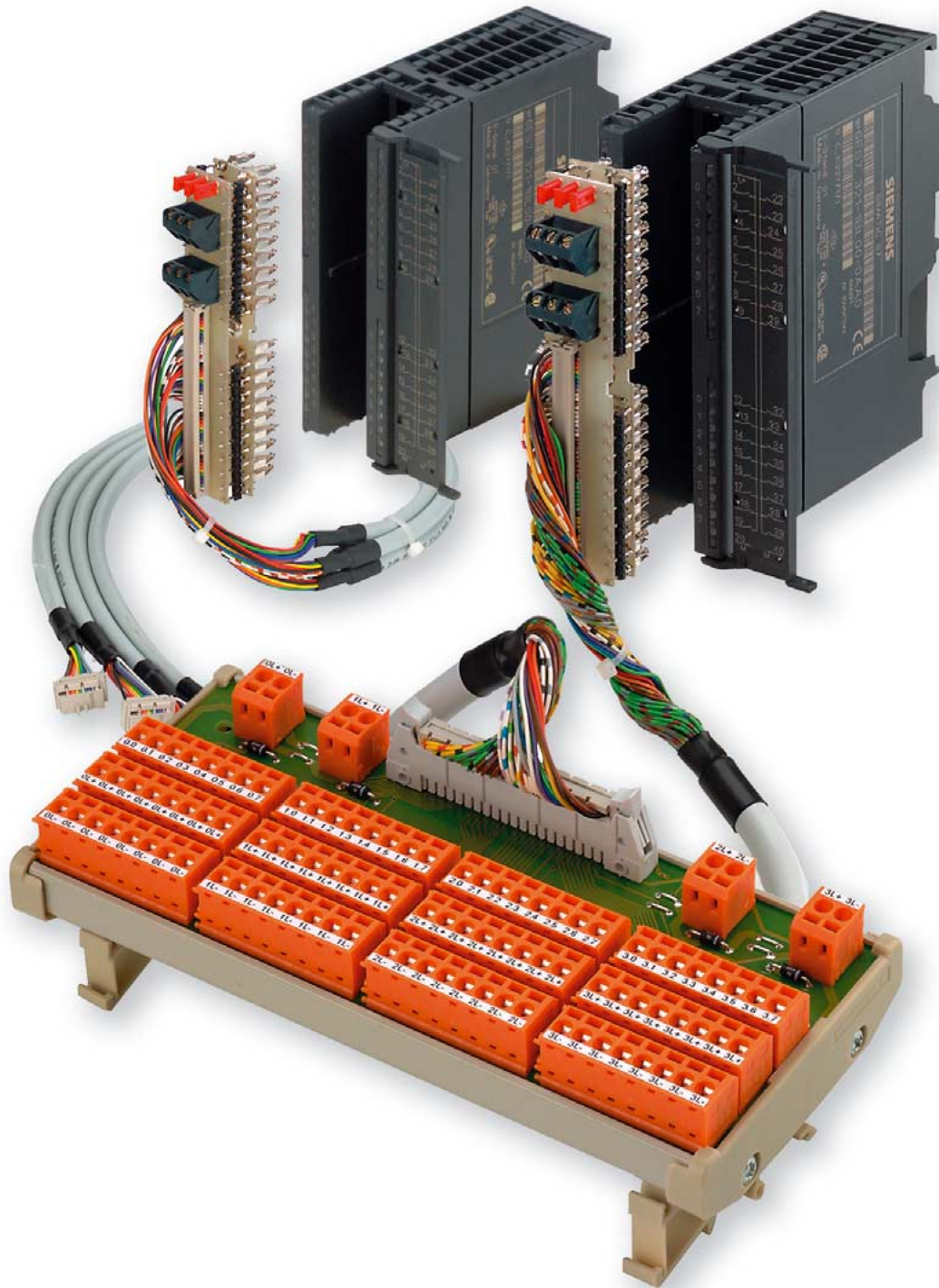
Type Cat. No. Qty.  
 HP **0136800000** 20

Grip white  
 black  
 Mounting foot for TS 35 (metal)  
 Mounting bracket for mounting on TS 32  
 Mounting plate

ZG **0128000000** -  
 ZG **0128060000** -  
 FM 4 **0687900000** 40  
 MB (M 3+M 5) **0503500000** 100  
 MB (M 4+M 6) **0334900000** 20  
 MP (Euro card)  
**2054280000** -  
 TS 32 **0122800000** -  
 TS 35 x 7,5 **0383400000** -  
 TS 35 x 15 **0498000000** -

ZG **0128000000** -  
 ZG **0128060000** -  
 FM 4 **0687900000** 40  
 MB (M 3+M 5) **0503500000** 100  
 MB (M 4+M 6) **0334900000** 20  
 MP (Euro card)  
**2054280000** -  
 TS 32 **0122800000** -  
 TS 35 x 7,5 **0383400000** -  
 TS 35 x 15 **0498000000** -

ZG **0128000000** -  
 ZG **0128060000** -  
 FM 4 **0687900000** 40  
 MB (M 3+M 5) **0503500000** 100  
 MB (M 4+M 6) **0334900000** 20  
 MP (double Euro card) **2051430000** -  
 TS 32 **0122800000** -  
 TS 35 x 7,5 **0383400000** -  
 TS 35 x 15 **0498000000** -



The complex nature of machines and installations in process, automation, and building technologies require an ever-increasing amount of wiring.

Until now, high installation and commissioning costs have been generated by the conventional method of wiring the PLC to the control periphery (single conductor connection).

With the PLC-System-Interface family of products, Weidmüller is offering the user a convenient and a quickly installed output level for all current PCL controls; for example, from the companies: SIEMENS and GROUPE SCHNEIDER.

The product spectrum includes:

- PLC-specific front adapters
- Passive components with screw and tension clamp connection elements
  - In and output modules with two-wire technology
  - In and output modules with three-wire technology
- Active components with screw and tension clamp connection elements
  - In and output modules
  - Analog components
- Pre-assembled control cables

The specific front adapters replace the current screw connection technology of the input and output cards of the PLC.

The PLC signals are transmitted to the active or passive components via 40-pole or 10-pole pre-assembled control cables.

The PLC signals are converted either:

- in double-word form via a flat-strip connection
- or
- byte-for-byte via 10-pole flat-strip connections

## Single wiring

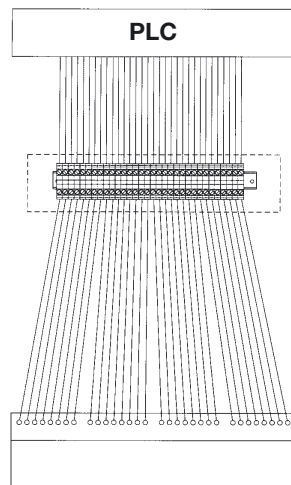
As a rule, commercially available PLC I/O cards have two different connection technologies available:

- Screw connection technology
- Crimp connection technology

With both these versions, the signal wires are wired individually to the respective connection element.

Single wiring has the following disadvantages:

- high mounting costs
- the risk of wiring mistakes occurring rises with increasing number of individual wires at one point
- large amount of space required in the switchgear cabinet
- expensive installation times
- time consuming work needed for laying and preparing the connection cables
- time consuming labeling and documentation work required.



## System cabling

The basic principle is to connect PLC-specific front adapters to passive and active I/O modules using prefabricated conductors.

The PLC adapters are attached directly to the I/O cards. The conversion takes place within the adapter of the PLC-specific connection level to the ribbon cable plug-in connector in accordance with DIN 41651. This allows passive and active I/O modules to be used irrespective of what PLC system is chosen.

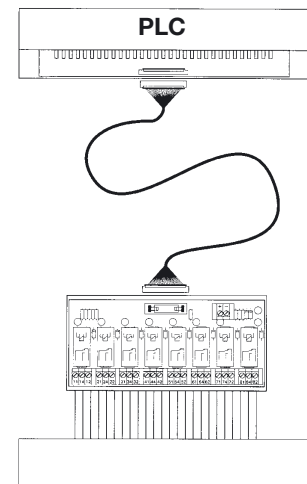
The user has two different interfacing variations available:

- per double word connection via 40-pole system-wire
- per byte connection via 10-pole system-wire

## System cabling offers the following advantages compared to individual wiring:

- minimised wiring time and material
- reduction of installation time
- simplified commissioning and documentation

The product range of the PLC system interface modules from Weidmüller offers the user a convenient quickly installed input and output level for all currently available PLC systems.





## System Advantages:

### • Fast

- time-saving installation
- reduces commissioning and troubleshooting times
- reduces planning time
- plug-in technology minimises wiring on site

### • Safe

- prevents wiring errors
- clear structure in the switchgear cabinet by using system cables instead of single wires
- direct marking identical to PLC
- additional individual markings also possible

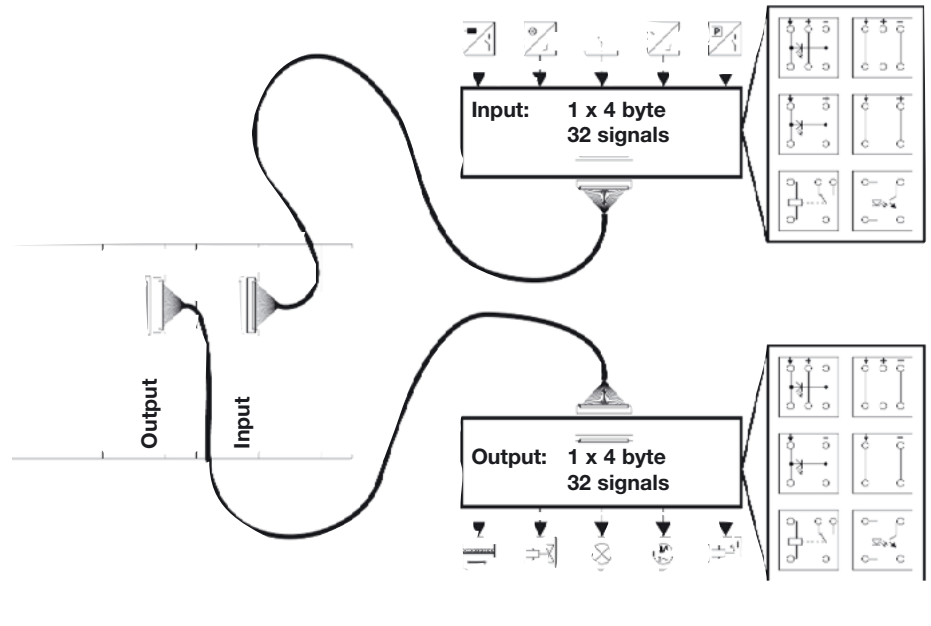
### • Variable

- approximately 40 different I/O components
- variable cable lengths
- modular structure of all components
- 1 x 4 byte and 4 x 1 byte system versions without routing module
- mixed functions on an input or output level in byte mode
- trouble-free extension options
- flexibility by simple exchange of the input/output interfaces

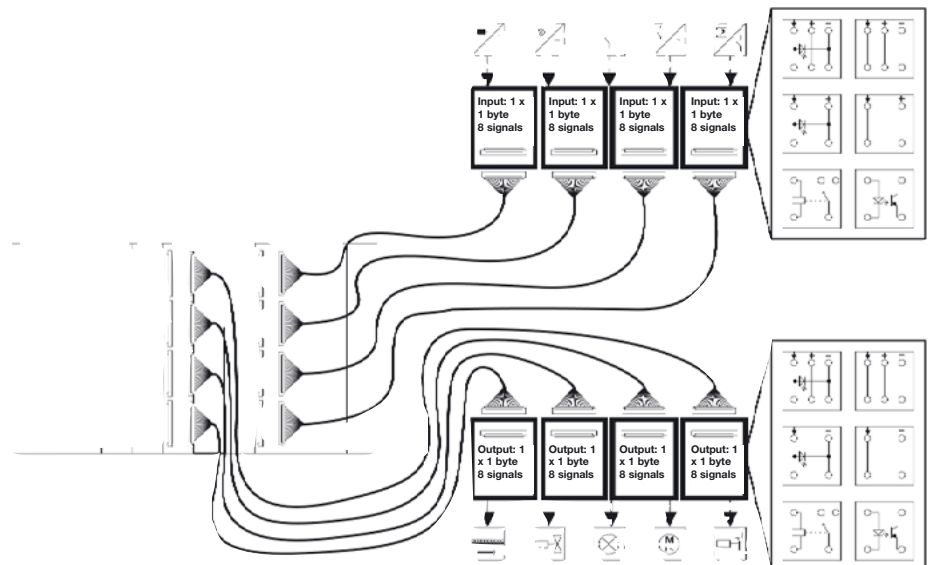
### • Small

- saves space in cable ducts
- compact design
- reduced terminal levels

## 1 x 4 byte structure



## 4 x 1 byte structure



# PLC Front Adapter

PLC-front adapters SIM 95U/100U/115U/135U, MOD A120/A500 enable connection of peripheral sensors/actuators to PLC-input/output modules from SIEMENS and MODICON(r) TSX. The expensive single conductor wiring is replaced by a cost- and time-saving preassembled control cable. The potential separation of the supply voltage is achieved by wire links on the PLC-adaptes or plug-in jumpers on the components.

The following options are available:

- 1 x 32 signals
- 2 x 16 signals
- 4 x 8 signals

Two options are available for feeding-in of the supply voltage to the PLC I/O cards:

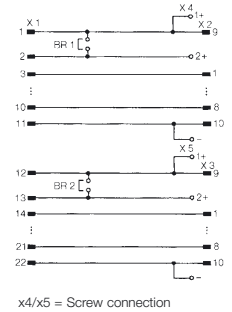
- direct feed at the front adapter via screw connection terminals
- feed-in via passive/active components by means of pre-assembled control cables (max. 1 A/byte)

Corresponding transfer units allow freely configurable use in many fields of application:

- quickly adapts
  - to the PLC via plug-in technology to PLC-input/output modules and
  - to the process via 40-pole and 10-pole ribbon cable plug-in connectors
- inexpensive coupling to interface modules via pre-assembled control cables
- 32-channel or 4 x 8-channel signal coupling per module

## PLC front adapter

**MODICON®  
TSX Compact  
(A 120, 984)  
2x1 Byte**



x4/x5 = Screw connection

BR1/2 +potential isolation from 1/2 resp. 13/14

Ordering data	
Front adapter without control cables (control cables s. page 55)	

### Technical data

Rated voltage	60 Vac/60 Vdc
Rated current	
Front connector connection via	- Flat strip pin cable - Screw connection
Connection technology	
	- byte mode
	- double word mode
	- power supply and other terminals
Storage temperature	-20...+60 °C
Ambient temperature	-20...+60 °C

### Front adapter for I/O component

MODICON TSX	
Digital input	
Digital output	
Digital input/output	
Analog input	
Analog output	

Type	Cat. No.
MOD A120	<b>8224690000</b>

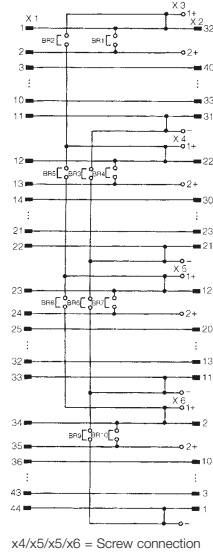
<b>MOD A 120</b>
DEO 216
DEP 214*
DEP 215*
DEP 216
DEP 217*
DEP 220
DEP 296*
DEP 297*
DAO 216
DAP 216
DAP 217
DAP 220
DAP 292
ADU 204*
ADU 205*
ADU 206*
ADU 210*
ADU 214*
DAU 202*
DAU 208*

\* Only in combination with input/output modules without LED indicator

# PLC Front Adapter

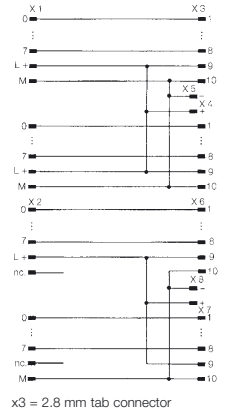
## PLC front adapter

**MODICON®  
TSX A 250/A 350  
A 500**  
1x4 byte



Wire bridge for supply of:  
 1x32 signals BR2/3/5/6/8/9 closed  
 2x16 signals BR2/4/8/9 closed  
 BR6/5 open  
 4x8 signals BR2/3/6/8/9 open  
 BR1/4/7/10 +potential isolation of  
 1/2, 12/13, 23/24 and 34/35

**SIEMENS S5  
90U/95U/100U**  
4 x 1 byte



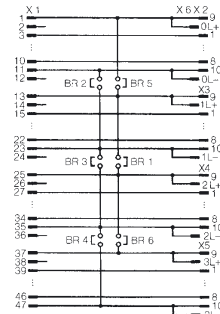
Ordering data	Type	Cat. No.	Type	Cat. No.
Front adapter without control cables (control cables s. page 55)	MOD A500	<b>8224700000</b>	SIM 95U/100U FB10 4 x 8	<b>8207720000</b>
<b>Technical data</b>				
Rated voltage	60 Vac/60 Vdc		60 Vac/60 Vdc	
Rated current				
Front terminal via	- Flat strip pin cable - Screw connection	1.0 A 4.0 A		1.0 A 4.0 A
Connection technology				
	- byte mode - double word mode - power supply and other terminals	1 x 40-pole FB strip (DIN 41651) Screw connection		4 x 10-pole FB strip (DIN 41651) 2.8 tab connector
Storage temperature	-20...+60 °C		-20...+60 °C	
Ambient temperature	-20...+60 °C		-20...+60 °C	
<b>Front adapter for I/O component</b>				
MODICON TSX/SIEMENS S5 SIMATIC® S5 Digital input	<b>MOD A 500</b> DEP 112		<b>SIM 95U / 100U FBxx</b>	
Digital output	DAP 112			
Digital input/output			S5-90U S5-95U GES5 482-8MA13	
Analog input	ADU 115* ADU 116*			
Analog output	DAU 104*			

\* Only in combination with input/output modules without LED indicator

# PLC Front Adapter

## SIEMENS S5 115U

### 4 x 1 byte



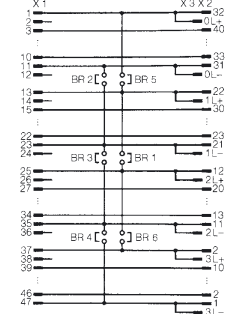
x6 = 2.8 mm tab connector / Screw connection

Wire bridge for supply of:

- 1 x 32 signals BR1...6 closed
- 2 x 16 signals BR1/3 closed
- 4 x 8 signals BR2/4/5/6 open
- BR1...6 open

## SIEMENS S5 115U

### 1x4 byte



x3 = 2.8 mm tab connector / Screw connection

Wire bridge for supply of:

- 1 x 32 signals BR1...6 closed
- 2 x 16 signals BR1/3 closed
- 4 x 8 signals BR2/4/5/6 open
- BR1...6 open

#### Ordering data

Front adapter without control cables (control cables s. page 55)	
Front adapter with pre-assembled control cable	
Cable length	2 m
Cable length	2.5 m
Cable length	3.0 m

#### Technical data

Rated voltage	60 Vac/60 Vdc
Rated current	
Front terminal via	- Flat strip pin cable - Screw connection
Connection technology	
	- byte mode - double word mode - power supply and other terminals
Storage temperature	-20...+60 °C
Ambient temperature	-20...+60 °C

#### Front adapter for I/O component

SIEMENS S5 SIMATIC® S5	
Digital input	
Digital output	
Digital input/output	
Analog input	
Analog output	

#### Type

SIM 115U FB10 4 x 8		Cat. No.	<b>8224660000</b>
SIM 115U FB10 4 x 8	KONV2.0		<b>8298510000</b>
SIM 115U FB10 4 x 8	KONV2.5		<b>8298520000</b>
SIM 115U FB10 4 x 8	KONV3.0		<b>8298530000</b>

#### SIM S5 115U FBxx

6ES5 420-7LA11
6ES5 430-7LA12
6ES5 431-7LA11
6ES5 432-7LA11
6ES5 441-7LA11
6ES5 451-7LA11
6ES5 451-7LA21
6ES5 457-7LA11
6ES5 458-7LA11
6ES5 482-7LA11
6ES5 482-7LF11
6ES5 482-7LF21
6ES5 460-7LA13*
6ES5 465-7LA13*
6ES5 470-7LA12*
6ES5 470-7LB12*
6ES5 470-7LC12*

#### Type

SIM 115U FB40 1 x 32		Cat. No.	<b>8224650000</b>
SIM 115U FB40 1 x 32	KONV2.0		<b>8298270000</b>
SIM 115U FB40 1 x 32	KONV2.5		<b>8298280000</b>
SIM 115U FB40 1 x 32	KONV3.0		<b>8298290000</b>

#### SIM S5 115U FBxx

6ES5 420-7LA11
6ES5 430-7LA12
6ES5 431-7LA11
6ES5 432-7LA11
6ES5 441-7LA11
6ES5 451-7LA11
6ES5 451-7LA21
6ES5 457-7LA11
6ES5 458-7LA11
6ES5 482-7LA11
6ES5 482-7LF11
6ES5 482-7LF21
6ES5 460-7LA13*
6ES5 465-7LA13*
6ES5 470-7LA12*
6ES5 470-7LB12*
6ES5 470-7LC12*

# PLC Front Adapter

## SIEMENS S5 135U 4 x 1 byte



## SIEMENS S5 135U 1x4 byte



### Ordering data

Front adapter without control cables (control cables s. page 55)	
Front adapter with pre-assembled control cable	
Cable length	2 m
Cable length	2.5 m
Cable length	3.0 m

### Technical data

Rated voltage	60 Vac/60 Vdc
Rated current	
Front terminal via	- Flat strip pin cable - Screw connection
Connection technology	- byte mode - double word mode - power supply and other terminals
Storage temperature	-20...+60 °C
Ambient temperature	-20...+60 °C

### Front adapter for I/O component

MOSICON TSX/SIEMENS S5 SIMATIC® S5

Digital input

### Type

Cat. No.	
SIM 135U FB10 4 x 8	<b>8224680000</b>
SIM 135U FB10 4 x 8 KONV2.0	<b>8298540000</b>
SIM 135U FB10 4 x 8 KONV2.5	<b>8298550000</b>
SIM 135U FB 10 4 x 8 KONV3.0	<b>8298560000</b>

Rated voltage	60 Vac/60 Vdc
Rated current	
Front terminal via	1.0 A 4.0 A
Connection technology	4 x 10pol. FB strip (DIN 41651) 2.8 tab connector
Storage temperature	-20...+60 °C
Ambient temperature	-20...+60 °C

### Type

Cat. No.	
SIM 135U FB40 1 x 32	<b>8224670000</b>
SIM 135U FB40 1 x 32 KONV2.0	<b>8298300000</b>
SIM 135U FB40 1 x 32 2 KONV2.5	<b>8298310000</b>
SIM 135U FB40 1 x 32 KONV3.0	<b>8298320000</b>

Rated voltage	60 Vac/60 Vdc
Rated current	
Front terminal via	1.0 A 4.0 A
Connection technology	1 x 40-pole FB strip (DIN 41651) 2.8 tab connector
Storage temperature	-20...+60 °C
Ambient temperature	-20...+60 °C

### SIM 135U FBxx

6ES5 420-4UA14
6ES5 430-4UA14
6ES5 431-4UA12
6ES5 432-4UA12
6ES5 434-4UA12

Digital output

6ES5 441-4UA14
6ES5 451-4UA14
6ES5 453-4UA12
6ES5 457-4UA12
6ES5 458-4UA12
6ES5 482-4UA11

6ES5 441-4UA14
6ES5 451-4UA14
6ES5 453-4UA12
6ES5 457-4UA12
6ES5 458-4UA12
6ES5 482-4UA11

Analog input

6ES5 460-4UA13*
6ES5 463-4UA12*
6ES5 463-4UB12*

6ES5 460-4UA13*
6ES5 463-4UA12*
6ES5 463-4UB12*

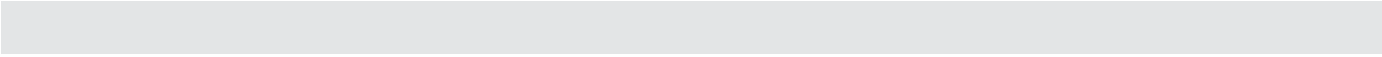
Analog output

6ES5 470-4UA12*
6ES5 470-4UB12*
6ES5 470-4UC12*

6ES5 470-4UA12*
6ES5 470-4UB12*
6ES5 470-4UC12*

\* Only in combination with input/output modules without LED indicator





## Siemens SIM S7/300 and SIM S7/400

The front adapters SIM S7/300 and SIM S7/400 can be quickly and reliably connected to SIEMENS SIMATIC® S7-300 and S7-400 input and output modules.

The PLC input/output modules are coupled with the passive and active interface elements of the PLC system interface via pre-assembled control cables with 10-pole or 40-pole female connector blocks in accordance with IEC 603-1/ DIN 41 651.

The potential separation of the supply voltage is accomplished. The following options are available:

- 1x32 signals
- 2x16 signals
- 4x8 signals

Two options are available for feeding-in the supply voltage to the PLC I/O cards:

- direct feed at the front adapter via screw connection terminals (MODICON, SIEMENS S5 135U) or 2.8-mm ribbon cable connections (SIEMENS S5 100U / 115U).

- feed-in via passive/active components by means of pre-assembled control cables (max. 1 A/byte)

Front adapters with four 10-pole <4 x 1 byte structure> or one 40-pole prefabricated control cable <1 x 4 byte structure> are available for the 32-bit PLC components.

This results in:

- faster and cost-optimized installation
- minimization of wiring errors
- reduction of commissioning times

Pin assignment

Front-adapter	SIM S7/300...KONV		SIM S7/400...KONV	
	block 4 x 10-pole	1 x 40-pole	4 x 10-pole	1 x 40-pole
Pin 1	X 1.9	X 1.32		
Pin 2	X 1.1	X 1.40		
Pin 3	X 1.2	X 1.39	X 1.9	X 1.32
Pin 4	X 1.3	X 1.38	X 1.1	X 1.40
Pin 5	X 1.4	X 1.37	X 1.2	X 1.39
Pin 6	X 1.5	X 1.36	X 1.3	X 1.38
Pin 7	X 1.6	X 1.35	X 1.4	X 1.37
Pin 8	X 1.7	X 1.34	X 1.5	X 1.36
Pin 9	X 1.8	X 1.33	X 1.6	X 1.35
Pin 10	X 1.10	X 1.31	X 1.7	X 1.34
Pin 11	X 2.9	X 1.22	X 1.8	X 1.33
Pin 12	X 2.1	X 1.30		
Pin 13	X 2.2	X 1.29		
Pin 14	X 2.3	X 1.28	X 2.9	X 1.22
Pin 15	X 2.4	X 1.27	X 2.1	X 1.30
Pin 16	X 2.5	X 1.26	X 2.2	X 1.29
Pin 17	X 2.6	X 1.25	X 2.3	X 1.28
Pin 18	X 2.7	X 1.24	X 2.4	X 1.27
Pin 19	X 2.8	X 1.23	X 2.5	X 1.26
Pin 20	X 2.10	X 1.21	X 2.6	X 1.25
Pin 21	X 3.9	X 1.12	X 2.7	X 1.24
Pin 22	X 3.1	X 1.20	X 2.8	X 1.23
Pin 23	X 3.2	X 1.19		
Pin 24	X 3.3	X 1.18		
Pin 25	X 3.4	X 1.17		
Pin 26	X 3.5	X 1.16	X 3.9	X 1.12
Pin 27	X 3.6	X 1.15	X 3.1	X 1.20
Pin 28	X 3.7	X 1.14	X 3.2	X 1.19
Pin 29	X 3.8	X 1.13	X 3.3	X 1.18
Pin 30	X 3.10	X 1.11	X 3.4	X 1.17
Pin 31	X 4.9	X 1.2	X 3.5	X 1.16
Pin 32	X 4.1	X 1.10	X 3.6	X 1.15
Pin 33	X 4.2	X 1.9	X 3.7	X 1.14
Pin 34	X 4.3	X 1.8	X 3.8	X 1.13
Pin 35	X 4.4	X 1.7		
Pin 36	X 4.5	X 1.6		
Pin 37	X 4.6	X 1.5		
Pin 38	X 4.7	X 1.4	X 4.9	X 1.2
Pin 39	X 4.8	X 1.3	X 4.1	X 1.10
Pin 40	X 4.10	X 1.1	X 4.2	X 1.9
Pin 41			X 4.3	X 1.8
Pin 42			X 4.4	X 1.7
Pin 43			X 4.5	X 1.6
Pin 44			X 4.6	X 1.5
Pin 45			X 4.7	X 1.4
Pin 46			X 4.8	X 1.3
Pin 47				
Pin 48			X 4.10	X 1.1
Pin 48			X 1.10	X 1.11
Pin 48			X 2.10	X 1.21
Pin 48			X 3.10	X 1.31

# Siemens SIM S7/300 And SIM S7/400

## SIM S7/300

### SIM S7/400

- pre-assembled control cables
- variable cable lengths in 4 standard lengths
- versatile system accessories
- economical coupling of interface modules

**Attention mounting note!**  
**We recommend that the front adapter for S7/300 be fitted before installation on the mounting rail!**

**Siemens S7/300 1 x 40**  
**1x4 byte**

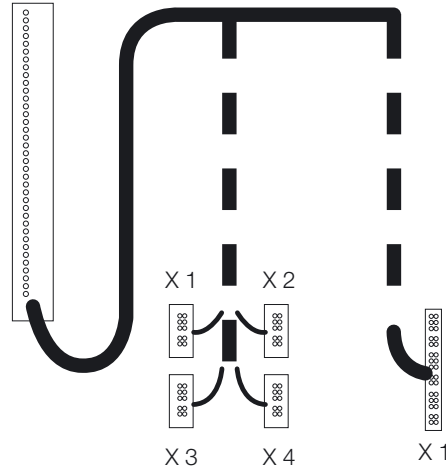
**Siemens S7/300 4 x 10**  
**4x1 byte**

**Siemens S7/400 1 x 40**  
**1x4 byte**

**Siemens S7/400 4 x 10**  
**4x1 byte**



Connection diagram



PLC System Interface

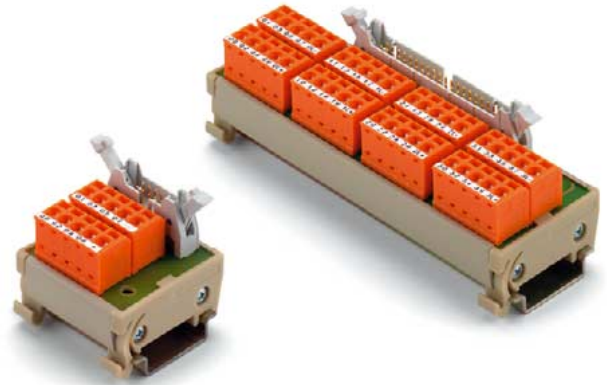
Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
Cable length	SIM S7/300 FB40 KONV		SIM S7/300 FB4 x 10 KON		SIM S7/400 FB40 KONV		SIM S7/400 FB4 x 10 KONV	
2 m		8433290200		8433310200		8335900200		8335910200
2.5 m		8433290250		8433310250		8335900250		8335910250
3 m		8433290300		8433310300		8335900300		8335910300
5 m		8433290500		8433310500		8335900500		8335910500
<b>Technical data</b>								
Number of signals	1 x 32		4 x 8		1 x 32		4 x 8	
Input voltage	60 Vac/75 Vdc		60 Vac/75 Vdc		60 Vac/75 Vdc		60 Vac/75 Vdc	
Rated current	1 A		1 A		1 A		1 A	
Total current load								
- 10-pole cable			10 A/ΔT = 20 K				10 A/ΔT = 20 K	
- 40-pole cable		26 A/ΔT = 20 K				26 A/ΔT = 20 K		
Rated cross-section of conductors	0.14 mm <sup>2</sup>		0.14 mm <sup>2</sup>		0.14 mm <sup>2</sup>		0.14 mm <sup>2</sup>	
PLC coupling	FB 40 DIN 41 651		FB 4 x 10 DIN 41 651		FB 40 DIN 41 651		FB 4 x 10 DIN 41 651	
Ambient temperature	-25...+50 °C		-25...+50 °C		-25...+50 °C		-25...+50 °C	
Storage temperature	-40...+80 °C		-40...+80 °C		-40...+80 °C		-40...+80 °C	
<b>Front adapter for Siemens I/O components</b>								
SIEMENS SIMATIC® S7 300/400								
Digital input	S7/300 6ES7 321-1BL00-0AA0, 32DI		S7/300 6ES7 321-1BL00-0AA0, 32DI		S7/400 6ES7 421-1BL00-0AA0, 32DI		S7/400 6ES7 421-1BL00-0AA0, 32DI	
Digital output	S7/300 6ES7 322-1BL00-0AA0, 32DO		S7/300 6ES7 322-1BL00-0AA0, 32DO		S7/400 6ES7 422-1BL00-0AA0, 32DO		S7/400 6ES7 422-1BL00-0AA0, 32DO	
Digital input/output	S7/300 6ES7 323-1BL00-0AA0, 16DI/16 DO		S7/300 6ES7 323-1BL00-0AA0, 16DI/16 DO					

## Passive Components

- Optionally available with screw or tension clamp connection
- Compact design
- Clearly arranged connection marking
- Additional marking field for group designation
- 45-mm profile mounts on TS 32  
87-mm profile mounts on TS 32/35

## Input/Output Module RS 45 Profile

### Single-conductor technology Tension clamp connection technology



RS F40 or RS F10 passive interface units for 32 or 8 signals enable efficient connection of peripheral initiators, sensors and actuators to PLC input/output modules.

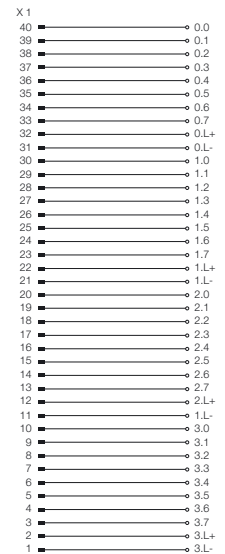
The link between PLC and interface module is the control-specific front adapter in connection with pre-assembled control cables.

This version replaces the often error prone and expensive single conductor wiring. The required auxiliary voltages are supplied at the connection elements. Switching and operating status information is signalled when used in combination with an LED status indicator.

- For 1:1 signal transfer of 32 or 8 signals to input or output component groups of the PLC
- For connecting 2-conductor and 3-conductor sensors/initiators PS F40 LPK2 and RS F10 LPK2 to input or output component groups of the PLC

- Optionally available with screw or tension clamp connection technology
- RS45 modules in extremely slim 45-mm design
- Cost-reducing conversion with pre-assembled control cables to the PLC
- The 32-channel module enables sensors to be split in to 1 x 32, 2 x 16, or 4 x 8 signal groups using plug-in jumpers.
- Signals clearly grouped byte-for-byte
- Optional integration of LED status indicator
- Additional marking field for group marking
- PCB testing points accessible via connection element
- Mount onto TS 35 (RS 45 profile) and TS 32 and TS 35

#### Connection diagram



#### Ordering data

Type	Cat. No.
RS F10 LMZF I/08	<b>8428870000</b>

Type	Cat. No.
RS F40 LMZF I/032	<b>8428880000</b>

#### Technical data

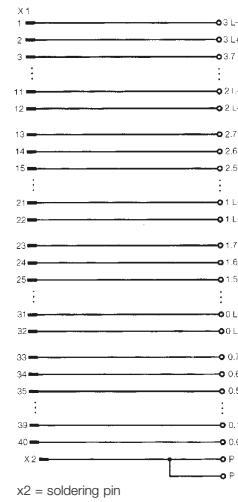
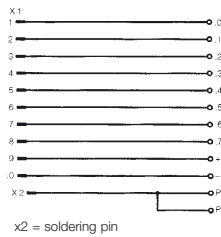
	8	32
Number of signals	8	32
Linput voltage	60 Vac/75 Vdc	60 Vac/75 Vdc
Rated current / signal path	1 A	1 A
Connection	Tension clamp connection	Tension clamp connection
Rated cross section	0.14...1.5 <sup>2</sup>	0.14...1.5 <sup>2</sup>
Insulation stripping lenght	7 mm	7 mm
Housing/socket type	RS-45 profile/TS 35	RS-45 profile/TS 35
PLC coupling		
- 8-chann. module	FB 10 DIN 41651 / IEC 603-1	
- 32-chann. module		FB 40 DIN 41651 / IEC 603-1
Storage temperature	-25...+50 °C	-25...+50 °C
Ambient temperature	-40...+60 °C	-40...+60 °C
Dimensions W/H/D	43/54/45 mm	125/54.5/45
<b>Insulation coordination according to EN 50 178</b>		
Overvoltage category	II	II
Pollution degree	2	2

# Input/Output Module RS 45 Profile

Single-conductor technology  
Screw connection technology



## Connection diagram



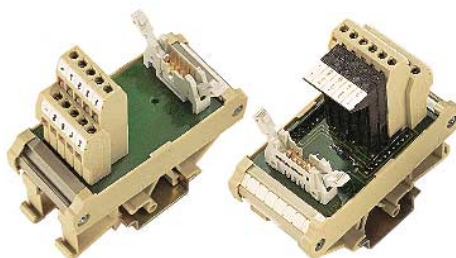
Ordering data	Type	Cat. No.	Type	Cat. No.
	RS F10 LPK2 I/O8	8248050000	RS F40 LPK2 I/O32	8248060000
<b>Technical data</b>				
Number of signals	8		32	
Input voltage	60 Vac/75 Vdc		60 Vac/75 Vdc	
Rated current / signal path	1 A		1 A	
LED current				
Voltage byte-for-byte separable	-		no	
PLC coupling				
- 8-chann. module	FB 10 DIN 41651 / IEC 603-1		FB 40 DIN 41651 / IEC 603-1	
- 32-chann. module				
Connection	Screw connection 1.5 mm <sup>2</sup>		Screw connection 1.5 mm <sup>2</sup>	
Rated cross section	7 mm		7 mm	
Insulating stripping length				
Storage temperature	-40 ... +70 °C		-40 ... +70 °C	
Ambient temperature	-25 ... +50 °C		-25 ... +50 °C	
Dim. W/H/D	49 x 65.5 x 45 mm		121 x 65.5 x 45 mm	
<b>Insulation coordination according to EN 50 178</b>				
Overvoltage category	II		II	
Pollution degree	2		2	



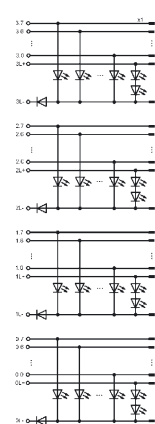
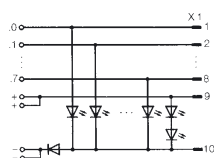
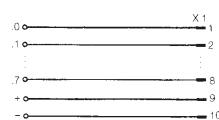
# Input/Output Modules

- Clearly arranged connection marking
- Additional marking fields for group tags
- Mounts onto TS 32/35

## Single-conductor technology Screw connection technology



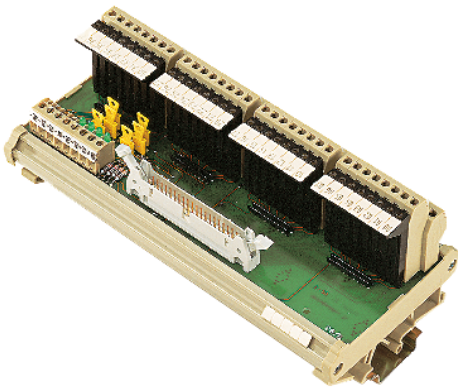
### Connection diagram



Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
	RS F10 LPK2 I/O8	<b>8224290000</b>	RS F10 LD LPK2 I/O8	<b>8224260000</b>	RS F40 LD LPK2H I/O32	<b>8269060000</b>
<b>Technical data</b>						
Number of signals	<b>8</b>		<b>8</b>		<b>8</b>	
Input voltage	60 Vac/75 Vdc		24 Vdc ± 10 %		24 Vdc ± 10 %	
Rated current / signal path	1 A		1 A		1 A	
LED current			≤ 3mA		≤ 3mA	
Voltage supply byte-for-byte separable	-		-		no	
PLC coupling						
- 8-chann. module	FB 10 DIN 41651 / IEC 603-1		FB 10 DIN 41651 / IEC 603-1		FB 10 DIN 41651 / IEC 603-1	
- 32-chann. module						
Connection	Screw connection		Screw connection		Screw connection	
Rated cross-section	1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>	
Insulation stripping length	7 mm		7 mm		7 mm	
Storage temperature	-40 ... +70 °C		-40...+70 °C		-40...+70 °C	
Ambient temperature	-25 ... +50 °C		-25...+50 °C		-25...+50 °C	
Dim. W/H/D	mm 40 x 80.5 x 87		45 x 80.5 x 87		45 x 80.5 x 87	
<b>Insulation coordination according to EN 50 178</b>						
Overvoltage category	II		II		II	
Pollution degree	2		2		2	

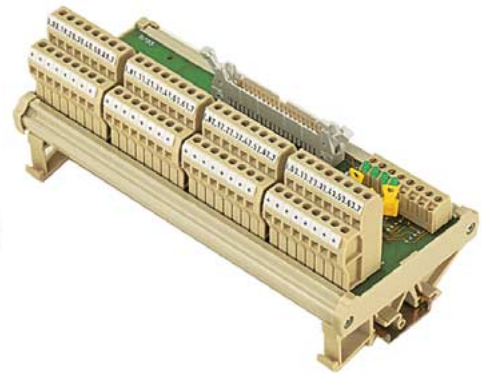
## Input Modules

Two-conductor technology  
Screw connection technology

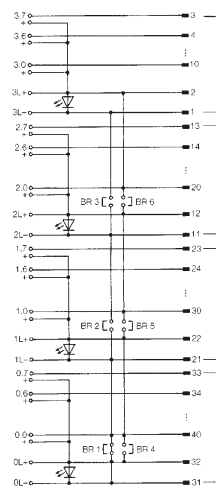


## Output Modules

Two-conductor technology  
Screw connection technology

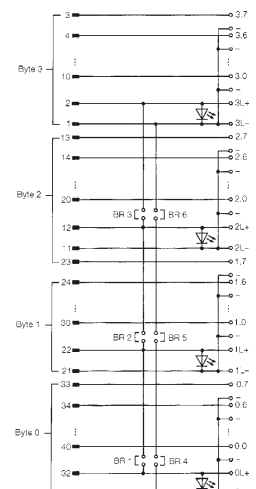
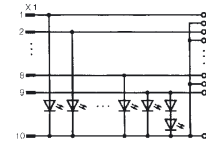
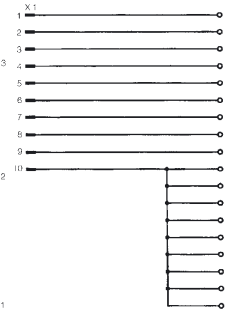


Connection diagram



822451 without LEDs

Plug-in jumper for potential supply of:  
1 x 32 signals BR1...6 plugged  
2 x 16 signals BR1/3/4/6 plugged  
BR2/5 open  
4 x 8 signals BR 1...6 open



822453 without LEDs

Plug-in jumper for potential supply of:  
1 x 32 signals BR1...6  
2 x 16 signals BR1/3/4/6 plugged  
BR2/5 open  
4 x 8 signals BR 1...6 open

### Ordering data

without status indicator

Type Cat. No.  
RS F40 LPK2 I32 **8224510000**

Type Cat. No.  
RS F10 LD LPK2 O8 **8256960000**

Type Cat. No.  
RS F10 LD LPK2 O8 **8256970000**

Type Cat. No.  
RS F40 LPK2 O32 **8224530000**

with status indicator

Type Cat. No.  
RS F40 LD LPK2 I32 **8224520000**

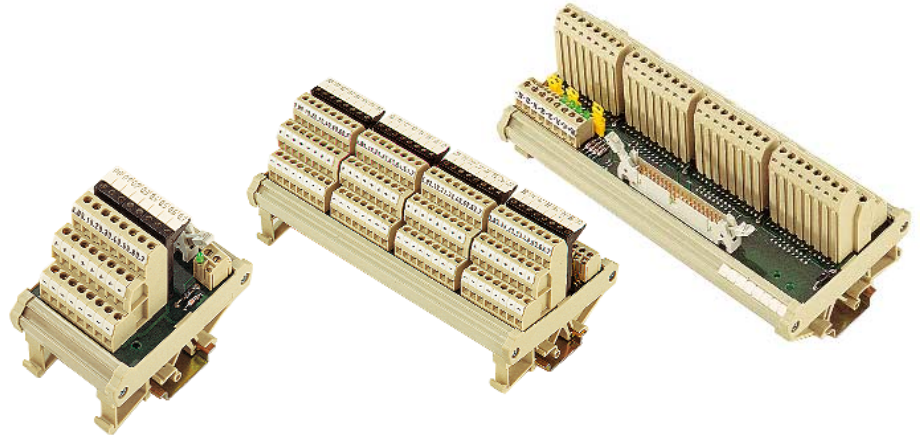
Type Cat. No.  
RS F40 LD LPK2 O32 **8224540000**

### Technical data

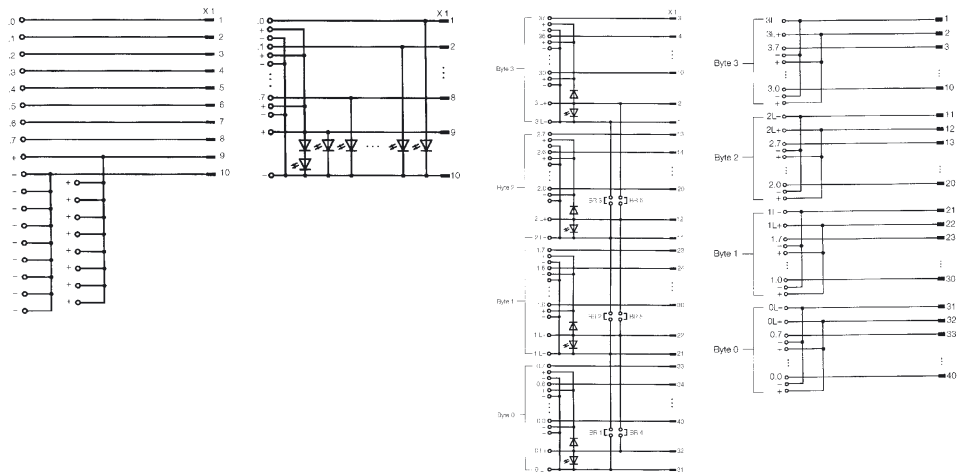
Number of signals	<b>32 (1 x 32, 2 x 16, 4 x 8)</b>	<b>8</b>	<b>8</b>	<b>32 (1 x 32, 2 x 16, 4 x 8)</b>
Input voltage	24 Vdc ± 10 % ( <b>8224520000</b> ) 60 Vac/75 Vdc ( <b>8224510000</b> )	60 Vac/75 Vdc	24 Vdc ± 10 %	24 Vdc ± 10 % ( <b>8224540000</b> ) 60 Vac/75 Vdc ( <b>8224530000</b> )
Rated current / signal path	1 A	1 A	1 A	1 A
Front terminal connection via	- Ribbon cable pin - Screw connection/tension clamp connection			
LED current	≤ 3 mA (8224520000)		≤ 3 mA	≤ 3 mA ( <b>8224540000</b> )
Voltage supply byte-for-byte separable	yes	-	-	yes
Joint potential on terminal	„+“ potential	„-“ potential	„-“ potential	„-“ potential
PLC coupling		FB 10 DIN 41651 / IEC 603-1	FB 10 DIN 41651 / IEC 603-1	
	- 8-chann. module - 32-chann. module			
Connection type	FB 40 DIN 41651 / IEC 603-1			FB 40 DIN 41651 / IEC 603-1
Rated cross-section	Screw connection 1.5 mm <sup>2</sup>	Screw connection 1.5 mm <sup>2</sup>	Screw connection 1.5 mm <sup>2</sup>	Screw connection 1.5 mm <sup>2</sup>
Insulation stripping length	7 mm	7 mm	7 mm	7 mm
Storage temperature	-40...+70 °C	-40...+70 °C	-40...+70 °C	-40...+70 °C
Ambient temperature	-25...+50 °C	-25...+50 °C	-25...+50 °C	-25...+50 °C
Dim. W/H/D	mm 190 x 80.5 x 87	65 x 80 x 87	65 x 80 x 87	190 x 80.5 x 87
<b>Insulation coordination according to EN 50 178</b>				
Overvoltage category	II	II	II	II
Pollution degree	2	2	2	2

# Input/Output Modules

Three-conductor technology  
Screw connection technology



## Connection diagram

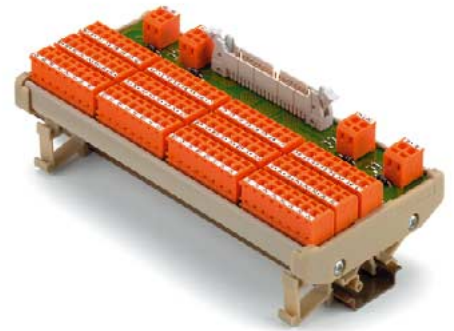


**822458 without LEDs**  
Plug-in jumper for potential supply of:  
1 x 32 signals BR1...6  
2 x 16 signals BR1/3/4/6 plugged  
BR2/5 open  
4 x 8 signals BR 1...6 open

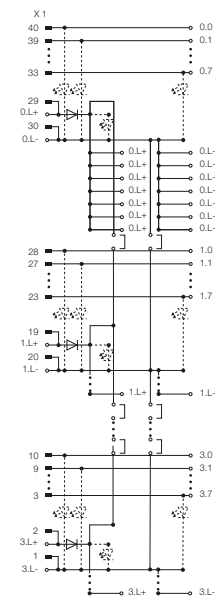
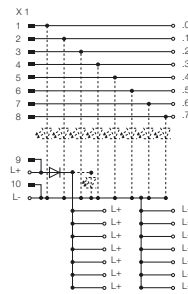
Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
without status indicator	RS F10 LPK3 INIT 8	<b>8248070000</b>	RS F10 LD LPK3 INIT 8	<b>8224640000</b>	RS F40 LPK3 INIT 32	<b>8224580000</b>	RS F40 LPK3 INIT 32	<b>8248040000</b>
with status indicator					RS F40 LD LPK3 INIT 32	<b>8224590000</b>		
Technical data								
Number of signals	<b>8</b>		<b>8</b>		<b>32 (1 x 32, 2 x 16, 4 x 8)</b>		<b>32 (1 x 32, 2 x 16, 4 x 8)</b>	
Input voltage	60 Vac/75 Vdc		24 Vdc ± 10 %		24 Vdc ± 10 % ( <b>8224590000</b> ) 60Vac / 75 Vdc ( <b>8224580000</b> )		60 Vac/75 Vdc	
Rated current / signal path	1 A		1 A		1 A		1 A	
Front terminal connection via	- Ribbon cable pin - Screw connection/tension clamp connection							
LED current	≤ 5 mA ( <b>8228890000</b> )		≤ 5 mA ( <b>8228900000</b> )		≤ 3 mA ( <b>8224590000</b> )			
Voltage supply byte-for-byte seperable	-		yes		yes		yes	
Joint potential on terminal	„+“ and „-“ potential		„+“ and „-“ potential		„+“ and „-“ potential		„+“ and „-“ potential	
PLC coupling	-8-chann. module - 32-chann. module	FB 10 DIN 41651 / IEC 603-1		FB 40 DIN 41651 / IEC 603-1	FB 40 DIN 41651 / IEC 603-1		FB 40 DIN 41651 / IEC 603-1	
Connection type	Screw connection		Screw connection		Screw connection		Screw connection	
Rated cross-section	1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>	
Insulation stripping length	6 mm		6 mm		7 mm		7 mm	
Storage temperature	-40 ... +70 °C		-40 ... +70 °C		-40 ... +70 °C		-40 ... +70 °C	
Ambient temperature	-25 ... +50 °C		-25 ... +50 °C		-25 ... +50 °C		-25 ... +50 °C	
Dim. W/H/D	mm	54 x 73 x 87	mm	185 x 73 x 87	mm	185 x 80.5 x 87	mm	185 x 80.5 x 87
<b>Insulation coordination according to EN 50 178</b>								
Overtoltage category	II		II		II		II	
Pollution degree	2		2		2		2	

# Input/Output Modules

Three-conductor technology  
Tension clamp connection technology



## Connection diagram



## Ordering data

**without status indicator**

**with status indicator**

Type	Cat. No.
RS F10 LMZF INIT 8	<b>8430970000</b>
RS F10 LMZF INIT 8 LD	<b>8428890000</b>

## Technical data

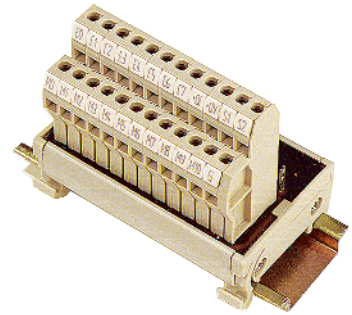
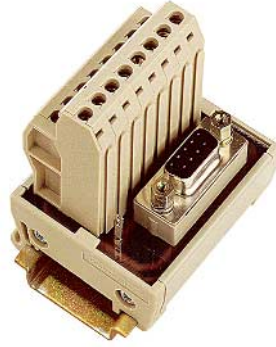
Number of signals	<b>8</b>
Input voltage	24 Vdc ± 10 % ( <b>8428890000</b> ) 60 Vac/75 Vdc ( <b>8430970000</b> )
Rated current / signal path	1 A
Front terminal connection via	- Ribbon cable pin - Screw connection/tension clamp connection
LED current	≤ 5 mA ( <b>8228890000</b> )
Voltage supply byte-for-byte separable	-
Joint potential on terminal	„+“ and „-“ potential
PLC coupling	FB 10 DIN 41651 / IEC 603-1 - 8-chann. module - 32-chann. module
Connection type	Tension clamp connection
Rated cross-section	1.5 mm <sup>2</sup>
Insulation stripping length	6 mm
Storage temperature	-40...+70 °C
Ambient temperature	-25 ... +50 °C
Dim. W/H/D	mm 54 x 73 x 87
<b>Insulation coordination according to EN 50 178</b>	
Overvoltage category	II
Pollution degree	2

Type	Cat. No.
RS F40 LMZF INIT 32	<b>8430980000</b>
RS F40 LMZF INIT 32 LD	<b>8428900000</b>

Number of signals	<b>32 (1 x 32. 2 x 16. 4 x 8)</b>
Input voltage	24 Vdc ± 10 % ( <b>8428900000</b> ) 60 Vac/75 Vdc ( <b>8430980000</b> )
Rated current / signal path	1 A
Front terminal connection via	- Ribbon cable pin - Screw connection/tension clamp connection
LED current	≤ 5 mA ( <b>8428900000</b> )
Voltage supply byte-for-byte separable	yes
Joint potential on terminal	„+“ and „-“ potential
PLC coupling	FB 40 DIN 41651/ IEC 603-1 - 8-chann. module - 16-chann. module - 32-chann. module
Connection type	Tension clamp connection
Rated cross-section	1.5 mm <sup>2</sup>
Insulation stripping length	6 mm
Storage temperature	-40...+70 °C
Ambient temperature	-25 ... +50 °C
Dim. W/H/D	mm 185 x 73 x 87
<b>Insulation coordination according to EN 50 178</b>	
Overvoltage category	II
Pollution degree	2

# Passive Components

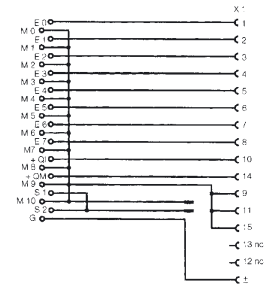
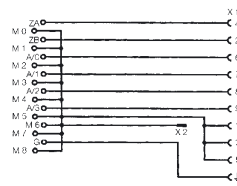
## Interface units for analogue signals Siemens S5 95U



Interface units for analogue signals enable the coupling of analogue inputs and outputs, counter and alarm inputs to a SIMATIC® S5 95U PLC.

- Extremely compact design: 45-mm width
- Pre-assembled cables reduce conversion costs to the PLC
- Signal conversion SUB-D to screw connection
- Shield connection for analogue signals
- Earth tapping option for measurement purposes
- Mounted onto TS 35

Connection diagram



Ordering data	Type	Cat. No.	Type	Cat. No.
Accessories	RSSD 9B 95U	<b>8245130000</b>	RSSD 15B 95U	<b>8245120000</b>
	SUBDK 9/150SS	<b>8252490000</b>	SUBDK 15/150SS	<b>8252500000</b>
	Cable length 1.5 m		Cable length 1.5 m	
Technical data				
Rated voltage	48 Vac		48 Vac	
Rated current / signal path	1.5 A		1.5 A	
Connection type	Screw connection Plug connection		Screw connection Plug connection	
Screw connection, flexible	0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>	
Conductor cross-section	0.5...0.15 mm <sup>2</sup>		0.5...0.15 mm <sup>2</sup>	
	AWG 26...0.14		AWG 26...0.14	
Type	9-pole Sub-D DIN 41651 / IEC 807-2		15-pole Sub-D DIN 41651 / IEC 807-2	
Connection type	Screw connection		Screw connection	
Rated cross-section	1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>	
Storage temperature	-40...+70 °C		-40...+70 °C	
Ambient temperature	0...+55 °C		0...+55 °C	
Dim. W/H/D	mm 40 x 65.5 x 45		54 x 65.5 x 45	
Insulation coordination according to EN 50 178				
Overvoltage category	II		II	
Pollution degree	2		2	



## Active Components

### Relay and opto-couplers input and output modules

Relay and opto-coupler input modules enable the transmission of electric signals between PLC controls and the sensor/actuator level. Signal isolation guarantees reference potential-free transmission and decoupling of electric signals. Furthermore, the active interface modules fulfil the following requirements

- Non-reactive and interference-free signal transmission
- Power amplification
- Compact design
- Pre-assembled cables ensure cost- and time-saving wiring

#### Active input units:

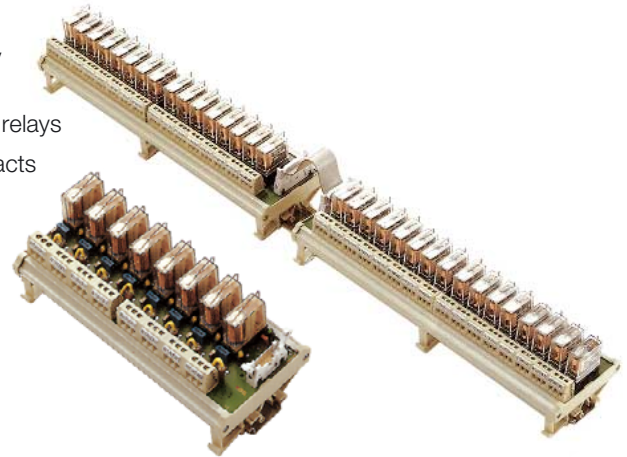
- Relay coupler input units for reference potential-free input of sensor and actuator signals to a PLC
  - RS F40 16 RS/16OS for input of 16 signals (max. 32 signals with extension module) and
  - RS F10 8 RS/8OS for input of 8 signals

#### Active output units:

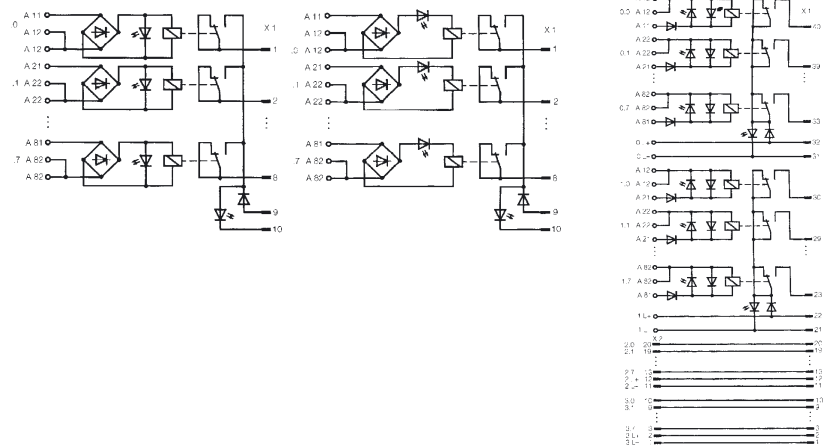
- Relay and opto-coupler output units for reference potential-free activation of actuators by a PLC
  - RS F40 16 RS/16OS for output of 16 Signals (max. 32 signals with extension module) and
  - RS F40 LMZF 32 RS for output of 32 signals
  - RS F10 8 RS/8OS for output of 8 signals
- Available with screw or tension clamp technology
- Economic conversion to the PLC via pre-assembled control cables
- Galvanic isolation of input/output circuit by use of relay and opto-couplers
- Extension assembly enables 16-channel module to be extended to a 32-channel module
- Pluggable relay/opto-coupler
- Integrated switching status indication
- Additional marking field for group marking
- Mount onto TS 32/35

## Input Modules

- Screw connection technology
- Pluggable relays  
see page 56 for replacement relays
- Relays with changeover contacts
- LED status indication
- Galvanic isolation input/output circuits
- Mount onto TS 32/35



#### Connection diagram



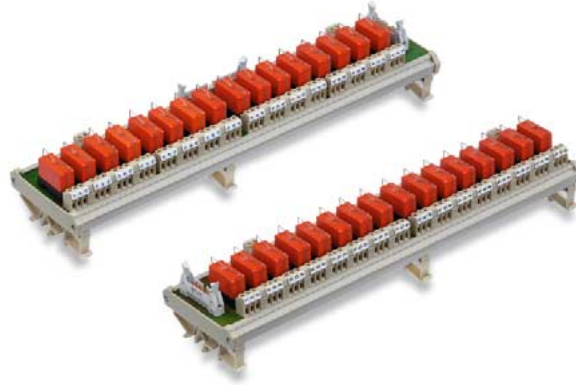
Connection to extension module

Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
	RS F10 8 RS IN 24 VAC/DC	<b>8224350000</b>	RS F10 8 RS IN 230 VAC	<b>8224360000</b>	RS F40 16 RS IN 24 VDC	<b>8224221001</b>
					RS F40 16 RS IN ERW	<b>8224231001</b>
Technical data						
Number of signals	<b>8</b>		<b>8</b>		<b>32 (2 x 16)</b>	
Input voltage	24 Vac/dc ± 10 %		230 Vac +5 % -10 %		24 Vdc ± 10 %	
Rated consumption	0.96 VA/0.8 W		1.35 VA		0.75 W	
Pick-up voltage	16 V				16 V	
Output voltage	24 Vdc		24 Vdc		24 Vdc	
Pick-up current	19 mA dc/22 mA ac		3.3 mA ac		23 mA	
Drop-out current	6.6 mA dc/10.5 mA ac		0.9 mA ac		2 mA	
<b>Switching current</b>	<b>1 A dc</b>		<b>1 A dc</b>		<b>1 A dc</b>	
Continuous current	0.2 A dc		0.2 A dc		0.2 A dc	
Switching behavior						
- Pick-up delay	≤ 9.5 ms		≤ 15 ms		≤ 8 ms	
- Drop-out delay	≤ 11 ms		≤ 25 ms		≤ 7 ms	
- Bounce times	≤ 2 ms		≤ 3 ms		≤ 3 ms	
- Switching frequency	20 Hz dc		30 Hz		20 Hz	
PLC coupling						
- 8-chann. module	10-pole FB strip DIN 41651/ IEC 603-1		10-pole FB strip DIN 41651/ IEC 603-1			
- 32-chann. module					40-pole FB strip DIN 41651/ IEC 603-1	
- Extension module					20-pole FB strip DIN 41651/ IEC 603-1	
Connection type	Screw connection		Screw connection		Screw connection	
Rated cross-section	2.5 mm <sup>2</sup>		2.5 mm <sup>2</sup>		2.5 mm <sup>2</sup>	
Insulation stripping length	7 mm		7 mm		7 mm	
Contact material	AgNi 5 μ Au		AgNi 90/10 gold flashed		AgNi 5 μ Au	
Storage temperature	-40...+60 °C		-40...+60 °C		-40...+60 °C	
Ambient temperature	-25...+50 °C		-25...+50 °C		-25...+50 °C	
Dim. W/H/D	195 x 76 x 87		195 x 76 x 87		316 x 76 x 87/309 x 76 x 87	
<b>Insulating coordination according to EN 50 178</b>						
Overvoltage category	II		II		II	
Pollution degree	2		2		2	

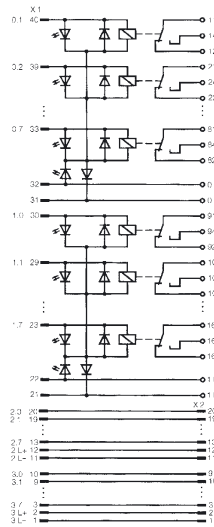
# Output Modules

## Relay couplers

- Screw connection technology
- Pluggable relays  
see page 56 for replacement relays
- Changeover contact
- LED Status indication
- Galvanic isolation of input and output circuits
- Mount onto TS 32/35



### Connection diagram



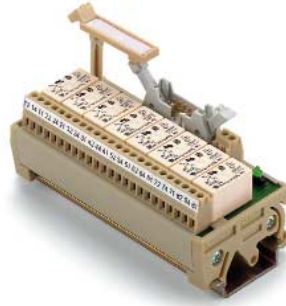
Connection to extension module

Ordering data	Type	Cat. No.
	RS F40 16 RS OUT	<b>8224180000</b>
	RS F40 16 RS OUT ERW	<b>8224190000</b>
Technical data		
Number of signals	<b>32 (2 x 16)</b>	
Input voltage	24 Vdc ± 10 %	
Rated consumption	0.75 W	
Pick-up voltage	16 V	
Output voltage	250 Vac	
Pick-up current	23 mA	
Drop-out current	2 mA	
<b>Switching current</b>	<b>8 A</b>	
Continous current	6 A	
Switching behavior		
- Pick-up delay	≤ 8 ms	
- Drop-out delay	≤ 7 ms	
- Bounce times	≤ 3 ms	
- Switching frequency	10 Hz	
PLC coupling		
- 8-chann. module		
- 32-chann. module	40-pole FB strip DIN 41651/ IEC 603-1	
- Extension module	20-pole FB strip DIN 41651/ IEC 603-1	
Connection type	Screw connection	
Rated cross-section	2.5 mm <sup>2</sup>	
Insulation stripping length	7 mm	
Contact material	AgNi 90/10	
Storage temperature	-40...+60 °C	
Ambient temperature	-25...+50 °C	
Dim. W/H/D	mm 355 x 76 x 87/350 x 76 x 87	
Insulation coordination according to EN 50 178		
Overvoltage category	II	
Pollution degree	2	

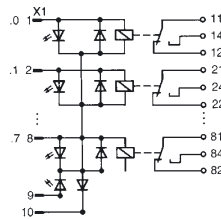
# Output Modules

## Relay couplers

- Compact design
- Relays with changover contacts
- Soldered relays
- Mount onto TS 35
- Mount onto TS 32/35



### Connection diagram



Ordering data	Type	Cat. No.
	RS F10 8R OUT/45 (RS 45 profile)	<b>832980000</b>
Technical data		
Number of signals	<b>8</b>	
Input voltage	24 V- ± 10 %	
Input current per relay	15 mA (+ 5 mA for operating voltage indication)	
Pick-up/drop-out voltage	18/4 V	
Output voltage	250 Vac/120 Vdc	
Switching frequency	20 Hz	
<b>max. switching current/continuous current</b>	<b>5/3 A</b>	
Switching capacity (resistive load)	1...120 W / 1...1250 VA	
Switching behavior		
- Pick-up delay	≤ 8 ms	
- Drop-out delay	≤ 4 ms	
- Bounce times	≤ 10 ms	
Contact material	AgNi	
Voltage proof input/output-mounting rail	4 kVeff 9	
PLC coupling input	10-pole FB pin header (i.a.w. DIN 41 651)	
Connection type output	Screw connection LM 3.5	
Connection type	Screw connection	
Conductor cross-section	0.08...1.5 mm <sup>2</sup> (solid and flexible)	
Insulation stripping length	5 mm	
Mounting rail	TS 35	
Storage temperature	-20...+80 °C	
Ambient temperature	-20...+50 °C	
Dim. W/H/D	93 x 51 x 45 mm	
<b>Insulation coordin. i.a.w. VDE 110/1.89 T. 1+2/VDE 0160</b>		
Rated voltage U	250 V (overvoltage category II)	
Rated voltage U	125 V (overvoltage category III)	
Rated impulse voltage	2.5 kV	
Pollution degree	2	

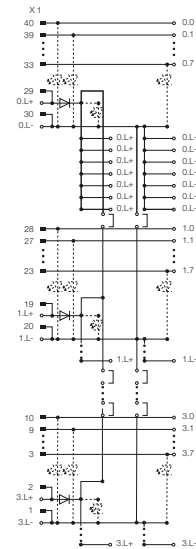
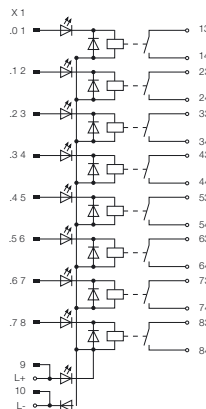
# Output Modules

## Relay couplers

- Tension clamp connection
- Compact design
- Byte-for-byte separation
- Clearly arranged connection markings
- Additional marking field for group markings
- LED status indication
- Galvanic isolation of input/output circuits
- Pluggable relays  
Replacement relays see page 56
- Mount onto TS 32/35



### Connection diagram

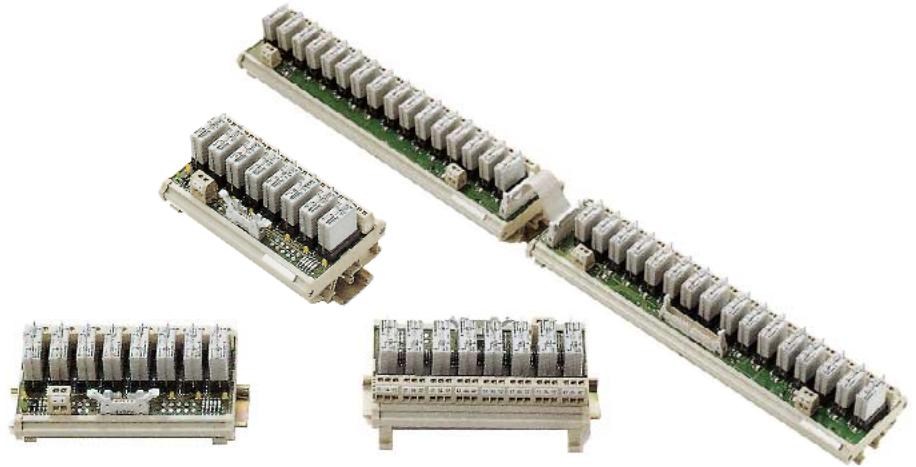


Ordering data	RS F10 LMZF 8RS OUT	RS F40 LMZF 32RS OUT
Type	RS F10 LMZF 8RS OUT	RS F40 LMZF 32RS OUT
Cat. No.	<b>8430990000</b>	<b>8431000000</b>
Relay contact	Normally open	Normally open
<b>Technical data</b>		
Number of signals	<b>8</b>	<b>32 (2 x 16)</b>
Input voltage	24 Vdc ± 10%	24 Vdc ± 10%
Pick-up voltage	>19 V	>19 V
Drop-out voltage	< 7 V	< 7 V
- Pick-up delay	5 ms	5 ms
- Drop-out delay	15 ms	15 ms
Output voltage	250 Vac/125 Vdc	250 Vac/125 Vdc
<b>Switching current</b>	<b>5 A</b>	<b>5 A</b>
Continuous current	3 A	3 A
Contact material	Ag-alloy, 5 µm gold-plated	Ag-alloy, 5 µm gold-plated
LED current	≤ 6 mA	≤ 6 mA
LED operating voltage	green	green
LED signal indication	yellow	yellow
Connection type	Tension clamp connection	Tension clamp connection
Rated cross-section	0.14...1.5 <sup>2</sup>	0.14...1.5 <sup>2</sup>
Insulation stripping length	7 mm	7 mm
Housing/socket type	RS-90 profile/TS 32 and TS 35	RS-90 profile/TS 32 and TS 35
PLC coupling		
- 8-chann. module	FB 10 DIN 41651 / IEC 603-1	FB 40 DIN 41651/ IEC 603-1
- 32-chann. module		
Voltage byte-for-byte separable	no	yes
Ambient temperature	-25...+50 °C	-25...+50 °C
Storage temperature	-40...+60 °C	-40...+60 °C
Dim. W/H/D	78/73/87	263/73/87
<b>Insulation coordination according to EN 50 178</b>		
Overvoltage category	III	III
Pollution degree	2	2
Rated voltage replacement relay	300 V	300 V
Cat. No.	<b>4052510000</b>	<b>4052510000</b>

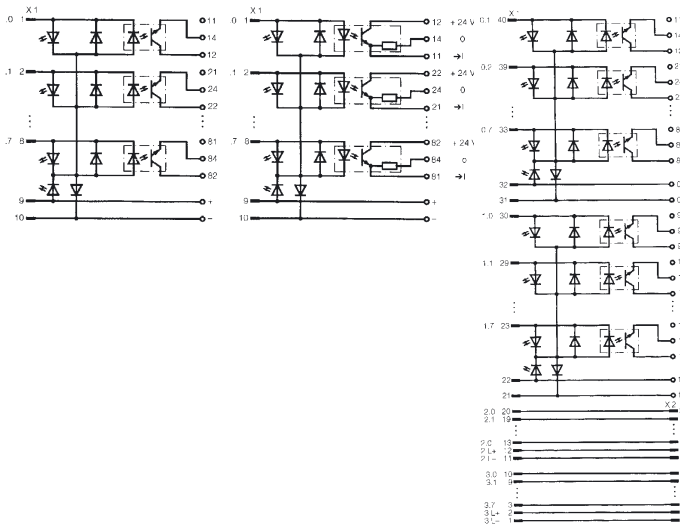
# Output Modules

## Opto-coupler

- Screw connection technology
- Pluggable opto-coupler see page 56
- LED status indication
- Galvanic isolation of input and output circuits
- Mount onto TS 32/35

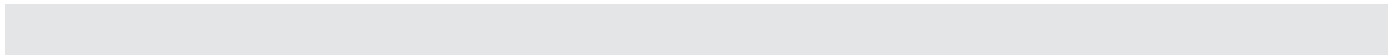


### Connection diagram



Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
	RS F10 8 OS OUT 5...48 VDC	<b>8224311001</b>	RS F10 8 OS OUT 24 VDC/2 A	<b>8224321001</b>	RS F40 16 OS OUT 5...48 VDC	<b>8224201001</b>
					RS F40 16 OS OUT ERW	<b>8224211001</b>
Technical data						
Number of signals	<b>8</b>		<b>8</b>		<b>32 (2 x 16)</b>	
Input voltage	24 Vdc ± 10 %		24 Vdc ± 10 %		24 Vdc ± 10 %	
Rated consumption	400 mW		400 mW		60 mW	
Making voltage	15 Vdc		15 Vdc		15 Vdc	
Output voltage	5...48 Vdc		24 Vdc ± 10 %		5...4 8 Vdc	
Making current	4 mA		7 mA		4 mA	
<b>Switching current</b>	<b>100 mA</b>		<b>2 A</b>		<b>100 mA</b>	
Continuous current	100 mA		2 A		100 mA	
Switching frequency	≤ 100 Hz		≤ 100 Hz		≤ 100 Hz	
PLC coupling						
- 8-chann. module	FB 10 DIN 41651 / IEC 603-1		FB 10 DIN 41651 / IEC 603-1		FB 40 DIN 41651 / IEC 603-1	
- 32-chann. module					FB 20 DIN 41651 / IEC 603-1	
- Extension module						
Connection type	Screw connection		Screw connection		Screw connection	
Rated cross-section	2.5 mm <sup>2</sup>		2.5 mm <sup>2</sup>		2.5 mm <sup>2</sup>	
Insulation stripping length	7 mm		7 mm		7 mm	
Storage temperature	-40...+60 °C		-40...+60 °C		-40...+60 °C	
Ambient temperature	-25...+50 °C		-25...+50 °C		-25...+50 °C	
Dim. W/H/D	mm 147 x 76 x 87		147 x 76 x 87		355 x 76 x 87/350 x 76 x 87	
Insulation coordination according to EN 50 178						
Overvoltage category	II		II		II	
Pollution degree	2		2		2	





# Control Cables

## Pre-assembled control cables

Control cables are pre-assembled at both ends with 10-pole or 40-pole DIN 41651 plug-in connectors in accordance with IEC 603/1 DIN 41 651.

They enable the connection of PLC front adapters to the passive or active PLC input/output modules.

The connecting cables for the PLC-system-interface are available in lengths from 1 m up to 7 m.

## Pre-assembled control cables



### Female connector block DIN 41651 / IEC 603-1

No.	Colour coding	Function
1	black	B-
2	brown	B3 +
3	red	B3.7
4	orange	B3.6
5	yellow	B3.5
6	green	B3.4
7	blue	B3.3
8	violet	B3.2
9	grey	B3.1
10	white	B3.0
11	white-black	B-
12	white-brown	B2 +
13	white-red	B2.7
14	white-orange	B2.6
15	white-yellow	B2.5
16	white-green	B2.4
17	white-blue	B2.3
18	white-violet	B2.2
19	white-grey	B2.1
20	brown-black	B2.0
21	brown-red	B-
22	brown-orange	B1 +
23	brown-yellow	B1.7
24	brown-green	B1.6
25	brown-blue	B1.5
26	brown-violet	B1.4
27	brown-grey	B1.3
28	brown-white	B1.2
29	green-black	B1.1
30	green-brown	B1.0
31	green-red	B-
32	green-orange	B0 +
33	green-blue	B0.7
34	green-violet	B0.6
35	green-grey	B0.5
36	green-white	B0.4
37	yellow-black	B0.3
38	yellow-brown	B0.2
39	yellow-red	B0.1
40	yellow-orange	B0.0

### Ordering data

Rated voltage	300 V
Current carrying capacity per conductor	1 A
Total current carrying capacity	
- 40-pole cable	26 A/ΔT = 20 K
- 10-pole cable	11.5 A/ΔT = 20 K
Rated cross section of the conductor	0.14 mm <sup>2</sup>
Resistance value	55 mΩ/m
Storage temperature	-10...+80 °C

### Ribbon/round cables, pre-assembled at both ends

Type	Length*	Cat. No.
<b>10-pole plug-in connectors for transmitting of 1 bytes</b>		
<b>i.a.w. DIN 41651 / IEC 603-1</b>		
FBK 10/100 RK	1.00 m	<b>8235360000</b>
FBK 10/150 RK	1.50 m	<b>8235370000</b>
FBK 10/200 RK	2.00 m	<b>8235380000</b>
FBK 10/250 RK	2.50 m	<b>8235390000</b>
FBK 10/300 RK	3.00 m	<b>8235400000</b>
FBK 10/350 RK	3.50 m	<b>8235410000</b>
FBK 10/400 RK	4.00 m	<b>8235420000</b>
FBK 10/450 RK	4.50 m	<b>8235430000</b>
FBK 10/500 RK	5.00 m	<b>8235440000</b>
FBK 10/550 RK	5.50 m	<b>8288640000</b>
FBK 10/600 RK	6.00 m	<b>8263940000</b>
FBK 10/650 RK	6.50 m	<b>8306810000</b>
FBK 10/700 RK	7.00 m	<b>8306460000</b>
FBK 10/1800 RK	18.00 m	<b>8614760000</b>

\* Other lengths on request.

### Ribbon/round cables, pre-assembled at both ends

Type	Length*	Cat. No.
<b>40-pole plug-in connectors for transmitting of 4 bytes</b>		
<b>i.a.w. DIN 41651 / IEC 603-1</b>		
FBK 40/050 RK	0.50 m	<b>8263960050</b>
FBK 40/050 RK	1.00 m	<b>8216350000</b>
FBK 40/150 RK	1.50 m	<b>8216360000</b>
FBK 40/200 RK	2.00 m	<b>8216370000</b>
FBK 40/250 RK	2.50 m	<b>8216380000</b>
FBK 40/300 RK	3.00 m	<b>8216390000</b>
FBK 40/350 RK	3.50 m	<b>8216400000</b>
FBK 40/400 RK	4.00 m	<b>8216410000</b>
FBK 40/450 RK	4.50 m	<b>8235340000</b>
FBK 40/500 RK	5.00 m	<b>8235350000</b>
FBK 40/550 RK	5.50 m	<b>8290850000</b>
FBK 40/600 RK	6.00 m	<b>8309470000</b>
FBK 40/650 RK	6.50 m	<b>8309480000</b>

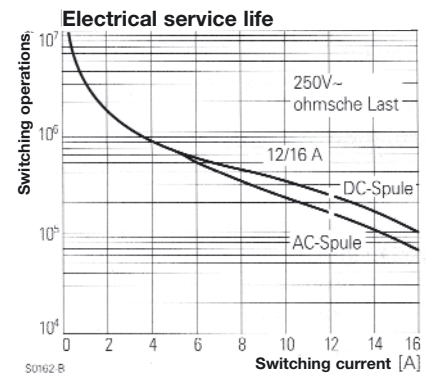
# Accessories

## Opto-coupler/relay coupler

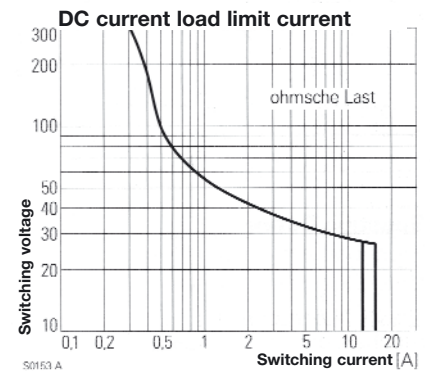


Ordering data	Type	Cat. No.	Type	Cat. No.
	OS 24 Vdc	<b>1124900000</b>	24 Vdc	<b>4058480000<sup>1)</sup></b>
	<b>Opto-coupler pluggable</b>		<b>Relay pluggable RT 314024</b>	
Input voltage	24 Vdc ± 10 %		24 Vdc	
Output voltage	5...48 Vdc			
Output current	0,1 A			
Replacement opto-coupler for	8224201001 8224211001 8224241001 8224311001			
Contact material			AgNi 90/20 gold-flushed	
Replacement relay for			8224181001 8224191001 8224301001	

Diagrams for Cat. No. 4058480000 and 4058500000



Ordering data	Type	Cat. No.	Type	Cat. No.
	OS 24 Vdc/2 A	<b>1170200000</b>	24 Vdc	<b>4036560000<sup>1)</sup></b>
	<b>Opto-coupler pluggable</b>		<b>Relay pluggable KHU 1645</b>	
Input voltage	24 Vdc ± 10 %		24 Vdc	
Output voltage	24 Vdc ± 10 %			
Output current	2,0 A			
Replacement opto-coupler for	8224321001			
Contact material			AgNi 5 µm Au	
Replacement relay for			8224221001 8224231001 8224351001	



Ordering data	Type	Cat. No.	Type	Cat. No.
	OS 24 Vdc	<b>1153200000</b>	115 Vdc	<b>4058500000<sup>1)</sup></b>
	<b>Opto-coupler pluggable</b>		<b>Relay pluggable RT 314110</b>	
Input voltage	24 Vdc ± 10 %		115 Vdc	
Output voltage	250 Vac			
Output current	0,1 A			
Replacement opto-coupler for	8224330000			
Contact material			AgNi gold-flushed	
Replacement relay for			8224360000	

Ordering data	Type	Cat. No.
	24 Vdc	<b>4052510000</b>
	<b>Relay pluggable NYP-24 WK</b>	
Input voltage	24 Vdc ± 10 %	
Output voltage	250 Vac	
Output current	5 A	
Replacement relay for	8430990000 8431000000	

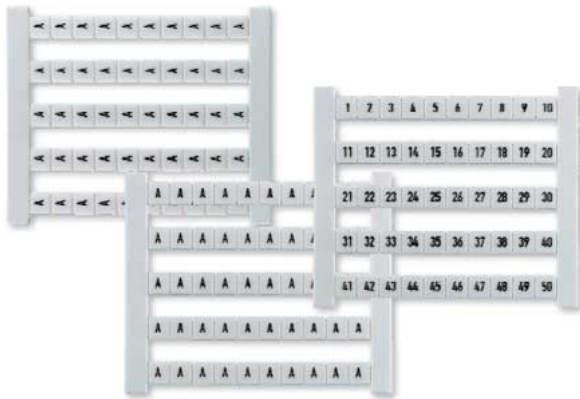
<sup>1)</sup> Switching current, continuous current see technical data relay coupler modules

## Accessories

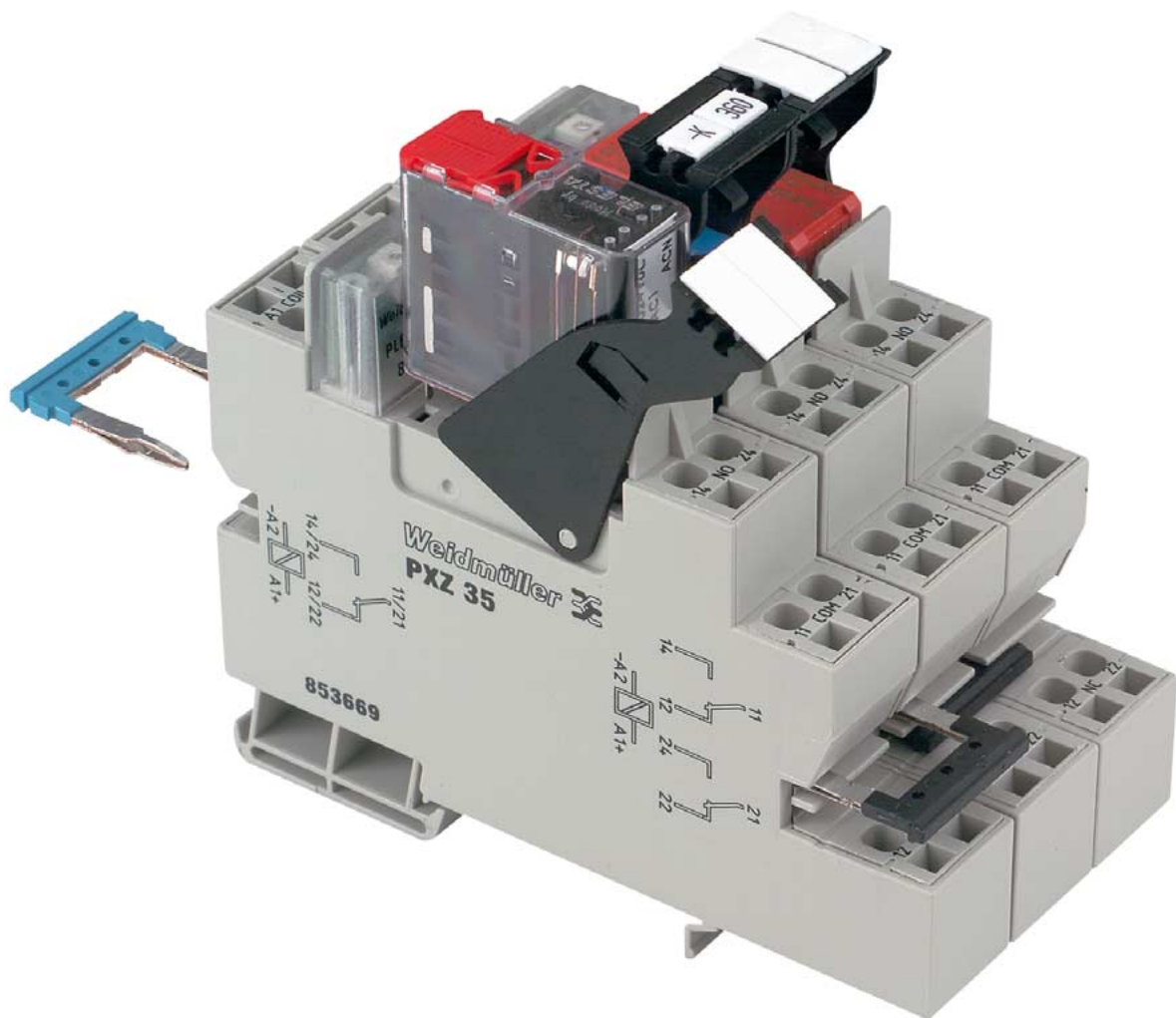
### Marking material

#### Connection marker DEK and WS

See page 312 onwards



## Relay Coupler



## Relay Coupler



The universal foot of the Weidmüller **relay modules** allow them to be assembled on TS 32, TS 35 x 7.5 and TS 35 x 15 mounting rails in accordance with European standards EN 50 035 and EN 50 022.

An LED status indicator in the coil of the relay coupler indicates the relay switching status.

Contact material	Properties	Application	U/I
<b>Fine silver</b> AG 99 %	- inexpensive - average tendency to weld and average resistance to burn-off - subject to corrosion in sulphurous atmosphere	universal use up to medium-size loads	1 V...250 V 1 mA...5 A
<b>Silver nickel</b> ● AgNi 0.15	- high mechanical stability - low tendency to weld - low contact resistance - high resistance to burn-off	universal use at medium-size loads	≥ 12 V 5 mA...10 A
<b>Hard silver</b> AgCu3	- mechanical stability > AgNi - tendency to weld < AgNi - resistance to burn-off > AgNi - contact resistance > AgNi	for use with medium-size loads	≥ 12 V 10 mA...10 A
<b>Silver cadmium oxide</b> ● AgCdO	- very low tendency to weld - resistance to burn-off > AgCu3/Ni	suitable for switching inductive loads	≥ 12 V ≥ 100 mA
<b>Silver-tin-oxide</b> ● AgSnO <sub>2</sub>	- high thermal decomposition temperature - more arc-resistant with low material transfer	suitable for switching inductive loads	≥ 12 V ≥ 100 mA
<b>Tungsten</b> W	- very high resistance to burn-off - high switching rate with short closed times	circuits with extremely high on/off loads	≥ 60 V ≥ 1 A
<b>Hard gold</b> ● AuNi	- < lowest contact resistance - best resistance to corrosion	dry circuits in damp atmospheres	µV...60 V µA...0.2 V

● = preferred materials

### Types of contact

The standard range comprises numerous types and combinations of contacts.

- 1 NC (EGR EG2, EGR EG7, RS 30)
- 1 NO (EGR EG2, EGR EG7, DKR, RS 30)
- 1 NC and 1 NO (EGR EG2, WRS)
- 2 NO (WRS)
- 3 NO (WRS)
- 1 Changeover (EGR EG2, EGR/RST EG7, WRS DKR PRS/PRZ MCZ R, RS 30, RS 31)
- 2 Changeover (EGR EG2, WRS, RS 32, PRS/PRZ)
- 4/8/16 Changeover (RSM)

### Contact material

The all-round capability of Weidmüller relay modules is achieved by the choice of the contact material.

The contact is responsible for both the reliable transmission of the control signals and for switching power contactors. Weidmüller uses gold-plated or gold-flashed AgNi contacts for most applications. Gold-plated contacts permit the switching of the low-power applications up to 40 µW with a gold-plating thicker than 2 µm. For switching higher ratings we use AgSnO<sub>2</sub> or AgCdO contacts (RS 31).



# Relay Coupler

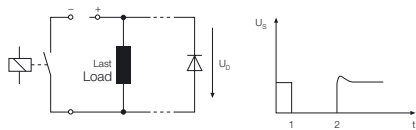


## Protective circuits of the contacts

Switching sparks may occur when switching inductive or capacitive loads that affect the operational life of the relay.

The following protective circuits offer the possibility of reducing contact wear:

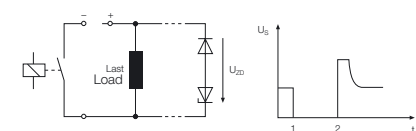
### Diode:



Advantage: can be used for all ratings, low overvoltage, minimum space requirements, economic

Disadvantage: very long drop-out delay

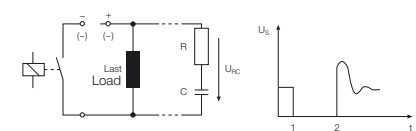
### Diode and Z-diode:



Advantage: low overvoltage (determined by Z-diode), low drop-out delay

Disadvantage: not usable for high power ratings

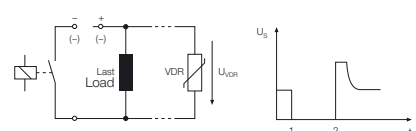
### RC combination:



Advantage: low overvoltage, low drop-out delay

Disadvantage: higher current loading on contacts at switch-on, complex and expensive for increased power rating

### Varistor:



Advantage: low drop-out delay, economic

Disadvantage: not for all operating voltages and power ratings

U<sub>S</sub> Voltage curve  
1 Close  
2 Open

## Switching of small and large power ratings

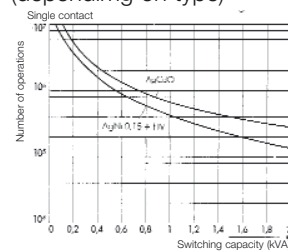
For automation technology, Weidmüller offers the EGR EGR 7 relay coupler to switch ratings up to 40  $\mu$ W under resistive loads. This allows signals to be reliably relayed to control devices.

The switching of higher power ratings in power supply technology is achieved by the RS 31 relay coupler, which guarantees switching capacity up to 3.5 kVA under resistive loads.

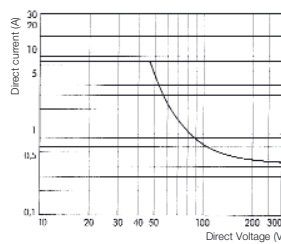
## Switching times of the relay modules

pick-up delay typ. < 10 ms  
drop-out delay typ. < 12 ms

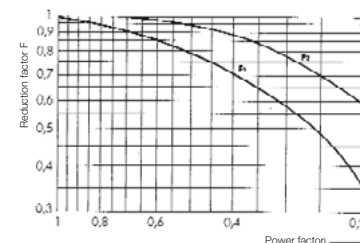
## Switching behaviour/load limit curve (depending on type)



Contact life with resistive load



DC-limit with resistive load



Reduction factor with inductive load  $\cos j < 1$   
Switching no. eff. = switching no. (at  $\cos j = 1$ ) x red. Factor F

## Relay couplers with plugged relays

Relay couplers with plugged relays are only conditionally suitable for use in applications subject to heavy vibrations. Relay couplers with soldered relays are to be preferred.

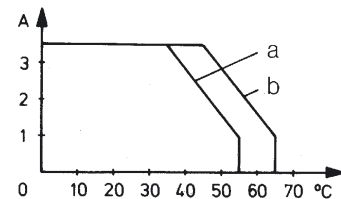
## Derating curves

The contact resistance is largely responsible for heat development within the relay. This link is demonstrated by a derating curve as a function of the permissible current subject to the ambient temperature.

We determine the current (curve a) for the following operating conditions:

- continuous operation
- rated input voltage + 10 %
- several relay modules operating under load, mounted horizontally in a row without spacing on mounting rail

A higher load is applicable when modules are mounted with a gap of 20 mm as shown in curve "b". In addition, the function of curve "b" shows the max. values for a switching or short-time operation when assembled horizontally on the mounting rail.



## Notes for usage

The characteristic data of the actuation are to be meticulously observed when using UC variants in DC circuitry. UC variants have a higher current input at the moment of switching due to their series circuitry. The internal current limiter of commercially available initiators can result in the operated relay coupler not being switched through.

## RC combination

Long supply cables are particularly open to electrical and electro-mechanical influences. These can lead to disturbances of the function or even failure of the relay module. A remedy for this problem is an RC combination in series that filters out unwanted disturbances. RC combinations are available for all customary relay couplers: pluggable (PLUGSERIES) or as terminal block (WDU 12C and DKU 12C).

## Protective separation

All equipment required to guarantee "protective separation" must be constructed in such a way that, for example, a mechanical defect cannot reduce the level of insulation. In the case of a relay, this means that if a mechanical defect occurs (bent solder pin, break in winding conductor or broken spring), "protective separation" must be guaranteed.

Relays are specified and tested according to IEC 255 and VDE 0435. Neither standard contains any reference to EN 50 178 (Equipping power installations with electronic equipment) nor is "protective separation" defined. To compound matters the test voltages quoted for the relays are based on different measurement conditions. The test voltages cannot be applied to EN 50 178 or DIN VDE 0106 Part 101. As more and more users employ only equipment that guarantees "protective separation", a lot of manufacturers of relays refer to DIN VDE 0106 and test their products accordingly. Consequently, the quoted values correspond to the requirements for "protective separation".

## Standards

The following standards are fulfilled:  
EN 50 178

Equipping power installations with electronic equipment  
DIN VDE 0106 Part 101

Protection against flow of dangerous currents through the human body; basic requirements for protective separation within electrical equipment.  
DIN VDE 0109

DIN VDE 0109

Insulation co-ordination within low-voltage system including clearance and creepage distances for assembled PCBs.  
DIN VDE 0435

DIN VDE 0435

Electrical relays, all-or-nothing relays

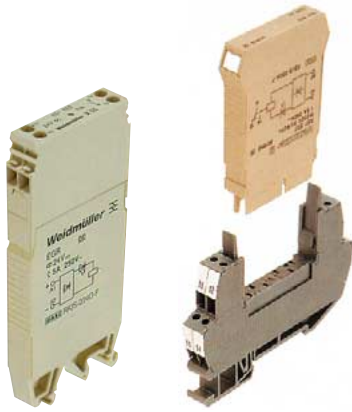
## Input circuit

<b>Input voltage [V]</b>	Reference voltage at which the relay coupler operates. Typical reference voltages: => 5 V DC, 12, 24, 48, 60, 115, 230 V AC/DC
<b>Input current [mA]</b>	Quotient resulting from input voltage and input resistance. Input resistance => coil resistance + resistance of drive (R, LED, rect. ...)
<b>Rated power consumption [W/VA]</b>	Input voltage x input current AC/DC with tolerance of +/- 10% or +/-15% Typical range for relay coupler: 250 mW > Pv > 1 W 0.4 VA > Pv > 1.2 VA
<b>Pull-in voltage [V]</b>	Smallest input voltage that relay coupler requires in order to respond (T <sub>amb</sub> = 293 K)
<b>Pick-up current [mA]</b>	Smallest input current required to switch relay from inoperative to operating position (T <sub>amb</sub> = 293 K)
<b>Pull-in power [W/VA]</b>	Product of pull-in voltage and pick-up current
<b>Drop-out voltage [V]</b>	Voltage level at which relay has definitely released
<b>Self reset current [mA]</b>	Input current level at which relay has definitely released

## Output circuit

<b>Output voltage [V]</b>	Max. voltage that can be applied to relay contact
<b>Switching current [A]</b>	Current that can flow for max. of 4 sec. after relay contact has closed
<b>Continuous current [A]</b>	Current that flows continuously after contact has closed
<b>Switching power [W/VA]</b>	Product of output voltage and switching current with resistive, inductive and capacitive load
<b>Min. switching power [mW]</b>	Smallest amount of power that can be switched via contact
<b>Service life</b>	Number of switching operations before contact fails - mechanical => with no electric load - electrical => with resistive or inductive AC/DC load
<b>Pick-up lag [ms]</b>	Length of time from application of energizing voltage until contact closes/opens
<b>Drop-out lag [ms]</b>	Length of time from breaking the energizing circuit until contact closes/opens
<b>Contact bounce time [ms]</b>	Length of time between first and last closing/opening of contact when relay picks up or drops out
<b>Switching frequency [Hz]</b>	Switching operations per sec. with a duty factor of 1 : 2 (t <sub>on</sub> = t <sub>off</sub> )
<b>Withstand voltage [kV]</b>	Max. test voltage between input and output circuits which does not cause any discharge
<b>Reliable separation</b>	Feature of relay coupler that conform to VDE 0160 and VDE 0106 Part 101
<b>Electric arc</b>	Current flow between contact surfaces as they open, caused by ionization
<b>Contact wear</b>	Switching inductive loads leads to considerable changes in the composition of the materials used. The results are: => formation of pits or peaks on the surface of contacts => failure due to interlocking of contacts
<b>Spark absorption</b>	Limitation of transient overvoltages by connecting supplementary circuit across inductive loads => RC combinations => Z-diodes/suppressor diodes => varistors
<b>Reduction factor</b>	Factor by which service life is reduced when switching inductive loads

## Types of Housings for Relay Coupler



### Component housing EG

Weidmüller coupling modules are enclosed in housings appropriate for industrial applications. The housings are suitable for fitting onto mounting rails TS 32, TS 35 x 7.5 or TS 35 x 15 in accordance with European standards EN 50 035 and EN 50 022.

Weidmüller component housings **EG 1** and **EG 2** are 18 mm wide.

The fully enclosed EG housings are equipped with clamping yoke screw connections or push-on connections to connect conductors. Conductors with the following cross-sections can be connected: solid core: 0.5...4 mm<sup>2</sup> or flexible: 0.5...2.5 mm<sup>2</sup>.

The component housing **EG 7** has a special status. It has been specifically designed to accommodate 10-mm slim relays and optocouplers.

**EG 7** relay couplers can be optionally mounted onto TS 32 or TS 35 rails.

The RST EG 7 locking socket is also available for use with the pluggable relays couplers.

The enclosed EG 7 housing are equipped with clamping yoke screw connections. The following conductor cross-sections can be connected:  
NO/NC: 0.5...1.5 mm<sup>2</sup>  
Changeover (RST): 0.5...2.5 mm<sup>2</sup>.



### Component housing WAVEBOX

It is important to provide modern electronics components with housings suitable for the function. Setting and operating functions must be guaranteed; technical requirements with respect to heat dissipation and EMC properties are to be supported.

An ideal design saves space and wiring costs in the switchgear cabinet. In addition, ergonomics and design are becoming increasingly important for high-quality relay coupler interfaces.

The WAVEBOX fulfils these criteria and is further distinguished by the following:

- Optimal width for any application (12.5 mm, 17.5 mm, **22.5 mm**)
- Large component assembly surface; SMDs mountable on solder side
- No tools required for assembly
- Pluggable PCBs
- Pluggable cross-connection via ZQV 2.5 N
- Hinged, transparent cover
- Screw/plug and socket connector BLZ 5.08
- Optional tension clamp/plug and socket connector BLFZ 5.08
- Marking option with WS tags
- Mount onto TS 35

#### Connection systems

BLZ screw/plug-in connectors and BLZF tension clamp/plug-in systems for flexible conductors up to 2.5 mm<sup>2</sup>, to guarantee maximum wiring flexibility.

#### Removing printed circuit boards

Accomplished by depressing the locking clips at the side of the headpiece, and withdrawing the terminal level and PCB from the housing. This is not permitted when the supply is connected.

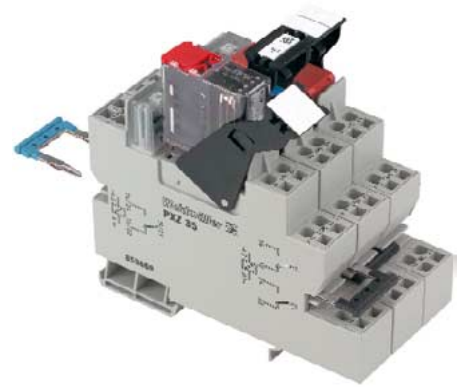
#### Cross-connection

The ZQV 2.5 N/2 cross-connector can connect housings of the same family at the base of the housing. The cross-connection can be loaded with a current of up to 8 A. This allows the supply voltage to be cross-connected from one electronics module to another.

The voltage at the cross-connection must not exceed 50 V.

#### Ventilation vents

Ventilation vents, arranged at an angle, temper and ventilate the lower side of the housings.



### Modular system PLUGSERIES/PLUGRELAY

is a new generation of pluggable relay couplers. The core of this system is an innovative relay socket **PXS** or **PXZ**. Weidmüller has combined the functionality and experience from its relay and terminal block business in this product.

The PLUGRELAY is the ideal connection technology between the relay and the application.

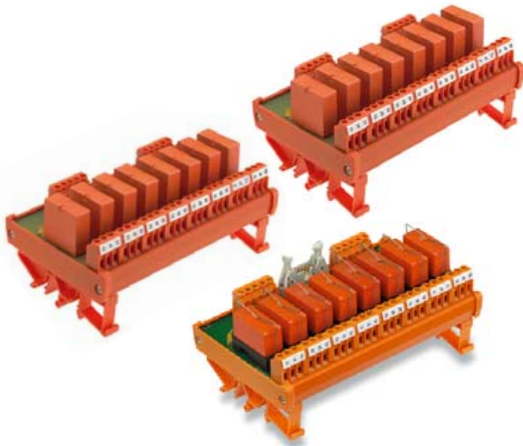
#### Modular system principle

The PLUGSERIES is particularly service friendly.

Commercially available relays are plugged; retainer and release clips ensure stability, LED indicators with free-wheeling diodes can be easily plugged.

- Relays can be easily plugged
  - suitable for small electric circuits
  - standard design and BGD
- Independent connection technology: screw or tension clamp rated cross-section 0.5...2.5 mm<sup>2</sup>
- Robust design of retainer / release clip
- One or two changeover contacts Max. current switched 16 A
- Low wiring costs thanks to ZQV 25N cross-connectors (pluggable)
- Service-friendly modular system
  - relay socket, LED indicators, retainer clips and relays
  - mount onto TS 35
  - marking options with WS markers on retainer clips
- Pluggable LED indicator with free-wheeling diode

## Types of Housings for Relay Coupler



### Weidmüller RS locking socket

Locking sockets with relays RS 30, 31, 32 are either 11.2 mm or 25 mm wide depending on version. The open profile makes the use of pluggable relays possible.

Modules mounted onto the locking sockets are provided with clamping yoke screw connections or push-on connectors for wiring conductors.

Conductors with the following cross-sections can be connected:

solid core: 0.5...4 mm<sup>2</sup>  
flexible: 0.5...2.5 mm<sup>2</sup>.

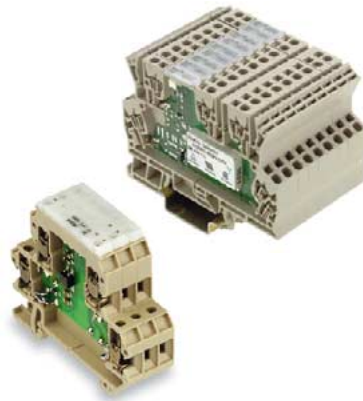
### Locking sockets with multiple interfaces

RSM multiple interfaces can be optionally assembled with 4, 8 or 16 relays.

To save wiring costs on the input side, variants are offered with joint positive and negative potentials.

The PCB connectors are provided with clamping yoke screw connections for conductors with the following cross-sections:  
solid core: 0.5...4 mm<sup>2</sup>  
flexible: 0.5...2.5 mm<sup>2</sup>.

Some versions of the RSM coupler have a male connector block available for connecting pre-assembled cables on the input side in accordance with IEC 603-1/DIN 41 651.



### Microupler DK

All DKR mini coupler components fulfil demands for slimmest possible design. The sensational width of only 6 mm is achieved by using state-of-the-art surface mountable components SMDs. 4 and 5 screw-connections are offered for 0.5...4 mm<sup>2</sup> conductor cross-sections. The mini couplers offer a wide spectrum for coupling digital sensor/actuator signals between automation devices and the field process. DKR relay couplers can receive and standardise signals with varying voltages from the field.

### Miniconditioner MCZ

The 6-mm MCZ housing is one of the slimmest of its kind. It has the following distinguishing features:

- Z-spring reduces mounting costs
- integrated cross-connection options in the input and outputs minimise wiring costs

MCZR miniconditioner (relay coupler) are available with 4 or 5 Z-spring connections. The clampable conductor cross-section is 0.5...1.5 mm<sup>2</sup>.



### MICROSERIES

The relay coupler and optocoupler variants from the **MICROSERIES** are used in applications in industrial automation to isolate and couple digital input and output signals. Their compact design means that they are particularly suitable for use on sub-distribution boards as well as in switchgear cabinets where they help the user to make optimum use of valuable switching space. With its compact design, the **MICROSERIES** elegantly combines the functionality of the classic coupling level and the terminal level.

- 6.1-mm mounting width
- Pluggable cross-connections of four potentials in the inputs and outputs
- Proven cross-connection system ZQV 4 N
- Wide input voltage spectrum from 5 ... 230 V
- LED-indicator reverse-connect protection free-wheeling diode
- Housing material: WEMID  
Flammability class: V0 in accordance with UL 94
- Innovative retaining and release system
- Marking surfaces for fitting standard WS 12/6 markers

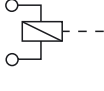
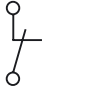


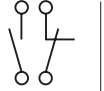

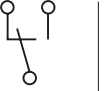

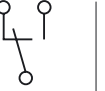
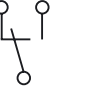
### CE-marking

Weidmüller relay couplers are marked with the CE symbol and comply with the requirements of EN 50 081 Part 1 and EN 50 082 Part 2. They can therefore be used for both industrial as well as for applications in residential, commercial and light industry.

Appropriate ESD measures should be taken during installation. If supply cables are particularly long, overvoltage protection should be provided to prevent interference from electrical disturbance in the atmosphere.

# Relay Coupler

## Electromechanical switching

	Output									
24 V										
Housing										
<b>EG</b>	● 0133660000 Page 72 ● 0536260000 Page 72	● 0133560000 Page 72 ● 0542660000 Page 72						● 0160260000 Page 73 ● 0123060000 Page 73		
<b>WAVESERIES</b> WRS			● 8275350000 ● 8286280000 ● 8416210000 ● 8418220000 ● 8418230000 Page 74	● 8418240000 ● 8418250000 Page 76	● 8418270000 ● 8418280000 Page 77	● 8418330000 Page 79	● 8418300000 ● 8418300000 ● 8418310000 ● 8418320000 Page 78			
<b>EG 7*</b>	● 8216520000 ● 8147120000 ● 8092340000 Page 80	● 8216530000 ● 8147140000 ● 8092350000 Page 80	● 8216570000 ● 8216560000 ● 8216580000 Page 80							
<b>PLUGSERIES</b> PRS / PRZ			● 8530621001 ● 8530691001 ● 8536530000 ● 8536650000 Page 82				● 8530631001 ● 8530701001 ● 8536560000 ● 8536680000 Page 82			
<b>RS 30</b>	● 1101661001 ● 1101611001 ● 1101621001 ● 1101761001 ● 1101711001 ● 1101721001 Page 91	● 1100961001 ● 1100911001 ● 1100921001 ● 1101061001 ● 1101011001 ● 1101021001 Page 91	● 1181511001 ● 1181521001 ● 1100260000 ● 1100210000 ● 1100220000 ● 1100360000 Page 91							
<b>RS 31</b>			● 1128361001 ● 1128331001 ● 1128311001 Page 92							
<b>RS 32</b>							● 9406121001 ● 9406221001 Page 94			
<b>RSM</b>							● 1173461001 ● 1113361001 ● 1113461001 ● 1112361001 ● 1112761001 Page 97	● 1113161001 ● 1100061001 ● 1113561001 ● 1113661001 ● 1107761001 ● 1112661001 ● 1113861001 Page 97	● 1113261001 ● 1100161001 ● 1113761001 ● 8018221001 ● 1107861001 ● 1113861001 ● 1113061001 ● 1173661001 Page 97	
<b>DKR 32</b>	● 8016620000 ● 8008110000 Page 70									
<b>DKR 35</b>	● 8016610000 ● 8008170000 Page 70 ● 8215620000 Page 71		● 8181980000 ● 8181970000 Page 71							
<b>DKR 35/32</b>			● 9454910000 Page 71							
<b>MCZ R</b>			● 8365980000 ● 8442960000 ● 8390590000 Page 68							
<b>MICROSERIES</b> MRS / MRZ			● 8533640000 ● 8533660000 ● 8556050000 ● 8556120000 Page 87							

\* Approval by Germanischer Lloyd

Reliable  
separation

● 24 V dc  
● 24 V<sub>uc</sub>/ac

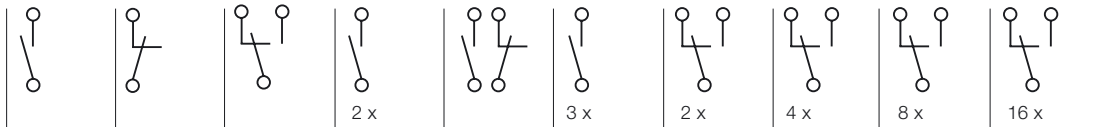
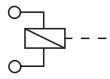


# Relay Coupler

## Electromechanical switching

### Output

48 V



### Housing

<b>EG</b>	● 0662660000 Page 72	● 0662460000 Page 72				● 0160360000 ● 0123260000 Page 73				
<b>WAVESERIES</b> WRS			● 8286280000 Page 74	● 8418250000 Page 76	● 8418280000 Page 77	● 8418310000 Page 78				
<b>EG 7*</b>	● 8092370000 Page 81	● 8092380000 Page 81	● 8216590000 Page 81							
<b>RS 30</b>	● 1101861001 ● 1101811001 ● 1101821001 ● 1101961001 ● 1101911001 ● 1101921001 Page 91	● 1101161001 ● 1101111001 ● 1101121001 ● 1101261001 ● 1101211001 ● 1101221001 Page 91	● 1100460000 ● 1100410000 ● 1100420000 ● 1100560000 Page 91							
<b>RS 31</b>			● 1150761001 Page 92							
<b>RS 32</b>						● 9406321001 Page 94 ● 9406421001 ● 1122661001 Page 95				
<b>RSM</b>						● 1114061001 ● 1113961001 ● 1112461001 ● 1173761001 Page 97	● 1114161001 ● 1114261001 Page 97	● 1114361001 ● 1114461001 Page 97		
<b>MICROSERIES</b> MRS / MRZ			● 8556040000 ● 8556110000 Page 87							
<b>EG</b>						● 0141360000 ● 0160460000 Page 73				
<b>WAVESERIES</b> WRS			● 8418220000 Page 75	● 8418260000 Page 76	● 8418290000 Page 77					
<b>EG 7*</b>	● 8092430000 Page 81	● 8092440000 Page 81	● 8216610000 Page 81							
<b>PLUGSERIES</b> PRS / PRZ			● 8536510000 ● 8536610000 ● 8530640000 ● 8530790000 Page 82			● 8536520000 ● 8536630000 ● 8530660000 ● 8530720000 Page 82				
<b>RS 30</b>	● 1155161001 ● 1155111001 ● 1155121001 ● 1102161001 ● 1102111001 ● 1102121001 Page 91	● 1155211001 ● 1155261001 ● 1155221001 ● 1101461001 ● 1101411001 ● 1101421001 Page 91								
<b>RS 31</b>			● 1150361001 ● 1150461001 Page 92							
<b>RS 32</b>						● 1122761001 ● 9406621001 Page 95				
<b>RSM</b>						● 1114561001 Page 97	● 1114661001 Page 97	● 1114761001 Page 97		
<b>MCZ R</b>			● 8420880000 ● 8467470000 Page 61							
<b>MICROSERIES</b> MRS / MRZ			● 8556030000 ● 8556100000 Page 87							

\* Approval by Germanischer Lloyd

Reliable separation

● Vdc  
● Vuc/ac

Digital signal processing

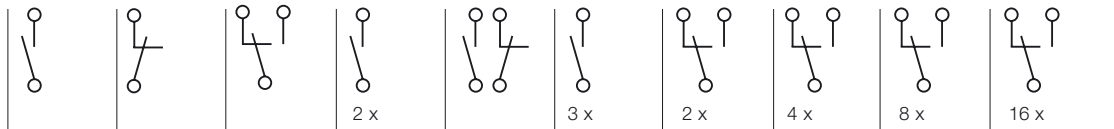


# Relay Coupler

## Electromechanical switching

### Output

230 V



### Housing

<b>EG</b>	● 0543860000 Page 72	● 0543660000 Page 72					● 0142460000 Page 73			
<b>WAVESERIES</b> WRS			● 8418230000 Page 75	● 8418260000 Page 76	● 8418290000 Page 77	● 8418340000 Page 79	● 8418320000 Page 78			
<b>EG 7*</b>	● 8092460000 Page 81	● 8092470000 Page 81	● 8216620000 Page 81							
<b>PLUGSERIES</b> PRS / PRZ			● 8530671001 ● 8530731001 Page 82				● 8530681001 ● 8530741001 Page 82			
<b>RS 30</b>	● 1102261001 ● 1102211001 ● 1102221001 Page 91	● 1101561001 ● 1101511001 ● 1101521001 Page 91	● 1100860000 Page 91							
<b>RS 31</b>			● 1128461001 ● 1128431001 ● 1128411001 Page 93							
<b>RS 32</b>							● 9406721001 ● 1122761001 Page 95			
<b>RSM</b>								● 1114861001 ● 1123461001 Page 97	● 1114961001 ● 1108061001 Page 97	● 1115061001 ● 1108261001 Page 97
<b>MCZ R</b>			● 8237710000 Page 69							
<b>MICROSERIES</b> MRS / MRZ			● 8556020000 ● 8556090000 Page 87							
<b>RS 30</b>	● 1128561001 ● 1128511001 ● 1128521001 Page 91	● 1128661001 ● 1128611001 ● 1128621001 Page 91								











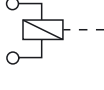
\* Approval by Germanischer Lloyd











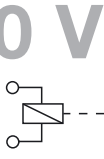
Reliable separation

● 230 Vuc/ac

# Relay Coupler

## Electromechanical switching

	Output										
											
<b>12 V</b> 				2 x		3 x		2 x	4 x	8 x	16 x
<b>Housing</b>											
<b>EG</b>								● 0160160000 Page 73			
<b>WAVESERIES</b> WRS				● 8418240000 Page 76	● 8418270000 Page 77			● 8418300000 Page 78			
<b>EG 7*</b>	● 8092310000 Page 80	● 8092320000 Page 80	● 8216550000 Page 80								
<b>PLUGSERIES</b> PRS / PRZ			● 8536471001 ● 8536571001 Page 82					● 8536501001 ● 8536591001 Page 82			
<b>RS 30</b>	● 1129421001 Page 91	● 1129521001 Page 91	● 1129660000 Page 91								
<b>RS 32</b>								● 9406021001 Page 94			
<b>DKR 35</b>	● 8171100000 Page 70										
<b>MICROSERIES</b> MRS / MRZ			● 8556070000 ● 8556140000 Page 86								

	Output										
											
<b>4...60 V</b> 				2 x		3 x		2 x	4 x	8 x	16 x
<b>Housing</b>											
<b>WAVESERIES</b> WRS 2, 4...24 V			● 8275320000 Page 74								
<b>WAVESERIES</b> WRS 60 V			● 8418210000 Page 74								
<b>EG 7*, 60 V</b>	● 8092400000 Page 81	● 8092410000 Page 81	● 8216600000 Page 81								
<b>RS 30, 60 V</b>	● 1102061001 ● 1102011001 ● 1102021001 Page 91		● 1100660000 ● 1100610000 ● 1100620000 Page 91					● 9406521001 Page 94			
<b>DKR 32, 5 V</b>	● 8019600000 Page 70										
<b>DKR 35, 5 V</b>	● 8019610000 Page 70										
<b>MCZ R, 60 V</b>			● 8470380000 Page 68								
<b>MICROSERIES</b> MRS / MRZ, 5 V			● 8556080000 ● 8556150000 Page 86								
<b>MICROSERIES</b> MRS / MRZ, 60 V			● 8556060000 ● 8556130000 Page 87								

\* Approval by Germanischer Lloyd

Reliable separation

● Vdc  
● Vuc/ac

Digital signal processing

# Relay Couplers in Component Housings

## Miniconditioners MCZ R



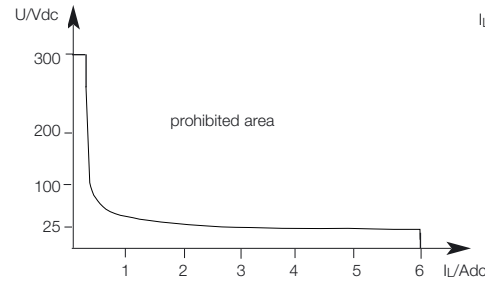
### MCZ R 24 Vdc

### MCZ R 24 Vdc/Au

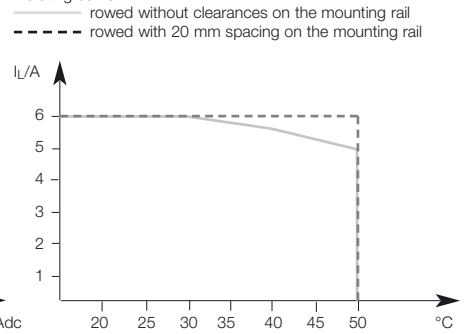
### MCZ R 24 Vac/dc

### MCZ R 60 Vdc

Limit diagram



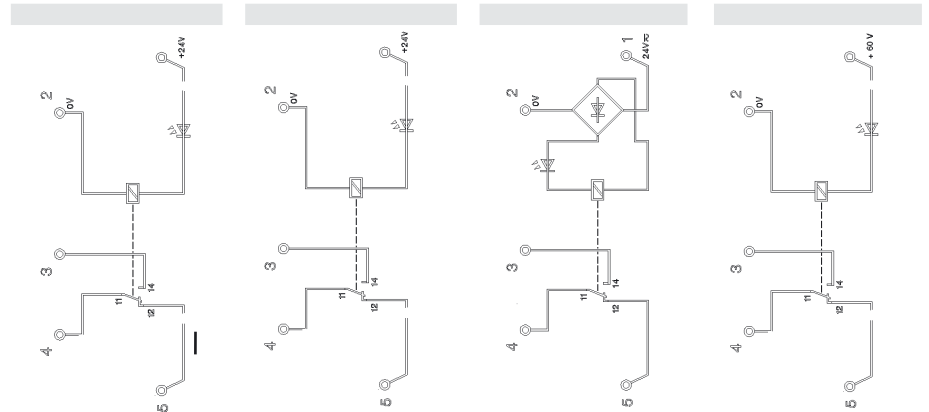
Derating curve



### Schematic circuit diagram

This module can be used as a universal interface between the controller and actuator for switching medium-sized loads.

- Reduces installation and commissioning times by use of the proven Z-spring connection technology
- Pluggable cross-connections in input and output minimise wiring costs
- 6-mm width



Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
for TS 35	MCZ R 24 Vdc	<b>8365980000</b>	MCZ R 24 Vdc/Au	<b>8442960000</b>	MCZ R 24 Vac/dc	<b>8390590000</b>	MCZ R 60 Vdc	<b>8470380000</b>
<b>Technical data</b>								
<b>Input</b>								
Input voltage	24 Vdc ±20 % (19.2...28.8 V)		24 Vdc ±20 % (19.2...28.8 V)		24 Vac/dc ±10% (21.6...26.4 V)		60 Vdc ±20% (48...72 V)	
Input current at U <sub>N</sub>	6.3 mA ±10 % (5.7...6.9 mA)		6.3 mA ±10 % (5.7...6.9 mA)		ac: 10.8 mA±15% (9.2...12.4 mA) dc: 6.1 mA ±15% (5.2...7.1 mA)		3 mA ±20 % (12.4...3.6 mA)	
Max. input power	156 mW ±10%		156 mW ±10%		ac: 160 mVA ±10 % dc: 151 mW ±10 %		180 mW ±45 %	
Making threshold	12 V...19 V		12 V...19 V		ac: ca. 17 V / dc: ca. 19 V		ca. 38 V	
Cut-out threshold	4 V...5.5 V		4 V...5.5 V		ac: ca. 7 V / dc: ca. 4 V		ca. 14 V	
Reaction time at U <sub>N</sub> (typ.)	4.5 ms		4.5 ms		5 ms		4.5 ms	
Release at U <sub>N</sub> (typ.)	10 ms		10 ms		30 ms		10 ms	
Capacity working resistance to reduction at dissipated energy	no		no		no		no	
Functionality	operating indication reverse polarity protect. diode free wheel diode		operating indication reverse polarity protect. diode free wheel diode		operating indication bridge rectifier		operating indication reverse polarity protect. diode free wheel diode	
Cross-connection on pin	2, 3, 4		2, 3, 4		2, 3, 4		2, 3, 4	
<b>Output</b>								
Switching voltage	1 changeo. cont. (AgSnO <sub>2</sub> ) max. 300 Vdc / 400 Vac		1 changeo. cont. (5 μ Au) max. 300 Vdc / 400 Vac		1 changeo. cont. (AgSnO <sub>2</sub> ) max. 300 Vdc / 400 Vac		1 changeo. cont. (AgSnO <sub>2</sub> ) max. 300 Vdc / 400 Vac	
ac: continuous current/switching power (see derating diagram)	max. 6 A / max. 1500 VA		max. 6 A* / max. 1500 VA		max. 6 A / max. 1500 VA		max. 6 A / max. 1500 VA	
Min. switching current	100 mA (at U = 10 V)		1) 0.1 mA		100 mA (at U = 10 V)		100 mA (at U = 10 V)	
Switch-on current	max. 6 A		max. 6 A*		max. 6 A		max. 6 A	
dc: Continuous current/switching power	see limit diagram		see limit diagram		see limit diagram		see limit diagram	
Mechanical service life	20 x 10 <sup>6</sup> switching operations		20 x 10 <sup>6</sup> switching operations		20 x 10 <sup>6</sup> switching operations		20 x 10 <sup>6</sup> switching operations	
Max. switching frequency at nominal load	0.1 Hz		0.1 Hz		0.1 Hz		0.1 Hz	
<b>Insulation coordination acc. to EN 50178</b>								
Rated voltage	300 V		300 V		300 V		300 V	
Rated impulse voltage	4 kV		4 kV		4 kV		4 kV	
Overvoltage category	III		III		III		III	
Pollution severity	2		2		2		2	
Clearances and creepage distances	≥ 5.5 mm		≥ 5.5 mm		≥ 5.5 mm		≥ 5.5 mm	
Insulation coord.- and voltage proof, input/output mounting rail	4 kV <sub>eff</sub> / 1 min		4 kV <sub>eff</sub> / 1 min		4 kV <sub>eff</sub> / 1 min		4 kV <sub>eff</sub> / 1 min	
Ambient temperature	-25 °C...+50 °C		-25 °C...+50 °C		-25 °C...+50 °C		-25 °C...+50 °C	
Storage temperature	-40 °C...+60 °C		-40 °C...+60 °C		-40 °C...+60 °C		-40 °C...+60 °C	
Conductor	AWG 22...12		AWG 22...12		AWG 22...12		AWG 22...12	
Conductor cross-section	1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>	
Approvals	CE, UL, CSA, GL		CE, UL, CSA, GL		CE, UL, CSA, GL		CE, UL, CSA	
Overall width	6 mm		6 mm		6 mm		6 mm	
<b>Accessories</b>	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
End plate	AP MCZ 1.5	<b>8389030000</b>	AP MCZ 1.5	<b>8389030000</b>	AP MCZ 1.5	<b>8389030000</b>	AP MCZ 1.5	<b>8389030000</b>
Further accessories, dimensions and connection data see	Page 305		Page 305		Page 305		Page 305	

<sup>1)</sup> depends on load conditions

\* the hard-gold plating is resistant for parameters 36 Vdc, 50 mA with 10<sup>6</sup> cycles

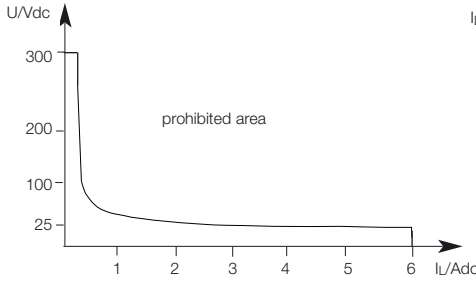
# Relay Couplers in Component Housings

**MCZ R 110 Vdc**

**MCZ R 120 Vac**

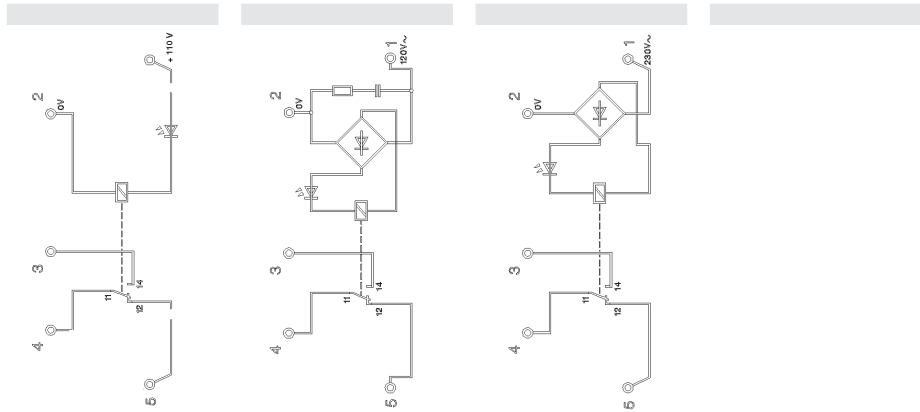
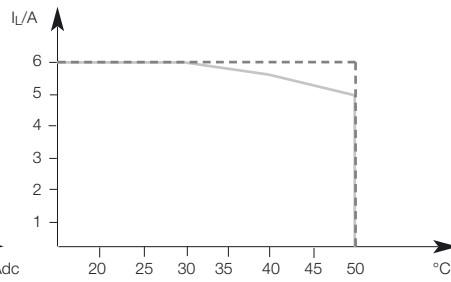
**MCZ R 230 Vac**

Limit diagram



Derating curve

— rowed without clearances on the mounting rail  
 - - - rowed with 20 mm spacing



Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
MCZ R 110 Vdc	<b>8467470000</b>	MCZ R 120 Vac	<b>8420880000</b>	MCZ R 230 Vac	<b>8237710000</b>
110 Vdc ±10%		120 Vac -15 %/+10 %		230 Vac ±10%	
2.85 mA ±25%		7 mA ±15 %		9.5 mA ±15 % (8...11mA)	
340 mW ±25%		0.85 VA ±15 % (380 mW ± 15 %)		2.1 VA ±15 %	
ca. 68 V / 1.6 mA		ca. 70 V / 4 mA		ca. 115 V / 5 mA	
ca. 19 V / 0.4 mA		ca. 22 V / 1.3 mA		ca. 60 V / 2.5 mA	
4.5 ms		8 ms		8 ms	
10 ms		30 ms		30 ms	
no		yes		no	
operating indication		operating indication		operating indication	
bridge rectifier		bridge rectifier		bridge rectifier	
2, 3, 4		2,3, 4		2,3, 4	
1 changeo. cont. (AgSnO <sub>2</sub> )		1 changeo. cont. (AgSnO <sub>2</sub> )		1 changeo. cont. (AgSnO <sub>2</sub> )	
max. 300 Vdc / 400 Vac		max. 300 Vdc / 400 Vac		max. 300 Vdc / 400 Vac	
max. 6 A / max. 1500 VA		max. 6 mA / max. 1500 VA		max. 6 A / max. 1500 VA	
100 mA (at U = 10 V)		100 mA (at U = 10 V)		100 mA (at U = 10 V)	
max. 6 A		max. 6 A		max. 6 A	
see limit diagram		see limit diagram		see limit diagram	
20 x 10 <sup>6</sup> switching operations		20 x 10 <sup>6</sup> switching operations		20 x 10 <sup>6</sup> switching operations	
0.1 Hz		0.1 Hz		0.1 Hz	
300 V		300 V		300 V	
4 kV		4 kV		4 kV	
III		III		III	
2		2		2	
≥ 5.5 mm		≥ 5.5 mm		≥ 5.5 mm	
4 kV <sub>eff</sub> / 1 min		4 kV <sub>eff</sub> / 1 min		4 kV <sub>eff</sub> / 1 min	
-25 °C...+50 °C		-25 °C...+50 °C		-25 °C...+50 °C	
-40 °C...+60 °C		-40 °C...+60 °C		-40 °C...+60 °C	
AWG 22...12		AWG 22...12		AWG 22...12	
1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>	
CE, UL, CSA		CE, UL, CSA		CE, UL, CSA	
6 mm		6 mm		6 mm	
Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
AP MCZ 1.5	<b>8389030000</b>	AP MCZ 1.5	<b>8389030000</b>	AP MCZ 1.5	<b>8389030000</b>
Page 305		Page 305		Page 305	

# Relay Couplers in Component Housings Mini coupler DKR

These modules are used for protective separation of input signals and adjustment of signal levels

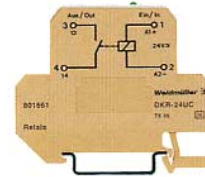
- Cost-effective solution for adjustment of power and potential
- Low input power
- Screw connection technology
- 6-mm width

DKR 5 Vdc

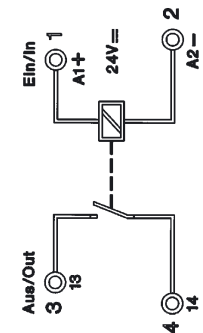
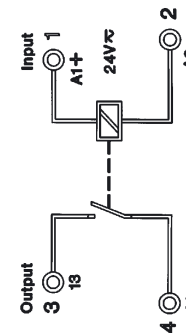
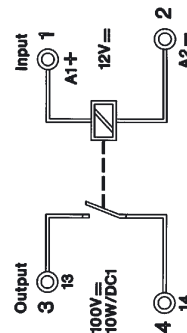
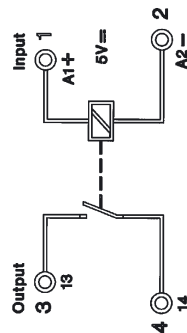
DKR 12 Vdc

DKR 24 Vac/dc

DKR 24 Vdc



## Schematic circuit diagram



Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
for TS 32	DKR 5 Vdc	<b>8019600000</b>	DKR 12 Vdc	<b>8171100000</b>	DKR 24 Vac/dc	<b>8008110000</b>	DKR 24 Vdc	<b>8016620000</b>
for TS 35	DKR 5 Vdc	<b>8019610000</b>			DKR 24 Vac/dc	<b>8016610000</b>	DKR 24 Vdc	<b>8008170000</b>
With combination foot TS 32/TS 35								
Technical data	Input: bottom		Input: bottom		Input: bottom		Input: bottom	
Input voltage	5 Vdc ±5 %		12 Vdc ±10 %		24 Vac/dc ±20 %		24 Vdc ±20 %	
Input current	12.5 mA		12 mA		11.5 mAac/9 mAdc		9.3 mA	
Input current, limited = SPS able								
Input power	65 mW		144 mW		300 mVA/220 mW		225 mW	
Pick-up lag	typ. 0.7...2.5 ms		typ. 0.7...2.5 ms		0.6...4.5 ms ac/0.9...1.3 ms dc		typ. 0.7...2.5 ms	
Turn off delay	typ. 0.2...2.0 ms		typ. 0.2...2.0 ms		12.7...25 ms ac/14.4...16.4 ms dc		typ. 0.2...2.0 ms	
Max. switch-on current	500 mA		500 mA		500 mA		500 mA	
Max. switching capacity	10 W/10 VA		10 W/10 VA		10 W/10 VA		10 W/10 VA	
Max. output voltage	100 V		175 V		170 V		100 V	
Max. output current	500 mA		500 mA		500 mA		500 mA	
Min. output current								
Max. switching frequency	200 Hz		25 Hz		5 Hz		20 Hz	
Contact material	RH/RU		RH/RU		RH/RU		RH/RU	
Contacts	1 normally-open contact		1 normally-open contact		1 normally-open contact		1 normally-open contact	
Service life	mechanical	10 <sup>9</sup> switching operations	10 <sup>9</sup> switching operations	10 <sup>9</sup> switching operations	10 <sup>9</sup> switching operations	10 <sup>9</sup> switching operations	10 <sup>9</sup> switching operations	10 <sup>9</sup> switching operations
	at I <sub>L</sub> = 10 mA	5 x 10 <sup>8</sup> switching operations	5 x 10 <sup>8</sup> switching operations	5 x 10 <sup>8</sup> switching operations	5 x 10 <sup>8</sup> switching operations	5 x 10 <sup>8</sup> switching operations	5 x 10 <sup>8</sup> switching operations	5 x 10 <sup>8</sup> switching operations
Insulation coordination acc. to EN 50178	Rated voltage		Rated voltage		Rated voltage		Rated voltage	
	150 V		150 V		150 V		150 V	
	Rated impulse voltage		Rated impulse voltage		Rated impulse voltage		Rated impulse voltage	
	1.5 kV		1.5 kV		1.5 kV		1.5 kV	
	Overvoltage category		Overvoltage category		Overvoltage category		Overvoltage category	
	III		III		III		III	
	Pollution severity		Pollution severity		Pollution severity		Pollution severity	
	2		2		2		2	
	Clearances and creepage distances		Clearances and creepage distances		Clearances and creepage distances		Clearances and creepage distances	
	≥3 mm		≥3 mm		≥3 mm		≥3 mm	
Operating temperature	without clearance	-25 °C...+40 °C	-25 °C...+40 °C	-25 °C...+40 °C	-25 °C...+40 °C	-25 °C...+40 °C	-25 °C...+40 °C	-25 °C...+40 °C
	with clearance	-25 °C...+50 °C	-25 °C...+50 °C	-25 °C...+50 °C	-25 °C...+50 °C	-25 °C...+50 °C	-25 °C...+50 °C	-25 °C...+50 °C
Storage temperature		-40 °C...+60 °C	-40 °C...+60 °C	-40 °C...+60 °C	-40 °C...+60 °C	-40 °C...+60 °C	-40 °C...+60 °C	-40 °C...+60 °C
Conductor		AWG 22...12	AWG 22...12	AWG 22...12	AWG 22...12	AWG 22...12	AWG 22...12	AWG 22...12
Conductor cross-section		0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>
Overall width		6 mm	6 mm	6 mm	6 mm	6 mm	6 mm	6 mm
Accessories	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
End plate	AP DKT4	<b>0687560000</b>	AP DKT4	<b>0687560000</b>	AP DKT4	<b>0687560000</b>	AP DKT4	<b>0687560000</b>
Further accessories, dimensions and connection data see	Page 305		Page 305		Page 305		Page 305	

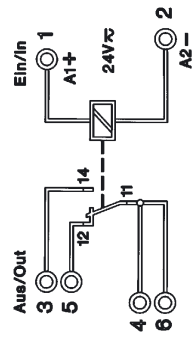
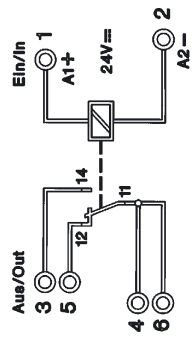
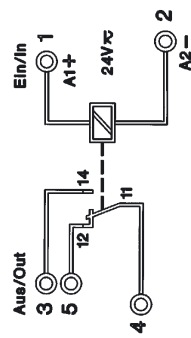
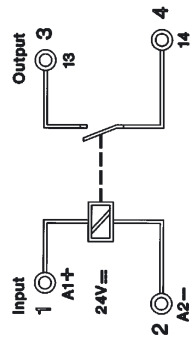
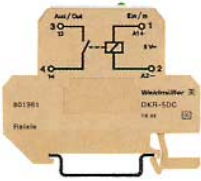
# Relay Couplers in Component Housings Mini coupler DKR

DKR 24 Vac/dc

DK5R-1U

DKR 24 Vdc

DKR 24 Vac/dc



Type Cat. No.  
DKR 24 Vdc **8215620000**

Type Cat. No.  
DK5R-1U **9454910000**

Type Cat. No.  
DKR 24 Vdc **8181980000**

Type Cat. No.  
DKR 24 Vac/dc **8181970000**

Input: top  
24 Vdc ±20 %  
9.3 mA  
  
225 mW  
typ. 0.7...2.5 ms  
typ. 0.2...2.0 ms  
  
500 mA  
10 W/10 VA  
175 Vac/dc  
500 mA  
  
25 Hz  
RH/RU  
1 normally-open contact  
10<sup>9</sup> switching operations  
5 x 10<sup>8</sup> switching operations

Input: bottom  
24 Vac/dc ±20 %  
9 mAac/7 mAdc  
max. 240 mA  
  
6 ms  
15 ms ac/dc  
  
4 A  
1.5 kVA/140 W  
250 Vac/dc  
**6 A**  
  
20 Hz  
Ag Ni  
1 changeover contact  
2x10<sup>7</sup> switching operations

Input: bottom  
24 Vdc ±20 %  
11.5 mA  
  
384 mW  
  
5 A  
2 kVA/192 W  
250 Vac/dc  
8 A  
100 mA  
25 Hz  
AgCdO  
1 changeover contact  
≥10<sup>7</sup> switching operations  
≥3 x 10<sup>6</sup> switching operations

Input: bottom  
24 Vac/dc ±20 %  
20 mAac/16 mAdc  
max. 100 mA  
  
480 mWac/400 mWdc  
  
5 A  
2 kVA/192 W  
250 Vac/dc  
8 A  
100 mA  
ac: 5 Hz dc: 25 Hz  
AgCdO  
1 changeover contact  
≥10<sup>7</sup> switching operations  
≥3 x 10<sup>6</sup> switching operations

150 V  
1.5 kV  
III  
2  
≥3 mm  
  
-25 °C...+40 °C  
-25 °C...+50 °C  
-40 °C...+60 °C  
AWG 22...12  
0.5...4 mm<sup>2</sup>  
6 mm

300 V  
4 kV  
III  
2  
≥8 mm  
  
-40 °C...+60 °C  
-40 °C...+60 °C  
-40 °C...+60 °C  
AWG 22...12  
0.5...4 mm<sup>2</sup>  
6 mm

300 V  
6 kV  
IV  
2  
≥8 mm  
  
-25 °C...+40 °C  
-25 °C...+50 °C  
-40 °C...+60 °C  
AWG 22...12  
0.5...4 mm<sup>2</sup>  
18 mm

300 V  
6 kV  
IV  
2  
≥8 mm  
  
-25 °C...+40 °C  
-25 °C...+50 °C  
-40 °C...+60 °C  
AWG 22...12  
0.5...4 mm<sup>2</sup>  
18 mm

Type Cat. No.  
AP DKT4 **0687560000**  
Page 305

Type Cat. No.  
AP DK5 **8268870000**  
Page 305

Type Cat. No.  
AP DKT4 **0687560000**  
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Type Cat. No.  
AP DKT4 **0687560000**  
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# Relay Coupler in Component Housings EG 2

with 1 NO or 1 NC

**EGR EG 2** 24 V  
AC/DC voltage



**EGR EG 2** 24 V  
Direct and alternating voltage



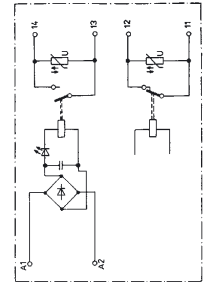
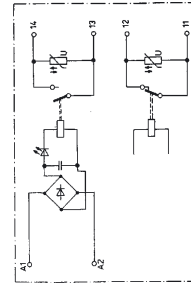
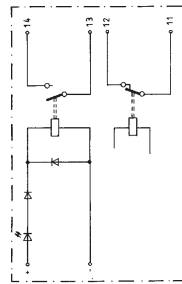
**EGR EG 2** 48 V



**EGR EG 2** 230 V  
AC voltage



## Schematic circuit diagram



## Ordering data

Type	Cat. No.
NC	<b>0133560000<sup>1)</sup></b>
NO	<b>0133660000<sup>1)</sup></b>

Type	Cat. No.
NC	<b>0542660000</b>
NO	<b>0536260000</b>

Type	Cat. No.
NC	<b>0662460000</b>
NO	<b>0662660000</b>

Type	Cat. No.
NC	<b>0662460000</b>
NO	<b>0662660000</b>

Type	Cat. No.
NC	<b>0543660000</b>
NO	<b>0543860000</b>

## Rated data

<b>Input voltage</b>	<b>24 V-, ±10 %</b>
Rated consumption – (W)	0.36 W
Rated consumption ~ (VA)	–
Drop-out current of the relay** (at 20 °C)	1.5 mA
<b>Max. output voltage</b>	<b>240 V~/100 V-</b>
<b>Continuous current</b>	<b>3 A</b>

<b>24 V0, ±10 %</b>
0.35 W
0.6 VA
1.5 mA~/4 mA~
240 V~/100 V-
3 A

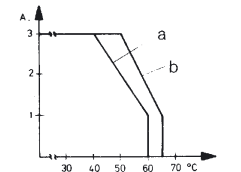
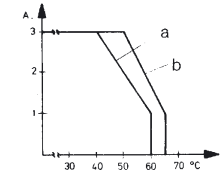
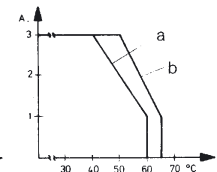
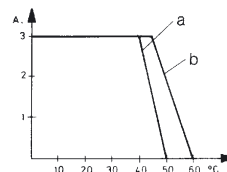
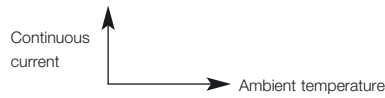
<b>24 V0, ±10 %</b>
0.35 W
0.6 VA
1.5 mA~/4 mA~
240 V~/100 V-
3 A

<b>48 V0, ±10 %</b>
0.8 W
0.9 VA
1.5 mA~/3.5 mA~
240 V~/100 V-
1 A

<b>230 V-, +5 % -15 %</b>
–
3.2 VA
4 mA
240 V~/100 V-
1 A

## Derating curve

a = mounted horizontally on rail without clearance  
b = mounted horizontally on rail with clearance x 20 mm



<b>Switch-on current</b>	<b>5 A</b>
<b>Max. switching capacity with resistor load</b>	<b>600 VA/120 W</b>
<b>Min. switching capacity/switching current</b>	<b>40 µW</b>
<b>Bounce times</b>	<b>&lt; 2 ms</b>
<b>Switching times, typical</b>	
–, pick-up lag	< 5.3 ms
–, turn off delay	< 8.3 ms
<b>Max. switching frequency</b>	<b>50 Hz</b>
<b>Contact material</b>	<b>AgNi, gold-plated</b>
<b>Service life, mechanical</b>	
–, 24 V-, 1 A, resistive load	> 10 <sup>7</sup> switching operations
–, 230 V-, 3 A, resistive load	> 6 x 10 <sup>5</sup> switching operations
<b>Status indicator</b>	<b>Green LED</b>
<b>Storage temperature</b>	<b>-40 °C...+60 °C</b>
<b>Ambient temperature</b>	
–, mounted on rail without clearance	-25 °C...+40 °C
–, mounted on rail with clearance ≥ 20 mm	-25 °C...+50 °C
<b>Approvals</b>	<b>CSA (013366)</b>

5 A
600 VA/120 W
40 µW
< 2 ms
< 5.3 ms
< 8.3 ms
50 Hz
AgNi, gold-plated
> 10 <sup>7</sup> switching operations
> 6 x 10 <sup>5</sup> switching operations
Green LED
-40 °C...+60 °C
-25 °C...+40 °C
-25 °C...+50 °C

5 A
600 VA/120 W
40 µW
< 2 ms
< 8 ms
< 22 ms
30 Hz
AgNi, gold-plated
> 10 <sup>7</sup> switching operations
> 6 x 10 <sup>5</sup> switching operations
Green LED
-40 °C...+60 °C
-25 °C...+40 °C
-25 °C...+50 °C

5 A
600 VA/120 W
40 µW
< 2 ms
< 9 ms
< 12 ms
37 Hz
AgNi, gold-plated
> 10 <sup>7</sup> switching operations
> 6 x 10 <sup>5</sup> switching operations
Green LED
-40 °C...+60 °C
-25 °C...+40 °C
-25 °C...+50 °C

5 A
600 VA/120 W
40 µW
< 2 ms
< 5 ms
< 7 ms
40 Hz
AgNi, gold-plated
> 10 <sup>7</sup> switching operations
> 6 x 10 <sup>5</sup> switching operations
Green LED
-40 °C...+60 °C
-25 °C...+40 °C
-25 °C...+50 °C

## Insulation coordination acc. to EN 50178

<b>Overvoltage category</b>	<b>III</b>
<b>Pollution severity</b>	<b>3</b>
<b>Accessories, dimensions and connection data see</b>	<b>Page 306, Fig. II</b>

III
3
Page 306, Fig. II

III
3
Page 306, Fig. II

III
2
Page 306, Fig. II

III
2
Page 306, Fig. II

\*\* Larger values on request

1) no output varistor

# Relay Coupler in Component Housings EG 2

with 2.8-mm tab connection

## EGR EG 2

DC voltage  
2 changeover contacts

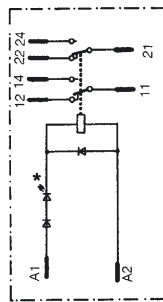


## EGR EG 2

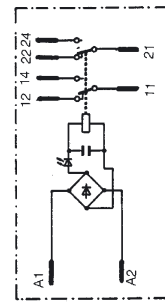
AC/DC voltage  
2 changeover contacts



### Schematic circuit diagram



LED is parallel to coil in 12 V DC and 24 V DC versions



### Ordering data

EGR 2 RT (12 V-)	<b>0160160000</b>
EGR 2 RT (24 V-)	<b>0160260000</b>

Type	Cat. No.
EGR 2 RT (12 V-)	<b>0160160000</b>
EGR 2 RT (24 V-)	<b>0160260000</b>

Type	Cat. No.
EGR 2 RT (48 V-)	<b>0160360000</b>
EGR 2 RT (115 V-)	<b>0160460000</b>

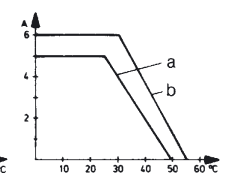
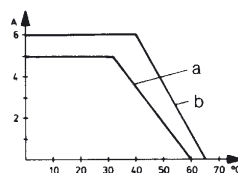
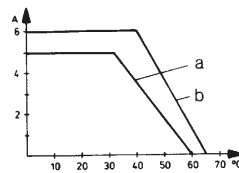
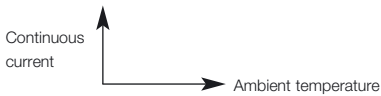
Type	Cat. No.
EGR 2 RT (24 V0)	<b>0123060000</b>
EGR 2 RT (48 V0)	<b>0123260000</b>

Type	Cat. No.
EGR 2 RT (115 V0)	<b>0141360000</b>
EGR 2 RT (230 V0)	<b>0142460000</b>

### Rated data

<b>Input voltage</b>	<b>12 V-</b>	<b>24 V-</b>	<b>48 V-</b>	<b>115 V-</b>	<b>24 V0</b>	<b>48 V0</b>	<b>115 V0</b>	<b>230 V0</b>
Rated consumption - (W)	0.61 W	0.54 W	0.65 W	0.6 W	0.7 W	0.7 W	0.6 W	1.2 W
Rated consumption ~ (VA)	-	-	-	-	1 VA	0.9 VA	0.6 VA	1.2 VA
Drop-out current of the relay** (at 20 °C)	12 mA	5.5 mA	2.5 mA	1 mA	3.5 mA-8 mA-	2 mA-3.5 mA-	1 mA-1 mA-	1 mA
Max. output voltage	250 V				250 V			
Continuous current	5 A				5 A			

Derating curve  
a = mounted horizontally on rail without clearance  
b = mounted horizontally on rail with clearance x 20 mm



Switch-on current	15 A/200 ms
Max. switching capacity with resistor load	1100 VA/144 W
Min. braking capacity/switching current	5 A
Bounce times	4 ms
Switching times, typical	
- , pick-up lag	16 ms 22 ms
- , turn off delay	20 ms 15 ms
Max. switching frequency	20 Hz 20 Hz
Contact material	Ag, gold-flashed
Service life, mechanical	30 x 10 <sup>6</sup>
- , 24 V-, 1 A, resistive load	10 <sup>5</sup> (1100 VA, cos φ = 1)
- , 230 V-, 3 A, resistive load	
Status indicator	Red LED
Storage temperature	-40 °C...+85 °C
Ambient temperature	
- , mounted on rail without clearance	-25 °C...+40 °C
- , mounted on rail with clearance ≥ 20 mm	

Type	Cat. No.
EGR 2 RT (12 V-)	<b>0160160000</b>
EGR 2 RT (24 V-)	<b>0160260000</b>
EGR 2 RT (48 V-)	<b>0160360000</b>
EGR 2 RT (115 V-)	<b>0160460000</b>
Switch-on current	15 A/200 ms
Max. switching capacity with resistor load	1100 VA/144 W
Min. braking capacity/switching current	5 A
Bounce times	4 ms
Switching times, typical	
- , pick-up lag	18 ms 14 ms
- , turn off delay	16 ms 23 ms
Max. switching frequency	27 Hz 24 Hz
Contact material	Ag, gold-flashed
Service life, mechanical	30 x 10 <sup>6</sup>
- , 24 V-, 1 A, resistive load	10 <sup>5</sup> (1100 VA, cos φ = 1)
- , 230 V-, 3 A, resistive load	
Status indicator	Red LED
Storage temperature	-40 °C...+85 °C
Ambient temperature	
- , mounted on rail without clearance	-25 °C...+40 °C
- , mounted on rail with clearance ≥ 20 mm	

Type	Cat. No.
EGR 2 RT (24 V0)	<b>0123060000</b>
EGR 2 RT (48 V0)	<b>0123260000</b>
Switch-on current	15 A/200 ms
Max. switching capacity with resistor load	1100 VA/144 W
Min. braking capacity/switching current	5 A
Bounce times	4 ms
Switching times, typical	
- , pick-up lag	23 ms 18 ms
- , turn off delay	25 ms 19 ms
Max. switching frequency	19 Hz 21 Hz
Contact material	Ag, gold-flashed
Service life, mechanical	30 x 10 <sup>6</sup>
- , 24 V-, 1 A, resistive load	10 <sup>5</sup> (1100 VA, cos φ = 1)
- , 230 V-, 3 A, resistive load	
Status indicator	Red LED
Storage temperature	-40 °C...+85 °C
Ambient temperature	
- , mounted on rail without clearance	-25 °C...+40 °C
- , mounted on rail with clearance ≥ 20 mm	

Type	Cat. No.
EGR 2 RT (115 V0)	<b>0141360000</b>
EGR 2 RT (230 V0)	<b>0142460000</b>
Switch-on current	15 A/200 ms
Max. switching capacity with resistor load	1100 VA/144 W
Min. braking capacity/switching current	5 A
Bounce times	4 ms
Switching times, typical	
- , pick-up lag	17 ms 13 ms
- , turn off delay	17 ms 18 ms
Max. switching frequency	24 Hz 22 Hz
Contact material	Ag, gold-flashed
Service life, mechanical	30 x 10 <sup>6</sup>
- , 24 V-, 1 A, resistive load	10 <sup>5</sup> (1100 VA, cos φ = 1)
- , 230 V-, 3 A, resistive load	
Status indicator	Red LED
Storage temperature	-40 °C...+85 °C
Ambient temperature	
- , mounted on rail without clearance	-25 °C...+40 °C
- , mounted on rail with clearance ≥ 20 mm	

Type	Cat. No.
EGR 2 RT (115 V0)	<b>0141360000</b>
EGR 2 RT (230 V0)	<b>0142460000</b>
Switch-on current	15 A/200 ms
Max. switching capacity with resistor load	1100 VA/144 W
Min. braking capacity/switching current	5 A
Bounce times	4 ms
Switching times, typical	
- , pick-up lag	17 ms 13 ms
- , turn off delay	17 ms 18 ms
Max. switching frequency	24 Hz 22 Hz
Contact material	Ag, gold-flashed
Service life, mechanical	30 x 10 <sup>6</sup>
- , 24 V-, 1 A, resistive load	10 <sup>5</sup> (1100 VA, cos φ = 1)
- , 230 V-, 3 A, resistive load	
Status indicator	Red LED
Storage temperature	-40 °C...+85 °C
Ambient temperature	
- , mounted on rail without clearance	-25 °C...+40 °C
- , mounted on rail with clearance ≥ 20 mm	

### Insulation coordination acc. to EN 50178

Overvoltage category	III
Pollution severity	2
Accessories, dimensions and connection data see	Page 306, Fig. III

Overvoltage category	III
Pollution severity	2
Accessories, dimensions and connection data see	Page 306, Fig. III

Overvoltage category	III
Pollution severity	2
Accessories, dimensions and connection data see	Page 306, Fig. III

Overvoltage category	III
Pollution severity	2
Accessories, dimensions and connection data see	Page 306, Fig. III

Overvoltage category	III
Pollution severity	2
Accessories, dimensions and connection data see	Page 306, Fig. III

\*\* Larger values on request

# WAVESERIES Relay Coupler in Component Housings

## With 1 changeover contact

Relay couplers in the WAVEBOX

- Independent connection technology
  - pluggable connection unit
  - screw or tension clamp technology
- Fast commissioning and after-sales-service service
  - pluggable PCBs
- Save wiring tasks
  - cross-connections possible at input and output

### WRS 1 2.4-24 VDC

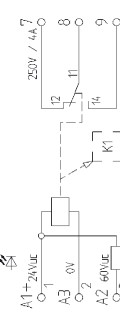
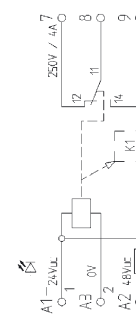
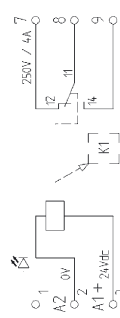
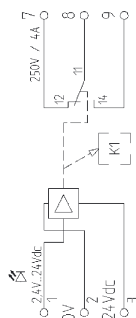
### WRS 1 24 VDC

### WRS 1 24/48 VUC

### WRS 1 24/60 VUC



#### Schematic circuit diagram

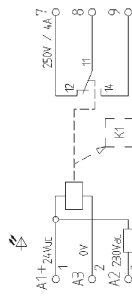
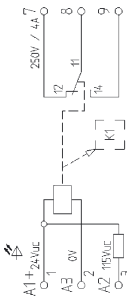


Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
Screw connection	WRS 1 2.4-24 Vdc	<b>8275320000</b>	WRS 1 24 Vdc	<b>8275350000</b>	WRS 1 24/48 Vuc	<b>8286280000</b>	WRS 1 24/60 Vuc	<b>8418210000</b>
Tension clamp connection	WRZ 1	<b>8430170000</b>	WRZ 1	<b>8430180000</b>	WRZ 1	<b>8430190000</b>	WRZ 1	<b>8430200000</b>
<b>Input</b>								
Input voltage	2.4...24 Vdc +10 %		24 Vdc±10 %		24 Vuc±10 % /48 Vuc±10%		24 Vuc±10% / 60 Vuc±10%	
Input current	4.6 mA <sub>dc</sub> ±15% at U <sub>e</sub> 12 V		9 mA <sub>dc</sub> ±15%		14 mA <sub>uc</sub> ±15% at U <sub>e</sub> 24 V 14 mA <sub>uc</sub> ±15% at U <sub>e</sub> 48V		11 mA <sub>ac</sub> ±15% at U <sub>e</sub> =60 V 10 mA <sub>dc</sub> ±15% at U <sub>e</sub> =60 V 10.2 mA <sub>ac</sub> ±15% at U <sub>e</sub> =24 V 9 mA <sub>dc</sub> ±15% at U <sub>e</sub> =24 V	
Input power	6 mW ±15% at U <sub>e</sub> 2.4 V		220 mW±15%		0.5 VA (W)±15% at U <sub>e</sub> =48V 0.35 VA (W)±15% at U <sub>e</sub> =24V		0.7 VA ±15% at U <sub>e</sub> =60 V 0.34 VA±15% at U <sub>e</sub> =24 V 0.6 W ±15% at U <sub>e</sub> =60 V 0.22 W±15% at U <sub>e</sub> =24 V	
<b>Output</b>								
Switching voltage	max. 150 Vdc /250 Vac		max. 150 Vdc /250 Vac		max. 150 Vdc /250 Vac		max. 150 Vdc/250 Vac	
Continuous current AC / Switching power AC	max. 5 A /max. 1250 VA*		max. 5 A /max. 1250 VA*		max. 5A /max. 1250 VA*		max. 5 A/max. 1250 VA*	
Switch-on current	max. 10 A		max. 10 A		max. 10 A		max. 10 A	
Min. switching	100 mA/5 Vdc		100 mA/5 Vdc		100 mA/5Vdc		100 mA/5 Vdc	
Contact material	Ag-alloy		Ag-alloy		Ag-alloy		Ag-alloy	
Contact resistance (when new)	max. 30 mΩ/max. 100 mΩ at 1 A/6 Vdc		max. 30 mΩ/max. 100 mΩ at 1 A/6 Vdc		max. 30 mΩ/max. 100 mΩ at 1 A/6 Vdc		max. 30 mΩ/max. 100 mΩ at 1 A / 6 Vdc	
Pick-up delay at nominal voltage	typ. 7 ms (NO) / 4.5 ms (NC)		typ. 7 ms (NO) / 4.5 ms (NC)		typ. 7 ms (NO) / 4.5 ms (NC)		typ. 5.4 ms (NO) / 4.2 ms (NC)	
Turn off delay	typ. 6.3 ms (NO) / 5.5 ms (NC)		typ. 6.3 ms (NO) / 5.5 ms (NC)		typ. 6.3 ms (NO) / 5.5 ms (NC)		typ. 4.4 ms (NO) / 5.4 ms (NC)	
Mechanical service life	20 x 10 <sup>6</sup> switching operations		20 x 10 <sup>6</sup> switching operations		20 x 10 <sup>6</sup> switching operations		20 x 10 <sup>6</sup> switching operations	
Electrical service life	150 x 10 <sup>3</sup> switching operations		150 x 10 <sup>3</sup> switching operations		1.5 x 10 <sup>5</sup> switching operations		150 x 10 <sup>3</sup> switching operations	
Max. switching frequency at nominal voltage	0.1 Hz		0.1 Hz		0.1 Hz		0.1 Hz	
Ambient temperature	-25 °C...+50 °C		-25 °C...+50 °C		-25 °C...+50 °C		-25 °C...+50 °C	
Storage temperature	-40 °C...+60 °C		-40 °C...+60 °C		-40 °C...+60 °C		-40 °C...+60 °C	
Approvals	UL/CSA		UL/CSA		UL/CSA		UL/CSA	
<b>Insulation coordination acc. to EN 50178</b>								
Rated voltage	300 V		300 V		300 V		300 V	
Rated impulse voltage	4 kV (1.2/50 μ)		4 kV (1.2/50 μ)		4 kV (1.2/50 μ)		4 kV (1.2/50 μ)	
Overtoltage category	III		III		III		III	
Pollution severity	2		2		2		2	
Implemented clearance and creepage path	≥ 5.5 mm		≥ 5.5 mm		≥ 5.5 mm		≥ 5.5 mm	
<b>Insulation and voltage strength</b>								
Insulation and voltage strength of entire circuit to mounting rail	4 kV <sub>eff</sub> 1 min		4 kV <sub>eff</sub> 1 min		4 kV <sub>eff</sub> 1 min		4 kV <sub>eff</sub> 1 min	
<b>Testing</b>								
Input/output high voltage test	4 kV <sub>eff</sub> 1 s		4 kV <sub>eff</sub> 1 s		4 kV <sub>eff</sub> 1 s		4 kV <sub>eff</sub> 1 s	
Accessories, dimensions and connection data see	Page 298 + 308		Page 298 + 308		Page 298 + 308		Page 298 + 308	

\* at ambient temperature 20°C

# WAVESERIES Relay Coupler in Component Housings

## WRS 1 24/115 VUC WRS 1 24 VUC 230 VAC



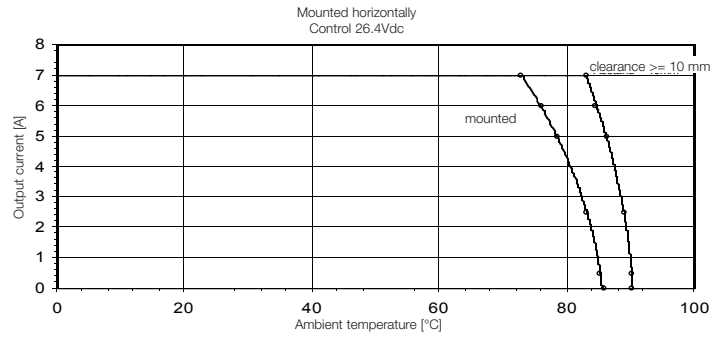
Type	Cat. No.	Type	Cat. No.
WRS 1 24/115 Vuc	<b>8418220000</b>	WRS 1 24 Vuc/230 Vac	<b>8418230000</b>
WRZ 1	<b>8430210000</b>	WRZ 1	<b>8430220000</b>

24 Vuc±10% / 115 Vuc±10%	24 Vuc±10% / 230 Vac±10%
11 mAac±15% at Ue=115 V	15 mAac±15% at Ue=230 V
10.5mAdc±15% at Ue=115 V	14 mAac±15% at Ue=24 V
10.2 mAac±15% at Ue=24 V	13 mAdc±15% at Ue=24 V
9 mAdc±15% at Ue=24 V	
1.3 VA ±15% at Ue=115 V	3.5 VA ±15% at Ue=230 V
0.34 VA±15% at Ue=24 V	0.34 VA±15% at Ue=24 V
1.2 W ±15% at Ue=115 V	0.32 W±15% at Ue=24 V
0.22 W±15% at Ue=24 V	

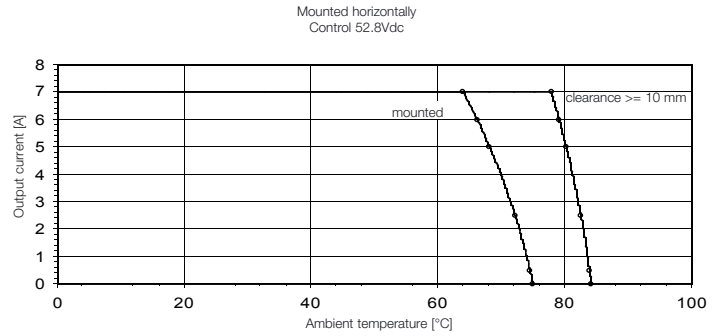
max. 150 Vdc/250 Vac	max. 150 Vdc/250 Vac
max. 5 A/max. 1250 VA*	max. 5 A/max. 1250 VA*
max. 10 A	max. 10 A
100 mA/5 Vdc	100 mA/5 Vdc
Ag-alloy	Ag-alloy
max. 30 mΩ/max. 100 mΩ at 1 A / 6 Vdc	max. 30 mΩ/max. 100 mΩ at 1 A / 6 Vdc
typ. 5.4 ms (NO) / 4.2 ms (NC)	typ. 5.4 ms (NO) / 4.2 ms (NC)
typ. 4.4 ms (NO) / 5.4 ms (NC)	typ. 4.4 ms (NO) / 5.4 ms (NC)
20 x 10 <sup>6</sup> switching operations	20 x 10 <sup>6</sup> switching operations
150 x 10 <sup>3</sup> switching operations	150 x 10 <sup>3</sup> switching operations
0.1 Hz	0.1 Hz
-25 °C...+50 °C	-25 °C...+50 °C
-40 °C...+60 °C	-40 °C...+60 °C
UL/CSA	UL/CSA

300 V	300 V
4 kV (1.2/50 μ)	4 kV (1.2/50 μ)
III	III
2	2
≥ 5.5 mm	≥ 5.5 mm
4 kV <sub>eff</sub> 1 min	4 kV <sub>eff</sub> 1 min

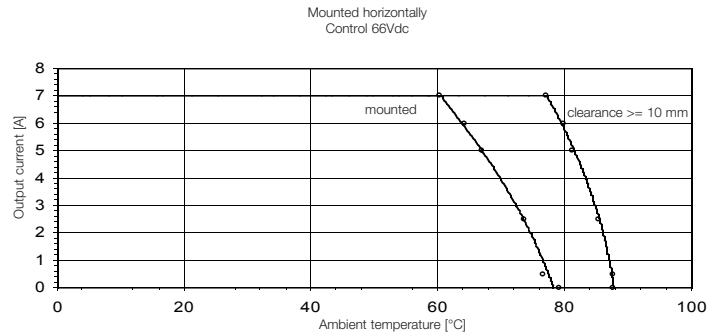
4 kV <sub>eff</sub> 1 s	4 kV <sub>eff</sub> 1 s
Page 298 + 308	Page 298 + 308



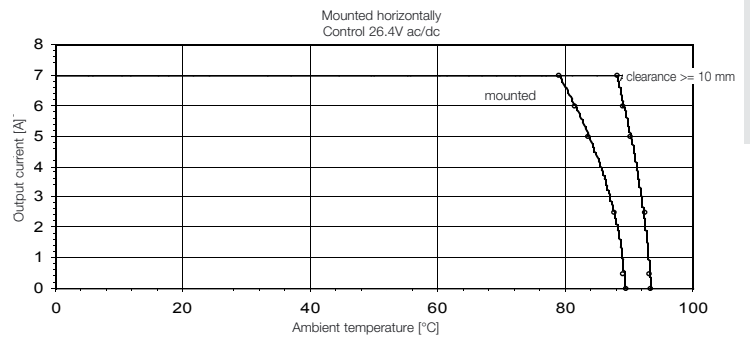
WRS 1 2.4-24 VDC • 8275320000



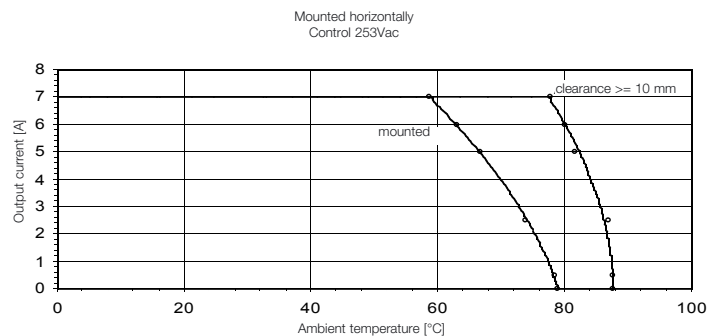
WRS 1 24/48 VUC • 8286280000



WRS 1 24/60 VUC • 8418210000



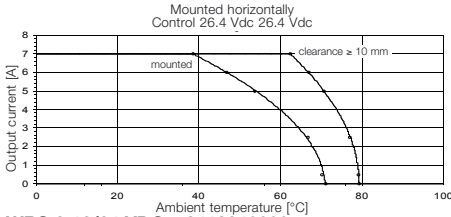
WRS 1 24/115 VUC • 8418220000



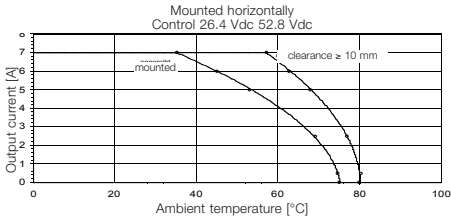
WRS 1 24 VUC/230 VAC • 8418230000

# WAVESERIES Relay Coupler in Component Housings

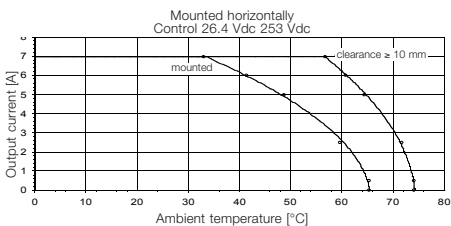
## with 2 NO contacts



**WRS 2 12/24 VDC • 8418240000**



**WRS 2 24/48 VUC • 8418250000**



**WRS 2 115 VUC/ 230 VAC • 8418260000**

## WRS 2 12/24 VDC



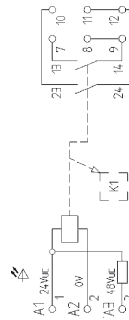
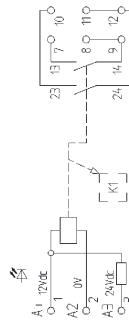
## WRS 2 24/48 VUC



## WRS 2 115 VUC/ 230 VAC



### Schematic circuit diagram



### Ordering data

Screw connection

Tension clamp connection

### Input

Input voltage

Input current

Input power

### Output

Switching voltage

Continuous current AC / Switching power AC

Switch-on current

Min. switching

Contact material

Contact resistance (when new)

Pick-up delay at nominal voltage

Turn off delay

Mechanical service life

Electrical service life

Max. switching frequency at nominal voltage

Ambient temperature

Storage temperature

Approvals

### Insulation coordination acc. to EN 50178

Rated voltage

Rated impulse voltage

Overtoltage category

Pollution severity

Implemented clearance and creepage path

### Insulation and voltage strength

Insulation and voltage strength of entire circuit to mounting rail

### Testing

Input/output high voltage test

Accessories, dimensions and connection data see

\* at ambient temperature 20°C

Type Cat. No.

WRS 2 12/24 Vdc

**8418240000**

WRZ 2 **8430230000**

12 Vdc±10 % / 24 Vdc±10 %

21 mAac±15% at Ue=24 V

20 mAac±15% bei Ue=12 V

0.5 W±15% at Ue=24 V

0.24 W±15% at Ue=12 V

max. 250 Vdc / 250 Vac

(UL -> 13300/12300)

max. 5 A / max. 1250 VA\*

max. 8 A

100 mA / 5 Vdc

AgSnO<sub>2</sub>

max. 30 mΩ/max. 100 mΩ

at 1 A/6 Vdc

typ. 5 ms

typ. 6.3 ms (NO) /

5.5 ms (NC)

50 x 10<sup>6</sup> switching operations

1 x 10<sup>5</sup> switching operations

0.1 Hz

-25 °C...+50 °C

-40 °C...+60 °C

UL/CSA

300 V

4 kV (1.2/50 μ)

III

2

≥ 8 mm

4 kV<sub>eff</sub> 1 min

4 kV<sub>eff</sub> 1 s

Page 298 + 308

Type Cat. No.

WRS 2 24/48 Vuc

**8418250000**

WRZ 2 **8430240000**

24 Vuc±10 % / 48 Vuc±10 %

10 mAac±15% at Ue=48 V

11.5 mAac±15% at Ue=24 V

8.5 mAac±15% at Ue=48 V

7.2 mAac±15% at Ue=24 V

0.48 VA±15% at Ue=48 V

0.21 VA±15% at Ue=24 V

0.4 W±15% at Ue=48 V

0.17 W±15% at Ue=24 V

max. 250 Vdc / 250 Vac

(UL -> 13300/12300)

max. 5 A / max. 1250 VA\*

max. 8 A

100 mA / 5 Vdc

AgSnO<sub>2</sub>

max. 30 mΩ/max. 100 mΩ

at 1 A/6 Vdc

typ. 5 ms

---

50 x 10<sup>6</sup> switching operations

1 x 10<sup>5</sup> switching operations

0.1 Hz

-25 °C...+50 °C

-40 °C...+60 °C

UL/CSA

300 V

4 kV (1.2/50 μ)

III

2

≥ 8 mm

4 kV<sub>eff</sub> 1 min

4 kV<sub>eff</sub> 1 s

Page 298 + 308

Type Cat. No.

WRS 2 115 Vuc/230 Vac

**8418260000**

WRZ 2 **8430250000**

115 Vuc±10% / 230 Vac±10 %

11 mAac±15% at Ue=230 V

8.5 mAac±15% at Ue=115 V

8 mAac±15% at Ue=115 V

2.5 VA±15% at Ue=230 V

1 VA±15% at Ue=115 V

0.9 W±15% at Ue=115 V

max. 250 Vdc / 250 Vac

(UL -> 13300/12300)

max. 5 A / max. 1250 VA\*

max. 8 A

100 mA / 5 Vdc

AgSnO<sub>2</sub>

max. 30 mΩ/max. 100 mΩ

at 1 A/6 Vdc

---

---

50 x 10<sup>6</sup> switching operations

1 x 10<sup>5</sup> switching operations

0.1 Hz

-25 °C...+50 °C

-40 °C...+60 °C

UL/CSA (nur 115 Vuc)

300 V

4 kV (1.2/50 μ)

III

2

≥ 8 mm

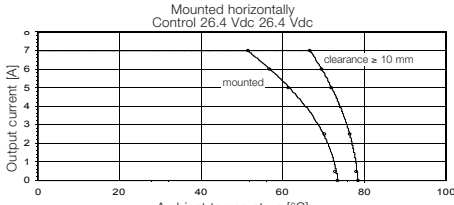
4 kV<sub>eff</sub> 1 min

4 kV<sub>eff</sub> 1 s

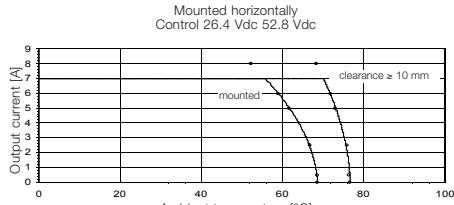
Page 298 + 308

# WAVESERIES Relay Coupler in Component Housings

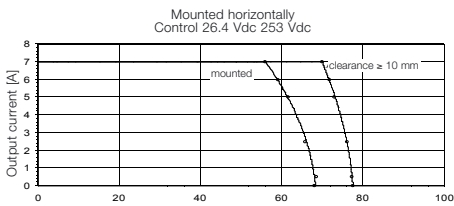
with 1NC / 1 NO



WRS 2 12/24 VDC • 8418270000



WRS 2 24/48 VUC • 8418280000



WRS 2 115 VUC/230 VAC • 8418290000

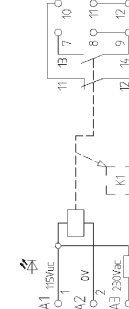
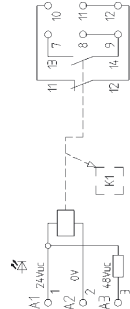
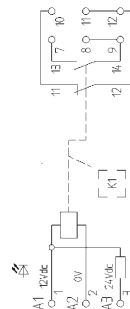
WRS 2 12/24 VDC

WRS 2 24/48 VUC

WRS 2 115 VUC/  
230 VAC



Schematic circuit diagram



## Ordering data

Screw connection

Tension clamp connection

## Input

Input voltage

Input current

Input power

## Output

Switching voltage

Continuous current AC / Switching power AC

Switch-on current

Min. switching

Contact material

Contact resistance (when new)

Pick-up delay at nominal voltage

Turn off delay

Mechanical service life

Electrical service life

Max. switching frequency at nominal voltage

Ambient temperature

Storage temperature

Approvals

## Insulation coordination acc. to EN 50178

Rated voltage

Rated impulse voltage

Overtoltage category

Pollution severity

Implemented clearance and creepage path

## Insulation and voltage strength

Insulation and voltage strength of entire circuit to mounting rail

## Testing

Input/output high voltage test

Accessories, dimensions and connection data see

\* at ambient temperature 20°C

Type	Cat. No.
WRS 2 12/24 Vdc	8418270000
WRZ 2	8430260000

Type	Cat. No.
WRS 2 24/48 Vuc	8418280000
WRZ 2	8430270000

Type	Cat. No.
WRS 2 115 Vuc/230 Vac	8418290000
WRZ 2	8430280000

12 Vdc±10% / 24 Vdc±10%  
19.7 mAdc±15% at Ue=12 V  
20.5 mAdc±15% at Ue=24 V

0.5 W±15% at Ue=24 V  
0.24 W±15% at Ue=12 V

max. 250 Vdc/250 Vac  
max. 5 A/max. 1250 VA\*  
max. 8 A  
100 mA/5 V  
AgSnO<sub>2</sub>  
max. 30 mΩ/max. 100 mΩ  
at 1 A/6 Vdc

50 x 10<sup>6</sup> switching operations  
1 x 10<sup>5</sup> switching operations  
0.1 Hz  
-25 °C...+50 °C  
-40 °C...+60 °C  
UL/CSA

300 V  
4 kV (1.2/50 μ)  
III  
2  
≥ 8 mm

4 kV<sub>eff</sub> 1 min

4 kV<sub>eff</sub> 1 s

Page 298 + 308

24 Vuc±10% / 48 Vuc±10%  
10 mAac±15% at Ue=48 V  
11.5 mAac±15% at Ue=24 V  
8.5 mAdc±15% at Ue=48 V  
7.2 mAdc±15% bei Ue=24 V  
0.48 VA±15% at Ue=48 V  
0.21 VA±15% at Ue=24 V  
0.4 W±15% at Ue=48 V  
0.17 W±15% at Ue=24 V

max. 250 Vdc/250 Vac  
max. 5 A/max. 1250 VA\*  
max. 8 A  
100 mA/5 V  
AgSnO<sub>2</sub>  
max. 30 mΩ/max. 100 mΩ  
at 1 A/6 Vdc

50 x 10<sup>6</sup> switching operations  
1 x 10<sup>5</sup> switching operations  
0.1 Hz  
-25 °C...+50 °C  
-40 °C...+60 °C  
UL/CSA

300 V  
4 kV (1.2/50 μ)  
III  
2  
≥ 8 mm

4 kV<sub>eff</sub> 1 min

4 kV<sub>eff</sub> 1 s

Page 298 + 308

115 Vuc±10% / 230 Vac±10%  
11 mAac±15% at Ue=230 V  
10 mAac±15% at Ue=115 V  
8 mAdc±15% at Ue=115 V

2.5 VA±15% at Ue=230 V  
1 VA±15% at Ue=115 V  
0.9 W±15% at Ue=115 V

max. 250 Vdc/250 Vac  
max. 5 A/max. 1250 VA\*  
max. 8 A  
100 mA/5 V  
AgSnO<sub>2</sub>  
max. 30 mΩ/max. 100 mΩ  
at 1 A/6 Vdc

50 x 10<sup>6</sup> switching operations  
1 x 10<sup>5</sup> switching operations  
0.1 Hz  
-25 °C...+50 °C  
-40 °C...+60 °C  
UL/CSA (nur 115 Vuc)

300 V  
4 kV (1.2/50 μ)  
III  
2  
≥ 8 mm

4 kV<sub>eff</sub> 1 min

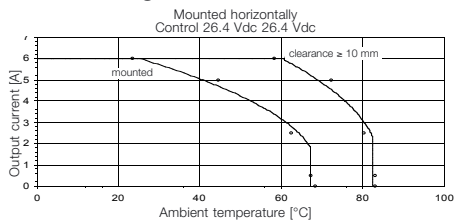
4 kV<sub>eff</sub> 1 s

Page 298 + 308

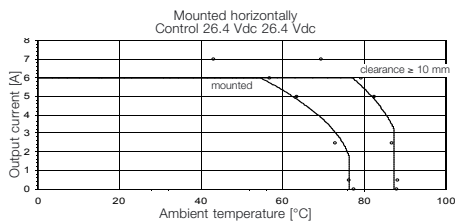


# WAVESERIES Relay Coupler in Component Housings

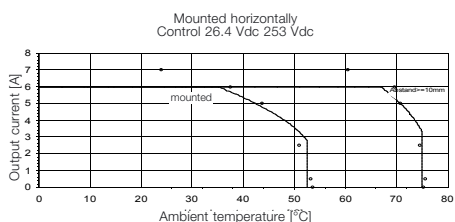
## with 2 changeover contacts



WRS 2 12/24 VDC • 8418300000



WRS 2 24/48 VUC • 8418310000



WRS 2 24 VUC/ 230 VAC • 8418320000

## WRS 2 12/24 VDC



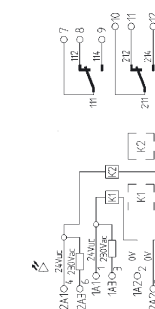
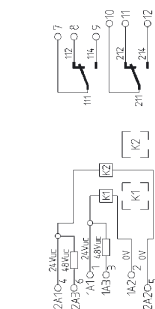
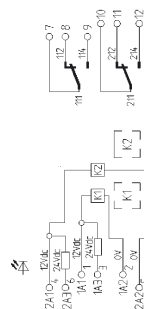
## WRS 2 24/48 VUC



## WRS 2 24 VUC/ 230 VAC



### Schematic circuit diagram



### Ordering data

Screw connection

Tension clamp connection

### Input

Input voltage

Input current

Input power

### Output

Switching voltage

Continuous current AC / Switching power AC

Switch-on current

Min. switching

Contact material

Contact resistance (when new)

Pick-up delay at nominal voltage

Turn off delay

Mechanical service life

Electrical service life

Max. switching frequency at nominal voltage

Ambient temperature

Storage temperature

Approvals

Type Cat. No.

WRS 2 12/24 Vdc

8418300000

WRZ 2 8430290000

12 Vdc±10% /24 Vdc±10 %

21 mA±15% at Ue=12 V

22 mA±15% at Ue=24 V

0.26 W±15% at Ue=12 V

0.53 W±15% at Ue=24 V

max. 150 Vdc /250 Vac

max. 5 A/max. 1250 VA\*

max. 10 A

100 mA/5 Vdc

Ag-alloy

max. 30 mΩ / max. 100 mΩ

at 1 A / 6 Vdc

typ. 6.5 ms (NO) /

4.5 ms (NC)

typ. 8 ms (NO) /

11 ms (NC)

20 x 10<sup>6</sup> switching operations

1.5 x 10<sup>5</sup> switching operations

0.1 Hz

-25 °C...+50 °C

-40 °C...+60 °C

UL/CSA

Type Cat. No.

WRS 2 24/48 Vuc

8418310000

WRZ 2 8430300000

24 Vuc±10% /48 Vuc±10 %

14 mA±15% at Ue=48 V

14 mA±15% at Ue=24 V

0.7 VA(W)±15% at Ue=48 V

0.35 VA(W)±15% at Ue=24 V

max. 150 Vdc /250 Vac

max. 5 A/max. 1250 VA\*

max. 10 A

100 mA/5 Vdc

Ag-alloy

max. 30 mΩ / max. 100 mΩ

at 1 A / 6 Vdc

typ. 6.5 ms (NO) /

4.5 ms (NC)

typ. 8 ms (NO)/

11 ms (NC)

20 x 10<sup>6</sup> switching operations

1.5 x 10<sup>5</sup> switching operations

0.1 Hz

-25 °C...+50 °C

-40 °C...+60 °C

UL/CSA

Type Cat. No.

WRS 2 24 VUC/230 Vac

8418320000

WRZ 2 8430310000

24 Vuc±10% /230 Vac±10%

15 mA±15% at Ue=230 V

14 mA±15% at Ue=24 V

0.35 W±15% at Ue=24 V

3.45 VA ±15% at Ue=230 V

max. 150 Vdc /250 Vac

max. 5 A/max. 1250 VA\*

max. 10 A

100 mA / 5 Vdc

Ag-alloy

max. 30 mΩ / max. 100 mΩ

at 1 A / 6 Vdc

typ. 6 ms (NO)/4.2 ms

(NO)/Eingang: 24 Vuc/230 Vac

typ. 4.4 ms (NO)/

5.4 ms (NC)

20 x 10<sup>6</sup> switching operations

150 x 10<sup>3</sup> switching operations

0.1 Hz

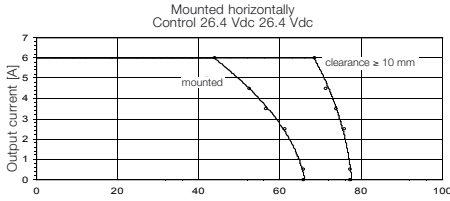
-25 °C...+50 °C

-40 °C...+60 °C

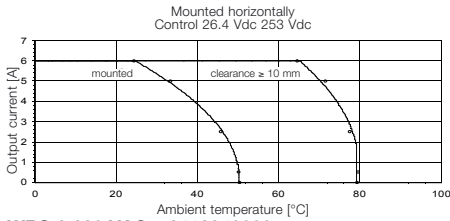
\* at ambient temperature 20°C

# WAVESERIES Relay Coupler in Component Housings

## with 3 NO contacts



**WRS 2 24 VUC • 8418330000**



**WRS 2 230 VAC • 8418340000**

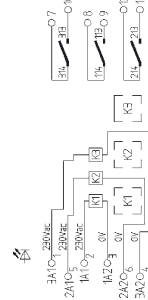
## WRS 2 24 VUC



## WRS 2 230 VAC



### Schematic circuit diagram



Ordering data	
Screw connection	
Tension clamp connection	

Type	Cat. No.
WRS 2 24 Vuc	<b>8418330000</b>
WRZ 2	<b>8430320000</b>

Type	Cat. No.
WRS 2 230 Vac	<b>8418340000</b>
WRZ 2	<b>8430330000</b>

Input	
Input voltage	3fach 24 Vac ±10 %
Input current	10.5 mAac ±15 % at U <sub>nom</sub> (per channel)
Input power	0.3 VA ±15 % (per channel) 0.25 W ±15 %

Input voltage	3 x 230 Vac ±10 %
Input current	10.3 mAac ±15 % at U <sub>nom</sub> (per channel)
Input power	2.4 VA ±15 % (per channel)

Output	
Switching voltage	max. 250 Vdc / 250 Vac
Continuous current AC / Switching power AC	max. 4 A/max. 1500 VA*
Switch-on current	max. 6 A
Min. switching	12 V/10 mA
Contact material	AgSnO <sub>2</sub>
Contact resistance (when new)	max. 100 mΩ at 1 A/24 Vdc
Pick-up delay at nominal voltage	typ. 5 ms
Turn off delay	typ. 21 ms
Mechanical service life	20 x 10 <sup>6</sup> switching operations
Electrical service life	1 x 10 <sup>5</sup> switching operations
Max. switching frequency at nominal voltage	0.1 Hz
Ambient temperature	-25 °C...+50 °C
Storage temperature	-40 °C...+60 °C
Approvals	UL/CSA

Switching voltage	max. 250 Vdc / 250 Vac
Continuous current AC / Switching power AC	max. 4 A/max. 1500 VA*
Switch-on current	max. 6 A
Min. switching	12 V/10 mA
Contact material	AgSnO <sub>2</sub>
Contact resistance (when new)	max. 100 mΩ at 1 A/24 Vdc
Pick-up delay at nominal voltage	typ. 8 ms
Turn off delay	typ. 11 ms
Mechanical service life	20 x 10 <sup>6</sup> switching operations
Electrical service life	1 x 10 <sup>5</sup> switching operations
Max. switching frequency at nominal voltage	0.1 Hz
Ambient temperature	-25 °C...+50 °C
Storage temperature	-40 °C...+60 °C

Insulation coordination acc. to EN 50178	
Rated voltage	300 V
Rated impulse voltage	4 kV (1.2/50 μ)
Overtoltage category	III
Pollution severity	2
Implemented clearance and creepage path	≥ 5.5 mm

Rated voltage	300 V
Rated impulse voltage	4 kV (1.2/50 μ)
Overtoltage category	III
Pollution severity	2
Implemented clearance and creepage path	≥ 5.5 mm

Insulation and voltage strength	
Insulation and voltage strength of entire circuit to mounting rail	4 kV <sub>eff</sub> 1 min

Insulation and voltage strength of entire circuit to mounting rail	4 kV <sub>eff</sub> 1 min
--	---------------------------

Testing	
Input/output high voltage test	4 kV <sub>eff</sub> 1 s
Accessories, dimensions and connection data see	Page 298 + 308

Input/output high voltage test	4 kV <sub>eff</sub> 1 s
Accessories, dimensions and connection data see	Page 298 + 308

\* at ambient temperature 20°C

# Relay Couplers in Components Housings EG 7

- Plugs on to locking socket RS EG 7 with combination foot TS 32, 35
- Overall width: 10 mm
- With combination foot for TS 15, TS 32 or TS 35
- Versions with 12 V, 24 V and 48 V full protective separation in accordance with VDE 0160, Part 101
- **All EGR EG 7 and RST EG 7 are approved by Germanischer Lloyd. Approval No. 35962 HH**

**EGR EG 7  
RST EG 7  
RS EG 7**



EGR EG 7



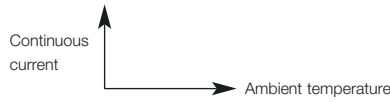
RST EG 7

RS EG 7

## Schematic circuit diagram

Derating curve

- a = mounted horizontally on rail without clearance
- b = mounted horizontally on rail, rowed with clearances

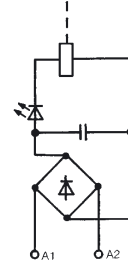
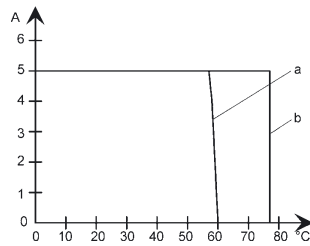


12 V0

24 V-

24 V-

24 V0



## Ordering data

Combination foot for TS 15, TS 32, TS 35	1 NO
	1 NC
EGR EG 7 spare relays, without connection unit	
Plug-in relay-coupl., without engagem. socket, 1 changeo. cont.	
Engage.socket f. plug-in relay coupler w. combin.foot TS 32, 35	

## Rated data of the coil

<b>Input voltage</b>	12 V0 +15 % -10 %
Rated consumption	320 mW +20 % -10 %
Max. switch-on current	120 mA
Combination foot for drop current	≤ 3 mA
Connection	- NO and NC
	- changeover contacts

## Rated data der Contacts

Max. output voltage	250 V
Continuous current	5 A
Max. switch-on current	8 A
Min. switching capacity/switching current	100 mW/10 mA
Bounce times	≤ 1 ms
Contact material <sup>2)</sup>	AgNi 0.15 gold-flashed
Bounce times	≤ 1 ms
Switching times	
pick up delay	≤ 8 ms
drop-out delay	≤ 6 ms
Service life, mechanical	> 15 x 10 <sup>6</sup> switching operations
- , 24 V-, 1.1 A, inductive load	≥ 2 x 10 <sup>6</sup> switching operations with free wheel diode
- , 230 V-, 5 A, resistive load	> 2 x 10 <sup>5</sup> switching operations
Status indicator	Green LED
Storage temperature	-40 °C...+60 °C
Ambient temperature	-25 °C...+60 °C

## Insulation coordination acc. to EN 50178

Safe isolation according to VDE 0106 part 101	DIN VDE 0106
Rated impulse voltage	8 kV
Clearances and creepage distances	≥ 8 mm
Overtoltage category	III
Pollution severity	2

## Accessories

Cross-connection comb. 16fold	QB 16/10.16	<b>1650330000</b>
Accessories, dimensions and connection data see	Page 304	

1) Serves only as a spare part for NO and NC

Type	Cat. No.
EGR EG7	<b>8092310000</b>
EGR EG7	<b>8092320000</b>
EGR EG7	<b>8092330000<sup>1)</sup></b>
RST EG7	<b>8216550000</b>
RS EG7	<b>8193830000</b>

<b>12 V0 +15 % -10 %</b>
320 mW +20 % -10 %
120 mA
≤ 3 mA
Screw connection
0.5...1.5 mm <sup>2</sup>
AWG-Conductor 26...16
0.5...2.5 mm <sup>2</sup>

Type	Cat. No.
EGR EG7	<b>8216520000</b>
EGR EG7	<b>8216530000</b>
EGR EG7	<b>8218200000<sup>1)</sup></b>
RST EG7	<b>8216570000</b>
RS EG7	<b>8193830000</b>

<b>24 V- +15 % -10 %</b>
280 mW +20 % -10 %
12 mA
≤ 3 mA
Screw connection
0.5...1.5 mm <sup>2</sup>
AWG-Conductor 26...16
0.5...2.5 mm <sup>2</sup>

Type	Cat. No.
EGR EG7	<b>8147120000</b>
EGR EG7	<b>8147140000</b>
EGR EG7	<b>8160030000<sup>1)</sup></b>
RST EG7	<b>8216560000</b>
RS EG7	<b>8193830000</b>

<b>24 V- +15 % -10 %</b>
280 mW +20 % -10 %
12 mA
≤ 3 mA
Screw connection
0.5...1.5 mm <sup>2</sup>
AWG-Conductor 26...16
0.5...2.5 mm <sup>2</sup>

Type	Cat. No.
EGR EG7	<b>8092340000</b>
EGR EG7	<b>8092350000</b>
EGR EG7	<b>8092360000<sup>1)</sup></b>
RST EG7	<b>8216580000</b>
RS EG7	<b>8193830000</b>

<b>24 V0 +15 % -10 %</b>
280 mW +20 % -10 %
240 mA
≤ 3 mA
Screw connection
0.5...1.5 mm <sup>2</sup>
AWG-Conductor 26...16
0.5...2.5 mm <sup>2</sup>

Max. output voltage	250 V
Continuous current	5 A
Max. switch-on current	8 A
Min. switching capacity/switching current	100 mW/10 mA
Bounce times	≤ 1 ms
Contact material <sup>2)</sup>	AgNi 0.15 <b>5 μ Au</b>
Bounce times	≤ 1 ms
Switching times	
pick up delay	≤ 8 ms
drop-out delay	≤ 6 ms
Service life, mechanical	> 15 x 10 <sup>6</sup> switching operations
- , 24 V-, 1.1 A, inductive load	≥ 2 x 10 <sup>6</sup> switching operations with free wheel diode
- , 230 V-, 5 A, resistive load	> 2 x 10 <sup>5</sup> switching operations
Status indicator	Green LED
Storage temperature	-40 °C...+60 °C
Ambient temperature	-25 °C...+60 °C

Safe isolation according to VDE 0106 part 101	DIN VDE 0106
Rated impulse voltage	8 kV
Clearances and creepage distances	≥ 8 mm
Overtoltage category	III
Pollution severity	2

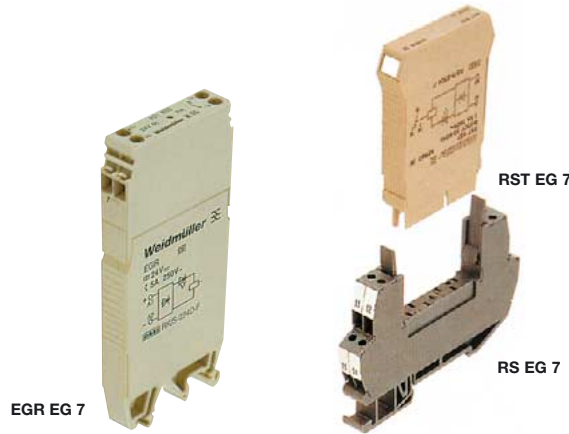
Cross-connection comb. 16fold	QB 16/10.16	<b>1650330000</b>
Accessories, dimensions and connection data see	Page 304	

After switching higher powers (b...d) lower powers (a) can no longer be switched.

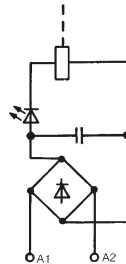
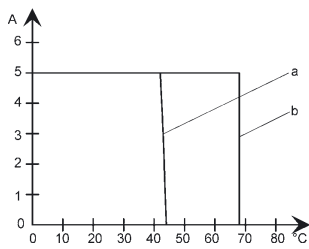
<sup>2)</sup> The following ratings can safely be switched:  
a) 100 mV...60 V ac/dc/100 μA...300 mA

b) 5 V... 24 V dc/10 mA... 1.2 A  
c) 24 V ... 60 V dc/10 mA... 500 mA  
d) 10 V...250 V ac/10 mA... 5 A

# Relay Couplers in Components Housings EG 7



48 V0      60 V~      115 V0      230 V~      230 V~



Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
EGR EG7	<b>8092370000</b>	EGR EG7	<b>8092400000</b>	EGR EG7	<b>8092430000</b>	EGR EG7	<b>8092460000</b>	EGR EG7	<b>8178200000</b>
EGR EG7	<b>8092380000</b>	EGR EG7	<b>8092410000</b>	EGR EG7	<b>8092440000</b>	EGR EG7	<b>8092470000</b>		
EGR EG7	<b>8092390000<sup>1)</sup></b>	EGR EG7	<b>8092420000<sup>1)</sup></b>	EGR EG7	<b>8092450000<sup>1)</sup></b>	EGR EG7	<b>8092480000<sup>1)</sup></b>		
RST EG7	<b>8216590000</b>	RST EG7	<b>8216600000</b>	RST EG7	<b>8216610000</b>	RST EG7	<b>8216620000</b>	RST EG7	<b>8216630000</b>
RS EG7	<b>8193830000</b>	RS EG7	<b>8193830000</b>	RS EG7	<b>8193830000</b>	RS EG7	<b>8193830000</b>	RS EG7	<b>8193830000</b>
<b>48 V0 +15 % -10 %</b>		<b>60 V0 +15 % -10 %</b>		<b>115 V0 +15 % -10 %</b>		<b>230 V~ +15 % -10 %</b>		<b>230 V~ +15 % -10 %</b>	
280 mW +15 % -10 %		280 mW +15 % -10 %		330 mW +15 % -10 %		280 mW +15 % -10 %		280 mW +15 % -10 %	
480 mA		600 mA		160 mA		185 mA		185 mA	
≤ 3 mA		≤ 3 mA		≤ 3 mA		≤ 3 mA		≤ 3 mA	
Screw connection		Screw connection		Screw connection		Screw connection		Screw connection	
0.5...1.5 mm <sup>2</sup>		0.5...1.5 mm <sup>2</sup>		0.5...1.5 mm <sup>2</sup>		0.5...1.5 mm <sup>2</sup>		0.5...1.5 mm <sup>2</sup>	
AWG-Conductor 26...16		AWG-Conductor 26...16		AWG-Conductor 26...16		AWG-Conductor 26...16		AWG-Conductor 26...16	
0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>	
250 V		250 V		250 V		250 V		250 V	
5 A		5 A		5 A		5 A		5 A	
8 A		8 A		8 A		8 A		8 A	
100 mW/10 mA		100 mW/10 mA		100 mW/10 mA		100 mW/10 mA		40 μW/2	
≤ 1 ms		≤ 1 ms		≤ 1 ms		≤ 1 ms		≤ 1 ms	
AgNi 0.15 gold-flashed		AgNi 0.15 gold-flashed		AgNi 0.15 gold-flashed		AgNi 0.15 gold-flashed		AgNi 0.15 <b>5 μ Au</b>	
≤ 2.5 ms		≤ 3.8 ms		≤ 3.8 ms		≤ 2 ms		≤ 2 ms	
≤ 12 ms		≤ 12 ms		≤ 12 ms		≤ 12 ms		≤ 12 ms	
≤ 10 ms		≤ 10 ms		≤ 10 ms		≤ 10 ms		≤ 10 ms	
> 15 x 10 <sup>6</sup> switching operations		> 15 x 10 <sup>6</sup> switching operations		> 15 x 10 <sup>6</sup> switching operations		> 15 x 10 <sup>6</sup> switching operations		> 15 x 10 <sup>6</sup> switching operations	
≥ 2 x 10 <sup>6</sup> switching operations		≥ 2 x 10 <sup>6</sup> switching operations		≥ 2 x 10 <sup>6</sup> switching operations		≥ 2 x 10 <sup>6</sup> switching operations		≥ 2 x 10 <sup>6</sup> switching operations	
with free wheel diode		with free wheel diode		with free wheel diode		with free wheel diode		with free wheel diode	
> 2 x 10 <sup>5</sup> switching operations		> 2 x 10 <sup>5</sup> switching operations		> 2 x 10 <sup>5</sup> switching operations		> 2 x 10 <sup>5</sup> switching operations		> 2 x 10 <sup>5</sup> switching operations	
Green LED		Green LED		Green LED		Green LED		Green LED	
-40 °C...+60 °C		-40 °C...+60 °C		-40 °C...+60 °C		-40 °C...+60 °C		-40 °C...+60 °C	
-25 °C...+60 °C		-25 °C...+60 °C		-25 °C...+60 °C		-25 °C...+60 °C		-25 °C...+60 °C	
DIN VDE 0106									
8 kV		8 kV		8 kV		8 kV		8 kV	
≥ 8 mm		≥ 8 mm		≥ 8 mm		≥ 8 mm		≥ 8 mm	
III		III		III		III		III	
2		2		2		2		2	
QB 16/10.16 <b>1650330000</b>		QB 16/10.16 <b>1650330000</b>		QB 16/10.16 <b>1650330000</b>		QB 16/10.16 <b>1650330000</b>		QB 16/10.16 <b>1650330000</b>	
Page 304		Page 304		Page 304		Page 304		Page 304	

# PLUGSERIES Relays on Sockets



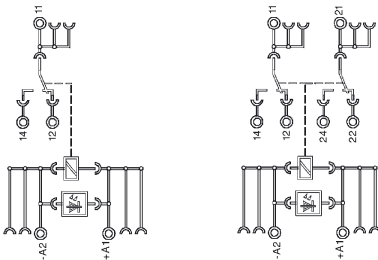
## PRZ/PRS



## PRZ/PRS



PRS/PRZ xxx 1CO    PRS/PRZ xxx 2CO



- Modular system comprising:
  - Relay socket for mounting rails
  - LED indicator unit / RC combination
  - retainer clip
  - pluggable relays
- Independent connection technology: screw or tension clamp technology
- Compatible with low power relays type RT / Standard with 1 or 2 CO contacts
- Coil and root-contacts cross-connectable with cross-connection type ZQV 2.5 N
- Available as complete module or as spare parts

## DC-Version

Type/Version	Cat. No.	Qty.
<b>Screw connection</b>		
PRS 12Vdc LD 1CO	8536471001	10
PRS 12Vdc LD 2CO	8536501001	10
PRS 24Vdc LD 1CO	8530621001	10
PRS 24Vdc LD 2CO	8530631001	10
PRS 115Vdc LD 1CO	8536510000	10
PRS 115Vdc LD 2CO	8536520000	10
PRS 24Vdc LD 2CO SGR 282	8596000000	10
with gold-plated relay contacts:		
PRS 24Vdc LD 2CO AU	8561760000	10

## Tension clamp connection

PRZ 12Vdc LD 1CO	8536571001	10
PRZ 12Vdc LD 2CO	8536591001	10
PRZ 24Vdc LD 1CO	8530691001	10
PRZ 24Vdc LD 2CO	8530701001	10
PRZ 115Vdc LD 1CO	8536610000	10
PRZ 115Vdc LD 2CO	8536630000	10
PRZ 24Vdc LD 2CO SGR 282	8595970000	10
with gold-plated relay contacts:		
PRZ 24Vdc LD 2CO AU	8552440000	10

Other variants on request

## Technical data

Input voltage	12 V dc ... 24Vdc ... 115Vdc
Rated consumption, typ	400 mW
Status indicator	pluggable LED-housing, green LED

## Output

Contact version	1 x UM / 2 x UM
Max. output voltage	250Vuc
Max. switching current	16A / 2 x 8A
Continuous current	10A
Rated braking capacity	4kVA / 2 x 2kVA
Service life, mech.	30 x 10 <sup>6</sup>

## Input/output

Clearance and creepage path	> 8mm
Protective separation	DIN VDE 0106 T. 101
Dielectric strength	> 4kV eff
Insulation coordinates acc. to EN 50178	III / 2

## Miscellaneous data

Ambient temperature	-40°C ... +50°C
Protection class	IP 20
Rated cross-section	0.5...2.5mm <sup>2</sup>
Flammability	V0
Relay type	Schrack RT1 / RT2
Dimensions WxHxT	15.2 x 91 x 85
Approvals	CE, UL recognized, cUL
Rail mounted	TS 35

## Accessories

Cross-connection	
2-pole black	ZQV 2.5N/4-2 SW 1784270000 60
2-pole red	ZQV 2.5N/4-2 RT 1784280000 60
2-pole blue	ZQV 2.5N/4-2 BL 1784290000 60

## Marking tags

WS 10/5	1060860000
WS 15/5	1609880000

## AC-Version

Type/Version	Cat. No.	Qty.
<b>Screw connection</b>		
PRS 24Vac LD 1CO	8536530000	10
PRS 24Vac LD 2CO	8536560000	10
PRS 120Vac LD 1CO	8530641001	10
PRS 120Vac LD 2CO	8530661001	10
PRS 230Vac LD 1CO	8530671001	10
PRS 230Vac LD 2CO	8530681001	10
with gold-plated relay contacts:		
PRS 120Vac LD 2CO AU	8595960000	10
PRS 230Vac LD 2CO AU	8595990000	10

## Tension clamp connection

PRZ 24Vac LD 1CO	8536651001	10
PRZ 24Vac LD 2CO	8536681001	10
PRZ 120Vac LD 1CO	8530710001	10
PRZ 120Vac LD 2CO	8530720000	10
PRZ 230Vac LD 1CO	8530731001	10
PRZ 230Vac LD 2CO	8530741001	10
with gold-plated relay contacts:		
PRZ 120Vac LD 2CO AU	8575940000	10
PRZ 230Vac LD 2CO AU	8575950000	10

Other variants on request

## Technical data

Input voltage	24Vac ... 120Vac ... 230Vac
Rated consumption, typ	760 VA
Status indicator	pluggable LED-housing, green LED

## Output

Contact version	1 x UM / 2 x UM
Max. output voltage	250Vuc
Max. switching current	16A / 2 x 8A
Continuous current	10A
Rated braking capacity	4kVA / 2 x 2kVA
Service life, mech.	5 x 10 <sup>6</sup>

## Input/output

Clearance and creepage path	> 8mm
Protective separation	DIN VDE 0106 T. 101
Dielectric strength	> 4kV eff
Insulation coordinates acc. to EN 50178	III / 2

## Miscellaneous data

Ambient temperature	-40°C ... +50°C
Protection class	IP 20
Rated cross-section	0.5...2.5mm <sup>2</sup>
Flammability	V0
Relay type	Schrack RT1 / RT2
Dimensions WxHxT	15.2 x 91 x 85
Approvals	CE, UL recognized, cUL
Rail mounted	TS 35

## Accessories

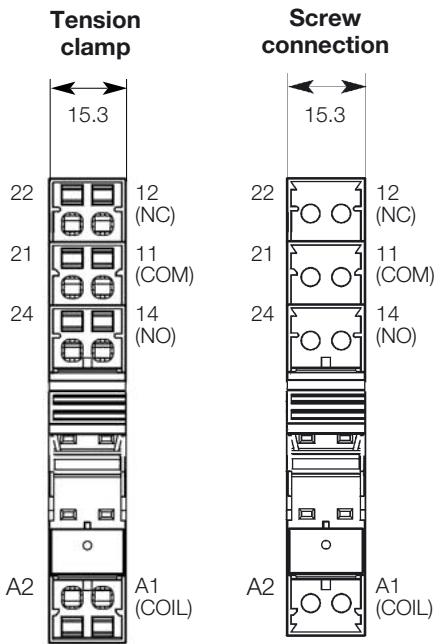
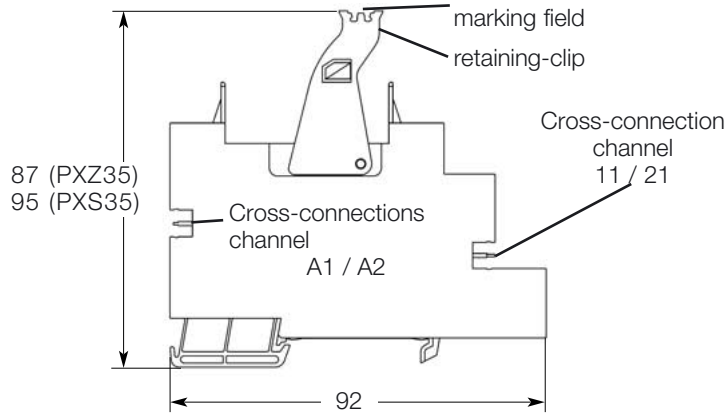
Cross-connection	
2-pole black	ZQV 2.5N/4-2 SW 1784270000 60
2-pole red	ZQV 2.5N/4-2 RT 1784280000 60
2-pole blue	ZQV 2.5N/4-2 BL 1784290000 60

## Marking tags

WS 10/5	1060860000
WS 15/5	1609880000

# PLUGSERIES Relays on Sockets

## Accessories



### Empty base for rail mounted TS 35

Screw connection  
Tension clamp connection

Type	Cat. No.	Qty.
PXS35	<b>8533771001</b>	10
PXZ35	<b>8536691001</b>	10

### Technical data

Rated current 16 A  
Rated voltage 250 V  
Dielectric strength coil/contacts > 4 kV  
Protection class IP 20  
Rated cross-section 2.5 mm<sup>2</sup>  
Insulation stripping length  
- Screw connection 8 mm  
- Tension clamp connection 10 mm  
Ambient temperature -40°C ... +60°C  
Flammability class UL 94 V0

### Holding clamp

Type	Cat. No.	Qty.
PRC	<b>8536700000</b>	100

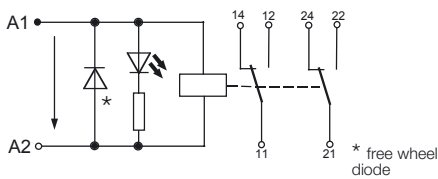
### Operating indication

LED indicator with free-wheeling diode

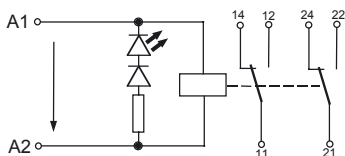
6 ... 24 Vdc	PLED 24 Vdc	<b>8536710000</b>	20
6 ... 24 Vdc	PLED 24 Vdc red	<b>8611010000</b>	20
48 ... 60 Vdc	PLED 48 Vdc	<b>8536720000</b>	20
115 Vdc	PLED 115 Vdc	<b>8536730000</b>	20
12 ... 24 Vac	PLED 24 Vac	<b>8536750000</b>	20
115 Vac	PLED 120 Vac	<b>8536760000</b>	20
230 Vac	PLED 230 Vac	<b>8536780000</b>	20
230 Vac	PLED 230 Vac red	<b>8611000000</b>	20
RC combination 120...230 VAC/DC	PLRC 200 nF/200Ω	<b>8566530000</b>	20

## Operating indication

### DC-Version



### AC-Version



### Pluggable cross-connections

2-pole black	ZQV 2.5N/4-2SW	<b>1784270000</b>	60
2-pole red	ZQV 2.5N/4-2RT	<b>1784280000</b>	60
2-pole blue	ZQV 2.5N/4-2BL	<b>1784290000</b>	60

### Marking tags

10 x 5 mm

Type	Cat. No.	Qty.
WS 10/5	<b>1060860000</b>	200
WS 15/5	<b>1609880000</b>	96

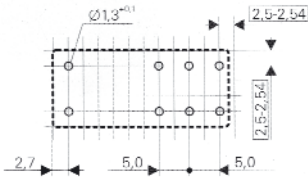


# PLUGSERIES Relays on Sockets

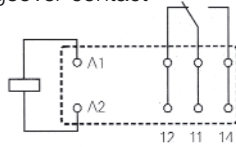
## Pluggable relay types

### Print figure/circuit diagram Relay type RT/SGR

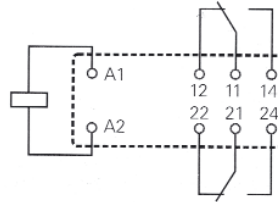
16 A, Pinning 5 mm



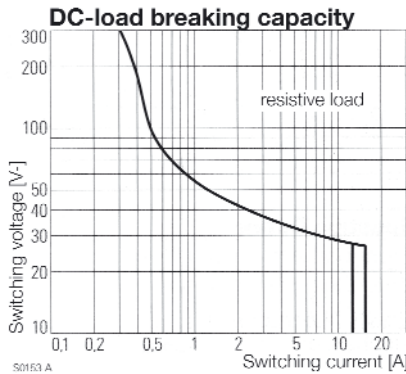
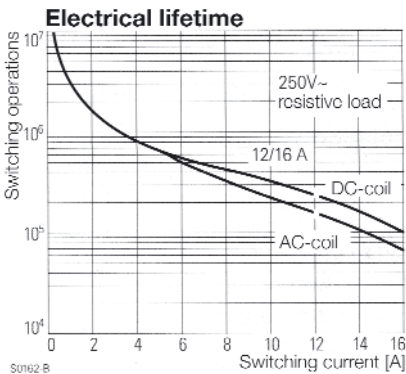
1 changeover contact



2 changeover contacts



## SCHRACK RT



#### Pluggable relay

12 Vdc 1 changeover contact
12 Vdc 2 changeover contacts
24 Vdc 1 changeover contact
24 Vdc 1 changeover contact AU
24 Vdc 2 changeover contacts
24 Vdc 2 changeover contacts AU
48 Vdc 1 changeover contact
48 Vdc 2 changeover contacts
60 Vdc 2 changeover contacts
110 Vdc 1 changeover contact
110 Vdc 2 changeover contacts
24 Vac 1 changeover contact
24 Vac 2 changeover contacts
115 Vac 1 changeover contact
115 Vac 1 changeover contact AU
115 Vac 2 changeover contacts
115 Vac 2 changeover contacts AU
230 Vac 1 changeover contact
230 Vac 1 changeover contact AU
230 Vac 2 changeover contacts
230 Vac 2 changeover contacts AU

Type Schrack RT	Cat. No.	Qty.
RT 314012	4058470000	20
RT 424012	4058560000	20
RT 314024	4058480000	20
RT 315024	4058490000	20
RT 424024	4058570000	20
RT 425024	4058580000	20
RT 314048	4058740000	20
RT 424048	4058750000	20
RT 424060	4058760000	20
RT 314110	4058500000	20
RT 424110	4058590000	20
RT 315524	4058510000	20
RT 424524	4058600000	20
RT 314615	4058520000	20
RT 315625	4058530000	20
RT 424615	4058610000	20
RT 425615	4058620000	20
RT 314730	4058540000	20
RT 315730	4058550000	20
RT 424730	4058630000	20
RT 425730	4058640000	20

#### Technical data

Contact number and type	1 changeover contact or 2 changeover contacts
Contact material	AgNi 90/10, AgNi 0.15 htv
Switching current	16 A 1We/2 x 8 A 2We
Switching voltage	250 V ac
Braking capacity	4 kVA
Min. switching current / braking capacity	10 mA /100 mW
Min. braking capacity AU contact	40 μW
Rated consumption	400 mW dc/0.55 VA ac
Dielectric strength Sp./Kont.	5 kV
Response / drop out time:	DC coil: typ. 7/3 ms AC coil: 9/45 ms
Bounce time NO contact/normally closed contact	typ. 1/3 ms
Mechanical service life:	DC coil: > 30 x 10 <sup>6</sup> switching operations AC coil: > 30 x 10 <sup>6</sup> switching operations
Braking capacity	1-pole DC 13: 1.25A, L/R = 80 ms 2.3 x 10 <sup>5</sup> 2-pole DC 13: 1.25A, L/R = 80 ms 2.8 x 10 <sup>5</sup> 2-pole AC 15: 1.2A, cosL/R = 0.3 6050x

#### Miscellaneous data

Protection class	IP 40
Flammability class UL	V0
Ambient temperature	DC coil: -40°C ... +85°C AC coil: -40°C ... +70°C
Weight	14 g
Approvals	UL, CSA, VDE, ÖVE

# PLUGSERIES Relays on Sockets

## ELESTA SGR Relais with manual operation



## RP 3SL Relays for high switching currents



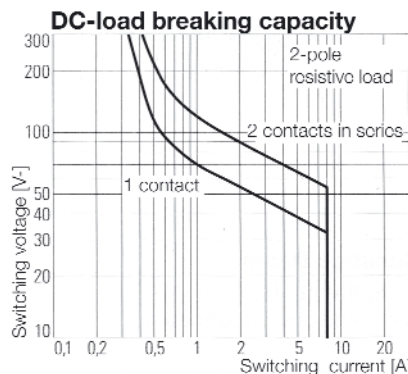
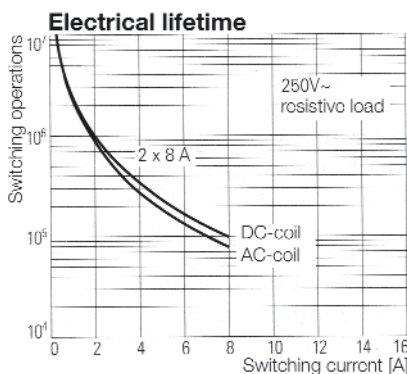
Pluggable relay	
24 Vdc 1 changeover contact with test button	
24 Vdc 2 changeover contacts with test button	
24 Vdc 1 normally-open contact	
Technical data	
Contact number and type	2 changeover contacts with test button
Contact material	AgCuNi
Switching current	16 A 1We/2 x 8 A 2We
Peak inrush current	
Switching voltage	250 Vac
Braking capacity	4 kVA
Min. switching current / braking capacity	10 mA / 100 mW
Rated consumption	500 mW
Dielectric strength Sp./Kont.	5 kV
Response / drop out time:	DC coil typ. 10/3 ms
Bounce time NO contact/normally closed contact	typ. 0.5/5 ms
Mechanical service life:	DC coil > 30 x 10 <sup>6</sup> switching operations
Miscellaneous data	
Protection class	IP 40
Flammability class UL	V1
Ambient temperature	DC coil -25°C ... +70°C
Weight	20 g
Approvals	SEV, UL, CSA, DEMKO, VDE, PTB

Type	ELESTA SGR	Cat. No.	Qty.
	SGR 662 24 Vdc T	<b>8550510000</b>	10
	SGR 282 24 Vdc T	<b>8550520000</b>	10

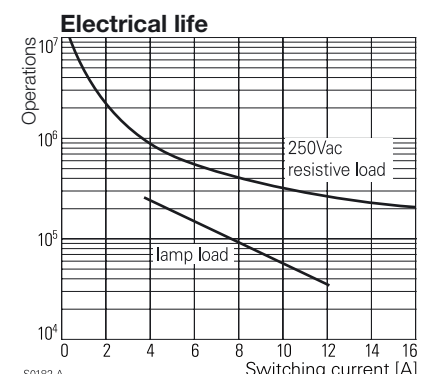
Type	Schrack RP 3SL	Cat. No.	Qty.
	RP3SL 24 Vdc 1NO	<b>8588510000</b>	20
	1 normally-open contact		
	AgSnO <sub>2</sub>		
	25 A		
	120 A / 20 ms		
	250 V		
	4 kVA		
	500 mW		
	4 kV		
	typ. 8/2 ms		
	typ. 2 ms		
	30 x 10 <sup>6</sup> switching operations		
	IP 40		
	-40°C ... +70°C		
	18 g		
	SEV, UL, CSA, VDE		

Contact service life			
Type	Load	switch. oper.	Regulation
RP3SL	12 A, 250 V~, cosφ=1	3x10 <sup>5</sup>	
RP3SL	TV 8	25x10 <sup>3</sup>	UL 508
RP3SL	2500 W, 230 V~, halogene lamps	>10 <sup>4</sup>	
RP3SL	1000 W, 250 V~, glow lamps	2.3x10 <sup>5</sup>	
RP3SL	3000 W, 250 V~, glow lamps	3.6x10 <sup>4</sup>	
RP3SL	1500 VA, fluorescent tubes 163 µF	10 <sup>4</sup>	

## Leistungsrelais Type RT2 2 changeover contacts

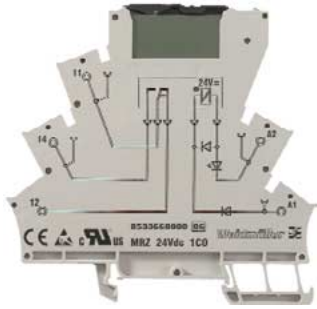


## Power relay RP 3SL



# Relay Couplers on Sockets MICROSERIES in Terminal Format

## MICRORELAY MRS/MRZ



MRS 5 Vdc 1CO

MRS 12 Vdc 1CO

MRZ 5 Vdc 1CO

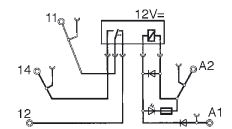
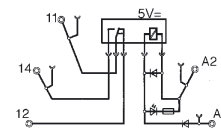
MRZ 12 Vdc 1CO



This module can be used as a universal interface between the controller and actuator for switching small to medium-sized loads.

- Pluggable cross-connection in the input and output reduces wiring costs
- 6-mm width
- Flexible thanks to screw and tension clamp connection versions

### Schematic circuit diagram



### Ordering data

for TS 35

Screw connection

Tension clamp connection

Type

Cat. No.

MRS 5 Vdc 1CO **8556080000**

MRZ 5 Vdc 1CO **8556150000**

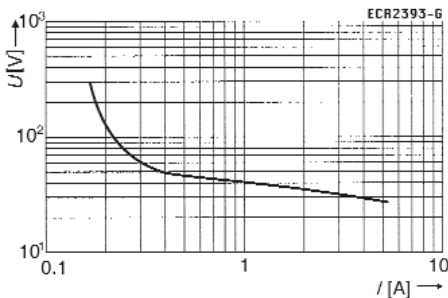
Type

Cat. No.

MRS 12 Vdc 1CO **8556070000**

MRZ 12 Vdc 1CO **8556140000**

### Limit diagram



### Technical data

#### Input

Input voltage

Input voltage ac with  $U_{Nenn}$

Input voltage dc with  $U_{Nenn}$

Input power

Making threshold, (typ.)

Cut-out threshold (typ.)

Status indicator

Reaction time at  $U_N$  (typ.)

Release at  $U_N$  (typ.)

Voltage of relay coil

5 Vdc  $\pm 20\%$  (4...6 V)

12 Vdc  $\pm 20\%$  (9.6...14.4 V)

38.5 mAdc  $\pm 10\%$

17.2 mAdc  $\pm 10\%$

193 mW  $\pm 10\%$

210 mW  $\pm 10\%$

3.2 V / 21.6 mA

6.4 V / 8.4 mA

1.6 V / 8 mA

2.5 V / 2.4 mA

Green LED

Green LED

6.2 ms

5.8 ms

3.9 ms

6.9ms

5 V

12 V

#### Functionality

Operating indication

Reverse polarity protection

Free wheel diode

yes

yes

yes

yes

yes

yes

#### Output

Switching voltage

ac: continuous current/switching power (see derating diagram)

Switch-on current

dc: Continuous current/switching power

Min. braking capacity

Contact material

Mechanical service life

Max. switching frequency at nominal voltage

1 changeover contact

1 changeover contact

250 Vac acc. to VDE

250 Vac acc. to VDE

240 Vac acc. to UL/CSA

240 Vac acc. to UL/CSA

max. 6 A / max. 1500 VA

max. 6 A / max. 1500 VA

max. 6 A

max. 6 A

see limit diagram

see limit diagram

12 V / 10 mA

12 V / 10 mA

AgSnO

AgSnO

20 x 10<sup>6</sup> switching operations

20 x 10<sup>6</sup> switching operations

0.1 Hz

0.1 Hz

Ambient temperature

-25 °C...+50 °C

-25 °C...+50 °C

Storage temperature

-40 °C...+60 °C

-40 °C...+60 °C

Climate

40 °C / 93 % rel. humidity,

40 °C / 93 % rel. humidity,

no condensation

no condensation

Approvals

CE, cUL

CE, cUL

### Insulation coordination acc. to EN 50178

Rated voltage

Rated impulse voltage

Overvoltage category

Pollution severity

Insulation coord.- and voltage proof, input/output mounting rail

Achieved clearances and creepage distances

300 V

300 V

4 kV (1.2 / 50  $\mu$ s)

4 kV

III

III

2

2

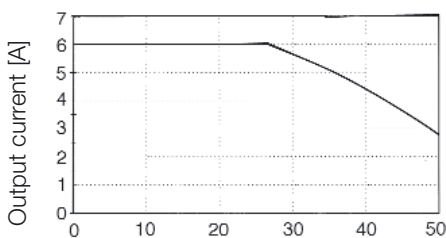
4 kV<sub>eff</sub> / 1 min

4 kV<sub>eff</sub> / 1 min

$\geq 5.5$  mm

$\geq 5.5$  mm

### Current temperature-rise curve



Ambient temperature [°C]

# Relay Couplers on Sockets MICROSERIES in Terminal Format

MRS 24 Vdc 1CO

MRS 24 Vuc 1CO

MRS 48 Vuc 1CO

MRS 60 Vdc 1CO

MRS 120 Vuc 1CO

MRS 230 Vac 1CO

MRZ 24 Vdc 1CO

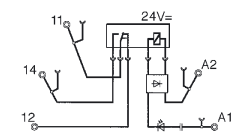
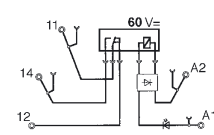
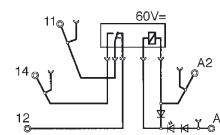
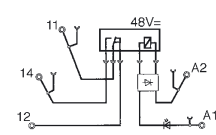
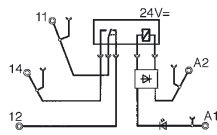
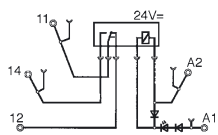
MRZ 24 Vuc 1CO

MRZ 48 Vuc 1CO

MRZ 60 Vdc 1CO

MRZ 120 Vuc 1CO

MRZ 230 Vac 1CO

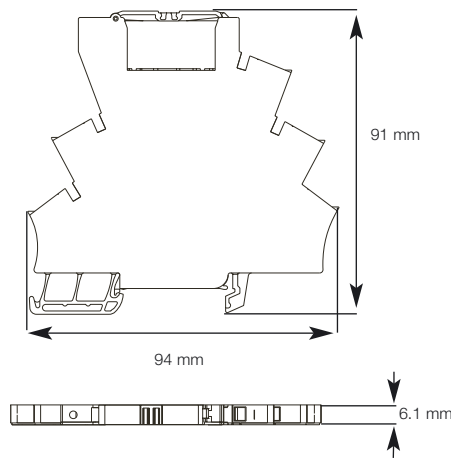


Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
MRS 24 Vdc 1CO	<b>8533640000</b>	MRS 24 Vuc 1CO	<b>8556050000</b>	MRS 48 Vuc 1CO	<b>8556040000</b>	MRS 60 Vdc 1CO	<b>8556060000</b>	MRS 120 Vuc 1CO	<b>8556030000</b>	MRS 230 Vac 1CO	<b>8556020000</b>
MRZ 24 Vdc 1CO	<b>8533660000</b>	MRZ 24 Vuc 1CO	<b>8556120000</b>	MRZ 48 Vuc 1CO	<b>8556110000</b>	MRZ 60 Vdc 1CO	<b>8556130000</b>	MRZ 120 Vuc 1CO	<b>8556100000</b>	MRZ 230 Vac 1CO	<b>8556090000</b>
24 Vdc ± 20 % (19.2...28.8 V)		24 Vuc ±10% (21.6...26.4 V)		48 Vuc ±10% (43.2...52.8 V)		60 Vdc ±20% (48...72 V)		120 Vuc +10%/-15% (102...132 V)		230 Vac ±10% (207...253 V)	
6.6 mAdc ±10 %		11 mA ±10 %		5 mA ±20 %		3.3 mAdc ±20 %		3.5 mAac ±15 %		7.6 mA ±15%	
160 mW ±10%		6.4 mA ±20 %		4 mA ±20 %		200 mW ±10 %		0.42 VA ±15 %		1.55 VA ±15 %	
15.4 V / 4 mA		154 mW ±10 %		29 V / 2.2 mA		35 V / 1.6 mA		71 V / 1.8 mA		103 V / 5 mA	
6.5 V / 1.2 mA		15.8 V / 3.6 mA		11 V / 1.3 mA		11 V / 0.6 mA		22 V / 0.5 mA		49 V / 2.5 mA	
Green LED		7 V / 1.3 mA		Green LED		Green LED		Green LED		Green LED	
6.6 ms		Green LED		6.1 ms		5.9 ms		6.7 ms		13 ms	
5.8 ms		7.3 ms		5.8 ms		6.5 ms		8.1 ms		11 ms	
24 V		9 ms		48 V		60 V		60 V		24 V	
		24 V									
yes		yes		yes		yes		yes		yes	
yes		yes		yes		yes		yes		-	
yes		yes		yes		yes		yes		-	
1 changeover contact		1 changeover contact		1 changeover contact		1 changeover contact		1 changeover contact		1 changeover contact	
250 Vac acc. to VDE		250 V ~ acc. to VDE		250 Vac acc. to VDE		250 Vac acc. to VDE		250 V ~ acc. to VDE		250 V ~ acc. to VDE	
240 Vac acc. to UL/CSA		240 V ~ acc. to UL/CSA		240 Vac acc. to UL/CSA		240 Vac acc. to UL/CSA		240 V ~ acc. to UL/CSA		240 V ~ acc. to UL/CSA	
max. 6 A / max. 1500 VA		max. 6 A / max. 1500 VA		max. 6 A / max. 1500 VA		max. 6 A / max. 1500 VA		max. 6 A / max. 1500 VA		max. 6 A / max. 1500 VA	
max. 6 A		max. 6 A		max. 6 A		max. 6 A		max. 6 A		max. 6 A	
see limit diagram		see limit diagram		see limit diagram		see limit diagram		see limit diagram		see limit diagram	
12 V /10 mA		12 V /10 mA		12 V /10 mA		12 V /10 mA		12 V /10 mA		12 V /10 mA	
AgSnO		AgSnO		AgSnO		AgSnO		AgSnO		AgSnO	
20 x 10 <sup>6</sup> switching operations		20 x 10 <sup>6</sup> switching operations		20 x 10 <sup>6</sup> switching operations		20 x 10 <sup>6</sup> switching operations		20 x 10 <sup>6</sup> switching operations		20 x 10 <sup>6</sup> switching operations	
0.1 Hz		0.1 Hz		0.1 Hz		0.1 Hz		0.1 Hz		0.1 Hz	
-25 °C...+50 °C		-25 °C...+50 °C		-25 °C...+50 °C		-25 °C...+50 °C		-25 °C...+50 °C		-25 °C...+50 °C	
-40 °C...+60 °C		-40 °C...+60 °C		-40 °C...+60 °C		-40 °C...+60 °C		-40 °C...+60 °C		-40 °C...+60 °C	
40 °C / 93 % rel. humidity, no condensation		40 °C / 93 % rel. humidity, no condensation		40 °C / 93 % rel. humidity, no condensation		40 °C / 93 % rel. humidity, no condensation		40 °C / 93 % rel. humidity, no condensation		40 °C / 93 % rel. humidity, no condensation	
CE, cUL		CE, cUL		CE, cUL		CE, cUL		CE, cUL		CE, cUL	
300 V		300 V		300 V		300 V		300 V		300 V	
4 kV		4 kV		4 kV		4 kV		4 kV		4 kV	
III		III		III		III		III		III	
2		2		2		2		2		2	
4 kV <sub>eff</sub> / 1 min		4 kV <sub>eff</sub> / 1 min		4 kV <sub>eff</sub> / 1 min		4 kV <sub>eff</sub> / 1 min		4 kV <sub>eff</sub> / 1 min		4 kV <sub>eff</sub> / 1 min	
≥ 5.5 mm		≥ 5.5 mm		≥ 5.5 mm		≥ 5.5 mm		≥ 5.5 mm		≥ 5.5 mm	

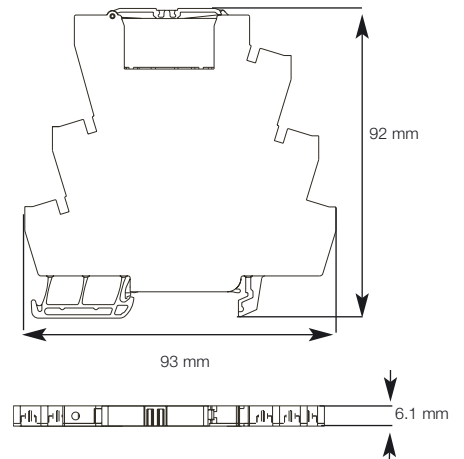
# Relay Couplers on Sockets MICROSERIES in Terminal Format

## Accessories

**Tension clamp version MRZ**



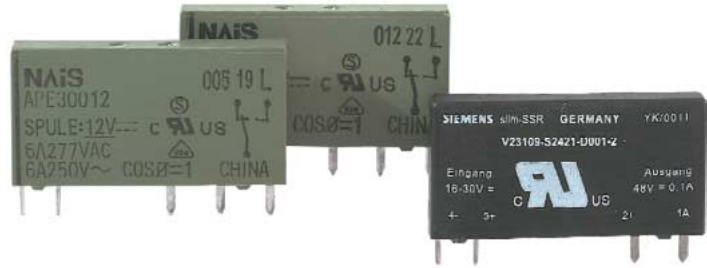
**Screw version MRS**



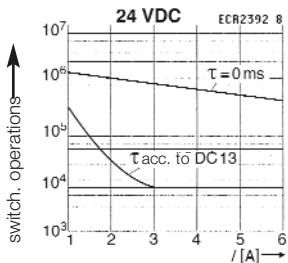
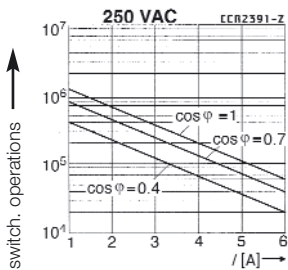
General technical data		Tension clamp version			Screw version		
Clampable conductor:							
Solid H07V-U	mm <sup>2</sup>	0.5...2.5			0.5...4		
Fsolid H07V-K	mm <sup>2</sup>	0.5...2.5			0.5...2.5		
„f“ with ferrules acc. to DIN 46 228/1*	mm <sup>2</sup>	0.5...1.5			0.5...1.5		
„f“ with ferrules with plastic collar*	mm <sup>2</sup>	0.5...1.5			0.5...1.5		
Max. clampable range in mm <sup>2</sup> /gauge pin acc. to IEC 60 947-1 Size		0.13...2.5 A 2			0.13...4 A 3		
Rated torque		-			0.6 Nm		
Continuous current of cross-connection 2-pole	A	10			10		
Continuous current of cross-connection multipole	A	10			10		
Insulation stripping length	mm	10			7		
Protection class		IP 20			IP 20		
Housing material		Wemid			Wemid		
Flammability class UL 94		V0			V0		
Rated current		6 A			6 A		
Rated voltage		250 V			250 V		
Cross-connection		Type	Cat. No.	Qty.	Type	Cat. No.	Qty.
Pluggable cross-connection							
ZQV	yellow	ZQV 4N / 2 GE	1758250000	60	ZQV 4N / 2 GE	1758250000	60
		ZQV 4N / 3 GE	1762630000	60	ZQV 4N / 3 GE	1762630000	60
		ZQV 4N / 4 GE	1762620000	60	ZQV 4N / 4 GE	1762620000	60
		ZQV 4N / 10 GE	1758260000	20	ZQV 4N / 10 GE	1758260000	20
		ZQV 4N / 41 GE	1758270000	10	ZQV 4N / 41 GE	1758270000	10
	red	ZQV 4N / 2 RT	1793950000	60	ZQV 4N / 2 RT	1793950000	60
		ZQV 4N / 3 RT	1793980000	60	ZQV 4N / 3 RT	1793980000	60
		ZQV 4N / 4 RT	1794010000	60	ZQV 4N / 4 RT	1794010000	60
		ZQV 4N / 10 RT	1794040000	20	ZQV 4N / 10 RT	1794040000	20
		ZQV 4N / 41 RT	1794070000	10	ZQV 4N / 41 RT	1794070000	10
	blue	ZQV 4N / 2 BL	1793960000	60	ZQV 4N / 2 BL	1793960000	60
		ZQV 4N / 3 BL	1793990000	60	ZQV 4N / 3 BL	1793990000	60
		ZQV 4N / 4 BL	1794020000	60	ZQV 4N / 4 BL	1794020000	60
		ZQV 4N / 10 BL	1794050000	20	ZQV 4N / 10 BL	1794050000	20
		ZQV 4N / 41 BL	1794080000	10	ZQV 4N / 41 BL	1794080000	10
	black	ZQV 4N / 2 SW	1793970000	60	ZQV 4N / 2 SW	1793970000	60
		ZQV 4N / 3 SW	1794000000	60	ZQV 4N / 3 SW	1794000000	60
		ZQV 4N / 4 SW	1794030000	60	ZQV 4N / 4 SW	1794030000	60
		ZQV 4N / 10 SW	1794060000	20	ZQV 4N / 10 SW	1794060000	20
		ZQV 4N / 41 SW	1794090000	10	ZQV 4N / 41 SW	1794090000	10
Markings		Type	Cat. No.	Qty.	Type	Cat. No.	Qty.
12 x 6 mm		WS 10/6	1060960000	200	WS 10/6	1060960000	200
		WS 12/6	1061160000	200	WS 12/6	1061160000	200
Screwdriver		Type	Cat. No.	Qty.	Type	Cat. No.	Qty.
		SD 0.6 x 3.5 x 100	9008330000	10	SD 0.6 x 3.5 x 100	9008330000	10

# Relay Couplers on Sockets MICROSERIES in Terminal Format

## Accessories



### Contact service life Material AgSnO<sub>2</sub>



#### Pluggable relay

Coil voltage 5 V, 1 changeover contact
Coil voltage 12 V, 1 changeover contact
Coil voltage 24 V, 1 changeover contact
Coil voltage 48 V, 1 changeover contact
Coil voltage 60 V, 1 changeover contact
Coil voltage 24 V, 1 changeover contact, 5 μAU
Coil voltage 60 V, 1 changeover contact, 5 μAU

Type NAIS APE...	Cat. No.	Qty.
... 30005V	<b>4061580000</b>	20
... 30012V	<b>4061610000</b>	20
... 30024V	<b>4060120000</b>	20
... 30048V	<b>4061620000</b>	20
... 30060V	<b>4061630000</b>	20
... 30124V	<b>4061590000</b>	20
... 30160V	<b>4061600000</b>	20

#### Technical data (of relay manufacturer)

Contact number and type
Contact version
Switching current
Switching voltage / max. Switching voltage
Braking capacity
Contact material
Recommended min. load
Typ. bounce time NO contact
Typ. bounce time normally closed contact

1 changeover contact
Single contact
6 A
300 Vdc / 400 Vac
1500 VA
AgSnO <sub>2</sub>
≥ 100 mA, 12 V
1 ms
5 ms

#### Miscellaneous data

Flammability class UL
Ambient temperature
Max. switching operations with rated load / without load
Response / drop out time
Bounce time NO contact / normally closed contact
Protection class Housing

V-0
-40 ... +85 °C
6/1200 switching operations per minute
5 / 2.5 ms
1.5 / 5 ms
IP 67

For further data see also

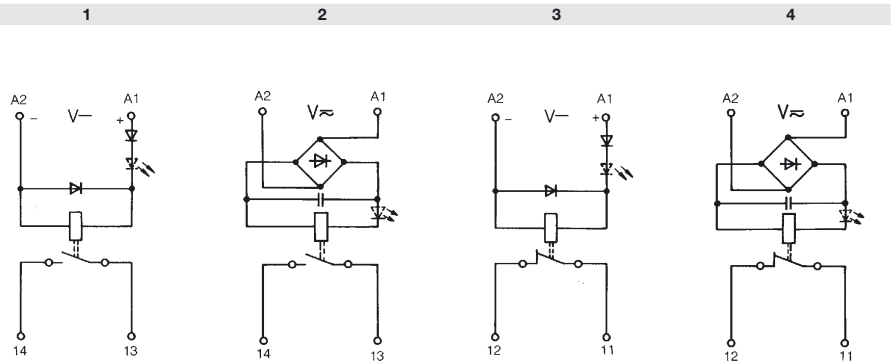
[www.matsushita.de](http://www.matsushita.de)



# Relay Couplers on Sockets RS 30

1 NC, 1 NO  
or 1 changeover contact

## Schematic circuit diagram



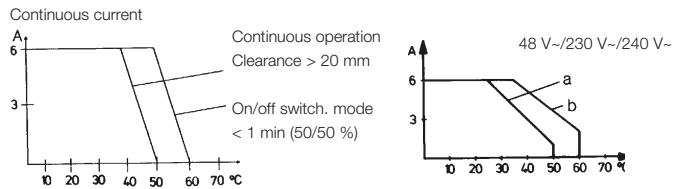
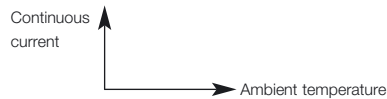
## Rated data

Input voltage 5...60 V ± 10%; 115 V/230 V + 5% - 15%

Rated consumption - (W)	0.45 W <sup>1)</sup>	0.45 W	0.45 W	0.45 W	0.45 W	0.45 W	0.45 W	-	0.82 W	-	-
Rated consumption ~ (VA)	-	-	-	0.7 VA	-	0.6 VA	-	0.8 VA	-	0.8 VA	1.2 VA
Drop-out current of the relay (at 20 °C)	-	3 mA	3 mA	2.5 mA	2 mA	2.5 mA	1 mA	-	2 mA	-	0.5 mA
Drop-out current of the relay (at 20 °C)	-	-	-	3.5 mA	-	4.5 mA	-	1 mA	-	1 mA	1 mA
Pick-up current	-	-	12 mA	-	10 mA	-	-	6 mA	4.3 mA	-	-
Max. output voltage	250 V	250 V	250 V	250 V	250 V	250 V	250 V	250 V	250 V	250 V	250 V
Continuous current	5 A	6 A	6 A	6 A	6 A	5 A	5 A	5 A	5 A	3 A	3 A

5 VTTL	12 V-	24 V-	24 V0	48 V-	48 V0	60 V-	115 V-	115 V-	230 V <sup>2)</sup>	240 V-
0.45 W <sup>1)</sup>	0.45 W	0.45 W	0.45 W	0.45 W	0.45 W	0.45 W	-	0.82 W	-	-
-	-	-	0.7 VA	-	0.6 VA	-	0.8 VA	-	0.8 VA	1.2 VA
-	3 mA	3 mA	2.5 mA	2 mA	2.5 mA	1 mA	-	2 mA	-	0.5 mA
-	-	-	3.5 mA	-	4.5 mA	-	1 mA	-	1 mA	1 mA
-	-	12 mA	-	10 mA	-	-	6 mA	4.3 mA	-	-
250 V	250 V	250 V	250 V	250 V	250 V	250 V	250 V	250 V	250 V	250 V
5 A	6 A	6 A	6 A	6 A	5 A	5 A	5 A	5 A	3 A	3 A

Derating curve  
a = mounted horizontally on rail without clearance  
b = mounted horizontally on rail with clearance x 20 mm



Switch-on current	8 A
Switching capacity with resistive load	2000 VA/100 W
Min. switching capacity/switching current	250 mW/10 mA
Bounce times	≤ 3 ms
Switching times, typical	
- , pick-up lag	≤ 8 ms
- , turn off delay	≤ 7 ms
Max. switching frequency	70 Hz
Contact material	AgNi, gold-flashed
Service life, mechanical	>10 <sup>7</sup> switching operations
- , 24 V-, 1 A, resistive load	> 5 x 10 <sup>5</sup> switching operations
- , 230 V-, 3 A, resistive load	>7 x 10 <sup>5</sup> switching operations
Storage temperature	-40 °C...+60 °C
Ambient temperature	
- , mounted on rail without clearance	-25 °C...+40 °C
- , mounted on rail with clearance ≥ 20 mm	-25 °C...+50 °C

## Insulation coordination acc. to EN 50178

Overvoltage category	III
Pollution severity	2
<b>Dimensions</b>	
Mounting width	11.2 mm NO/NC, 25 mm changeover contacts
Length (perpendicular to mounting rail)	70 mm (74 mm BL/SL version)
Height TS 32/TS 35 x 7.5	56 mm/51.5 mm

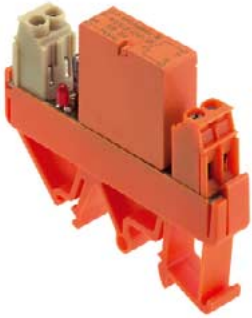
<sup>1)</sup> Rated consumption with 24 VDC auxiliary voltage.

<sup>2)</sup> 230 V- on request

# Relay Couplers on Sockets RS 30

## RS 30

Screw connection  
1 NO  
1 NC



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## RS 30

Screw connection  
1 changeover contact



6

## RS 30

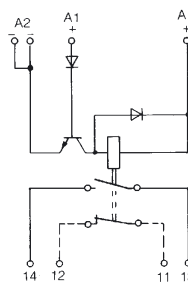
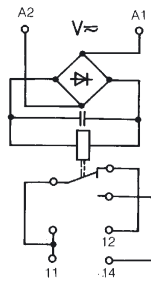
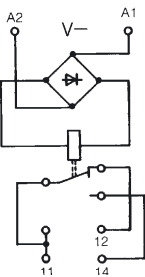
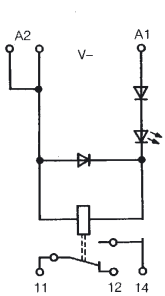
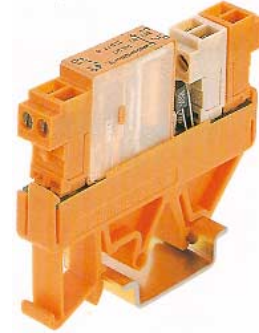
Disconnect plug with screw connection  
1 changeover contact



8

## RS 30 TTL

Disconnect plug with screw connection  
1 NO and 1 NC



### Ordering data

Connection method	Screw connection (LP)					Disconnect plug with screw connection (BL/SL)			
Schematic circuit diagram	1	2	3	4	5	6	7	8	8
Contact	NO	NO	NC	NC	changeo. c.	changeo. c.	changeo. c.	NO	NC

Input voltage	Function indicator								
5 V-, TTL	None							1167760000	1167660000
12 V-	None							1129660000	
	Red LED	1129421001		1129521001					
	None	1101661001		1100961001				1100260000	
24 V-	Green LED	1101611001		1100911001		1181511001		1100210000	
	Red LED	1101621001		1100921001		1181521001		1100220000	
	None		1101761001		1101061001			1100360000	
24 Vb	Green LED		1101711001		1101011001				
	Red LED		1101721001		1101021001				
	None	1101861001		1101161001				1100460000	
48 V-	Green LED	1101811001		1101111001				1100410000	
	Red LED	1101821001		1101121001				1100420000	
	None		1101961001		1101261001			1100560000	
48 Vb	Green LED		1101911001		1101211001				
	Red LED		1101921001		1101221001				
	None	1102061001						1100660000	
60 V-	Green LED	1102011001						1100610000	
	Red LED	1102021001						1100620000	
	None	1155161001		1155261001					
115 V-	Green LED	1155111001		1155211001					
	Red LED	1155121001		1155221001					
	None		1102161001		1101461001			1100760000	
115 V-	Green LED		1102111001		1101411001				
	Red LED		1102121001		1101421001				
	None		1102261001		1101561001			1100860000	
230 V-	Green LED		1102211001		1101511001				
	Red LED		1102221001		1101521001				
	None		1128561001		1128661001				
240 V-	Green LED		1128511001		1128611001				
	Red LED		1128521001		1128621001				

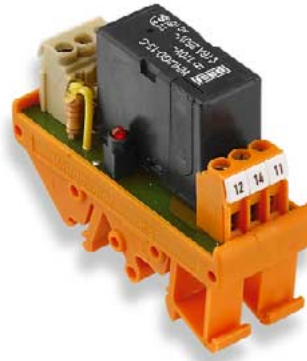
# Relay Couplers on Sockets RS 30

## 1 changeover contact

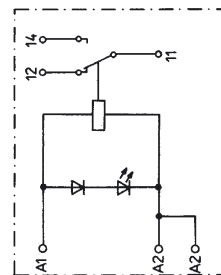
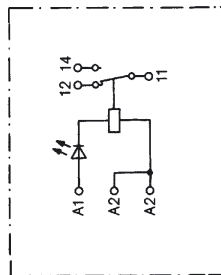
- Usable for high switching-power
- Suitable for switching inductive loads

## RS 31

with power contacts



### Schematic circuit diagram

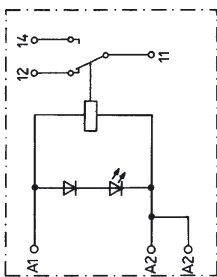


Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
	RS 31, 24 V-	<b>1128361001</b>	RS 31, 48 V-	<b>1150761001</b>	RS 31, 115 V-	<b>1150361001</b>	RS 31, 115 V~	<b>1150461001</b>
	RS 31, 24 V-	<b>1128331001</b>						
	RS 31, 24 V-	<b>1128311001</b>						
Rated data								
<b>Input voltage</b>	<b>24 V-, ±10 %</b>		<b>48 V-, ±10 %</b>		<b>115 V-, +5 % -15 %</b>		<b>115 V-, +5 % -15 %</b>	
Rated consumption – (W)	1 W		1 W		1 W		–	
Rated consumption – (VA)	–		–		–		1 VA	
Drop-out current of the relay (at 20 °C)	11.5 mA-		13.5 mA-		5.5 mA-		–	
Drop-out current of the relay (at 20 °C)	–		–		–		1.5 mA-	
Max. output voltage	250 V		250 V		250 V		250 V	
Continuous current	16 A		16 A		16 A		16 A	
Derating curve	mounted horizontally on rail without clearance							
Continuous current								
Switch-on current	<b>60 A/200 ms</b>		<b>60 A/200 ms</b>		<b>60 A/200 ms</b>		<b>60 A/200 ms</b>	
Max. switching capacity with resistor load	3.5 kVA/480 W		3.5 kVA/480 W		3.5 kVA/480 W		3.5 kVA/480 W	
Min. switching capacity/switching current	1 W/100 mA		1 W/100 mA		1 W/100 mA		1 W/100 mA	
Bounce times	< 3 ms		< 6 ms		< 6 ms		< 6 ms	
Switching times, typical								
–, pick-up lag	< 9 ms		< 12 ms		< 10 ms		< 4 ms	
–, turn off delay	< 10 ms		< 8 ms		< 12 ms		< 11 ms	
Max. switching frequency								
Contact material	AgCdO		AgCdO		AgCdO		AgCdO	
Service life, mechanical	3 x 10 <sup>7</sup> switching operations		3 x 10 <sup>7</sup> switching operations		3 x 10 <sup>7</sup> switching operations		3 x 10 <sup>7</sup> switching operations	
– 230 V, 50 Hz, 3.5 kV A	2.5 x 10 <sup>5</sup> switching operations		2.5 x 10 <sup>5</sup> switching operations		2.5 x 10 <sup>5</sup> switching operations		2.5 x 10 <sup>5</sup> switching operations	
Status indicator	Red LED <b>1128361001</b>		Yellow LED <b>1128331001</b>		Green LED <b>1128311001</b>			
Storage temperature	–40 °C...+60 °C		–40 °C...+60 °C		–40 °C...+60 °C		–40 °C...+60 °C	
Ambient temperature	–25 °C...+40 °C		–25 °C...+40 °C		–25 °C...+40 °C		–25 °C...+40 °C	
Insulation coordination acc. to EN 50178								
Overvoltage category	III		III		III		III	
Pollution severity	2		2		2		2	
Dimensions								
Mounting width	25 mm		25 mm		25 mm		25 mm	
Length (perpendicular to mounting rail)	70 mm		70 mm		70 mm		70 mm	
Height with TS 32/TS 35 x 7.5	58 mm/53.5 mm		58 mm/53.5 mm		58 mm/53.5 mm		58 mm/53.5 mm	

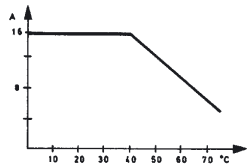
# Relay Coupler on Locking Socket Profile RS 31

## RS 31

with power contacts



Type	Cat. No.	
RS 31, 230 V~	<b>1128461001</b>	
RS 31, 230 V~	<b>1128431001</b>	
RS 31, 230 V~	<b>1128411001</b>	
<b>230 V~, +5 % -15 %</b>		
-		
1 VA		
-		
2.2 mA~		
250 V		
16 A		



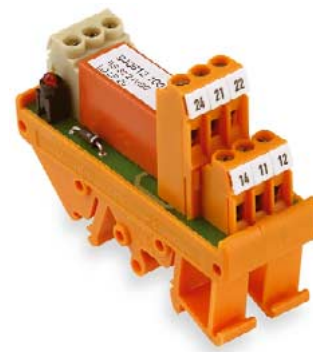
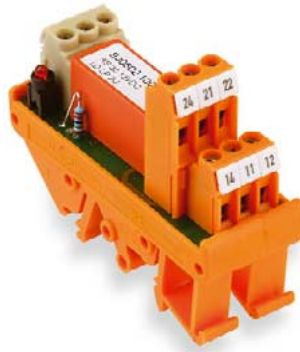
<b>60 A/200 ms</b>	
3.5 kVA/480 W	
1 W/100 mA	
< 6 ms	
< 10 ms	
< 8 ms	
AgCdO	
3 x 10 <sup>7</sup> switching operations	
2.5 x 10 <sup>5</sup> switching operations	
<b>1128461001</b>	
<b>1128431001</b>	
<b>1128411001</b>	
-40 °C...+60 °C	
-25 °C...+40 °C	
III	
2	
25 mm	
70 mm	
58 mm/53.5 mm	

# Relay Couplers on Sockets RS 32

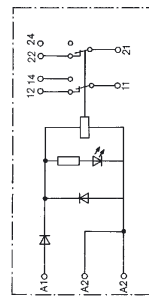
with 2 changeover contacts

RS 32

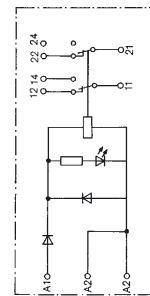
RS 32



## Schematic circuit diagram



9406021001



9406121001

9406321001

9406521001

## Ordering data

Type RS 32 Cat. No. **9406021001**

Type RS 32 Cat. No. **9406121001**

Type RS 32 Cat. No. **9406221001**

Type RS 32 Cat. No. **9406321001**

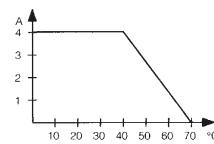
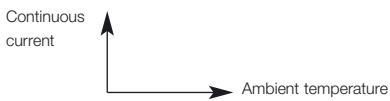
## Rated data

Input voltage	<b>12 V-, ±10 %</b>
Rated consumption - (W)	0.6 W
Rated consumption ~ (VA)	-
Drop-out current of the relay** (at 20 °C)	9.5 mA
Drop-out current of the relay** (at 20 °C)	-
Max. output voltage	250 V
Continuous current	2 x 4 A
Derating curve	mounted horizontally on rail without clearance

Input voltage	<b>24 V-, ±10 %</b>
Rated consumption - (W)	0.6 W
Rated consumption ~ (VA)	-
Drop-out current of the relay** (at 20 °C)	5 mA
Drop-out current of the relay** (at 20 °C)	-
Max. output voltage	250 V
Continuous current	2 x 4 A

Input voltage	<b>24 V0, ±10 %</b>
Rated consumption - (W)	0.6 W
Rated consumption ~ (VA)	0.9 VA
Drop-out current of the relay** (at 20 °C)	24 V-: 4.5 mA
Drop-out current of the relay** (at 20 °C)	24 V-: 2.5 mA
Max. output voltage	250 V
Continuous current	2 x 4 A

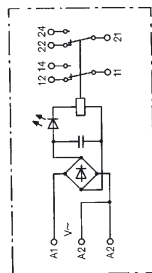
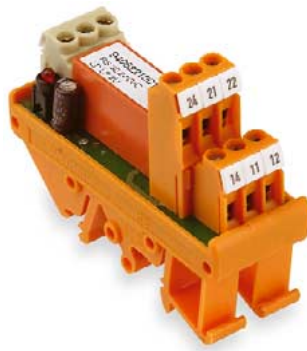
Input voltage	<b>48 V-, ±10 %</b>
Rated consumption - (W)	0.6 W
Rated consumption ~ (VA)	-
Drop-out current of the relay** (at 20 °C)	2 mA
Drop-out current of the relay** (at 20 °C)	-
Max. output voltage	250 V
Continuous current	2 x 4 A



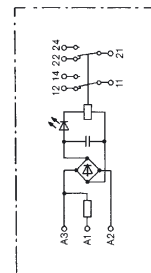
Switch-on current	2 x 6 A	2 x 6 A	2 x 6 A	2 x 6 A
Max. switching capacity with resistor load	1400 VA	1400 VA	1400 VA	1400 VA
Min. switching capacity/switching current				
Bounce times	≤ 4 ms	≤ 4 ms	≤ 4 ms	≤ 4 ms
Switching times, typical				
- , pick-up lag	≤ 13 ms	≤ 13 ms	≤ 13 ms	≤ 13 ms
- , turn off delay	≤ 10 ms	≤ 10 ms	≤ 10 ms	≤ 10 ms
Max. switching frequency				
Contact material	AgNi0.15, gold-flashed	AgNi0.15, gold-flashed	AgNi0.15, gold-flashed	AgNi0.15, gold-flashed
Service life, mechanical	> 30x10 <sup>6</sup> switching operations	> 30x10 <sup>6</sup> switching operations	> 30x10 <sup>6</sup> switching operations	> 30x10 <sup>6</sup> switching operations
- , 24 V-, 1 A, resistive load				
- , 230 V-, 3 A, resistive load				
Status indicator	Red LED	Red LED	Red LED	Red LED
Storage temperature	-40 °C...+60 °C	-40 °C...+60 °C	-40 °C...+60 °C	-40 °C...+60 °C
Ambient temperature	-25 °C...+40 °C	-25 °C...+40 °C	-25 °C...+40 °C	-25 °C...+40 °C
Approvals		CSA		CSA
<b>Insulation coordination acc. to EN 50178</b>				
Overvoltage category	III	III	III	III
Pollution severity	2	2	2	2
<b>Dimensions</b>				
Mounting width	25 mm	25 mm	25 mm	25 mm
Length (perpendicular to mounting rail)	70 mm	70 mm	70 mm	70 mm
Height with TS 32/TS 35 x 7.5	68 mm/63.5 mm	68 mm/63.5 mm	68 mm/63.5 mm	68 mm/63.5 mm

# Relay Couplers on Sockets RS 32

## RS 32

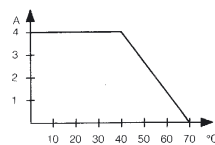


9406221001  
9406421001  
9406621001  
9406721001



1122661001  
1122761001

Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
RS 32	<b>9406421001</b>	RS 32	<b>9406521001</b>	RS 32	<b>9406621001</b>	RS 32	<b>9406721001</b>	RS 32	<b>1122661001</b>	RS 32	<b>1122761001</b>
<b>48 V<sub>0</sub>, ±10 %</b>		<b>60 V<sub>-</sub>, ±10 %</b>		<b>115 V<sub>0</sub>, +5 % -15 %</b>		<b>230 V<sub>0</sub>, +5 % -15 %</b>		<b>24 V/48 V<sub>0</sub>, ±10 %</b>		<b>115 V/230 V<sub>0</sub>, +5 % -15 %</b>	
0.6 W		0.6 W		0.5 W		1 W		0.5 W/0.6 W		0.5 W/1 W	
0.9 VA		-		0.6 VA		1 VA		0.7 VA/0.9 VA		0.6 VA/1 VA	
48 V <sub>-</sub> : 2 mA		1.5 mA		115 V <sub>-</sub> : 1 mA		230 V <sub>-</sub> : 1.2 mA		-: 5 mA/2 mA		-: 1 mA/1.2 mA	
48 V <sub>-</sub> : 4.5 mA		-		115 V <sub>-</sub> : 1.5 mA		230 V <sub>-</sub> : 2 mA		-: 3 mA/4.5 mA		-: 1.5 mA/2 mA	
250 V		250 V		250 V		250 V		250 V		250 V	
2 x 4 A		2 x 4 A		2 x 4 A		2 x 4 A		2 x 4 A		2 x 4 A	



2 x 6 A	2 x 6 A	2 x 6 A	2 x 6 A	2 x 6 A	2 x 6 A
1400 VA	1400 VA	1400 VA	1400 VA	1400 VA	1400 VA
≤ 4 ms	≤ 4 ms	≤ 4 ms	≤ 4 ms	≤ 4 ms	≤ 4 ms
≤ 13 ms	≤ 10 ms	≤ 13 ms	≤ 13 ms	≤ 13 ms	≤ 13 ms
≤ 10 ms	≤ 10 ms	≤ 10 ms	≤ 10 ms	≤ 10 ms	≤ 10 ms
AgNi0.15, gold-flashed	AgNi0.15, gold-flashed	AgNi0.15, gold-flashed	AgNi0.15, gold-flashed	AgNi0.15, gold-flashed	AgNi0.15, gold-flashed
> 30x10 <sup>6</sup> switching operations	> 30x10 <sup>6</sup> switching operations	> 30x10 <sup>6</sup> switching operations	> 30x10 <sup>6</sup> switching operations	> 30x10 <sup>6</sup> switching operations	> 30x10 <sup>6</sup> switching operations
Red LED	Red LED	Red LED	Red LED	Green LED	Green LED
-40 °C...+60 °C	-40 °C...+60 °C	-40 °C...+60 °C	-40 °C...+60 °C	-40 °C...+60 °C	-40 °C...+60 °C
-25 °C...+40 °C	-25 °C...+40 °C	-25 °C...+40 °C	-25 °C...+40 °C	-25 °C...+40 °C	-25 °C...+40 °C
III	III	III	III	III	III
2	2	2	2	2	2
25 mm	25 mm	25 mm	25 mm	25 mm	25 mm
70 mm	70 mm	70 mm	70 mm	70 mm	70 mm
68 mm/63.5 mm	68 mm/63.5 mm	68 mm/63.5 mm	68 mm/63.5 mm	68 mm/63.5 mm	68 mm/63.5 mm



# Multiple Socket Interface RSM

## (Relay Coupler)

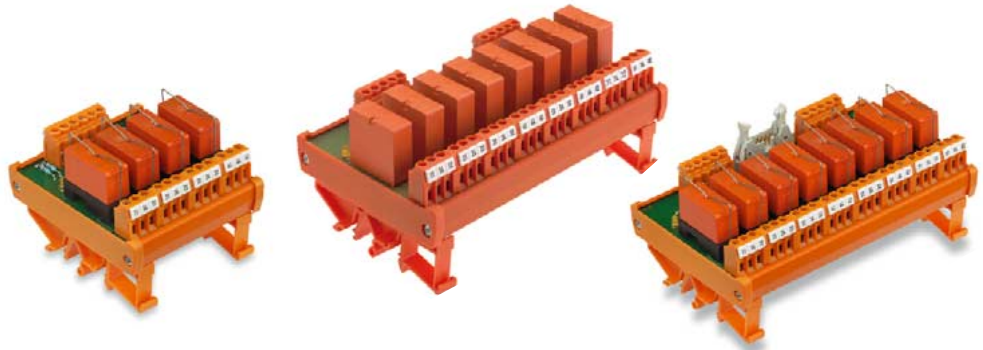
with one changeover contact each

**RSM 4 R** 4 relays, soldered

**RSM 4 RS** 4 relays, plug-in

**RSM 8 R** 8 relays, soldered

**RSM 8 RS** 8 relays, plug-in

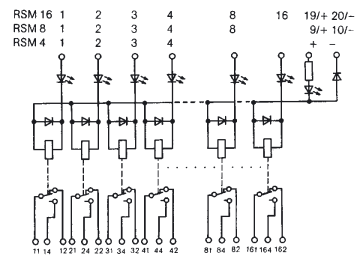


Also available as opto-coupler (max. 48 V),  
See page 120/121

Schematic circuit diagram

Fixing feet can also be mounted turned through 180°

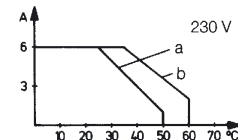
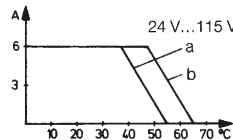
DC voltage, positive switching



Rated data	
Input voltage	
Rated consumption ~ (W)	soldered relay
	plug-in relay
Rated consumption ~ (VA)	soldered relay
	plug-in relay
Pick-up current ~ (mA)	soldered relay
	plug-in relay
Pick-up current ~ (mA)	soldered relay
	plug-in relay
Drop-out current of the relay (at 20 °C)	
Max. output voltage	
Continuous current	

24 V~	24 V0	48 V~	48 V0	115 V~	115 V0	230 V~	230 V0
0.45 W	0.45 W	0.45 W	0.45 W	-	-	-	-
0.55 W	-	0.55 W	-	-	-	-	-
-	0.5 VA	-	0.6 VA	0.6 VA	0.6 VA	0.9 VA	0.9 VA
12 mA	-	10 mA	-	-	5 mA	-	3 mA
23 mA	12 mA	14 mA	-	-	-	-	-
-	-	-	-	-	6 mA	-	3.5 mA
-	16.5 mA	-	-	5 mA	-	4 mA	-
2 mA		1.5 mA		1 mA		1 mA	
250 V	250 V	250 V	250 V	250 V	250 V	250 V	250 V
6 A	6 A	6 A	6 A	6 A	6 A	3 A	3 A

a = mounted horizontally on rail without clearance  
b = mounted horizontally on rail with clearance ≥ 20 mm



Switching times, typical							
- , pick-up lag (-/-)	≤ 8 ms	≤ 10 ms/10 ms	≤ 12 ms	≤ 10 ms/12 ms	≤ 10 ms	≤ 8 ms/10 ms	≤ 10 ms
- , turn off delay (-/-)	≤ 7 ms	≤ 15 ms/20 ms	≤ 11 ms	≤ 15 ms/20 ms	≤ 10 ms	≤ 5 ms/8 ms	≤ 10 ms
Bounce times	≤ 3 ms	≤ 3 ms	≤ 3 ms	≤ 3 ms	≤ 3 ms	≤ 3 ms	≤ 3 ms
Switch-on current	8 A	8 A	8 A	8 A	8 A	8 A	8 A
Switching capacity with resistive load	2000 VA	2000 VA	2000 VA	2000 VA	2000 VA	2000 VA	2000 VA
Min. switching capacity/switching current	250 mW/10 mA						
Contact material	AgNi 90/10, AgNi0,15, gold-flashed						
Service life, mechanical	> 30x10 <sup>6</sup> switching operations						
- , 24 V~, 1 A, resistive load	> 5 x 10 <sup>5</sup> switching operations						
- , 230 V~, 3 A, resistive load	> 7 x 10 <sup>5</sup> switching operations						
Storage temperature	-40 °C...+60 °C						
Ambient temperature	-25 °C...+50 °C						
<b>Insulation coordination acc. to EN 50178</b>							
Overtoltage category	III						
Pollution severity	2						

Dimensions			
Conductor cross-section (screw connection)	0.5...2.5 mm <sup>2</sup>		
<b>Spare relay</b> (pluggable)	<b>Input voltage</b>	<b>Contact material</b>	<b>Cat. No.</b>
for 24 V-RSM types	24 V~	AgNi 90/10	<b>8630780000</b>
	24 V~	AgNi 90/10	<b>4058480000</b>
for 48 V-RSM types	48 V~	AgNi 90/10	<b>8630790000</b>
	48 V~	AgNi 90/10	<b>4058740000</b>
for 115 V, 230 V-RSM types	115 V~	AgNi 90/10	<b>8630770000</b>
	115 V~	AgNi 90/10	<b>4058500000</b>
	115 V~	Au 5	<b>4156970000</b>
			Notes
			RT 314024 with yoke
			RT 314024 without yoke
			RT 314048 with yoke
			RT 314048 without yoke
			RT 314110 with yoke
			RT 314110 without yoke
			ZLT input relay KHU/BV 1680

# Multiple Socket Interface RSM

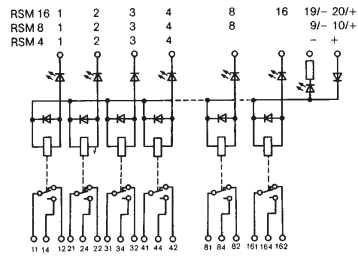
## RSM 16 RS

16 relays, plug-in

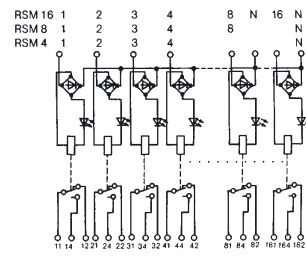


Red LEDs, further colours on request

### DC voltage, negative switching



### AC-DC/DC voltage



Ordering data	Input voltage	RSM 4 R/RS 4 relays	RSM 8 R/RS 8 relays	RSM 16 R/RS 16 relays	Positive switching <sup>1)</sup>	Negative switching <sup>2)</sup>	Relay pluggable	Relay pluggable	Relay soldered	Mounted width
Ribbon cable/	<b>24 VDC</b>		•		•		-		<b>1113161001</b>	145 mm
Screw connection			•			•			<b>1100061001</b>	145 mm
Male connector block with interlock according to DIN 41651/Parts 1 and 2				•	•				<b>1113261001</b>	285 mm
				•		•			<b>1100161001</b>	285 mm
Screw connection	<b>24 VDC</b>	•			•		<b>1113361001<sup>3)</sup></b>	<b>8017581001<sup>4)</sup></b>	<b>1112361001</b>	75 mm
		•				•	<b>1113461001<sup>3)</sup></b>		<b>1112761001</b>	75 mm
• Input: -Relay pluggable			•		•		<b>1113561001<sup>3)</sup></b> •	<b>8003671001<sup>4)</sup></b> •	<b>1107761001</b>	145 mm
Screw connection and male conn. block acc. to IEC 603-1/ DIN 41651			•			•	<b>1113661001<sup>3)</sup></b> •		<b>1112661001</b>	145 mm
-Relay soldered				•	•		<b>1113761001<sup>3)</sup></b> •	<b>8018221001<sup>4)</sup></b> •	<b>1107861001</b>	285 mm
male conn. block acc. to IEC 603-1/ DIN 41651				•		•	<b>1113861001<sup>3)</sup></b> •		<b>1113061001</b>	285 mm
• Output: Screw connection	<b>24 V0</b>	•					<b>1173461001</b>			75 mm
			•				<b>1173561001</b>			145 mm
				•			<b>1173661001</b>			285 mm
	<b>48 VDC</b>	•			•		<b>1113961001</b>		<b>1112461001</b>	75 mm
		•				•	<b>1114061001</b>			75 mm
			•		•		<b>1114161001</b> •			145 mm
			•			•	<b>1114261001</b> •			145 mm
				•	•		<b>1114361001</b> •			285 mm
				•		•	<b>1114461001</b> •			285 mm
	<b>48 V0</b>	•					<b>1173761001</b>			75 mm
	<b>115 V0</b>	•					<b>1114561001</b>			75 mm
			•				<b>1114661001</b>			145 mm
				•			<b>1114761001</b>			285 mm
	<b>230 V-</b>	•					<b>1114861001</b>			75 mm
			•				<b>1114961001</b>			145 mm
				•			<b>1115061001</b>			285 mm
	<b>230 V0</b>	•						<b>1123461001</b>		75 mm
			•					<b>1108061001</b>		145 mm
				•				<b>1108261001</b>		285 mm

Spare relays on request

<sup>1)</sup> Common negative potential, positive is switched  
<sup>2)</sup> Common negative potential, negative is switched

<sup>3)</sup> Approval by the Germanischer Lloyd  
<sup>4)</sup> Empty modules without relays

# Relay Socket Module for Industry Relays

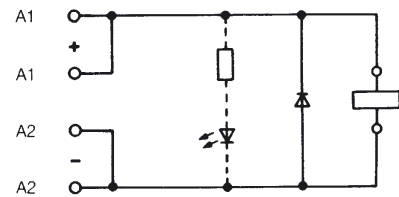
Weidmüller relay sockets for mounting rails enable plug-in relays most commonly used in industry to be mounted; they make possible installations in which the control section and power section are perfectly separated. The coil terminals and the connection terminals are located on opposite sides of the locking socket modules.

The conductors are connected via screw terminals; the securing in the terminal is achieved by a clamping yoke system. This method has been used by Weidmüller for many years, and is the only method that guarantees a reliable connection in industrial applications.

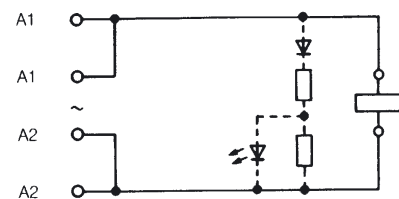
Thanks to their combination foot, these modules can be mounted onto TS 32, TS 35x7.5, TS 35x15 mounting rails in accordance with European standards EN 50035 and EN 50022.

The connections are marked according to European Standard EN 50005. The modules are designed for DC relays (with a damping diode parallel to the coil, as well as a protection diode for reverse polarity protection) and AC relays.

They can be provided with an LED on request.



DC voltage



Ac voltage

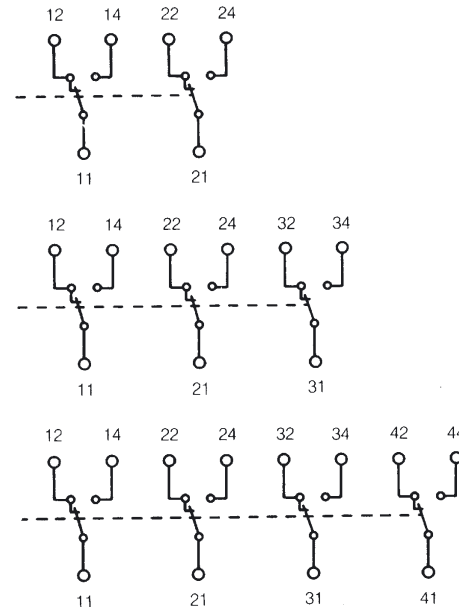
The input terminals are doubled, in order to pick off the poles. Note the following for DC current operation:

A1 = +

A2 = -

The contacts available at the output are: 2, 3 or 4 changeover contacts.

The marking of the contacts in the following diagram corresponds to European standard EN 50005.



The standard range of relay socket modules is divided as follows:

### Group 1:

RS 3 (2 changeover contacts)

RS 4, RS 14 (4 changeover contacts)

For relays of the type "international"

### Group 2:

RS 6 (2 changeover contacts)      Size 1

RS 7, 17 (3 changeover cont.)      Size 2

RS 8, 18 (4 changeover cont.)      Size 2

RS 9 (2 changeover cont.)      Size 2

For relays of the type "European".

Relays with 4 changeover contacts (size 2) can be secured to RS 7, RS 17 and RS 9; however, only 3 or 2 changeover contacts are connected to the terminals, which results in space savings.

**Group 3:** RS 21 (2 changeover contacts)

RS 23 (3 changeover contacts)

RS 24 (2 x 3 changeover cont.)

For relays with one socket with 8 or 11 pins.

The table on page 87 offers an overview of the most important manufacturers of relays in groups 2, 3 and 4. The list is provided for information purposes only, and does not claim to be complete

# List of Plug-in Relays for Weidmüller Relay Socket Modules

Manufacturer	Group 1	Group 2	Group 3
	International relays	European relays	Relays with socket oktal
	<ul style="list-style-type: none"> <li>• RS 3 2 changeover contacts</li> <li>• RS 4, RS 14 4 changeover contacts</li> </ul>	<ul style="list-style-type: none"> <li>• RS 6 2 changeover contacts (Size 1)</li> <li>• RS 7, RS 17 3 changeover cont. (Size 2)</li> <li>• RS 8, RS 18 4 changeover cont. (Size 2)</li> <li>• RS 9 2 changeover cont. (Size 2)</li> </ul>	<ul style="list-style-type: none"> <li>• RS 21 2 changeover contacts</li> <li>• RS 23 3 changeover contacts</li> <li>• RS 24 2x3 changeover contacts</li> </ul>
EBERLE	Relay type • – • –	Relay type • – • Type 40701 • Type 40701	Relay type • – • Type 41454 • Type 41454
ELESTA	• – • –	• – • – • –	• SKR 085 • SKR 115
FEME	• – • –	• – • – • – • –	• RCP 8 • RCP 11 • RCP 11
GRUNER	• – • –	• Series 9065 G • Series 9059 G/9066 G • Series 9059 G/9066 G • Series 9059 G/9066 G	• Series 668 B 2 changeover contacts • Series 668 A 3 changeover contacts • Series 668 A 3 changeover contacts
HALLER	• – • –	• Series H-561 Size 1 • Series H-561 Size 2 • Series H-561 Size 2 • Series H-561 Size 2	• HB-1/1 • HB-1/2 • HB-1/2
ITT (MTI)	• MAT 2 • MAT 4	• Type 24 • Type 25 • Type 25 • Type 25	• – • – • –
FUJITSU	• FRL 263-02 • FRL 263-04	• – • – • – • –	• FRL 256-02 • FRL 256-04 • FRL 256-04
KUHNKE	• – • Type 111 A4	• – • – • – • –	• Universal relays-M/-H/-U • Universal relays-M/-H/-U • Universal relays-M/-H/-U
KUKE	• – • –	• Miniature relays Type 01 • Miniature relays Type 02 • Miniature relays Type 02 • Miniature relays Type 02	• – • – • –
NATIONAL	• HC 2 • HC 4	• – • – • – • –	• – • – • –
OMRON	• MY 2 • MY 4	• MHS-2 • MHS-4 • MHS-4 • MHS-4	• MK 2 • MK 3 • MK 3
POTTER & BRUMFIELD	• – • Series KH	• – • Series R 10 • Series R 10 • Series R 10	• Series KAP • Series KAP • Series KAP
RAPA	• – • –	• Series 012 Size 1 • Series 012 Size 2 • Series 012 Size 2 • Series 012 Size 2	• Series C-Type CKR • Series C-Type CKR • Series C-Type CKR
Tyco/SCHRACK	• ZT 4 • PT 4	• Relays N, S, W Size 1 • Relays N, S, W Size 2 • Relays N, S, W Size 2 • Relays N, S, W Size 2	• Series RN/RC • Series RN/RC • Series RN/RC
SDS	• HC 2 • HC 4	• K 2 • K 4 • K 4 • K 4	
TEC	• – • Type 1301	• Type 1350 • Type 1360 • Type 1360 • Type 1360	• Type 1210 • Type 1210 • Type 1210
ZETTLER	• – • TEC 1401	• AZ E 20, AZ 420, AZ 420 W • AZ E 21, AZ 421, AZ 421 W • AZ E 21, AZ 421, AZ 421 W • AZ E 21, AZ 421, AZ 421 W	• AZ 1010 – AZ 509 2 C • AZ 1010 – AZ 509 3 C • AZ 1010 – AZ 509 3 C

# Relay Sockets for Industry Relays

## PT 4 industry relays

4-pole, with test button



### Rated data

Contact data	
Contact number and type	4 changeover contacts
Contact version	Single contacts
Contact material	AgNi 90/10, AgNi 90/10 htv
Max. braking capacity AC	1500 VA
Rated voltage	250 V~
Continuous current	6 A / contact
Switch-on current	12 A / contact
Min. contact rating	24V, 10 mA / 20 m, 1 mA htv
Mechanical service life	DC coil > 30x10 <sup>6</sup> AC coil > 20x10 <sup>6</sup>
Response / drop out time	15/10 ms
Bounce time	5 ms
Test voltage	2.5 kV <sub>eff</sub> coil / contact
Isolation acc. to IEC664	B, 60 V~/75 V
Rated voltage	250 V
Pollution severity	2
Overvoltage category	III
Insulation group / reference voltage	B/250
Approvals	VDE, UL, CSA

### Miscellaneous data

Protection class	IP50
Flammability class UL 94	V-0
Ambient temperature	DC coil -40 ... + 70 °C AC coil -40 ... + 70 °C
Weight	30g

### Correspond. relay socket

	<ul style="list-style-type: none"> <li>Relay sockets Type RS 3, RS 4 and RS 14</li> <li>Alternatives to ZT 4 see table on page 99</li> </ul>
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### Ordering data

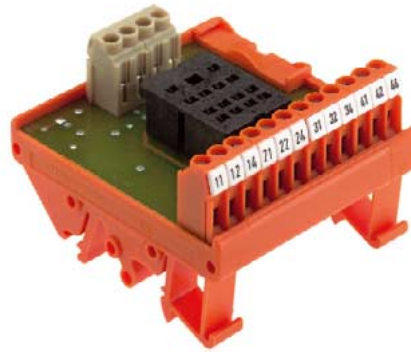
	Type (ZT 4)	Best.-Nr
6 V~	PT 570006	8074650000
12 V~	PT 570012	8054360000
24 V~	PT 570024	1180700000
48 V~	PT 570048	8074670000
60 V~	PT 570060	8074680000
115 V~	PT 570110	8074700000
6 V~	PT 570506	8074710000
12 V~	PT 570512	8074730000
24 V~	PT 570524	1181800000
48 V~	PT 570548	1180900000
60 V~	PT 570560	8074760000
115 V~	PT 570615	1180800000
230 V~	PT 570730	1181100000
Retainer clip for SIEMENS-Relays	PT 28800	8572170000

# Relay Sockets for Industry Relays

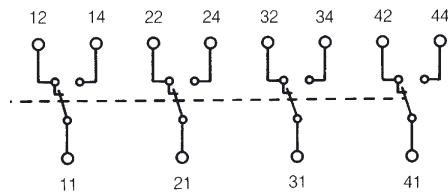
RS 3

RS 4

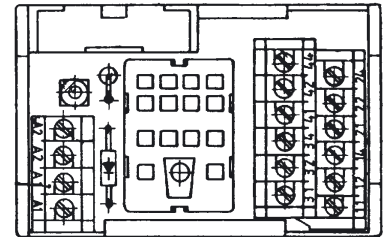
RS 14



Relay sockets for DC and AC voltage relays  
with fixing foot for TS 32/TS 35x7.5 and TS 35x15



0125661001



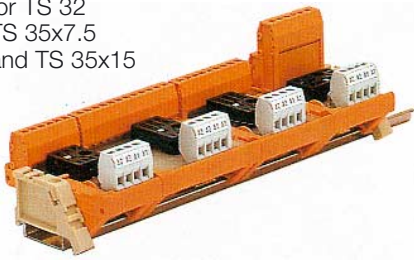
Relay type*	Schrack	Schrack	Schrack
Type	PT 5	PT 5	PT 5
Poles	4-pole	4-pole	4-pole
Contacts on module	2 changeover contacts	4 changeover contacts	4 changeover contacts
<b>Ordering data</b>	<b>RS 3</b>	<b>RS 4</b>	<b>RS 14</b>
Relay socket for <b>AC relays</b> (without diode) With red LED (230 V~)	<b>0115161001</b>	<b>0116261001</b>	<b>0125561001</b>
Relay socket for <b>DC relays</b> with suppressor diode and reserve voltage protection (diode 1 N 4007) With red LED (24 V~)	<b>0115061001</b>	<b>0116161001</b>	<b>0125661001</b>
With green LED (24 V~)	<b>0115011001</b>	<b>0116121001</b>	<b>1127661001</b>
<b>Dimensions</b>			
Relay socket width	35 mm	65 mm	45 mm
Insulation stripping length	7 mm	7 mm	7 mm
<b>Connection data</b>			
Screw connection, solid	0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>
Screw connection, flexible	0.5...2.5 mm <sup>2</sup>	0.5...2.5 mm <sup>2</sup>	0.5...2.5 mm <sup>2</sup>
Conductor cross-section	AWG 26...14	AWG 26...14	AWG 26...14
<b>Rated data</b>			
Coil voltage (types without LED)	250 V <sub>0</sub>	250 V <sub>0</sub>	250 V <sub>0</sub>
Contact voltage	250 V~	125 V~	125 V~
Contact current	5 A	5 A	5 A
<b>Accessories</b>	Type	Cat. No.	Qty.
Mounting rail (2 m lengths)	TS 32	<b>0122800000</b>	-
	TS 35x7.5	<b>0383400000</b>	-
	TS 35x15	<b>0498000000</b>	-
End bracket (thickness mm)	EWK 2	<b>0199360000</b>	50
	EW 35	<b>0383560000</b>	50
Insert tag (blanc)**	ESo 7	<b>0515200000</b>	-
Protective strip, transparent**	SSt 7	<b>0515300000</b>	100
Retainer clip for Schrack relays	ZG 28800	<b>0116000000</b>	25

\* Relay not included in delivery

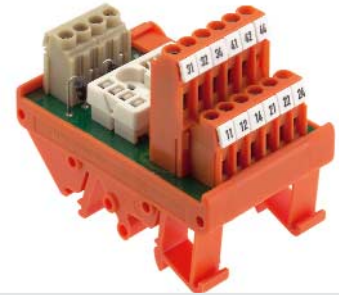


# Relay Sockets for Industry Relays

Relay socket for DC and AC voltage relays with locking foot for TS 32 TS 35x7.5 and TS 35x15



**RS 6      RS 6      RS 8      RS 9      RS 17      RS 18**

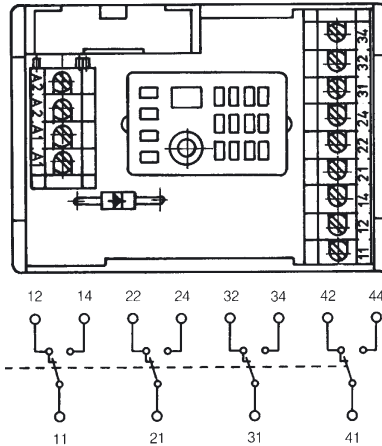


Assigning commercially available relays to the Weidmüller relay sockets RS 6...RS 24:

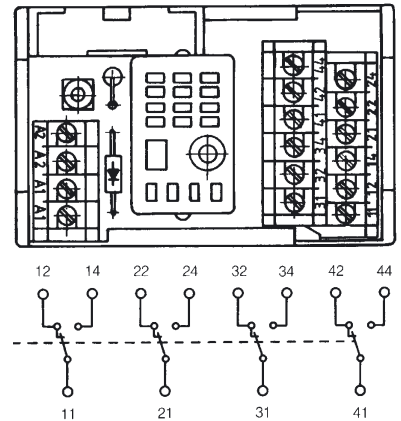
- Relay socket RS 6**  
Siemens cradle relay, size I  
Zettler cradle-operated relay AZ 420  
RAPA range 012, size 1
- Relay socket type RS 7, RS 8, RS 9, RS 17 and RS 18**  
Siemens cradle relay, size II  
Zettler cradle-operated relay AZ 421  
RAPA range 012, size II
- Relay socket type RS 21, RS 23 and RS 24**  
Siemens/Schrack Universal  
Industry relay RS/RN/RC  
Siemens industry relay 10  
Kuhnke universal relay  
Zettler industrial relay AZ 1010  
RAPA range C

(No claim is made that this is a complete list of manufacturers of relays or types of relays.)

0115461001



0126061001



Relay type*

**Ordering data** Socket type

Relay socket for **AC relays**  
(without diode)

Relay socket for **DC relays**  
with suppressor diode and reserve voltage protection  
(diode 1 N 4007)

With red LED (24 V-)

With green LED (24 V-)

**Dimensions**

Relay socket width

Insulation stripping length

**Connection data**

Screw connection, solid

Screw connection, flexible

Conductor cross-section

**Rated data**

Coil voltage (types without LED)

Contact voltage

Contact current

**Accessories**

Mounting rail (2 m lengths)

End bracket (thickness mm)

Insert tag (blanc)\*\*

Protective strip, transparent\*\*

Retainer clip for Schrack relays

Kamm-R.®	Kamm-R.®	Kamm-R.®	Kamm-R.®
Gr. I	Gr. II	Gr. II	Gr. II
2 changeov. c. 3 changeov. c. 4 changeov. c. 2 changeov. c.			
(e. g. B 104)	(e. g. B 110)	(e. g. B 110)	(e. g. B 104)
<b>RS 6</b>	<b>RS 7</b>	<b>RS 8</b>	<b>RS 9</b>

0115361001

0115261001    0115461001    0116361001    0188961001

Kamm-R.®	Kamm-R.®
Gr. II	Gr. II
3 changeov. c. 4 changeov. c.	
(e. g. B 110)	(e. g. B 110)
<b>RS 17</b>	<b>RS 18</b>

0125861001    0126061001

0126011001

35 mm	50 mm	65 mm	35 mm
7 mm	7 mm	7 mm	7 mm
0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>	0.5...2.5 mm <sup>2</sup>	0.5...2.5 mm <sup>2</sup>	0.5...2.5 mm <sup>2</sup>
AWG 26...14	AWG 26...14	AWG 26...14	AWG 26...14

35 mm	45 mm
7 mm	7 mm
0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>	0.5...2.5 mm <sup>2</sup>
AWG 26...14	AWG 26...14

250 V0	250 V0	250 V0	250 V0
250 V~	250 V~	125 V~	250 V~
5 A	5 A	5 A	5 A
Type	Cat. No.	Qty.	
TS 32	0122800000	-	
TS 35x7.5	0383400000	-	
TS 35x15	0498000000	-	
EWK 2	0199360000	50	
EW 35	0383560000	50	
ESo 7	0515200000	-	
SSt 7	0515300000	100	

50 V0	250 V0	
125 V~	125 V~	
5 A	5 A	
Type	Cat. No.	Qty.
TS 32	0122800000	-
TS 35x7.5	0383400000	-
TS 35x15	0498000000	-
EWK 2	0199360000	50
EW 35	0383560000	50
ESo 7	0515200000	-
SSt 7	0515300000	100

\* Relay not included in delivery

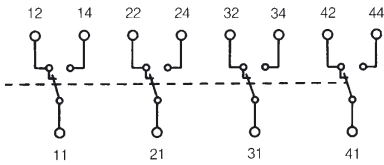
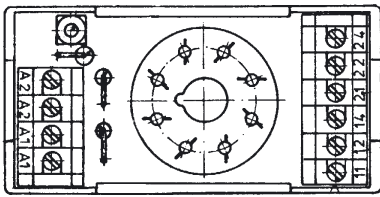
\*\* Not suitable for RS 12

# Relay Coupler, Relay Sockets Module for Industry Relays

RS 21      RS 23      RS 24



0167161001



Plug-in relay for	Plug-in relay for
Octal socket	submagnal socket
8-pole	11-pole
2 changeov. c. 3 changeov. c. 2 x 3 changeov. c.	

<b>RS 21</b>	<b>RS 23</b>	<b>RS 24</b>
on request	<b>8010061001</b>	on request

<b>0167161001</b>	<b>0188661001</b>	on request
-------------------	-------------------	------------

35 mm	40 mm	75.5 mm
7 mm	7 mm	7 mm
0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>	0.5...2.5 mm <sup>2</sup>	0.5...2.5 mm <sup>2</sup>
AWG 26...14	AWG 26...14	AWG 26...14

250 V0	250 V0	250 V0
250 V~	250 V~	250 V~
6 A	6 A	6 A
Type	Cat. No.	Qty.
TS 32	<b>0122800000</b>	-
TS 35x7.5	<b>0383400000</b>	-
TS 35x15	<b>0498000000</b>	-
EWK 2	<b>0199360000</b>	50
EW 35	<b>0383560000</b>	50
ESo 7	<b>0515200000</b>	-
SSt 7	<b>0515300000</b>	100



# Opto-coupler



With increasing automation, potential separation between the control and field sides of circuits is becoming increasingly important. The control unit being the core of the automation must be electrically safe and free from feedback when coupled with the various sensors and actuators. Opto-coupler are being used in a growing number of applications. They offer the necessary safety and have further advantages such as:

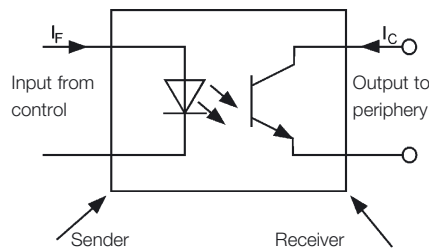
- low power uptake on control side
- high switching frequency
- no contact bounce
- wear-free switching
- insensitive to vibration
- use independent of location
- no mechanical parts
- long life
- high insulation voltage

Because of these features, opto-coupler are an alternative to conventional, mechanical relay interfaces.

For industrial usage, Weidmüller offers modules with various input voltages and housings.

## Basic construction of the opto-coupler interface:

The heart of the system is the opto-electronic component (opto-coupler) that effects the coupling.



An important parameter of this type of modules is the CTR = current transfer rate.

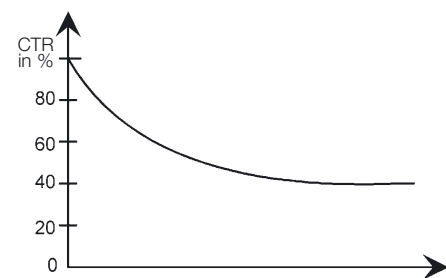
The CTR is given in % and is the ratio between the input current  $I_F$  and the maximum available output current  $I_C$ .

Example:  $I_F = 10 \text{ mA}$ ;  $CTR = 100\%$   
 $\Rightarrow I_C = 10 \text{ mA}$ .

The CTR is affected by a number of parameters such as:

- Ambient temperature
- efficiency of the luminescence diode
- geometric dimensions within the module

It also drops with time. The result is that the switching levels change due to ageing.



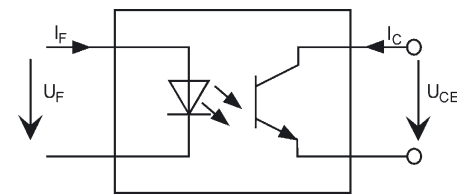
CTR as a function of operating life

To eliminate these effects where possible, Weidmüller opto-coupler use almost exclusively semiconductors which have a long life in terms of CTR.

Moreover, the insulation of a module is highly important, since the actual coupling of the input and output circuits takes place optically. Thus the optical component has to guarantee separation of both circuits even in case of a defect.

Weidmüller opto-coupler comply with DIN VDE 0884 to provide a maximum level of safety.

Appropriate switching circuits need to be included to ensure that the entire component provides reliable separation in accordance with DIN VDE 0106, Part 101.



Circuit diagram of an opto-coupler

## Opto-coupler for protective separation or galvanic isolation

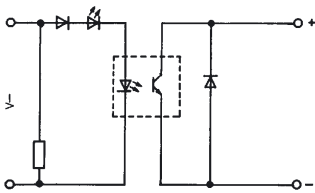
The most important precondition for achieving protective separation with opto-electronic coupling modules is the partial discharge test in accordance with DIN VDE 0884. Double or reinforced insulation for protective separation must be discharge proof. High voltage tests, as are usual with relays, cannot be carried out with semi-conductors, because they could lead to the destruction of the semi-conductor. Safe separation for the given rated voltage is applicable to coupling modules that are integrated into opto-couplers if:

- the opto-couplers are tested according to DIN VDE 0884
- clearance and creepage distances on the PCB and connection elements correspond to EN 50 178, DIN VDE 0106 and 0109.

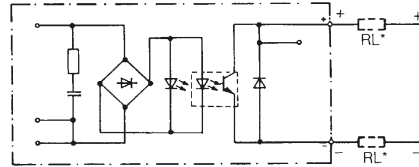
## Control side of the opto-coupler interface

3 basic circuits are to be differentiated on the input side of the opto-coupler's interface:

- as a pure **DC input** with polarity protection diode which prevents the opto-coupler from being destroyed if the input polarity is reversed.

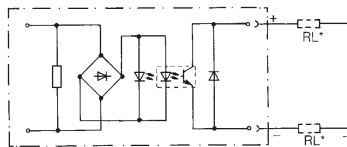


- as an **AC/DC input:**



Wrong polarity of the DC input signal is not possible with this switching. The disadvantage of an AC/DC input circuit (driven by DC signal) is the low switching rate since the charging capacitor (CL, necessary for AC-input signal) lowers the max. switching rate.

- pure **AC-Input:**



\* Sample circuit

Here, too, the charging capacity lowers the max. switching rate considerably. Weidmüller opto-coupler with AC/DC or AC input signals are designed for 40...60 Hz power supply. With AC-signal input the max. switching rate is below half the power supply frequency. A high switching rate is not possible, otherwise continuous switching in tune with the power frequency would occur.

## Output side of the opto-coupler

Weidmüller opto-coupler are designed and sized for a wide variety of applications. Demands regarding the load side of opto-coupler modules could be:

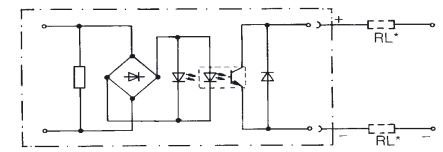
- power amplification
- signal conditioning AC/DC, DC/AC
- short-circuit protection
- interference proof, etc.

To fulfil these requirements, the opto-coupler must contain additional electronic components which determine the functionality of the opto-coupler. Thus there are 2 basic output variations for opto-coupler

Output as

- 2 pole and
- 3 pole circuits

## 2-pole DC output



\* Wiring example

The 2-pole DC output is comparable to a conventional switch. With this type it is immaterial where the load is in the output circuit. It is, however, important to provide the necessary output supply voltage with the right polarity.

# Opto-coupler

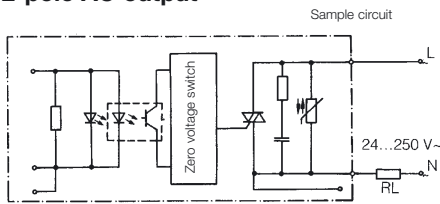


Opto-couplers are normally given with an output voltage supply from 5...48 VDC. These values should not be cut or exceeded on any occasion.

The load current should not be higher than the stated max. output current. Continuously exceeding this value will destroy the output stage.

The derating curve shows the dependency of the output current as a function of the Ambient temperature (see under the respective product on the following pages).

## 2-pole AC output

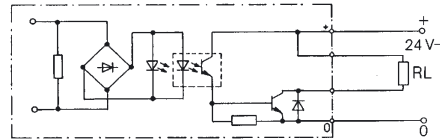


A special semiconductor element (TRIAC) in the output stage of the opto-coupler is used to switch AC voltages.

As for the DC-versions the appropriate parameters (such as voltage, frequency, max. load current, ambient temperature) should be given consideration.

A neutral voltage switch ensures that the load is switched only in the voltage zero. To protect against voltage spikes, the modules are always fitted with appropriate protection elements (varistors, RC-combination).

## 3-pole DC output



This type of output stage requires for safe function a potential-linked output voltage supply with an output that is either positive switching (common reference potential is GND or 0 V) or negative switching (common reference potential is the positive voltage pole).

## Standards

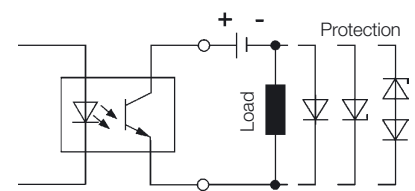
Weidmüller opto-coupler comply with the following standards:

- EN 50 178
- Furnishing of power engineering systems with electronic equipment
- DIN VDE 0106 Part 101
- Protection against flow of dangerous currents into the human body; basic requirements for reliable separation within electrical equipment.
- DIN VDE 0884
- Optoelectronic coupling devices for reliable separation
- DIN VDE 0109
- Insulation coordination within low-voltage system including clearance and creepage distances for equipment

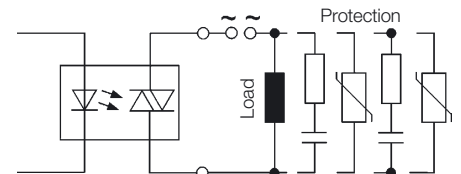
## Protective circuit

All opto-coupler have a protective circuit in the output (generally a free-wheeling diode).

To prevent decoupling of interference signals to other leads the load side should be protected.

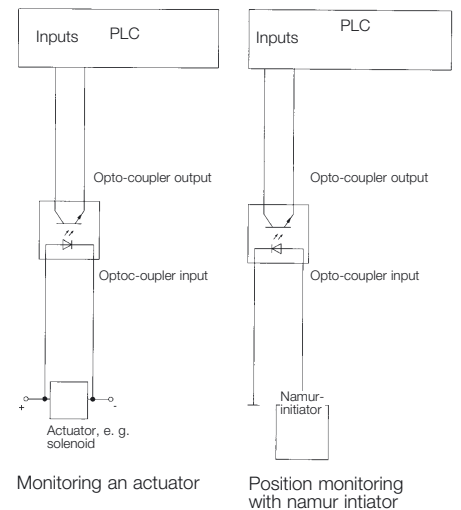


Protective circuit for DC output



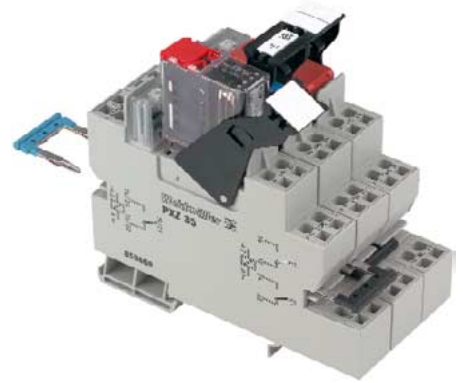
Protective circuit for AC output

## Application example





## Types of housing for opto-coupler



Weidmüller coupler modules are enclosed in housings that are appropriate for industrial applications. The housings are suitable for fitting onto mounting rails TS 32, TS 35 x 7.5 or TS 35 x 15 in accordance with European Standards EN 50 035 and EN 50 022.

### Component housing EG

Weidmüller component housings **EG 1** and **EG 2** are 18 mm wide. The fully enclosed EG housings are fitted with clamping yoke screw connections or push-on blade connectors for attaching wires. Conductors with the following cross-sectional dimensions can be connected:

solid conductors: 0.5...4 mm<sup>2</sup> or  
flexible conductors: 0.5...2.5 mm<sup>2</sup>.

The component housing EG 7 has a special status. It has been specifically designed to accommodate 10-mm slim opto-couplers.

EG 7 opto-coupler modules can be mounted onto TS 32 or TS 35 rails.

The RS EG7 locking socket is also available for the OST opto-couplers.

The fully-enclosed EG 7 housing is fitted with clamping yoke connections.

Conductors with the following cross-sections can be connected:

Component housing EG7: 0.5...1.5 mm<sup>2</sup>  
Locking socket: 0.5...2.5 mm<sup>2</sup>.

### Component Housing WAVEBOX

Component housing WAVEBOX

It is important for modern electronics to create a functional housing. Setting and operating functions must be guaranteed, technical demands regarding heat dissipation and EMC properties are to be supported. The ideal design saves space and mounting costs in the switchgear cabinet. Moreover, ergonomics and the design are gaining in importance for high-quality opto-couplers interfaces. The WAVEBOX fulfils these criteria and has the following distinguishing features:

The WAVEBOX is characterised by:

- Optimal width for any application (12.5 mm, 17.5 mm, **22.5 mm**)
- Large component assembly surface; SMD's can be mounted on the solder side
- No tools required for assembly
- Plug-in printed circuit board
- Plug-in cross-connection via ZQV 2.5 N
- Hinged, transparent cover
- BLZ 5.08 screw/plug and socket connector
- BLZF 5.08 optional tension clamp/plug and socket connector
- Marking option with WS tags
- Suitable for snap-fitting on TS 35

#### Connection systems

Available are BLZ screw-type connectors as well as the BLZF tension clamp system for up to 2.5 mm<sup>2</sup> flexible conductors for maximum wiring flexibility.

#### Printed-circuit board removal

This takes place by pushing in the locking hooks in way of the cover and with drawing of the terminal level and printed circuit board from the housing. This must not take place with the supply connected.

#### Cross-connection

Housings of the same family arranged side by side, can be cross-connected in the base of the housing with the ZQV 2.5 N/2 cross-connector. The cross-connection can be loaded with a current of up to 8 A. By means of this arrangement, the supply voltage can be cross-connected from one electronic module to another. The voltage transferred from the cross-connection to the terminal level must not exceed 50 V.

#### Air vents

Slanted air vents control the temperature and ventilate the housing base.

### Modular system

#### PLUGSERIES/PLUGOPTO

is a new generation of pluggable SSR. The core is an innovative relay socket **PXS** or **PXZ**.

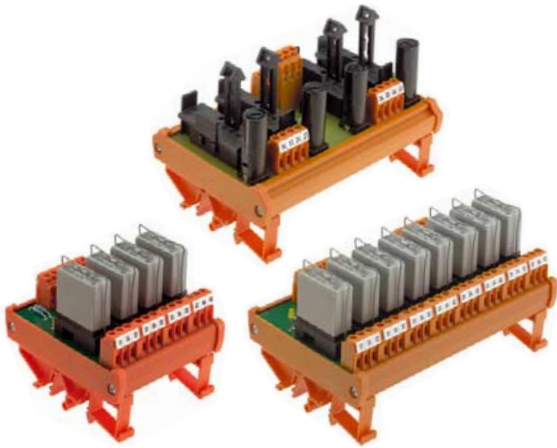
Both products combine Weidmüller functionality and experience gained from the relay and terminal business.

The PLUGopto is the ideal connection technology between SSR and the application.

### Modular principle

The new PLUGSERIES is particularly service friendly. Commercially available SSRs are simply plugged: holding / dismantling clamps guarantee secure mounting; LED indicators with free-wheeling diode can be simply plugged.

- Easy plugging of SSR
  - suitable for the standard design and RT
- Independent connection technology: screw or tension clamp
  - Rated cross-section 0.5 2.5 mm<sup>2</sup>
- Robust holding / dismantling clamp
- Control voltage 24 Vac/Vdc
- Rated switching voltage 24 Vdc, 24 Vac/Vdc, 230 Vac
- Up to 5 A continuous current
- Low wiring costs thanks to ZQV 2.5N (pluggable) cross-connectors
- Service-friendly modular system
  - relay socket, LED indicator
  - holding clamp and SSR
  - mount onto TS 35
  - marking options with WS marking tags and holding clamps
- Pluggable LED indicator with free-wheeling diode



### Weidmüller locking socket RS

The locking socket with opto-couplers RS 40 have a width of 11.2 mm. The modules on locking socket profiles are equipped with clamping yoke (screw connection) units for conductor connection.

Connectable are:

solid conductors: 0.5...4 mm<sup>2</sup>

flexible conductors: 0.5...2.5 mm<sup>2</sup>.

### Locking socket with multiple interfaces

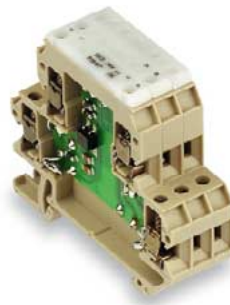
Multiple interfaces RSM are optionally available assembled with 4, 8 or 16 plug-gable opto-couplers. Versions are available with joint positive and negative potentials in order to reduce wiring on the input side.

PCB clamping yoke screw connector elements have clamping yoke units for connecting conductors with the following cross-sections:

solid conductors: 0.5...4 mm<sup>2</sup>

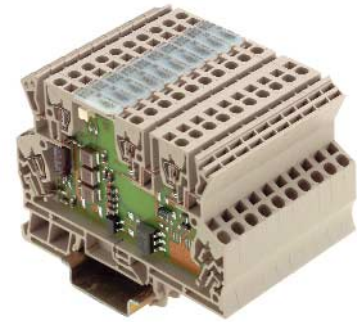
flexible conductors: 0.5...2.5 mm<sup>2</sup>

Variants of the RSM couplers have male connector blocks on the input side for connecting pre-assembled cables, in accordance with IEC 603-1/DIN 41651.



### Mini-coupler

All parts of the mini-coupler DKR and DKO meet the specifications for a design that is as slim as possible. The sensational width of a mere 6 mm can be achieved by employing the latest surface-mounted devices (SMD). There are 4 or 5 screw connections available which accept conductors with cross-sectional dimensions from 0.5...4 mm<sup>2</sup>. The mini-coupler offer a wide range of options for coupling digital sensor/actuator signals between automation devices and the process stage. With DKO opto-coupler, signals from the field with different voltages can be picked up and unified.



### Miniconditioner MCZ

The MCZ-housing is distinguished as one of the slimmest component-housings. A tool width of only 6 mm reduces space requirements in cabinets.

The MCZ is characterized by:

- Tension-clamp connection
  - integrated cross-connection option for input and output minimise wiring costs.
- The mini conditioner MCZO (opto-couplers) have 4 and 5 Z-tension spring connections. The clampable conductor cross-section is 0.5...1.5 mm<sup>2</sup>.












### CE-marking

Weidmüller opto-coupler are marked with the CE symbol and comply with the requirements of EN 50 081 Part 1 and EN 50 082 Part 2. They can therefore be used for both industrial as well as for commercial and light industry.

Appropriate ESD measures should be taken during installation. If connecting wires are particularly long, overvoltage protection should be provided in order to prevent interference from electrical disturbance in the atmosphere.

# Opto-coupler

## Electronic switching

	Output										
											
Housing	5 - 48 V ≤ 20 mA	5 - 48 V ≤ 0.1 A	5 - 48 V ≤ 0.5 A	5 - 48 V ≤ 20 mA	5 - 48 V ≤ 2.5 A	5 - 48 V ≤ 5 A	24 - 250 V ≤ 3.5 A	5 - 48 V ≤ 0.1 A	5 - 48 V ≤ 0.1 A	5 - 48 V ≤ 0.1 A	4 x 8 x 16 x
EG	● 0558160000 Page 122	● 0609860000 Page 123				● 8220870000 Page 130					
WAVESERIES WOS						● 8275190000 Page 126		● 8237720000 Page 128			
EG 7					● 8269050000 Page 131	● 8281720000 Page 131					
RS 40		● 8092530000 ● 8234580000 Page 132									
RSM	● 1160961001 ● 1161761001 ● 1177860000 Page 137	● 1117461001 ● 8065031001 ● 1119460000 Page 137						● 1123861001 ● 1123761001 ● 1125161001 ● 8017581001 ● 1124900000 ● 1124900000 ● 1170200000 ● 1153200000 ● 1121300000 ● 1121300000 Page 139	● 1124261001 ● 1125261001 ● 8003671001 ● 1124900000 ● 1170200000 ● 1153200000 ● 1121300000 ● 8021391001 ● 1124900000 ● 1170200000 ● 1153200000 ● 1121300000 Page 139	● 1124661001 ● 8018220000 ● 1124900000 ● 1170200000 ● 1153200000 ● 1121300000 ● 8082471001 ● 1124900000 ● 1170200000 ● 1153200000 ● 1121300000 Page 139	
DKO 32	● 8008090000 Page 116		● 8019580000 Page 117								
DKO 35	● 8008150000 Page 116 ● 8028300000 ● 8215640000 ● 8248790000 Page 117		● 8019590000 Page 117 ● 8215630000 Page 118		● 8215600000 ● 8181990000 Page 118						
DKO 35/32	● 8228640000 Page 119				● 8228630000 Page 118						
MCZ O	● 8365940000 Page 114	● 8398940000 Page 115			● 8287730000 Page 114						
PLUGSERIES POS/POZ	● 8324610000 (5 V TTL) Page 115					● 8610840000 ● 8610920000 ● 8610900000 ● 8610970000 ● 8610890000 ● 8610960000 ● 8615600000 ● 8615640000 ● 8615620000 ● 8615650000 Page 134	● 8610860000 ● 8610930000 ● 8610910000 ● 8610980000 ● 8615590000 ● 8615630000 Page 134				

Reliable separation

● 24 V dc  
● 24 Vuc/ac

● Replacement opto-coupler dc and ac/dc  
● Empty socket

# Opto-coupler

## Electronic switching

**48 V**

**Output**

Housing	5 - 48 V ≤ 20 mA	5 - 48 V ≤ 0.1 A	5 - 48 V ≤ 0.5 A	5 - 48 V ≤ 20 mA	5 - 48 V ≤ 2.5 A	5 - 48 V ≤ 5 A	24 - 250 V ≤ 3.5 A	5 - 48 V ≤ 0.1 A	5 - 48 V ≤ 0.1 A	5 - 48 V ≤ 0.1 A
<b>EG 7</b>		● 8092550000 Page 132								
		● 8234590000 Page 132								
<b>RS 40</b>		● 1161061001 Page 137								
		● 1161860000 Page 137								
<b>DKO 35</b>	● 8151230000 Page 120									

**115 V**

**Output**














Housing	5 - 48 V ≤ 20 mA	5 - 48 V ≤ 0.1 A	5 - 48 V ≤ 0.5 A	5 - 48 V ≤ 20 mA	5 - 48 V ≤ 2.5 A	5 - 48 V ≤ 5 A	24 - 250 V ≤ 3.5 A	5 - 48 V ≤ 0.1 A	5 - 48 V ≤ 0.1 A	5 - 48 V ≤ 0.1 A
<b>EG</b>		● 0131860000 Page 123								
<b>WAVESERIES</b> WOS			● 8235180000 Page 125			● 8296250000 Page 126	● 8259950000 Page 127	● 8275360000 Page 128		
<b>EG 7</b>		● 8092570000 ● 8234600000 ● 8397420000 ● 8315590000 Page 133								
<b>RS 40</b>		● 1161161001 ● 1161960000 Page 137								
<b>DKO 32</b>	● 8027980000 Page 119									
<b>DKO 35</b>	● 8077860000 Page 119 ● 8131660000 Page 120									
<b>MCZ O</b>		● 8421060000 Page 114								

Digital signal processing

Reliable separation ● Vdc ● Vuc/ac

# Opto-coupler

## Electronic switching

	Output												
													
Housing	5 - 48 V ≤ 20 mA	5 - 48 V ≤ 0.1 A	5 - 48 V ≤ 0.5 A	5 - 48 V ≤ 20 mA	5 - 48 V ≤ 2.5 A	5 - 48 V ≤ 5 A	24 - 250 V ≤ 3.5 A	5 - 48 V ≤ 0.1 A	5 - 48 V ≤ 0.1 A	5 - 48 V ≤ 0.1 A	4 x	8 x	16 x
EG		● 0546360000 Page 123											
WAVESERIES WOS			● 8275380000 Page 125			● 8275220000 Page 126	● 8275400000 Page 127	● 8275340000 Page 128					
EG 7		● 8092590000 ● 8234610000 ● 8387580000 ● 8394990000 Page 133											
RS 40		● 1161461001 ● 1162060000 ● 8182690000 Page 137											
DKO 32	● 8008100000 Page 119												
DKO 35	● 8008160000 Page 119												
MCZ O	● 8421380000 Page 114												

● 230 V<sub>uc/ac</sub>

# Opto-coupler

## Electronic switching

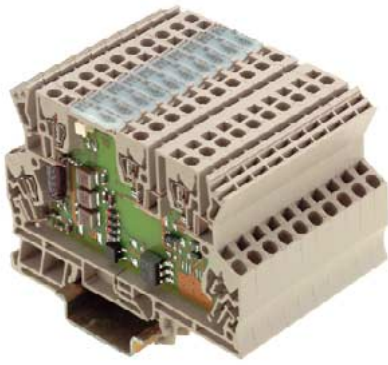
	Output									
								4 x	8 x	16 x
<b>12 V</b>										
<b>Housing</b>	5 - 48 V ≤ 20 mA	5 - 48 V ≤ 0.1 A	5 - 48 V ≤ 0.5 A	5 - 48 V ≤ 20 mA	5 - 48 V ≤ 2.5 A	5 - 48 V ≤ 5 A	24 - 250 V ≤ 3.5 A	5 - 48 V ≤ 0.1 A	5 - 48 V ≤ 0.1 A	5 - 48 V ≤ 0.1 A
<b>EGO</b>	● 8011250000 Page 122	● 0114260000 Page 122								
<b>WAVESERIES</b> WOS			● 8275500000 Page 124							
<b>EGO 7</b>		● 8092510000 ● 8234570000 Page 132								
<b>RS 40</b>		● 1118760000 ● 1161660000 Page 137								
<b>RSM O</b>							● 8017581001 ● 1121200000 ● 1124800000 Page 139	● 8003671001 ● 1121200000 ● 1124800000 ● 8021391001 ● 1121200000 ● 1124800000 Page 139	● 8018221001 ● 1121200000 ● 1124800000 ● 8082471001 ● 1121200000 ● 1124800000 Page 139	
<b>DKO 35</b>		● 8184030000 Page 116								
<b>3...60 V</b>										
<b>EGO, 3...5 V</b>	● 0266160000 Page 122									
<b>EGO, 3...12 V</b>	● 8011250000 Page 122									
<b>WAVESERIES</b> WOS 5 V					● 8275430000 Page 124					
<b>WAVESERIES</b> WOS 5 V TTL		● 8275210000 Page 129								
<b>WAVESERIES</b> WOS 3.5 - 15 V		● 8275390000 Page 124								
<b>WAVESERIES</b> WOS 12 - 28 V		● 8275450000 Page 129								
<b>WAVESERIES</b> WOS 15 - 60 V		● 8237730000 Page 124	● 8237730000 Page 124			● 8275440000 Page 127				
<b>EGO, 7.5 V</b>			● 8092490000 ● 8234560000 Page 132							
<b>RS 40, 5 V</b>	● 1118861001 ● 1161560000 Page 137									
<b>RSM, 5 V</b>							● 1123661001 ● 1121100000 Page 139	● 1124061001 ● 1121100000 Page 139	● 1124461001 ● 1121100000 Page 139	
<b>DKO 32</b>	● 8018620000 Page 116									
<b>DKO 35</b>	● 8018630000 Page 116	● 8067100000 Page 120								
<b>DKO 32/35</b>		● 8228650000 Page 116								

Reliable separation ● 12 Vdc ● Replacement opto-coupler dc and ac/dc  
● 12 Vuc/ac ● Empty socket



# Opto-coupler in component housing mini coupler MCZ

## Opto-couplers MCZ O



### Schematic circuit diagram

This module can be used:

- between controller and sensor, for feedback of different statuses.
- for direct switching of load currents up to a Adc, but also provides "online" information about the behaviour of the load current.

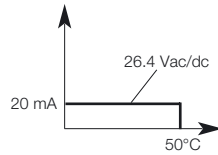
The MCZ-O modules do have following features:

- Reduction of installation- and power-up times by using the proved tension-clamp technology
- Pluggable cross-connection units in the input side reduce wiring costs
- 6 mm width

### MCZ O 24 Vac/dc 20 mA

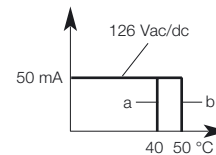
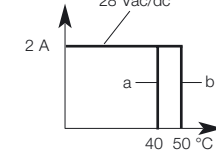
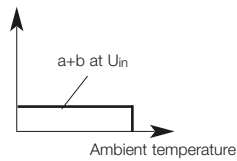
**Derating curve**  
rated to ambient temperature

a = rowed without clearances on the mounting rail  
b = rowed with clearances  $\geq 20$  mm

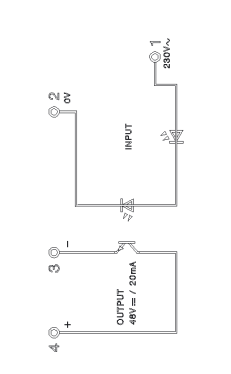
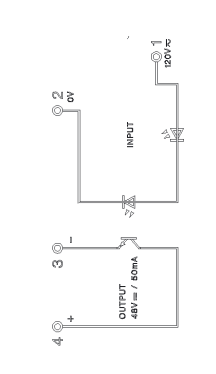
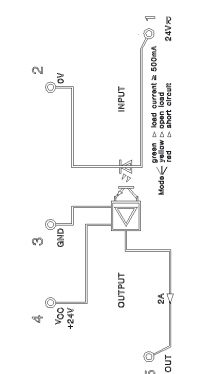
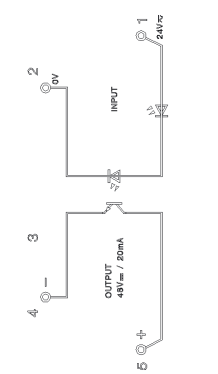
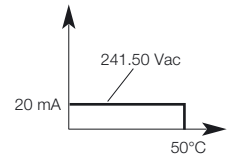


### MCZ O 24 Vac/dc 2 A<sup>2</sup>

Output current



### MCZ O 230 Vac



### Ordering data

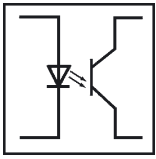
For TS 35

### Technical data

	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
Input voltage	24 Vac/dc $\pm 10\%$ (21.6...26.4ac/dc)	<b>8365940000</b>	24 Vac/dc $\pm 20\%$ (19.2...28.8ac/dc)	<b>8287730000</b>	120 Vac/dc -15 % +5 %	<b>8421060000</b>	230 Vac -15 % +5 %	<b>8421380000</b>
Making threshold	ac: 14.1 Vac / dc: 16.8 Vdc		approx. 16 Vac/dc		approx. 65 Vac/approx. 70 Vdc		approx. 170 Vac	
Input current at $U_{nom}$	ac: 11.4 mA / dc: 9.6 mA		ac: 13 mA / dc: 12 mA		approx. 3 mA		ac: 10 mA	
Rated input consumption			ac: approx. 220 mW					
Max. input frequency	ac: 5 Hz duty factor 1:2 dc: 10 Hz duty factor 1:2		ac: $\leq 10$ Hz duty factor 1:2 dc: $\leq 30$ Hz duty factor 1:2		ac: 5 Hz duty factor 1:2 dc: 20 Hz duty factor 1:2		ac: 5 Hz duty factor 1:2	
Capacity working resistance to reduction at dissipated energy	no		no		no		yes	
Functionality	operating indication		operating indication		operating indication		operating indication	
Supply voltage	5...48 Vdc		24 Vdc $\pm 20\%$ (19.2...28.8 Vdc)		5...48 Vdc		5...48 Vdc	
Max. output current	20 mA		2 A		50 mA		20 mA	
Voltage drop at max. load current	$\leq 1$ V				$< 1.6$ V		$< 1.6$ V	
Pulse duration, limiting overload current (not periodic)	$< 150$ mA / 10 ms				$< 150$ mA / 10 ms		$< 150$ mA / 10 ms	
Reverse current (close-circuit current) at $U_{out} = 48$ V	max. 0.16 mA				max. 0.16 mA		max. 0.16 mA	
Reverse polarity protection			present					
Free-wheel diode	present		external necessary		present		present	
- typ. Switch-on delay (at ac phase position dependent)	ac: $\leq 10$ ms / dc: $\leq 20$ ms				$\leq 30$ ms			
- typ. Switch-off delay (at ac phase position dependent)	ac: $\leq 45$ ms / dc: $\leq 40$ ms				$\leq 40$ ms			
Short-circuit proof			yes					
Rated voltage	300 V		300 V		300 V		300 V	
Rated impulse voltage	6 kV		6 kV		6 kV		6 kV	
Overvoltage category	III		III		III		III	
Pollution severity	2		2		2		2	
Clearances and creepage distances	$\geq 5.5$ mm		$\geq 5.5$ mm		$\geq 5.5$ mm		$\geq 3$ mm	
Insulation coordin.- and voltage proof, input/output mounting rail	4 kV <sub>eff</sub> / 1 min		4 kV <sub>eff</sub> / 1 min		4 kV <sub>eff</sub> / 1 min		4 kV <sub>eff</sub> / 1 min	
Opto-coupler	acc. to VDE 0884		acc. to VDE 0884		acc. to VDE 0884		acc. to VDE 0884	
Ambient temperature rowed on mounting rail without clearances	-25 °C...+50 °C		-25 °C...+40 °C		-25 °C...+40 °C		-25 °C...+50 °C	
Ambient temperature rowed with clearances $\geq 20$ mm			-25 °C...+50 °C		-25 °C...+50 °C			
Storage temperature	-40 °C...+85 °C		-40 °C...+60 °C		-40 °C...+60 °C		-40 °C...+85 °C	
Conductor	AWG 22...12		AWG 22...12		AWG 22...12		AWG 22...12	
Conductor cross-section	1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>	
Approvals	CE, UL, CSA		CE, UL, CSA		CE, UL, CSA		CE, UL, CSA	
Overall width	6 mm		6 mm		6 mm		6 mm	
Accessories	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
End plate	AP MCZ 1.5	<b>8389030000</b>	AP MCZ 1.5	<b>8389030000</b>	AP MCZ 1.5	<b>8389030000</b>	AP MCZ 1.5	<b>8389030000</b>
Further accessories, dimensions and connection data	Page 305		Page 305		Page 305		Page 305	

# Opto-coupler in component housing mini coupler MCZ

## Opto-couplers MCZ O



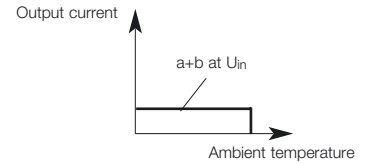
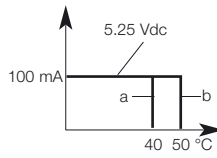
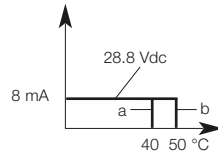
This module can be used:  
 1\* - between controller and actuator, for the signal conversion of 24 Vdc to 5 VTTL  
 2\* - between controller and actuator, for the signal conversion of 5 VTTL to 5...48 Vdc

### MCZ O 24 Vdc/5 VTTL<sup>1\*</sup>

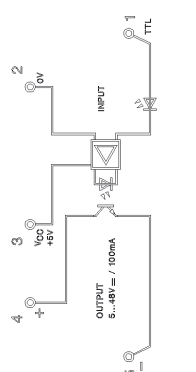
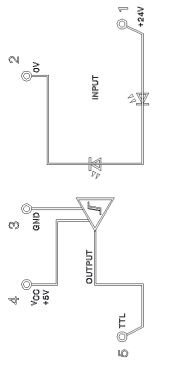
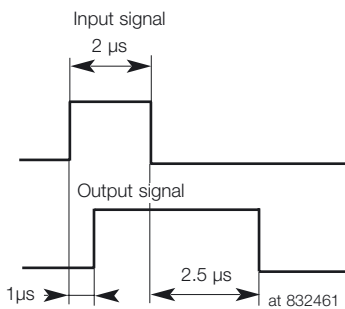
**Derating curve**  
 rated to ambient temperature

a = rowed on the mounting rail without clearances  
 b = rowed with clearances  $\geq 20$  mm

### MCZ O 5 V TTL/5...48 Vdc<sup>2\*</sup>



### Schematic circuit diagram



### Ordering data

For TS 35

Type	Cat. No.	Type	Cat. No.
MCZ O 24 Vdc	<b>8324610000</b>	MCZ O 24 Vdc	<b>8398940000</b>

### Technical data

#### Input

Supply voltage	
Input voltage	24 Vdc $\pm 16\%$ (20...28 Vdc)
Making threshold	approx. 17 Vdc
Input current at $U_{nom}$	4.7 mA (2.9...6.5 mA)
Rated input consumption	dc: 112 mW
Max. input frequency	100 kHz switching ratio 1:2 50 kHz switching ratio 1:10
Min. input impulse width	2 $\mu$ s

Supply voltage	5 Vdc $\pm 5\%$
Input voltage	5 V TTL
Making threshold	
Input current at $U_{nom}$	$I_{IL} = 1 \mu A / I_{IH} = 8 \mu A$
Rated input consumption	
Max. input frequency	2.4 kHz
Min. input impulse width	

#### Output

Supply voltage	5 V (4.75...5.25 V)
Output voltage	5 V TTL (4.75...5.25 V)
Max. output current	8 mA, Fan Out = 20 LS-TTL
Voltage drop at max. load current	
Pulse duration, limiting overload current (not periodic)	
Reverse current (static current) at $U_{out} = 48$ V	
Reverse polarity protection	
Free-wheel diode	
- typ. switch-on delay	1 $\mu$ s (at 20 Vdc)
- typ. switch-off delay	2.5 $\mu$ s (at 28 Vdc)

Supply voltage	5...48 Vdc
Output voltage	
Max. output current	100 mA
Voltage drop at max. load current	$\leq 1.8$ V
Pulse duration, limiting overload current (not periodic)	
Reverse current (static current) at $U_{out} = 48$ V	
Reverse polarity protection	present (input)
Free-wheel diode	present
- typ. switch-on delay	approx. 27 $\mu$ s
- typ. switch-off delay	approx. 210 $\mu$ s

### Insulation coordin./Reliable separation acc. to EN 50178

Rated voltage	300 V
Rated impulse voltage	6 kV
Overvoltage category	III
Pollution severity	2
Clearances and creepage distances	$\geq 5.5$ mm
Insulation coordination/dielectric strength I/O to TS	4 kV <sub>eff</sub> / 1 min
Opto-coupler	acc. to VDE 0884
Ambient temperature rowed on mounting rail without clearances	-25 °C...+40 °C
Ambient temperature rowed with clearances $\geq 20$ mm	-25 °C...+50 °C
Storage temperature	-40 °C...+60 °C
Conductor	AWG 22...12
Conductor cross-section	1.5 mm <sup>2</sup>
Approvals	CE, UL, CSA
Overall width	6 mm

Rated voltage	300 V
Rated impulse voltage	6 kV
Overvoltage category	III
Pollution severity	2
Clearances and creepage distances	$\geq 5.5$ mm
Insulation coordination/dielectric strength I/O to TS	4 kV <sub>eff</sub> / 1 min
Opto-coupler	acc. to VDE 0884
Ambient temperature rowed on mounting rail without clearances	-25 °C...+50 °C
Ambient temperature rowed with clearances $\geq 20$ mm	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Conductor	AWG 22...12
Conductor cross-section	1.5 mm <sup>2</sup>
Approvals	CE, UL, CSA
Overall width	6 mm

### Accessories

Type	Cat. No.
End plate	AP MCZ 1.5 <b>8389030000</b>
Further accessories, dimensions and connection data	Page 305

Type	Cat. No.
End plate	AP MCZ 1.5 <b>8389030000</b>
Further accessories, dimensions and connection data	Page 305

# Opto-coupler in component housing mini coupler DK

## Opto-couplers DKO

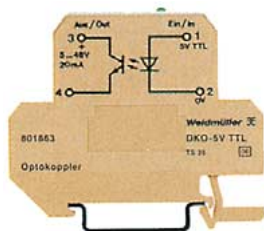
- Coupling of digital sensor-/actuator-signals between PLC and process
- Low cost solution for level- and potential-equalization
- Low input power
- Screw clamp connection technology
- 6 mm width

### DKO 5 Vdc

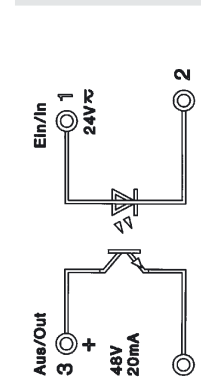
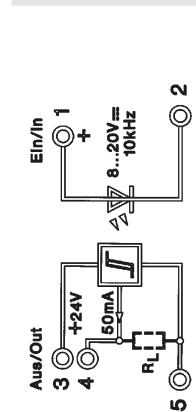
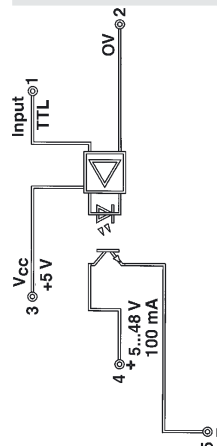
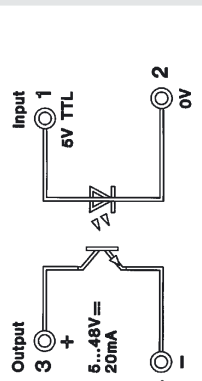
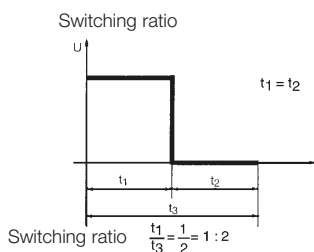
### DKO 5 VTTL

### DKO 12 Vdc

### DKO 24 Vac/dc



### Schematic circuit diagram



Ordering data	
For TS 32	Y
For TS 35	W

With combination foot TS 32/TS 35

Technical data	
Input voltage	5 Vdc $\pm 5\%$
Switch-on voltage	2.4 Vdc
Input current	$\leq 10$ mA
Max. input power	50 mW
Output voltage	5...48 Vdc
Max. output current	20 mA
Min. output current	50 $\mu$ A
Max. switching frequency; switching ratio 1: 2	20 Hz

Switch-on delay	$\leq 15$ $\mu$ s
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Switch-off delay	$\leq 70$ $\mu$ s
------------------	-------------------

Voltage drop at max. load	$\leq 1.6$ V
---------------------------	--------------

### Insulation coordination to EN 50 178

Rated voltage	150 V
Rated impulse voltage	4 kV
Overtoltage category	IV
Pollution severity	2
Clearances and creepage distances	$\geq 4$ mm
Operating temperature	without clearances: -25 °C...+50 °C with clearances: -25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Conductor	AWG 22...12
Conductor cross-section	0.5...4 mm <sup>2</sup>
Overall width	6 mm

Accessories	
End plate	AP DKT4 <b>0687560000</b>
Further accessories, dimensions and connection data	Page 305

Type	Cat. No.
DKO 5 Vdc	<b>8018620000</b>
DKO 5 Vdc	<b>8018630000</b>

Technical data	
Input: bottom	5 Vdc $\pm 5\%$
Input: bottom	5 VTTL
Input current	1 $\mu$ A
Output voltage	5...48 Vdc
Max. output current	100 mA
Min. output current	50 $\mu$ A
Max. switching frequency	3 kHz

Switch-on delay	$\leq 15$ $\mu$ s
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Switch-off delay	$\leq 70$ $\mu$ s
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Voltage drop at max. load	$\leq 1.6$ V
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Rated voltage	300 V
Rated impulse voltage	6 kV
Overtoltage category	IV
Pollution severity	2
Clearances and creepage distances	$\geq 5.5$ mm
Operating temperature	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Conductor	AWG 22...12
Conductor cross-section	0.5...4 mm <sup>2</sup>
Overall width	6 mm

Type	Cat. No.
DKO DK5 5 VTTL	<b>8228650000</b>

End plate	AP DKT4 <b>0687560000</b>
Further accessories, dimensions and connection data	Page 305

Type	Cat. No.
DKO 12 Vdc	<b>8184030000</b>

Technical data	
Input: bottom	12 Vdc $\pm 20\%$
Input: bottom	approx. 7 V
Input current	11 mA
Max. input power	130 mW
Output voltage	24 Vdc $\pm 10\%$
Max. output current	50 mA
Min. output current	50 $\mu$ A
Max. switching frequency	10 kHz

Switch-on delay	1 $\mu$ s
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Switch-off delay	2.5 $\mu$ s
------------------	-------------

Voltage drop at max. load	$\leq 1$ V
---------------------------	------------

Rated voltage	300 V
Rated impulse voltage	6 kV
Overtoltage category	IV
Pollution severity	2
Clearances and creepage distances	$\geq 5.5$ mm
Operating temperature	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Conductor	AWG 22...12
Conductor cross-section	0.5...4 mm <sup>2</sup>
Overall width	12 mm

Type	Cat. No.
DKO 24 Vac/dc	<b>8008090000</b>
DKO 24 Vac/dc	<b>8008150000</b>

End plate	AP DKT4 <b>0687560000</b>
Further accessories, dimensions and connection data	Page 305

Type	Cat. No.
DKO 24 Vac/dc	<b>8008090000</b>
DKO 24 Vac/dc	<b>8008150000</b>

Technical data	
Input: bottom	24 Vac/dc $\pm 10\%$
Input: bottom	112.8 Vac/16.8 Vdc
Input current	11.4 mAac/9.6 mAdc
Max. input power	280 mVA/230 mW
Output voltage	5...48 Vdc
Max. output current	20 mA
Min. output current	50 $\mu$ A
Max. switching frequency	ac: 5 Hz dc: 10 Hz

Switch-on delay	$\leq 15$ ms at dc
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Switch-off delay	$\leq 25$ ms at dc
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Voltage drop at max. load	$\leq 1$ V
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Rated voltage	300 V
Rated impulse voltage	4 kV
Overtoltage category	III
Pollution severity	2
Clearances and creepage distances	$\geq 4$ mm
Operating temperature	-25 °C...+40 °C
Storage temperature	-25 °C...+50 °C
Conductor	AWG 22...12
Conductor cross-section	0.5...4 mm <sup>2</sup>
Overall width	6 mm

Type	Cat. No.
AP DKT4	<b>0687560000</b>

End plate	AP DKT4 <b>0687560000</b>
Further accessories, dimensions and connection data	Page 305

# Opto-coupler in component housing mini coupler DK

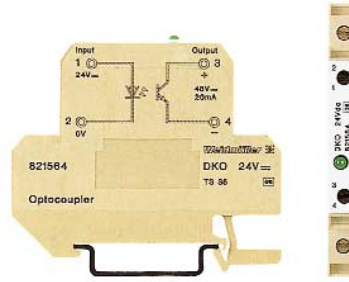
Opto-couplers DKO

DKO 24 Vdc

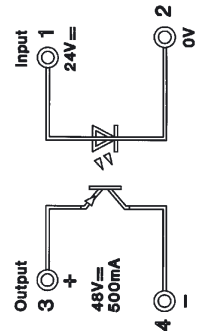
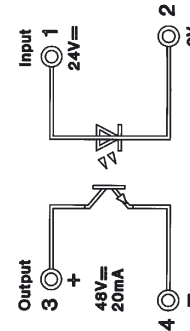
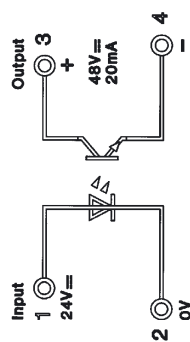
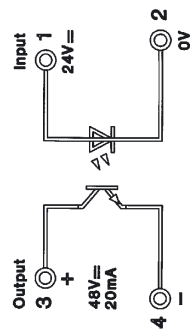
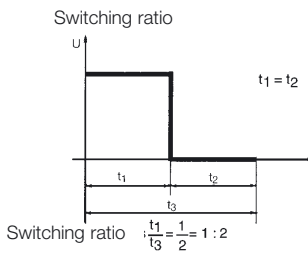
DKO 24 Vdc

DKO 24 Vdc

DKO 24 Vdc



## Schematic circuit diagram



### Ordering data

For TS 32	Y
For TS 35	W

Type	Cat. No.
DKO 24 Vdc	<b>802830000</b>

Type	Cat. No.
DKO 24 Vdc	<b>821564000</b>

Type	Cat. No.
DKO 24 Vdc	<b>824879000</b>

Type	Cat. No.
DKO 24 Vdc	<b>8019580000</b>
DKO 24 Vdc	<b>8019590000</b>

### Technical data

Input voltage	24 Vdc $\pm 10\%$
Switch-on voltage	approx. 19 V/7.5 mA
Input current	$\leq 15$ mA
Max. input power	360 mW
Output voltage	5...48 Vdc
Max. output current	20 mA
Min. output current	50 $\mu$ A
Max. switching frequency; switching ratio 1: 2	3 kHz

Input: top	24 Vdc $\pm 10\%$
Input: bottom	24 Vdc $\pm 10\%$
Switch-on voltage	approx. 19 V/7.5 mA
Input current	$\leq 15$ mA
Max. input power	360 mW
Output voltage	5...48 Vdc
Max. output current	20 mA
Min. output current	50 $\mu$ A
Max. switching frequency; switching ratio 1: 2	3 kHz

Input: bottom	24 Vdc $\pm 10\%$
Switch-on voltage	approx. 19 V/7.5 mA
Input current	$\leq 8.5$ mA
Max. input power	204 mW
Output voltage	5...48 Vdc
Max. output current	20 mA
Min. output current	50 $\mu$ A
Max. switching frequency; switching ratio 1: 2	3 kHz

Input: bottom	24 Vdc $\pm 10\%$
Switch-on voltage	approx. 17 V
Input current	6 mA
Max. input power	145 mW
Output voltage	5...48 Vdc
Max. output current	500 mA
Min. output current	50 $\mu$ A
Max. switching frequency; switching ratio 1: 2	200 Hz

Input: bottom	24 Vdc $\pm 10\%$
Switch-on voltage	approx. 17 V
Input current	6 mA
Max. input power	145 mW
Output voltage	5...48 Vdc
Max. output current	500 mA
Min. output current	50 $\mu$ A
Max. switching frequency; switching ratio 1: 2	200 Hz

### Switch-on delay

Switch-on delay	approx. 50 $\mu$ s
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Switch-on delay	approx. 50 $\mu$ s
-----------------	--------------------

Switch-on delay	approx. 50 $\mu$ s
-----------------	--------------------

Switch-on delay	approx. 50 $\mu$ s
-----------------	--------------------

Switch-on delay	approx. 40 $\mu$ s
-----------------	--------------------

### Switch-off delay

Switch-off delay	approx. 80 $\mu$ s
------------------	--------------------

Switch-off delay	approx. 80 $\mu$ s
------------------	--------------------

Switch-off delay	approx. 80 $\mu$ s
------------------	--------------------

Switch-off delay	approx. 80 $\mu$ s
------------------	--------------------

Switch-off delay	approx. 65 $\mu$ s
------------------	--------------------

### Voltage drop at max. load

Voltage drop at max. load	$\leq 900$ mV
---------------------------	---------------

Voltage drop at max. load	$\leq 900$ mV
---------------------------	---------------

Voltage drop at max. load	$\leq 900$ mV
---------------------------	---------------

Voltage drop at max. load	$\leq 900$ mV
---------------------------	---------------

Voltage drop at max. load	$\leq 800$ mV
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### Insulation coordination to EN 50 178

Rated voltage	300 V
Rated impulse voltage	4 kV
Overvoltage category	II
Pollution severity	2
Clearances and creepage distances	$\geq 4$ mm

Rated voltage	300 V
Rated impulse voltage	4 kV
Overvoltage category	II
Pollution severity	2
Clearances and creepage distances	$\geq 4$ mm

Rated voltage	300 V
Rated impulse voltage	4 kV
Overvoltage category	III
Pollution severity	2
Clearances and creepage distances	$\geq 4$ mm

Rated voltage	300 V
Rated impulse voltage	4 kV
Overvoltage category	III
Pollution severity	2
Clearances and creepage distances	$\geq 4$ mm

Rated voltage	300 V
Rated impulse voltage	4 kV
Overvoltage category	II
Pollution severity	2
Clearances and creepage distances	$\geq 4$ mm

Operating temperature	without clearances	-25 °C...+40 °C
	with clearances	-25 °C...+50 °C

Operating temperature	without clearances	-25 °C...+40 °C
	with clearances	-25 °C...+50 °C

Operating temperature	without clearances	-25 °C...+40 °C
	with clearances	-25 °C...+50 °C

Operating temperature	without clearances	-25 °C...+40 °C
	with clearances	-25 °C...+50 °C

Operating temperature	without clearances	-25 °C...+40 °C
	with clearances	-25 °C...+50 °C

Storage temperature	-40 °C...+85 °C
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Storage temperature	-40 °C...+85 °C
---------------------	-----------------

Storage temperature	-40 °C...+85 °C
---------------------	-----------------

Storage temperature	-40 °C...+85 °C
---------------------	-----------------

Storage temperature	-40 °C...+85 °C
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Conductor	AWG 22...12
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Conductor	AWG 22...12
-----------	-------------

Conductor	AWG 22...12
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Conductor	AWG 22...12
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Conductor	AWG 22...12
-----------	-------------

Conductor cross-section	0.5...4 mm <sup>2</sup>
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Conductor cross-section	0.5...4 mm <sup>2</sup>
-------------------------	-------------------------

Conductor cross-section	0.5...4 mm <sup>2</sup>
-------------------------	-------------------------

Conductor cross-section	0.5...4 mm <sup>2</sup>
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Conductor cross-section	0.5...4 mm <sup>2</sup>
-------------------------	-------------------------

Overall width	6 mm
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Overall width	6 mm
---------------	------

Overall width	6 mm
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Overall width	6 mm
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Overall width	6 mm
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### Accessories

End plate	AP DKT4	<b>0687560000</b>
Further accessories, dimensions and connection data	Page 305	

End plate	AP DKT4	<b>0687560000</b>
Further accessories, dimensions and connection data	Page 305	

End plate	AP DKT4	<b>0687560000</b>
Further accessories, dimensions and connection data	Page 305	

End plate	AP DKT4	<b>0687560000</b>
Further accessories, dimensions and connection data	Page 305	

End plate	AP DKT4	<b>0687560000</b>
Further accessories, dimensions and connection data	Page 305	

# Opto-coupler in component housing mini coupler DK

## Opto-couplers DKO

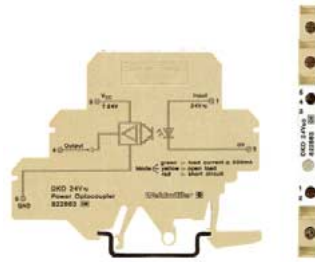
- Coupling of digital sensor-/actuator-signals between PLC and process
- Low cost solution for level- and potential-equalization
- Low input power
- Screw clamp connection technology
- 6 mm width

## DKO 24 Vdc

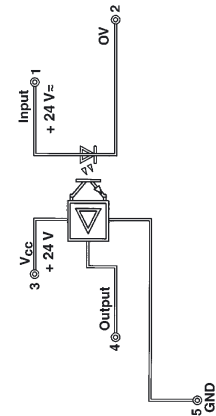
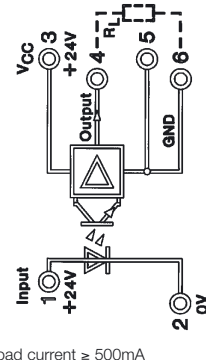
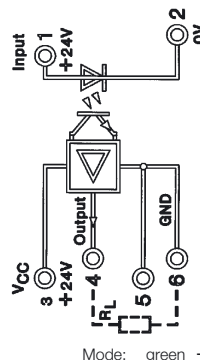
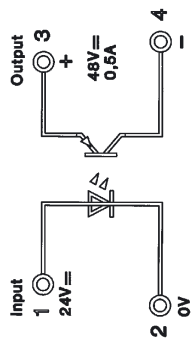
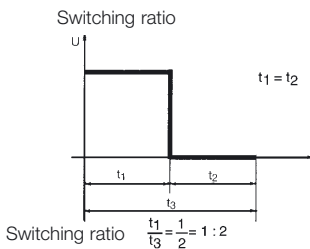
## DKO 24 Vdc

## DKO 24 Vdc

## DKO 24 Vac/dc



### Schematic circuit diagram



Mode: green → Load current ≥ 500mA  
 yellow → Idling  
 red → Short circuit

### Ordering data

For TS 32	Y
For TS 35	W

With combination foot TS 32 / TS 35

### Technical data

Input voltage	24 Vdc ±10 %
Switch-on voltage	approx.17 Vdc
Input current	6 mA
Max. input power	145 mW
Output voltage	5...48 Vdc
Max. output current	500 mA
Min. output current	50 µA
Max. switching frequency; switching ratio 1: 2	200 Hz
Switch-on delay	approx.40 µs
Switch-off delay	approx.65 µs
Voltage drop at max. load	≤800 mV

### Type Cat. No.

DKO 24 Vdc	<b>8215630000</b>
------------	-------------------

### Input: top

Input voltage	24 Vdc ±10 %
Switch-on voltage	approx.17 Vdc
Input current	6 mA
Max. input power	145 mW
Output voltage	5...48 Vdc
Max. output current	500 mA
Min. output current	50 µA
Max. switching frequency; switching ratio 1: 2	200 Hz
Switch-on delay	approx.40 µs
Switch-off delay	approx.65 µs
Voltage drop at max. load	≤800 mV

### Type Cat. No.

DKO 24 Vdc	<b>8181990000</b>
------------	-------------------

### Input: bottom

Input voltage	24 Vdc ±10 %
Switch-on voltage	approx.18 Vdc
Input current	12 mA
Max. input power	290 mW
Output voltage	24 Vdc ±10 %
Max. output current	2 A
Min. output current	50 µA
Max. switching frequency; switching ratio 1: 2	100 Hz
Switch-on delay	approx.40 µs
Switch-off delay	approx.65 µs
Voltage drop at max. load	≤800 mV

### Type Cat. No.

DKO 24 Vdc	<b>8215600000</b>
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### Input: top

Input voltage	24 Vdc ±10 %
Switch-on voltage	approx.18 Vdc
Input current	12 mA
Max. input power	290 mW
Output voltage	24 Vdc ±10 %
Max. output current	2 A
Min. output current	50 µA
Max. switching frequency; switching ratio 1: 2	100 Hz
Switch-on delay	approx.40 µs
Switch-off delay	approx.65 µs
Voltage drop at max. load	≤800 mV

### Type Cat. No.

DKO 24 Vac/dc	<b>8228630000</b>
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### Input: bottom

Input voltage	24 Vac/dc ±20 %
Switch-on voltage	approx.16 Vac/dc
Input current	13 mAac/12 mAdc
Max. input power	220 mVA/195 mW
Output voltage	24 Vdc ±20 %
Max. output current	2 A
Min. output current	50 µA
Max. switching frequency; switching ratio 1: 2	ac: 10 Hz dc: ≤30 Hz
Switch-on delay	2 ms
Switch-off delay	7 ms
Voltage drop at max. load	≤800 mV

### Insulation coordination to EN 50 178

Rated voltage	300 V
Rated impulse voltage	4 kV
Overvoltage category	III
Pollution severity	2
Clearances and creepage distances	≥4 mm
Operating temperature	without clearances: -25 °C...+40 °C with clearances: -25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Conductor	AWG 22...12
Conductor cross-section	0.5...4 mm <sup>2</sup>
Overall width	6 mm

### Type Cat. No.

300 V	300 V
4 kV	4 kV
III	III
2	2
≥4 mm	≥3 mm
-25 °C...+40 °C	-25 °C...+40 °C
-25 °C...+50 °C	-25 °C...+50 °C
-40 °C...+85 °C	-40 °C...+85 °C
AWG 22...12	AWG 22...12
0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>
6 mm	12 mm

### Type Cat. No.

300 V	300 V
4 kV	4 kV
III	III
2	2
≥3 mm	≥3 mm
-25 °C...+40 °C	-25 °C...+40 °C
-25 °C...+50 °C	-25 °C...+50 °C
-40 °C...+85 °C	-40 °C...+85 °C
AWG 22...12	AWG 22...12
0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>
12 mm	12 mm

### Type Cat. No.

300 V	300 V
4 kV	4 kV
III	III
2	2
≥3 mm	≥3 mm
-25 °C...+40 °C	-25 °C...+40 °C
-25 °C...+50 °C	-25 °C...+50 °C
-40 °C...+85 °C	-40 °C...+85 °C
AWG 22...12	AWG 22...12
0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>
6 mm	6 mm

### Type Cat. No.

300 V	300 V
6 kV	6 kV
IV	IV
2	2
≥5.5 mm	≥5.5 mm
-25 °C...+40 °C	-25 °C...+40 °C
-25 °C...+50 °C	-25 °C...+50 °C
-40 °C...+85 °C	-40 °C...+85 °C
AWG 22...12	AWG 22...12
0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>
6 mm	6 mm

### Accessories

End plate	AP DKT4	<b>0687560000</b>
Further accessories, dimensions and connection data	Page 305	

### Type Cat. No.

AP DKT4	<b>0687560000</b>
Page 305	

### Type Cat. No.

AP DKT4	<b>0687560000</b>
Page 305	

### Type Cat. No.

AP DKT4	<b>0687560000</b>
Page 305	

### Type Cat. No.

AP DK 5	<b>8268870000</b>
Page 305	

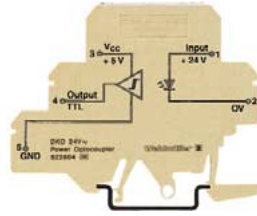
# Opto-coupler in component housing mini coupler DK

Opto-couplers DKO

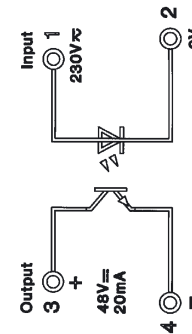
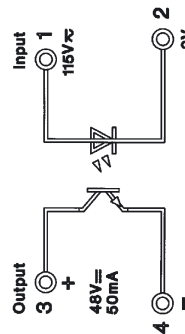
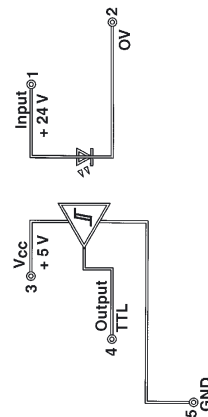
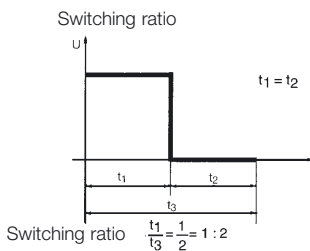
DKO DK5 24 Vdc

DKO 115 Vac/dc

DKO 230 Vac/dc



## Schematic circuit diagram



Ordering data	
For TS 32	Y
For TS 35	W
With combination foot TS 32/TS 35	

Technical data	
Input voltage	24 Vdc $\pm 20\%$
Switch-on voltage	approx. 17 Vdc
Input current	4.7 mA
Max. input power	112 mW
Output voltage	5 VTTL
Max. output current	8 mA, Fan Out = 20 LS-TTL
Min. output current	
Max. switching frequency; switching ratio 1: 2	100 kHz 1:2/50 kHz 1:10

Switch-on delay	1 $\mu$ s
-----------------	-----------

Switch-off delay	2.5 $\mu$ s
------------------	-------------

Voltage drop at max. load	
---------------------------	--

## Insulation coordination to EN 50 178

Rated voltage	300 V
Rated impulse voltage	4 kV
Overvoltage category	III
Pollution severity	2
Clearances and creepage distances	$\geq 5.5$ mm
Operating temperature	without clearances with clearances
	-25 °C...+40 °C
	-25 °C...+50 °C
Storage temperature	-25 °C...+85 °C
Conductor	AWG 22...12
Conductor cross-section	0.5...4 mm <sup>2</sup>
Overall width	6 mm

Accessories	
End plate	AP DK5 8268870000
Further accessories, dimensions and connection data	Page 305

Type	Cat. No.
DKO 24 Vdc	8228640000

Input: top	
Input: top	24 Vdc $\pm 20\%$
Switch-on voltage	approx. 17 Vdc
Input current	4.7 mA
Max. input power	112 mW
Output voltage	5 VTTL
Max. output current	8 mA, Fan Out = 20 LS-TTL
Min. output current	
Max. switching frequency; switching ratio 1: 2	100 kHz 1:2/50 kHz 1:10

Switch-on delay	1 $\mu$ s
-----------------	-----------

Switch-off delay	2.5 $\mu$ s
------------------	-------------

Voltage drop at max. load	
---------------------------	--

## Insulation coordination to EN 50 178

Rated voltage	300 V
Rated impulse voltage	4 kV
Overvoltage category	III
Pollution severity	2
Clearances and creepage distances	$\geq 5.5$ mm
Operating temperature	without clearances with clearances
	-25 °C...+40 °C
	-25 °C...+50 °C
Storage temperature	-25 °C...+85 °C
Conductor	AWG 22...12
Conductor cross-section	0.5...4 mm <sup>2</sup>
Overall width	6 mm

Type	Cat. No.
DKO 115 Vac/dc	8027980000
DKO 115 Vac/dc	8077860000

Type	Cat. No.
DKO 115 Vac/dc	8027980000
DKO 115 Vac/dc	8077860000

Input: bottom	
Input: bottom	115 Vac/dc +5 % -15 %
Switch-on voltage	approx. 65 Vac/approx. 66 Vdc
Input current	2.65 mAac/3 mAac
Max. input power	390 mVA/350 mW
Output voltage	5...48 Vdc
Max. output current	50 mA
Min. output current	
Max. switching frequency; switching ratio 1: 2	ac: 5 Hz/dc: 20 Hz

Switch-on delay	17.4 ms
-----------------	---------

Switch-off delay	27.4 ms
------------------	---------

Voltage drop at max. load	<1.6 V
---------------------------	--------

## Insulation coordination to EN 50 178

Rated voltage	300 V
Rated impulse voltage	6 kV
Overvoltage category	IV
Pollution severity	2
Clearances and creepage distances	$\geq 5.5$ mm
Operating temperature	without clearances with clearances
	-25 °C...+40 °C
	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Conductor	AWG 22...12
Conductor cross-section	0.5...4 mm <sup>2</sup>
Overall width	6 mm

Type	Cat. No.
DKO 230 Vac/dc	8008100000
DKO 230 Vac/dc	8008160000

Type	Cat. No.
DKO 230 Vac/dc	8008100000
DKO 230 Vac/dc	8008160000

Input: bottom	
Input: bottom	230 Vac/dc +5 % -15 %
Switch-on voltage	approx. 130 Vac/approx. 140 Vdc
Input current	1.8 mAac/1.7 mAac
Max. input power	395 mVA/370 mW
Output voltage	5...48 Vdc
Max. output current	20 mA
Min. output current	50 $\mu$ A
Max. switching frequency; switching ratio 1: 2	ac: 5 Hz/dc: 20 Hz

Switch-on delay	20 ms
-----------------	-------

Switch-off delay	20 ms
------------------	-------

Voltage drop at max. load	<1.6 V
---------------------------	--------

## Insulation coordination to EN 50 178

Rated voltage	300 V
Rated impulse voltage	4 kV
Overvoltage category	III
Pollution severity	2
Clearances and creepage distances	$\geq 3$ mm
Operating temperature	without clearances with clearances
	-25 °C...+50 °C
	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Conductor	AWG 22...12
Conductor cross-section	0.5...4 mm <sup>2</sup>
Overall width	6 mm

Type	Cat. No.
AP DK5	8268870000
AP DKT4	0687560000
AP DKT4	0687560000
Page 305	





# Opto-coupler in component housing mini coupler DK

## Opto-couplers DKO S0 signal sensor

Application example:  
Signals for consumers are normally transferred via an interface. Generally, this interface must conform with DIN 43867 (interface for signal transmission). There must be a differentiation between the passive interface and active S0 interface. The actual signals, that are correspondingly proportional to the relevant consumption (electrical energy, gas consumption, water, district heating, etc.) are shown at measuring sensors (electric meter, etc.) The interface itself is purely passive (acceptor) and must be supplied via a source. The source for providing the current is built into the active interface. The following threshold values are specified:

$$I_{\max} = 27 \text{ mAdc}$$

$$U_{\max} = 27 \text{ Vdc}$$

$$f_{\max} = 16.66 \text{ Hz}$$

For the recognition of the corresponding consumption signals, the following currents are integrated:

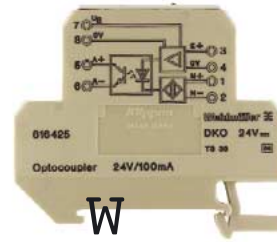
$$\text{ON (active)} \rightarrow 10 \dots 27 \text{ mA}$$

$$\text{Off (inactive)} \rightarrow 0 \dots 2 \text{ mA}$$

The module accepts the input from the signal sensor and outputs the opto-decoupled output signal, i. e. galvanically isolated.

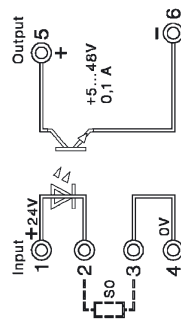
## DKO switching amplifiers/opto-couplers for Namur initiators

### DKO DK4 S0

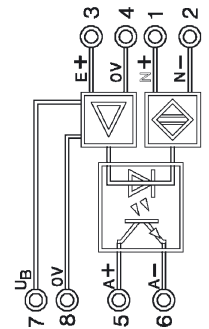


### DKO

Schematic circuit diagram



Schematic circuit diagram



Ordering data	
For TS 32	y
For TS 35	w

With combination foot TS 32 / TS 35

Technical data	
Input	
Input voltage	24 Vdc ±10 %
Input current	≤13 mA
Pulse generator	Specification acc. to DIN 43864 (current interface for connection to pulse generator acc. to DIN 43864)
Output	
Output voltage	5...48 Vdc
Output current	max. 100 mA
Voltage proof input-output/mounting rail	4 kV <sub>eff</sub>

#### Insulation coordination to DIN VDE 0160, Draft 11/94

Rated voltage	300 V
Rated impulse voltage	6 kV
Overvoltage category	IV
Pollution severity	2
Clearances and creepage distances	≥5.5 mm
Operating temperature	without clearances with clearances
	-25 °C...+40 °C -25 °C...+50 °C -40 °C...+60 °C
Storage temperature	-40 °C...+60 °C
Conductor	AWG 22...12
Conductor cross-section	0.5...4 mm <sup>2</sup>
Overall width	12 mm

Accessories	
End plate	AP DKT4

Type	Cat. No.
DKO DK4 S0	8467030000
DKO DK4 S0	8100180000

Ordering data	
For TS 32	y
For TS 35	w

With combination foot TS 32 / TS 35

Technical data	
Input	
Input voltage	24 Vdc ±20 %
Input current	≤35 mA
Reverse polarity protection	up to 1 kV available
NAMUR-Input (N+ and N-)	
Switching frequency	300 Hz f, pulse duty factor 1:1
Switch-on delay	approx.45 µs
Switch-off delay	approx.450 µs
Input (E+ and 0)	
Switch-on point	approx.18 V
Switch off-point	ca 15 V
Current consumption	< 5 mA
Max. switching frequency	300 Hz f, pulse duty factor 1:1
Switch-on delay	approx.20µs
Switch-off delay	approx.400 µs
Output (A+ and A-)	
Output voltage	5...30 Vdc
Output current	max. 100 mA
Switching capacity	max. 3 W
Internal voltage drop	max. 1 V
Protective measure	Free-wheel. diode btwn. A+...A-
Voltage proof input-output/mounting rail	4 kV <sub>eff</sub>
Operating temperature	without clearances with clearances
	-25 °C...+40 °C -25 °C...+50 °C -40 °C...+60 °C
Storage temperature	-40 °C...+60 °C
Conductor	AWG 22...12
Conductor cross-section	0.5...4 mm <sup>2</sup>
Overall width	12 mm

Accessories	
End plate	AP DKT4

Type	Cat. No.
DKO	8164250000

Technical data	
Input	
Input voltage	24 Vdc ±20 %
Input current	≤35 mA
Reverse polarity protection	up to 1 kV available
NAMUR-Input (N+ and N-)	
Switching frequency	300 Hz f, pulse duty factor 1:1
Switch-on delay	approx.45 µs
Switch-off delay	approx.450 µs
Input (E+ and 0)	
Switch-on point	approx.18 V
Switch off-point	ca 15 V
Current consumption	< 5 mA
Max. switching frequency	300 Hz f, pulse duty factor 1:1
Switch-on delay	approx.20µs
Switch-off delay	approx.400 µs
Output (A+ and A-)	
Output voltage	5...30 Vdc
Output current	max. 100 mA
Switching capacity	max. 3 W
Internal voltage drop	max. 1 V
Protective measure	Free-wheel. diode btwn. A+...A-
Voltage proof input-output/mounting rail	4 kV <sub>eff</sub>
Operating temperature	without clearances with clearances
	-25 °C...+40 °C -25 °C...+50 °C -40 °C...+60 °C
Storage temperature	-40 °C...+60 °C
Conductor	AWG 22...12
Conductor cross-section	0.5...4 mm <sup>2</sup>
Overall width	12 mm

# Opto-coupler in component housing EG

## Opto-couplers EGO

### EGO 1 5 V

For low voltage  
alternatively positive  
or negative switching

### EGO 1 5 V

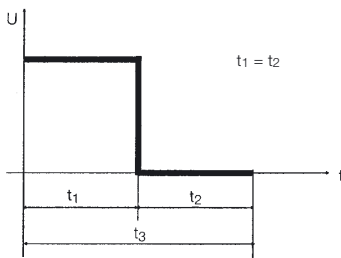
### EGO 1 12 V

### EGO 1 24 V

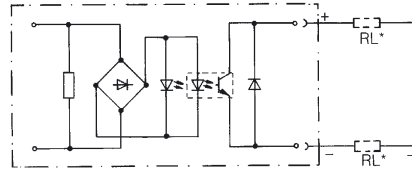


#### Schematic circuit diagram

Switching ratio



Switching ratio  $\frac{t_1}{t_3} = \frac{1}{2} = 1 : 2$



\* Wiring option

#### Ordering data

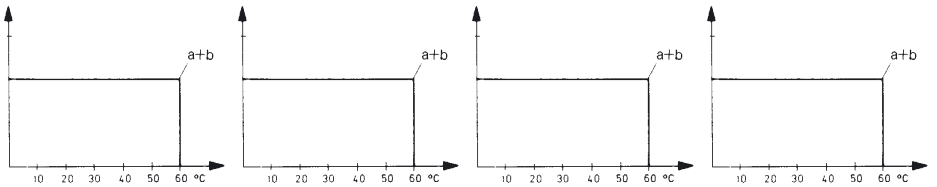
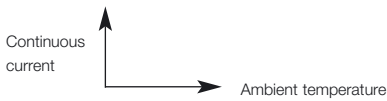
Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
EGO 1, 5 V	<b>0266160000</b>	EGO 1, 12 V	<b>8011250000<sup>3)</sup></b>	EGO 1, 12 V	<b>0114260000</b>	EGO 1, 24 V	<b>0558160000</b>

#### Rated data

Input voltage	3...5 V- <sup>2)</sup>	3...12 V-	12 V0, ±10 %	24 V-, ±10 %
Rated consumption - (W)	9...45 mW	30...280 mW	0.35 W	0.6 W
Rated consumption ~ (VA)	-	-	0.45 VA	-
Output supply voltage	5...48 V- <sup>1)</sup>	5...48 V- <sup>1)</sup>	5...48 V- <sup>1)</sup>	5...48 V- <sup>1)</sup>
Voltage drop at max. load current	<1 V	<1 V	<1.6 V	<1 V
Output current	20 mA	20 mA	100 mA	20 mA

Derating curve  
a = mounted on rail without clearance

b = mounted on rail without clearance ≥ 20 mm



Impulse loading, max. current (not periodic)	0.2 A/10 ms	0.2 A/10 ms	0.8 A/10 ms	0.2 A/10 ms
Max. reverse current (quiescent current) at U = 48 V	0.16 mA	0.16 mA	0.16 mA	0.16 mA
Switch-on time (cyclic operation)	≤12 μs	22 μs	≤6 ms	≤30 μs
Switching-off time (cyclic operation)	≤180 μs	44 μs	≤13 ms	≤100 μs
Max. switching frequency, DC	100 Hz	<b>5000 Hz/5000 Hz</b>	20 Hz	<b>3000 Hz</b>
Max. switching frequency, AC			<10 Hz	
Switching ratio	1 : 2	1 : 2/1 : 4	1 : 2	1 : 2
Min. input impulse width	50 μs	50 μs		
Storage temperature	-40 °C...+60 °C	-40 °C...+85 °C	-40 °C...+85 °C	-40 °C...+85 °C
Ambient temperature				
- , rowed on mounting rail without clearances	-25 °C...+60 °C	-25 °C...+60 °C	-25 °C...+60 °C	-25 °C...+60 °C
- , rowed with clearances ≥ 20 mm	-25 °C...+60 °C	-25 °C...+60 °C	-25 °C...+60 °C	-25 °C...+60 °C
<b>Insulation coordination to EN 50 178</b>				
Overvoltage category	III	III	III	III
Pollution severity	2	2	2	2
Accessories, dimensions and connection data see	Page 306, Fig. I	Page 306, Fig. I	Page 306, Fig. I	Page 306, Fig. I

<sup>1)</sup> Not TTL-compatible

<sup>2)</sup> Conditionally level-compatible

<sup>3)</sup> At U<sub>e</sub> ≤ 5 V, the LED only lights weakly or not at all. Output switching function is not affected.

# Opto-coupler in component housing EG

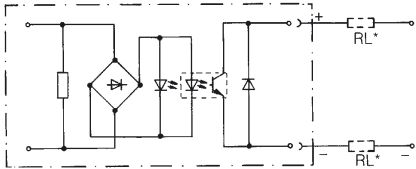
**EGO 1** 24 V



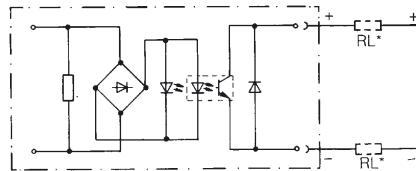
**EGO 2** 115 V<sub>0</sub>  
for low voltage



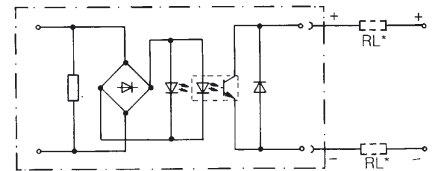
**EGO 2** 230 V<sub>0</sub>



\* Wiring option



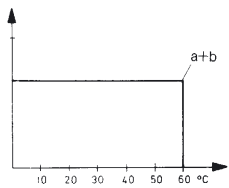
In the case of inductive or capacitive electrical noise, it is recommended to connect an RC network (DK 4 RC) upstream or to use EGO 3.



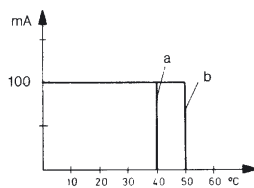
Type	Cat. No.
EGO 1, 24 V	<b>0609860000</b>
<b>24 V<sub>0</sub>, ±10 %</b>	
0.5 W	
0.6 VA	
5...48 V <sup>-1</sup>	
<1.6 V	
100 mA	

Type	Cat. No.
EGO 2, 115 V <sub>0</sub>	<b>0131860000</b>
<b>117 V<sub>0</sub>, ±10 %</b>	
0.8 W	
0.9 VA	
5...48 V <sup>-1</sup>	
<1.6 V	
100 mA	

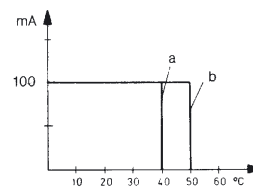
Type	Cat. No.
EGO 2, 230 V <sub>0</sub>	<b>0546360000</b>
<b>230 V<sub>0</sub>, +5 %-15 %</b>	
1.2 W	
1.4 VA	
5...48 V <sup>-1</sup>	
<1.6 V	
100 mA	



0.8 A/10 ms	
0.16 mA	
≤ 2 ms	
≤ 15 ms	
20 Hz	
<10 Hz	
1 : 2	
-40 °C...+85 °C	
-25 °C...+60 °C	
-25 °C...+60 °C	
III	
2	
Page 306, Fig. I	



0.8 A/10 ms	
0.16 mA	
≤ 5 ms	
≤ 22 ms	
20 Hz	
< 10 Hz	
1 : 2	
-40 °C...+85 °C	
-25 °C...+40 °C	
-25 °C...+50 °C	
III	
2	
Page 306, Fig. I	



0.8 A/10 ms	
0.16 mA	
≤ 13 ms	
≤ 10 ms	
20 Hz	
< 10 Hz	
1 : 2	
-40 °C...+85 °C	
-25 °C...+40 °C	
-25 °C...+50 °C	
III	
2	
Page 306, Fig. I	

# Opto-coupler in component housing WAVESERIES

## Opto-couplers WAVESERIES

Opto-coupler in WAVEBOX:

- Independent connection technology
  - pluggable connection unit optionally available with screw or tension clamp connection technology
- Fast commissioning and after-sales service
  - pluggable replacement PCBs
- Save wiring
  - cross-connection option at input / output
- Fast switching
  - high frequency output, up to 100 kHz
- Reliable power output
  - short-circuit and overload proof
- Space-saving components
  - 4-channel opto-couplers

### WOS 1 5 VDC negative switching



### WOS 1 3.5-15 VDC



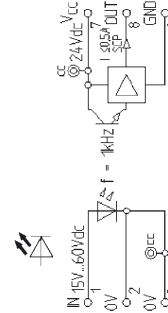
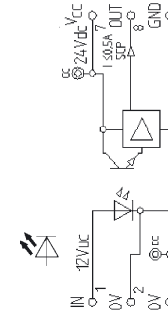
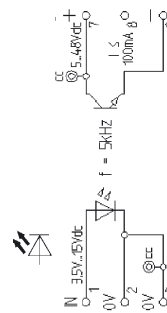
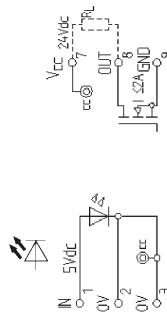
### WOS 1 12 VDC



### WOS 1 15-60 VDC



#### Schematic circuit diagram



Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
Screw connection	WOS 1 5 Vdc	<b>8275430000</b>	WOS 1 3.5-15 Vdc	<b>8275390000</b>	WOS 1 12 Vdc	<b>8275500000</b>	WOS 1 15-60 Vdc	<b>8237730000</b>
Tension clamp connection	WOZ 1	<b>8430030000</b>	WOZ 1	<b>8430040000</b>	WOZ 1	<b>8429990000</b>	WOZ 1	<b>8430090000</b>
<b>Input</b>								
Input voltage	4.0 Vdc... <b>5 Vdc</b> ...6.0 Vdc		3.5 Vdc...15 Vdc		10 Vdc... <b>12 Vdc</b> ...14 Vdc		15 Vdc...60 Vdc <sup>1)</sup>	
Input current	7.5 mA at 4.0 V 13.5 mA at 5.0 V 19.0 mA at 6.0 V		10.5 mA at 3.5.0 V 12.5 mA at 5.0 V 25.0 mA at 15 V		15.3 mA <b>ac</b> at 12 V 12.4 mA <b>dc</b> at 12 V		1.4 mA at 15 V 2.5 mA at 24 V 4.1 mA at 48 V ...60 V	
Making threshold	approx.2.2 V		approx.2.5 V		approx.8 V		ca.12 V	
Breaking threshold	approx.2.0 V		approx.1.5 V		approx.7 V		approx.9 V	
Input frequency	100 Hz		5 kHz				1 kHz	
Switch-on delay	100 us		8 us		10 ms <b>ac</b> and 4 ms <b>dc</b>		90 us	
Switch-off delay	1 ms		35 us		20 ms <b>ac</b> and 18 ms <b>dc</b>		250 us	
Status indicator	LED green in input		LED green in input		LED green in output		LED green in output	
<b>Output</b>	<b>negative switching</b>				<b>short-circuit protection</b>		<b>short-circuit protection</b>	
Output current range					10 mA...0.6 A		10 mA A...0.6 A	
Nominal output current	max. 2 A*		max. 100 mA		max. 500 mA		max. 500 mA	
Output voltage	18 Vdc... <b>24 Vdc</b> ...30 Vdc		5 Vdc...48 Vdc		12 Vdc... <b>24 Vdc</b> ...28 Vdc		12 Vdc... <b>24 Vdc</b> ...28 Vdc	
Response threshold					typ. 0.7 A ... 1.8 A min. 0.7 A; max. 2.4 A		typ. 0.7 A ... 1.8 A min.0.7 A; max. 2.4 A	
Residual voltage	≤ 300 mV		≤ 1.5 V at 100 mA		≤ 0.5 V, at 500 mA		≤ 0.5 V at 500 mA	
Protection circuit	Varistor		Varistor, integr. free-wh. diode		Polarity protection, varistor		Polarity protection, varistor	
Voltage supply					12Vdc... <b>24Vdc</b> ...28Vdc		12 Vdc... <b>24 Vdc</b> ...28 Vdc	
Short-circuit in output	no		no		yes / max. 96 h		yes / max. 96 h	
<b>Temperature</b>								
Operating temperature**	-25 °C...+50 °C rowed		-25 °C...+60 °C rowed		-25 °C...+60 °C rowed		-25 °C...+60 °C rowed	
Storage temperature	-40 °C...+85 °C		-40 °C...+85 °C		-40 °C...+85 °C		-40 °C...+85 °C	
<b>Mechanical data</b>								
Overall width	22.5 mm		22.5 mm		22.5 mm		22.5 mm	
Housing material	Polyamide PA 66		Polyamide PA 66		Polyamide PA 66		Polyamide PA 66	
Approvals	UL/CSA		UL/CSA		UL/CSA		UL/CSA	
<b>Reliable separation according to EN 50 178</b>								
<b>Coordination of insulation according to EN 50 178</b>								
<b>Opto-coupler according to VDE 0884</b>								
Rated voltage	300 V		300 V		300 V		300 V	
Rated impulse voltage	4 kV		4 kV		4 kV		4 kV	
Overvoltage category	III		III		III		III	
Pollution severity	2		2		2		2	
Clearance/creepage path	≥ 5.5 mm		≥ 5.5 mm		≥ 5.5 mm		≥ 5.5 mm	
Accessories, dimensions and connection data see	Page 298 + 308		Page 298 + 308		Page 298 + 308		Page 298 + 308	

\* at ambient temperature 20 °C/horizontal installation

<sup>1)</sup> **Caution:** Cross-connections may only be used for voltages ≤ 50 Vdc (extra-low voltage).

# Opto-coupler in component housing WAVESERIES

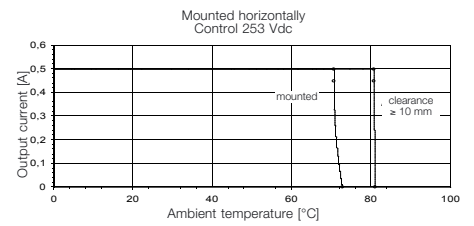
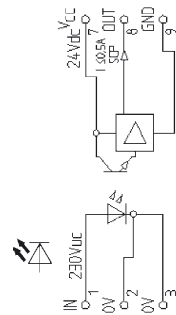
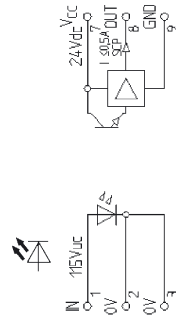
## Opto-couplers WAVESERIES

### WOS 1 115 VUC

### WOS 1 230 VUC



#### Schematic circuit diagram



WOS 1 230 VUC • 8275380000

#### Ordering data

Screw connection  
Tension clamp connection

Type	Cat. No.
WOS 1 115 Vuc	<b>8235180000</b>
WOZ 1	<b>8430100000</b>

Type	Cat. No.
WOS 1 230 Vuc	<b>8275380000</b>
WOZ 1	<b>8430050000</b>

#### Input

Input voltage	115 Vuc, max. 130 Vuc
Input current	3.1 mA <b>ac</b> at 115 V 2.9 mA <b>dc</b> at 115 V

Input voltage	230 V, max. 250 Vuc
Input current	11.5 mA <b>ac</b> at 230 V 1.8 mA <b>dc</b> at 230 V

Making threshold	ca.75 V <b>ac</b> and 71 <b>dc</b>
Breaking threshold	ca.70 Vuc
Input frequency	-
Switch-on delay	10 ms <b>ac</b> 10 ms <b>dc</b>
Switch-off delay	15 ms <b>ac</b> 15 ms <b>dc</b>
Status indicator	LED green in output

Making threshold	ca.170 V <b>ac</b> and 140 V <b>dc</b>
Breaking threshold	ca.130 V <b>ac</b> and 135 V <b>dc</b>
Input frequency	-
Switch-on delay	25 ms <b>ac</b> 15 ms <b>dc</b>
Switch-off delay	25 ms <b>ac</b> 20 ms <b>dc</b>
Status indicator	LED green in output

#### Output

Output current range	10 mA...0.6 A
Nominal output current	max. 500 mA
Output voltage	12 Vdc... <b>24 Vdc</b> ...28 Vdc
Response threshold	typ. 0.7 A ... 1.8 A min.0.7 A; max. 2.4 A
Residual voltage	≤ 0.5 V at 500 mA
Protection circuit	Polarity protection, varistor
Voltage supply	12 Vdc... <b>24 Vdc</b> ...28 Vdc
Short-circuit in output	yes / max. 96 h

Output current range	10 mA...0.6 A
Nominal output current	max. 500 mA
Output voltage	12 Vdc... <b>24 Vdc</b> ...28 Vdc
Response threshold	typ. 0.7 A ... 1.8 A min.0.7 A; max. 2.4 A
Residual voltage	≤ 0.5 V at 500 mA
Protection circuit	Polarity protection, varistor
Voltage supply	12 Vdc... <b>24 Vdc</b> ...28 Vdc
Short-circuit in output	yes / max. 96 h

#### Temperature

Operating temperature**	-25 °C...+60 °C rowed
Storage temperature	-40 °C...+85 °C

#### Mechanical data

Overall width	22.5 mm
Housing material	Polyamide PA 66
Approvals	UL/CSA

#### Reliable separation according to EN 50 178

#### Coordination of insulation according to EN 50 178

#### Opto-coupler according to VDE 0884

Rated voltage	300 V
Rated impulse voltage	4 kV
Overvoltage category	III
Pollution severity	2
Clearance/creepage path	≥ 5.5 mm

Accessories, dimensions and connection data see Page 298 + 308

Accessories, dimensions and connection data see Page 298 + 308

\* at ambient temperature 20 °C/horizontal installation



# Opto-coupler in component housing WAVESERIES

## Opto-couplers WAVESERIES

with power output  
(short-circuit proof and overload proof)

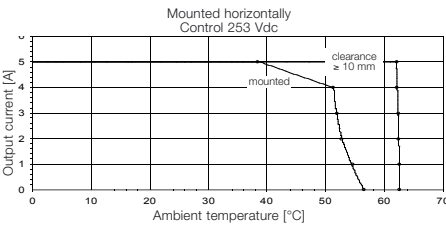
### WOS 2 24 VUC



### WOS 2 115 VUC

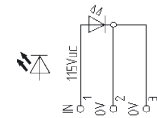
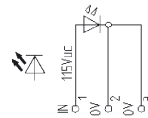
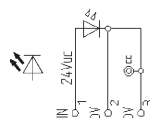
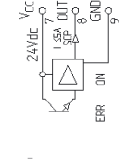
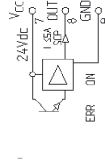
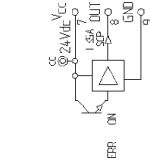


### WOS 2 230 VUC



WOS 2 230 VUC • 8275220000

#### Schematic circuit diagram



#### Ordering data

Screw connection

Tension clamp connection

#### Input

Input voltage

Input current

Making threshold

Breaking threshold

Switch-on delay

Switch-off delay

Status indicator normal operation

Status indicator short-circuit, underload, overload

Underload

#### Output

Output current

Closed supply-circuit current (output not switched)

Voltage supply

Residual voltage

Protection circuit

Short-circuit in output

#### Temperature

Operating temperature\*\*

Storage temperature

#### Mechanical data

Overall width

Housing material

Approvals

Reliable separation according to EN 50 178

Coordination of insulation according to EN 50 178

Opto-coupler according to VDE 0884

Rated voltage

Rated impulse voltage

Overvoltage category

Pollution severity

Clearance/creepage path

Accessories, dimensions and connection data see

\* at ambient temperature 20 °C/horizontal installation

Type	Cat. No.
WOS 2 24 Vuc	<b>8275190000</b>
WOZ 2	<b>8430080000</b>

Type	Cat. No.
WOS 2 115 Vuc	<b>8296250000</b>
WOZ 2	<b>8429980000</b>

Type	Cat. No.
WOS 2 230 Vuc	<b>8275220000</b>
WOZ 2	<b>8430060000</b>

21.6 V... <b>24 V</b> ...26.4 V
16.3 mA <b>ac</b> at 24 V
13.5 mA <b>dc</b> at 24 V
ca.16 V
ca.11 V
<b>8 ms ac</b> 7 ms <b>dc</b>
<b>25 ms ac</b> 25 ms <b>dc</b>
LED green in output
LED red in output* <sup>1)</sup>
min. 2 mA...max. 1.5 A at Tb
25 °C...150 °C
min. 2 mA...max. 1.9 A at Tb
-40 °C...25 °C
Tb: temperature in module
direct at output driver
BTS442

short-circuit protection
5 Adc*
approx.15 mA at 28.8 V
19.2 Vdc... <b>24 Vdc</b> ...28.8 Vdc
max. 400 mV
Polarity protection, varistor
yes / max. 96 h

-25 °C...+50 °C rowed
-40 °C...+85 °C
22.5 mm
Polyamide PA 66
UL/CSA
300 V
4 kV
III
2
≥ 5.5 mm
Page 298 + 308

115 V, max. 130 Vuc
3.1 mA <b>ac</b> at 115 V
2.8 mA <b>dc</b> at 115 V
ca.70 V
ca.55 V
<b>10 ms ac</b> 15 ms <b>dc</b>
<b>30 ms ac</b> 30 ms <b>dc</b>
LED green in output
LED red in output* <sup>1)</sup>
min. 2 mA...max. 1.5 A at Tb
25 °C...150 °C
min. 2 mA...max. 1.9 A at Tb
-40 °C...25 °C
Tb: temperature in module
direct at output driver
BTS442

short-circuit protection
5 Adc*
approx.15 mA at 28.8 V
19.2 Vdc... <b>24 Vdc</b> ...28.8 Vdc
max. 400 mV
Polarity protection, varistor
yes / max. 96 h

-25 °C...+50 °C rowed
-40 °C...+85 °C
22.5 mm
Polyamide PA 66
UL/CSA
300 V
4 kV
III
2
≥ 5.5 mm
Page 298 + 308

230 V, max. 250 Vuc
12.0 mA <b>ac</b> at 230 V
1.8 mA <b>dc</b> at 230 V
ca.140 V
ca.100 V
<b>10 ms ac</b> 15 ms <b>dc</b>
<b>30 ms ac</b> 30 ms <b>dc</b>
LED green in output
LED red in output* <sup>1)</sup>
min. 2 mA...max. 1.5 A at Tb
25 °C...150 °C
min. 2 mA...max. 1.9 A at Tb
-40 °C...25 °C
Tb: temperature in module
direct at output driver
BTS442

short-circuit protection
5 Adc*
approx.15 mA at 28.8 V
19.2 Vdc... <b>24 Vdc</b> ...28.8 Vdc
max. 400 mV
Polarity protection, varistor
yes / max. 96 h

-25 °C...+50 °C rowed
-40 °C...+85 °C
22.5 mm
Polyamide PA 66
UL/CSA
300 V
4 kV
III
2
≥ 5.5 mm
Page 298 + 308

#### \*<sup>1)</sup> LED red:

hard short-circuit, LED permanently lit. The output is switched off and does **not** reset itself. To reset, the output or input must be temporarily disconnected from the supply voltage or input signal.

**Overload:** LED cycles, Rate: approx. 2 sec. on, approx. 30 sec. off. Module resets itself after the overload is removed.

**Underload:** LED permanently lit.

When an underload recognised, both LEDs are lit. The output is switched through

# Opto-coupler in component housing WAVESERIES

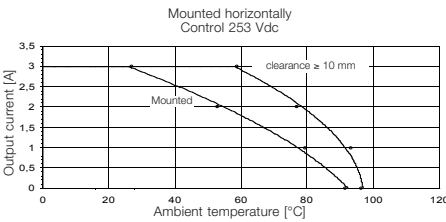
## Opto-coupler WAVESERIES

with AC voltage output and zero voltage switch

### WOS 2 15-60 VUC

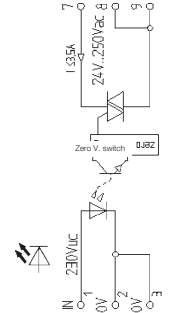
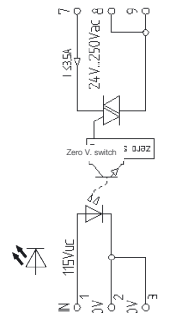
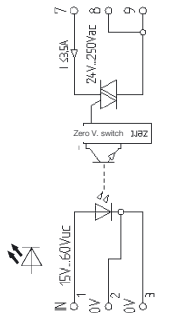
### WOS 2 115 VUC

### WOS 2 230 VUC



WOS 2 15-60 VUC • 8275440000

### Schematic circuit diagram



Ordering data	
Screw connection	
Tension clamp connection	

Input	
Input voltage	
Input current	
Making threshold	
Breaking threshold	
Switch-on delay	
Switch-off delay	
Status indicator normal operation	

Type	Cat. No.
WOS 2 15-60 Vuc	<b>8275440000</b>
WOZ 2	<b>8430010000</b>
15 Vuc...60 Vac/66 Vdc	
3.3 mA ac at 15 V	
3.8 mA dc at 15 V	
4.0 mA ac at 24 V	
4.6 mA dc at 24 V	
5.3 mA ac at 60 V	
5.6 mA dc at 60 V	
approx.11 V dc approx.15 V ac	
approx.5 V dc approx.14 V ac	
max. 20 ms	
max. 20 ms	
LED green in input	

Type	Cat. No.
WOS 2 115 Vuc	<b>8259950000</b>
WOZ 2	<b>8430160000</b>
115 Vuc max. 130 Vuc	
7.2 mA ac at 115 V	
3.8 mA dc at 115 V	
approx.90 V dc approx.90 V ac	
approx.70 V dc approx.70 V ac	
max. 20 ms	
max. 20 ms	
LED green in input	

Type	Cat. No.
WOS 2 230 VUC	<b>8275400000</b>
WOZ 2	<b>8430150000</b>
230 Vuc max. 250 Vuc	
11.8 mA ac at 230 V	
3.3 mA dc at 230 V	
approx.180 V dc approx.200 V ac	
approx.150 V dc approx.140 V ac	
max. 25 ms	
max. 25 ms	
LED green in input	

Output	
Output current	
Closed supply-circuit current (output not switched)	
Voltage supply	
Residual voltage	
Protection circuit	
Short-circuit in output	
Temperature	
Operating temperature**	
Storage temperature	
Mechanical data	
Overall width	
Housing material	
Approvals	
<b>Reliable separation according to EN 50 178</b>	
<b>Coordination of insulation according to EN 50 178</b>	
<b>Opto-coupler according to VDE 0884</b>	
Rated voltage	
Rated impulse voltage	
Overvoltage category	
Pollution severity	
Clearance/creepage path	

AC voltage output	
max. 230 V/3.5 A ac*	
2 mA	
24 Vac...250Vac (50Hz-60Hz)	
max. 1.6 V	
RC-combination with varistor	
-	
-25 °C...+50 °C rowed	
-40 °C...+85 °C	
22.5 mm	
Polyamide PA 66	
UL/CSA	
300 V	
4 kV	
III	
2	
≥ 5.5 mm	
Page 298 + 308	

AC voltage output	
max. 230 V/3.5 A ac*	
2 mA	
24Vac...250 Vac (50Hz-60Hz)	
max. 1.6 V	
RC-combination with varistor	
-	
-25 °C...+50 °C rowed	
-40 °C...+85 °C	
22.5 mm	
Polyamide PA 66	
UL/CSA	
300 V	
4 kV	
III	
2	
≥ 5.5 mm	
Page 298 + 308	

AC voltage output	
max. 230V/3.5A ac*	
2 mA	
24 Vac...250 Vac (50Hz-60Hz)	
max. 1.6 V	
RC-combination with varistor	
-	
-25 °C...+50 °C rowed	
-40 °C...+85 °C	
22.5 mm	
Polyamide PA 66	
UL/CSA	
300 V	
4 kV	
III	
2	
≥ 5.5 mm	
Page 298 + 308	

Accessories, dimensions and connection data see  
\* at ambient temperature 20 °C/horizontal installation

# Opto-coupler in component housing WAVESERIES

## Opto-coupler WAVESERIES

(4-channel, short-circuit proof)

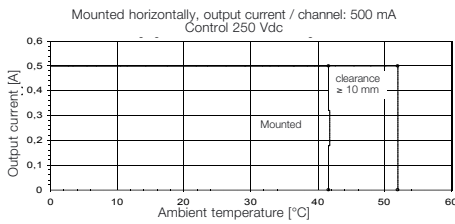
### WOS 2 24 VUC

### WOS 2 115 VUC

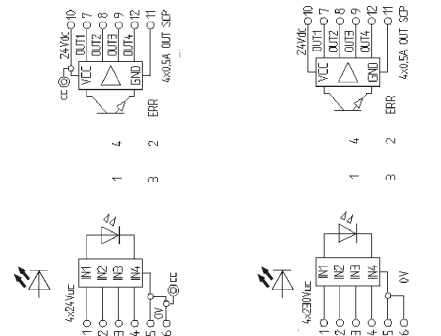
### WOS 2 230 VUC



#### Schematic circuit diagram



WOS 2 230 VUC • 8275340000



Ordering data	
Screw connection	
Tension clamp connection	

Type	Cat. No.
WOS 2 24 Vuc	<b>8237720000</b>
WOZ 2	<b>8430110000</b>

Type	Cat. No.
WOS 2 115 Vuc	<b>8275360000</b>
WOZ 2	<b>8430130000</b>

Type	Cat. No.
WOS 2 230 Vuc	<b>8275340000</b>
WOZ 2	<b>8430140000</b>

Input	
Input voltage	18 Vuc ... 30 Vuc
Input current	2.8 mA <b>ac</b> at 24 V 3.7 mA <b>dc</b> at 24 V
Making threshold	ca.13 V <b>dc</b> ca.14 V <b>ac</b>
Breaking threshold	ca.10 V <b>dc</b> ca.13 V <b>ac</b>
Switch-on delay	20 ms <b>ac</b> 7.0 ms <b>dc</b>
Switch-off delay	46 ms <b>ac</b> 50 ms <b>dc</b>
Status indicator normal operation	LED green in output
Status indicator short-circuit, underload, overload	LED red in output*

short-circuit protection	
Output current	max. 500 mA per channel
Output total current	max. 2 A
Voltage supply	12 Vdc... <b>24 Vdc</b> ...28 Vdc
Response threshold	typ. 0.9 A min. 0.65 A, max. 1.2 A, $R_{\text{L}}2\Omega$
Residual voltage	$\leq 0.65$ V, at 500 mA
Protection circuit	Polarity protection, varistor
Synchronisation factor	100 %
Lamp load	max. 3 W

short-circuit protection	
Output current	max. 500 mA per channel
Output total current	max. 2 A
Voltage supply	12 Vdc... <b>24 Vdc</b> ...28 Vdc
Response threshold	typ. 0.9 A min. 0.65 A, max. 1.2 A, $R_{\text{L}}2\Omega$
Residual voltage	$\leq 0.65$ V, at 500 mA
Protection circuit	Polarity protection, varistor
Synchronisation factor	100 %
Lamp load	max. 3 W

short-circuit protection	
Output current	max. 500 mA per channel
Output total current	max. 2 A
Voltage supply	12 Vdc... <b>24 Vdc</b> ...28 Vdc
Response threshold	typ. 0.9 A min. 0.65 A, max. 1.2 A, $R_{\text{L}}2\Omega$
Residual voltage	$\leq 0.65$ V, at 500 mA
Protection circuit	Polarity protection, varistor
Synchronisation factor	100 %
Lamp load	max. 3 W

Output <sup>1)</sup>	
Output current	max. 500 mA per channel
Output total current	max. 2 A
Voltage supply	12 Vdc... <b>24 Vdc</b> ...28 Vdc
Response threshold	typ. 0.9 A min. 0.65 A, max. 1.2 A, $R_{\text{L}}2\Omega$
Residual voltage	$\leq 0.65$ V, at 500 mA
Protection circuit	Polarity protection, varistor
Synchronisation factor	100 %
Lamp load	max. 3 W
<b>Temperature</b>	
Operating temperature	-25 °C...+50 °C rowed
Storage temperature	-40 °C...+85 °C
<b>Mechanical data</b>	
Overall width	22.5 mm
Housing material	Polyamide PA 66
Approvals	UL/CSA

Reliable separation according to EN 50 178	
Coordination of insulation according to EN 50 178	
Opto-coupler according to VDE 0884	
Rated voltage	150 V
Rated impulse voltage	2.5 kV
Overvoltage category	III
Pollution severity	2
Clearance/creepage path	$\geq 3$ mm

Reliable separation according to EN 50 178	
Coordination of insulation according to EN 50 178	
Opto-coupler according to VDE 0884	
Rated voltage	150 V
Rated impulse voltage	2.5 kV
Overvoltage category	III
Pollution severity	2
Clearance/creepage path	$\geq 3$ mm

Reliable separation according to EN 50 178	
Coordination of insulation according to EN 50 178	
Opto-coupler according to VDE 0884	
Rated voltage	300 V
Rated impulse voltage	4 kV
Overvoltage category	III
Pollution severity	2
Clearance/creepage path	$\geq 5.5$ mm

Accessories, dimensions and connection data see	Page 298 + 308
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Accessories, dimensions and connection data see	Page 298 + 308
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Accessories, dimensions and connection data see	Page 298 + 308
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Accessories, dimensions and connection data see	Page 298 + 308
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<sup>1)</sup> Protection circuit for output load necessary, page 107

# Opto-coupler in component housing WAVESERIES

## Opto-coupler WAVESERIES

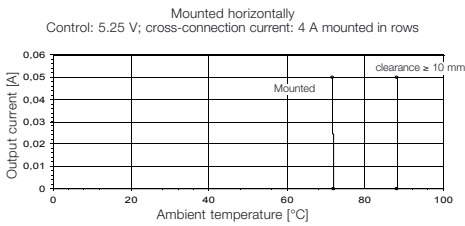
with high switching frequency

**WOS 1 5 VTTL**  
50 kHz

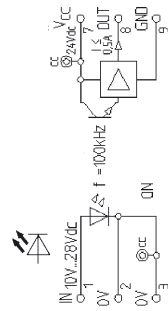
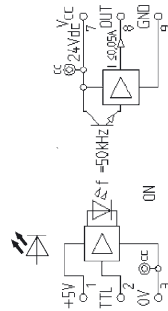
**WOS 1 12-28 VDC**  
100 kHz



### Schematic circuit diagram



**WOS 1 5 VTTL 50 kHz • 8275210000**



### Ordering data

Screw connection

Tension clamp connection

### Input

Input voltage

Input current

Supply voltage

Input resistance

Making threshold

Breaking threshold

Input frequency

Switch-on delay

Switch-off delay

Status indicator normal operation

### Output

Voltage supply

Supply nominal current

Output current

Residual voltage

Protection circuit

### Temperature

Operating temperature

Storage temperature

### Mechanical data

Overall width

Housing material

Approvals

Reliable separation according to EN 50 178

Coordination of insulation according to EN 50 178

Opto-coupler according to VDE 0884

Rated voltage

Rated impulse voltage

Overvoltage category

Pollution severity

Clearance/creepage path

Accessories, dimensions and connection data see

Type Cat. No.

WOS 1 5 VTTL 50 kHz

**8275210000**

WOZ 2 **8430070000**

Type Cat. No.

WOS 1 12-28 Vdc/100 kHz

**8275450000**

WOZ 2 **8430000000**

5 VTTL

11.8 mA at 4.75 V

13.6 mA at 5 Vdc

15.5 mA at 5.25 Vdc

4.75 Vdc ... 5.25 Vdc

110 KΩ

**50 kHz** at  $R_{load} = 470 \Omega$

1  $\mu$ s

7  $\mu$ s

LED green in input circuit

21.6 Vdc...**24 Vdc**...26.4 Vdc

approx.5.4 mA, output not switched

$\leq 50$  mA

$\leq 1.5$  V at 50 mA

Polarity protection, varistor

12V dc...28 Vdc

5.5 mA at 12 Vdc

7.9 mA at 24 Vdc

8.8 mA at 28 Vdc

approx.5 V dc

approx.4 V dc

**100 kHz** at  $R_{load} = 470 \Omega$

1  $\mu$ s

3  $\mu$ s

LED green in input circuit

21.6 Vdc...**24 Vdc**...26.4 Vdc

approx.5.4 mA, output not switched

$\leq 50$  mA

$\leq 1.5$  V at 50 mA

Polarity protection, varistor

-25 °C...+60 °C rowed

-40 °C...+85 °C

22.5 mm

Polyamide PA 66

UL/CSA

300 V

4 kV

III

2

$\geq 5.5$  mm

Page 298 + 308

Page 298 + 308

# Opto-coupler in component housing EG5

## power opto-couplers

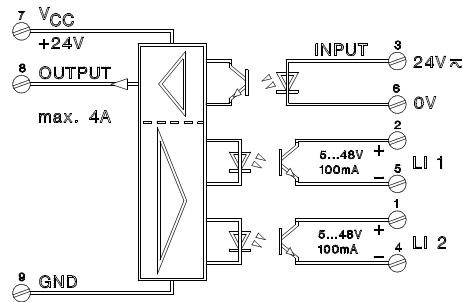
With "online" check-back indication of the load ratio

- Power opto-couplers for load currents up to 4 A.
- Short-circuit proof
- Patented "online" load indication and check-back indication
  - optical indication
  - status indication via 3-coloured LEDs
  - electrical indication
  - 2-bit "online" data signal for check-back indication of the load performance to a PLC or similar
- Module fulfils protective separation in accordance with VDE 0106 Part 101 and EN 50 178 (rated voltage 300 V)
- Internal opto-coupler according to with DIN VDE 0884
- Insulation voltage 4 kV<sub>eff</sub>
- Clearance and creepage distances ≥ 8 mm

## EGO 5 PKR 24 Vac/dc



### Schematic circuit diagram



### Indication and check-back indication of load ratio

Input	Load Indication	LI 1	LI 2	LED	Output
Low	x x x	L	L	off	low
High	Normal	L	H	green	high
High	Error <sup>1)</sup>	H	L	red	low
High	Open Load <sup>2)</sup>	H	H	yellow	high

### Ordering data

Type	Cat. No.
EGO 5 PKR	8220870000

### Rated data

Input	
Input voltage	24 Vac/dc, min 20 Vac/dc, max 30 Vac/dc
Input current (at U <sub>N</sub> )	12 mA (24 Vdc) 13 mA (24 Vac)
Rated input consumption	195 mW, 220 mVA
Max. input frequency dc	≤ 30 Hz, switching ratio 1 : 2
Typ. switch-on delay	2 ms
Typ. switch-off delay	7 ms
Max. input frequency ac	≤ 10 Hz

### Output

Supply voltage	Screw connection 0.5...4 mm <sup>2</sup> 20...30 Vdc
Max. output current	4 A
Reverse polarity protection	present
Short-circuit conditions	short-circuit-protected (switches output off immediately; auto switch-on when short-circuit eliminated)
Thermal short-circuit	≤ 12 A, output switches off and on again automatically after certain time.

### Load Indication LI 1, LI 2

Supply voltage	5...48 Vdc
Max. current	100 mA
Max. voltage drop	1.6 V
Storage temperature	-40 °C...+60 °C
Ambient temperature	-20 °C...+40 °C
- rowed on mounting rail without clearances	-20 °C...+40 °C
- rowed with clearances	-20 °C...+50 °C

### Insulation coordination EN 50 178

Overvoltage category	IV
Pollution severity	2

Accessories, dimensions and connection data see

Page 307, Fig. VII

<sup>1)</sup> Error: short-circuit, overload, over- or under voltage at output, overtemperature in the module

<sup>2)</sup> Open load: Underload recognition at active input: type 500 mA (max. 1.5 A) at 25 °C. Open load will be indicated at I<sub>Load</sub> ≥ 500 mA depending on switching status.

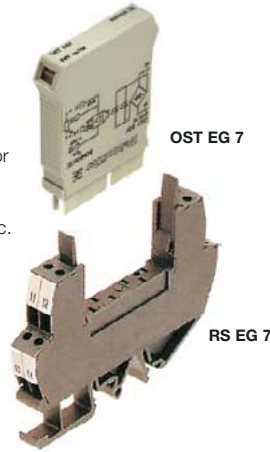
# Opto-coupler in component housing EG7

## power opto-couplers

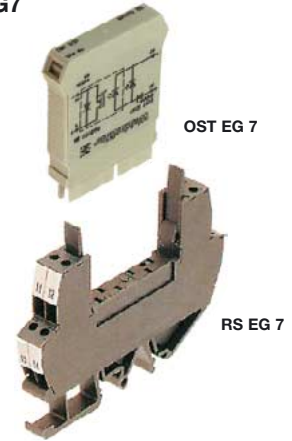
- Pluggable on socket RS EG 7 with combination foot TS 32, 35
- Overall width **10 mm**

### OST EG7 2 A

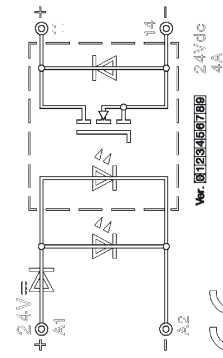
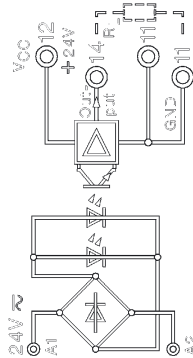
- Short circuit protected and over load-safe output
- 3-colour status-LED for output current indication
- Reliable separation acc. to DIN VDE 0884



### OST EG7 4 A



#### Schematic circuit diagram



Ordering data	Type	Cat. No.
Puggable opto-coupler, without socket	OST EG7 2 A	<b>826905000</b>
socket for pluggable opto-coupler with combin. foot TS 32, 35	RS EG7	<b>819383000</b>

Ordering data	Type	Cat. No.
Puggable opto-coupler, without socket	OST EG7 4 A	<b>828172000</b>
socket for pluggable opto-coupler with combin. foot TS 32, 35	RS EG7	<b>819383000</b>

Rated data	Type	Cat. No.
Conductor connection	Lugs for socket RS EG7	<b>819383000</b>
Input voltage	24 Vac/dc $\pm 20\%$	
Input current	dc: 5.5 mA ac: 6 mA	
Input power	dc: 132 mW ac: 145 mW	
Reliably switched on	19.2 V	
Reliably switched off	2.4 V	
Status indicator	LED green, yellow, red	
Reverse polarity protection	-	
Switch-on delay	12 ms	
Switch-off delay	17 ms	
Max. Switching frequency	100 Hz (resistive load/2 A/ Switching ratio 1 : 2)	
Output supply voltage	24 Vdc $\pm 30\%$	
Switching current	2 A	
Voltage drop at max. load current	$\leq 0.2$ V, short-circuit proof and overload proof	
Status indicator:		
	Green LED	output set
	Yellow LED	output set, no activity, < 500 mA
	Red LED	output set, short-circuit
	LED off	output not set
Storage temperature	- 25...+ 60 °C	
Operating temperature		
- rowed on mounting rail without clearances	0...+ 40 °C	
- rowed with clearances	0...+ 50 °C	
<b>Insulation coordination to EN 50 178</b>		
Reliable separation	according to DIN VDE 0884	
Overvoltage category	III	
Pollution severity	2	
Accessories, dimensions and connection data see	Page 304	

Rated data	Type	Cat. No.
Conductor connection	Lugs for socket RS EG7	<b>819383000</b>
Input voltage	21.6 Vdc	26.4 Vdc
Input current	10.5 mA	11.2 mA
Input power	230 mW	270 mW
Reliably switched on	21.6 V	320 mW
Reliably switched off	2 V	
Status indicator	LED green	
Reverse polarity protection	present	
Switch-on delay	typ. 10 $\mu$ s	
Switch-off delay	typ. 45 $\mu$ s	
Max. Switching frequency	100 Hz (resistive load/4 A/ Switching ratio 1 : 2)	
Output supply voltage	21.6...26.4 Vdc	
Switching current	4 A	
Voltage drop at max. load current	$\leq 0.2$ V, not short-circuit proof and not overload proof	
Status indicator:		
	output set	
	normal function	
Storage temperature	- 25...+ 60 °C	
Operating temperature		
- rowed on mounting rail without clearances	0...+ 40 °C	
- rowed with clearances	0...+ 50 °C	
<b>Insulation coordination to EN 50 178</b>		
Reliable separation	-	
Overvoltage category	III	
Pollution severity	2	
Accessories, dimensions and connection data see	Page 304	



# Opto-coupler in component housing EG7

## Opto-couplers

- With combination foot for TS 15, TS 32 or TS 35
- Pluggable on socket RS EG 7 with combination foot TS 32, 35
- Overall width **10 mm**
- **Reliable separation according to DIN VDE 0884**

**EGO EG 7**  
**OST EG 7**  
**RS EG 7**

EGO EG 7



OST EG 7



RS EG 7

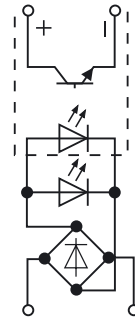
**Schematic circuit diagram**

5 V-

12 V0

24 V0

48 V0



**Ordering data**

Combination foot for TS 15, TS 32, TS 35

Type Cat. No.  
EGO EG7 **8092490000**

Type Cat. No.  
EGO EG7 **8092510000**

Type Best.-EGO  
EGO EG7 **8092530000**

Type Cat. No.  
EGO EG7 **8092550000**

Plug-in opto-coupler, without engagement socket

OST EG7 **8234560000**

OST EG7 **8234570000**

OST EG7 **8234580000**

OST EG7 **8234590000**

Engage. socket for opto-coupler with combin. foot TS 32, 35

RS EG7 **8193830000**

RS EG7 **8193830000**

RS EG7 **8193830000**

RS EG7 **8193830000**

**Rated data**

**Input voltage**

5 V- ±20 %

12 V0 ±20 %

24 V0 ±20 %

48 V0 ±20 %

Switch-on current

3 V-

12 V/4.5 mA for max. 10 ms

12 V/4.5 mA for max. 10 ms

12 V/4.5 mA for max. 10 ms

Making threshold, typical

3 V-

6.5 V-

15.5 V-

31.5 V-

Rated input current DC

6.8 mA

7.5 V-

16.5 V-

45 V-

Rated input current AC

-

3 mA

2.8 mA

2.8 mA

Rated input consumption

-

33.5 mA

3.4 mA

3.2 mA

Output supply voltage

5...48 V-

40 mW/50 mVA

70 mW/90 mVA

135 mW/155 mVA

Output current

5...48 V-

100 mA

100 mA

100 mA

Max. output current

300 mA

300 mA

300 mA

300 mA

Switch-on time (first time)

6 ms for U<sub>N</sub> = 5 V-

6 ms for U<sub>N</sub> = 12 V-

5 ms for U<sub>N</sub> = 24 V-

5 ms for U<sub>N</sub> = 48 V-

Switch-off time

12 ms for U<sub>N</sub> = 5 V-

12 ms for U<sub>N</sub> = 12 V-

15 ms for U<sub>N</sub> = 24 V-

15 ms for U<sub>N</sub> = 48 V-

Switching frequency

15 Hzdc

15 Hzdc

15 Hzdc

15 Hzdc

Storage temperature

-40...+60 °C

-40...+60 °C

-40...+60 °C

-40...+60 °C

Ambient temperature

-25...+60 °C

-25...+60 °C

-25...+60 °C

-25...+60 °C

Connection

**Insulation coordination to EN 50 178**

Protective separation

acc. to DIN VDE 0884

acc. to DIN VDE 0884

acc. to DIN VDE 0884

acc. to DIN VDE 0884

Clearances and creepage distances

≥ 5.5 mm

≥ 5.5 mm

≥ 5.5 mm

≥ 5.5 mm

Rated impulse voltage

6 kV

6 kV

6 kV

6 kV

Overvoltage category

III

III

III

III

Pollution severity

2

2

2

2

**Accessories**

Cross connection comb 16-pole

Type Cat. No.  
QB 16/10.16 **1650330000**

Type Cat. No.  
QB 16/10.16 **1650330000**

Type Cat. No.  
QB 16/10.16 **1650330000**

Type Cat. No.  
QB 16/10.16 **1650330000**

Further accessories, dimensions and connection data see

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# Opto-coupler in component housing EG7

## EGO EG 7

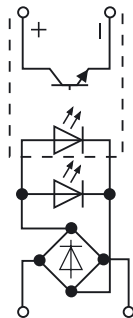


EGO EG 7

115 V0

230 V9

230 Vdc



Type	Cat. No.
EGO EG7	<b>8092570000</b>

OST EG7	<b>8234600000</b>
RS EG7	<b>8193830000</b>

<b>115 V0 ±20 %</b>	<b>230 V- ±20 %</b>
115 V/90 mA for 5 ms	230 V/110 mA for 2 ms
70 V-	140 V-
72 V-	-
3.3 mA	3.8 mA
5.5 mA	-
400 mW/500 mVA	836 mVA
5...48 V-	5...48 V-
100 mA	100 mA
300 mA	300 mA
5 ms for UN = 115 V-	5 ms for UN = 230 V-
18 ms for UN = 115 V-	18 ms for UN = 230 V-
15 Hzdc	12 Hz
-40...+60 °C	-40...+60 °C
-25...+60 °C	-25...+60 °C

acc. to DIN VDE 0884	acc. to DIN VDE 0884
≥ 5.5 mm	≥ 5.5 mm
6 kV	6 kV
III	III
2	2

Type	Cat. No.
QB 16/10.16	<b>1650330000</b>

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Type	Cat. No.
EGO EG7	<b>8092590000</b>

OST EG7	<b>8234610000</b>
RS EG7	<b>8193830000</b>

<b>230 V- ±20 %</b>	<b>230 Vdc ±20 %</b>
230 V/110 mA for 2 ms	230 V- /110 mA for 2 ms
140 V-	140 V- (for testing only)
-	-
3.8 mA	1.8 mA
-	-
836 mVA	100 mA
5...48 V-	100 mA
100 mA	300 mA
300 mA	-
5 ms for UN = 230 V-	5 ms for UN = 115 V-
18 ms for UN = 230 V-	18 ms for UN = 230 V-
12 Hz	12 Hz
-40...+60 °C	-40...+60 °C
-25...+60 °C	-25...+60 °C

acc. to DIN VDE 0884	acc. to DIN VDE 0884
≥ 5.5 mm	≥ 5.5 mm
6 kV	6 kV
III	III
2	2

Type	Cat. No.
QB 16/10.16	<b>1650330000</b>

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Type	Cat. No.
OST EG7	<b>8621190000</b>

<b>230 Vdc ±20 %</b>	<b>230 Vdc ±20 %</b>
230 V- /110 mA for 2 ms	230 V- /110 mA for 2 ms
140 V- (for testing only)	140 V- (for testing only)
-	-
1.8 mA	1.8 mA
-	-
100 mA	100 mA
300 mA	300 mA
-	-
-40...+60 °C	-40...+60 °C
-25...+60 °C	-25...+60 °C

acc. to DIN VDE 0884	acc. to DIN VDE 0884
≥ 5.5 mm	≥ 5.5 mm
6 kV	6 kV
III	III
2	2

Type	Cat. No.
QB 16/10.16	<b>1650330000</b>

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## Opto-couplers for long control cables

- with combination foot for TS 15, TS 32 or TS 35
- plugs onto locking socket RS EG 7 with combination TS 32, 35
- overall width **10 mm**
- **protective separation acc. to DIN VDE 0884**
- RC-input for suppressing noise signals
- reliable switching performance by interference on the control side

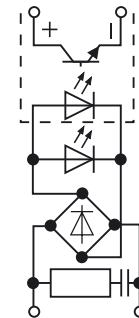
## EGO EG 7 RC/ OST EG 7 RC



115 V0

230 V9

### Schematic circuit diagram



Type	Cat. No.
EGO EG7	<b>8397420000</b>

OST EG7	<b>8315590000</b>
---------	-------------------

<b>115 V0 ±20 %</b>	<b>230 V- ±20 %</b>
115 V/90 mA for 5 ms	230 V/110 mA for 2 ms
70 V-	140 V-
72 V-	-
3.3 mA	14 mA/110 mA (2 ms)
9 mA/90 mA (5 ms)	-
400 mW/500 mVA	836 mVA
5...48 V-	5...48 V-
100 mA	100 mA
300 mA	300 mA
9 ms for UN = 115 V-	15 ms for UN = 230 V-
25 ms for UN = 115 V-	15 ms for UN = 230 V-
12 Hzdc	12 Hz
-40...+60 °C	-40...+60 °C
-25...+60 °C	-25...+60 °C

acc. to DIN VDE 0884	acc. to DIN VDE 0884
≥ 5.5 mm	≥ 5.5 mm
6 kV	6 kV
III	III
2	2

Type	Cat. No.
QB 16/10.16	<b>1650330000</b>

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Type	Cat. No.
EGO EG7	<b>8387580000</b>

OST EG7	<b>8394990000</b>
---------	-------------------

<b>230 V- ±20 %</b>	<b>230 Vdc ±20 %</b>
230 V/110 mA for 2 ms	230 V/110 mA for 2 ms
140 V-	140 V-
-	-
14 mA/110 mA (2 ms)	14 mA/110 mA (2 ms)
-	-
836 mVA	836 mVA
5...48 V-	5...48 V-
100 mA	100 mA
300 mA	300 mA
15 ms for UN = 230 V-	15 ms for UN = 230 V-
15 ms for UN = 230 V-	15 ms for UN = 230 V-
12 Hz	12 Hz
-40...+60 °C	-40...+60 °C
-25...+60 °C	-25...+60 °C

acc. to DIN VDE 0884	acc. to DIN VDE 0884
≥ 5.5 mm	≥ 5.5 mm
6 kV	6 kV
III	III
2	2

Type	Cat. No.
QB 16/10.16	<b>1650330000</b>

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Accessories
Cross connec. comb 16-pole

Further Accessories, dimensions and connection data see

# Solid State relay on locking socket PLUGSERIES

## Complete module



## DC version

Type/Version	Cat. No.
<b>Screw connection</b>	
POS 24Vdc/24Vdc 2.5A	8610840000
POS 24Vdc/230Vac 2A	8610860000
POS 24Vdc/24Vdc 1A	8610890000
POS 24Vdc/24Vdc 5A	8610900000
POS 24Vdc/230Vac 4A	8610910000
<b>Tension clamp connection</b>	
POZ 24Vdc/24Vdc 2.5A	8610920000
POZ 24Vdc/230Vac 2A	8610930000
POZ 24Vdc/24Vdc 1A	8610960000
POZ 24Vdc/24Vdc 5A	8610970000
POZ 24Vdc/230Vac 4A	8610980000

## AC version

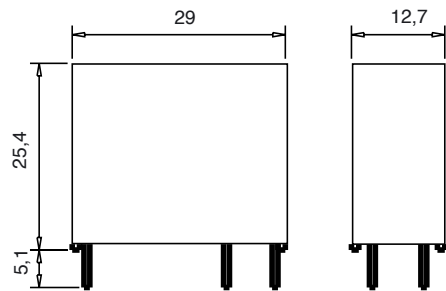
Type/Version	Cat. No.
<b>Screw connection</b>	
POS 24Vac/24Vdc 2.5A	8615600000
POS 24Vac/24Vdc 5A	8615620000
POS 24Vac/230Vac 4A	8615590000
<b>Tension clamp connection</b>	
POZ 24Vac/24Vdc 2.5A	8615640000
POZ 24Vac/24Vdc 5A	8615650000
POZ 24Vac/230Vac 4A	8615630000

## Accessories SSR Standard



- Compact dimensions (29 x 25.4 x 12.7)
- Combines with PLUGSERIES socket PXS / PXZ, LED indicator PLED and PRC holding clamp to a complete functioning unit.
- Fully compatible with electromechanical relays in standard design
- Control voltage 24 VAC / DC
- Rated switching current 24 VDC, 24 VAC/DC, or 230 VAC
- Up to 5 A continuous current
- Mounts onto PCB or socket
- High mounting density possible

## Dimensions



## Ordering data

Type	Cat. No.
SSR 24 VUC/24VDC 5A	8576350000

Type	Cat. No.
SSR 24 VUC/230VAC 4A	8576360000

## Technical data

Input (typical values at 20 °C)	
Input voltage min. AC/DC	15 V
Input voltage max. AC/DC	30 V
Input current min. AC/DC	6.1 mA
Input current max. AC/DC	12 mA
Drop-out voltage AC/DC	2.5 V
Resistance	2.100 Ω

## DC Version

15 V	15 V
30 V	30 V
6.1 mA	6.1 mA
12 mA	12 mA
2.5 V	2.5 V
2.100 Ω	2.100 Ω

## Output

max. switching current DC	5 A
max. switching current AC	3 A (4 A at 20 °C)
min. switching current DC	1 mA
min. switching current AC	50 mA
Rated switching voltage DC	24 V
Rated switching voltage AC	230 V ~

## 5 A

1 mA	50 mA
24 V	230 V ~

Switch voltage range DC  
Switch voltage range AC

max. forward anode voltage at max. switching current DC  
max. forward anode voltage at max. switching current AC

max. switch-on time DC  
max. switch-on time AC (50 Hz)

max. switch-off time DC  
max. switch-off time AC (50 Hz)

0...30 V

0.3 V

2 ms

18 ms

## Insulation

Test voltage control circuit - switching circuit DC  
Test voltage control circuit - switching circuit AC

2.5 kV<sub>eff</sub>

4 kV<sub>eff</sub>

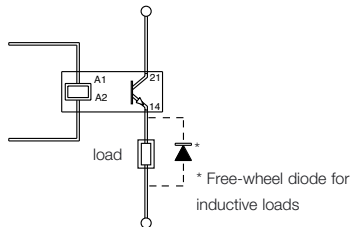
## Further data

Operating temperature range  
Weight  
Approvals  
Celduc  
Further accessories, dimensions and connection data

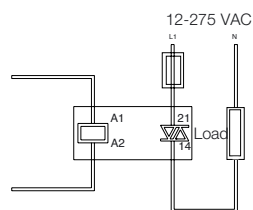
-40 °C...+50 °C  
approx.18 g  
cUL, UL recognized  
SPD07505  
see page 83

-40 °C...+50 °C  
approx.18 g  
cUL, UL recognized  
SPA07420  
see page 83

## DC version



## AC version

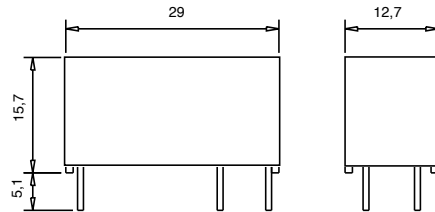


# Solid State relay on locking socket PLUGSERIES

## Accessories SSR / RT

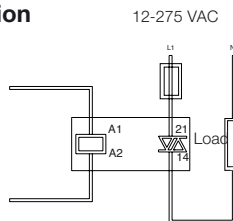


## Dimensions

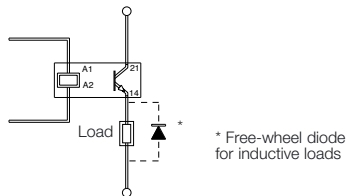


- Compact dimensions (29 x 15.7 x 12.7)
- Combines with PLUGSERIES socket PXS / PXZ, LED indicator PLED and PRC holding clamp to a complete functioning unit.
- Fully compatible with standard electromechanical relays RT
- Control voltage 24 VAC / DC
- Rated switching current 24 VDC, 24 VAC/DC, or 230 VAC
- Up to 5 A continuous current
- Mounts onto PCB or socket
- High mounting density possible

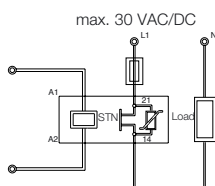
### AC version



### DC version



### AC/DC version

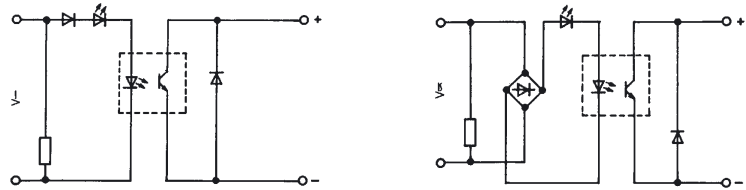


Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
	SSR 24 VUC/24VDC 2.5A		SSR 24 VUC/230VAC 2A		SSR 24 VUC/24VUC 1A	
		<b>8576340000</b>		<b>8576370000</b>		<b>8576380000</b>
Technical data	DC Version	AC Version	AC/DC Version			
<b>Input</b> (typical values at 20 °C)						
Input voltage min. AC/DC	15 V	15 V	15 V			15 V
Input voltage max. AC/DC	30 V	30 V	30 V			30 V
Input current min. AC/DC	6.1 mA	6.1 mA	6.1 mA			6.1 mA
Input current max. AC/DC	12 mA	12 mA	12 mA			12 mA
Drop-out voltage AC/DC	2.5 V	2.5 V	2.5 V			2.5 V
Resistances	2.100 Ω	2.100 Ω	2.100 Ω			2.100 Ω
<b>Output</b>						
max. switching current DC	<b>2.5 A</b>					
max. switching current AC		<b>2 A</b>				
max. switching current AC/DC			<b>1 A</b>			
min. switching current DC	1mA					
min. switching current AC		50mA				
min. switching current AC/DC						1mA
Rated switching voltage DC	24 V					
Rated switching voltage AC		230 V				
Rated switching voltage AC/DC						24 V
Switch voltage range DC	0...30 V					
Switch voltage range AC		12...275 V				
Switch voltage range AC/DC						0...30 V
max. forward anode voltage at max. switching current DC	0.5 V					
max. forward anode voltage at max. switching current AC		1 V				
max. forward anode voltage at max. switching current AC/DC						0.9 V
max. switch-on time DC	2 ms					
max. switch-on time AC (50 Hz)		12 ms				
max. switch-on time AC/DC (50 Hz)						5 ms
max. switch-off time DC	18 ms					
max. switch-off time AC (50 Hz)		20 ms				
max. switch-off time AC/DC (50 Hz)						12 ms
<b>Insulation</b>						
Test voltage control circuit - switching circuit DC	2.5 kV <sub>eff</sub>					
Test voltage control circuit - switching circuit AC		4 kV <sub>eff</sub>				
Test voltage control circuit - switching circuit AC/DC						4 kV <sub>eff</sub>
<b>Further data</b>						
Operating temperature range	-40 °C...+50 °C	-40 °C...+50 °C	-40 °C...+50 °C			-40 °C...+50 °C
Weight	approx.11 g	approx.11 g	approx.11 g			approx.11 g
Approvals	cUL, UL recognized	cUL, UL recognized	cUL, UL recognized			cUL, UL recognized
Celduc	STD07205	STA07220	STN07105			
Further accessories, dimensions and connection data	see page 83	see page 83	see page 83			see page 83

# Opto-coupler on locking socket profile RS 40

## Opto-couplers for signal input

## RS 40



### Rated data

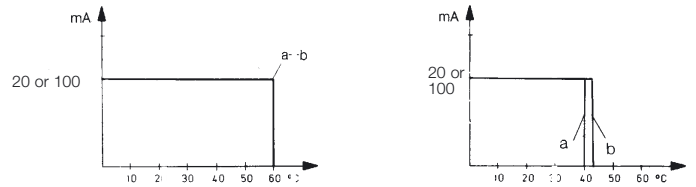
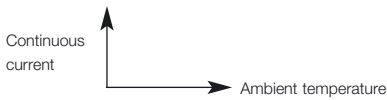
<b>Input voltage</b>
Rated consumption - (W)
Rated consumption - (VA)
Output supply voltage
Voltage drop at max. load current
Output current

5 V <sup>2)</sup>	12 V <sub>0</sub> ± 10 %	24 V <sup>-</sup> ± 10 %	24 V <sub>0</sub> ± 10 %	48 V <sub>0</sub> ± 10 %	115 V <sub>0</sub> , +5%-15%	230 V <sup>-</sup> , +5%-15%
0.045 W	0.25 W	0.51 W	0.34 W	0.55 W	0.33 W	
	0.32 VA		0.5 VA	0.65 VA	0.65 VA	0.52 VA
5...48 V <sup>-1)</sup>	5...48 V <sup>-1)</sup>	5...48 V <sup>-1)</sup>	5...48 V <sup>-1)</sup>	5...48 V <sup>-1)</sup>	5...48 V <sup>-1)</sup>	5...48 V <sup>-1)</sup>
< 0.9 V	< 1.6 V	< 0.9 V	< 1.6 V	< 1.6 V	< 1.5 V	< 1.5 V
20 mA	100 mA	20 mA	100 mA	100 mA	100 mA	100 mA

### Derating curve

a = rowed on mounting rail without clearances

b = rowed with clearances ≥ 20 mm



Pulse duration, limiting overload current (not periodic)
Sperrstrom (Ruhestrom), max. at U = 48 V
Switch-on time (cyclic operation)
Switch-off time (cyclic operation)
Max. switching frequency DC voltage
Max. switching frequency AC voltage
Switching ratio

0.2 A/10 ms	0.8 A/10 ms	0.2 A/10 ms	0.8 A/10 ms	0.8 A/10 ms	0.8 A/10 ms	0.8 A/10 ms
0.16 mA	0.16 mA	0.16 mA	0.16 mA	0.16 mA	0.16 mA	0.16 mA
≤ 12 μs	≤ 6 ms	≤ 30 μs	≤ 2 ms	≤ 5 ms	≤ 10 ms	≤ 6 ms
≤ 15 μs	≤ 13 ms	≤ 60 μs	≤ 15 ms	≤ 20 ms	≤ 23 ms	≤ 18 ms
3 kHz	20 Hz	3 kHz	20 Hz	< 20 Hz	10 Hz	
	< 10 Hz		< 10 Hz	< 10 Hz		
1 : 2	10 Hz 1 : 2	1 : 2	10 Hz 1 : 1	10 Hz 1 : 1	10 Hz 1 : 1	10 Hz 1 : 1

### Insulation coordination to EN 50 178

Rated voltage
Rated impulse voltage
Overvoltage category
Pollution severity
Clearances and creepage distances
Opto-coupler
Test voltage (corresponds 100% module test)
Module is immune to interference
Insulation voltage
Input - output/mounting rail
Storage temperature
Ambient temperature
- , rowed on mounting rail without clearances
- , rowed with clearances ≥ 20 mm

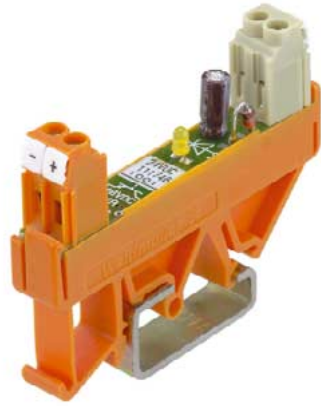
300 V	300 V	300 V	300 V	300 V	300 V	300 V
6 kV	6 kV	6 kV	6 kV	6 kV	6 kV	6 kV
IV	IV	IV	III	IV	IV	IV
2	2	2	2	2	2	2
≥ 5.5 mm	≥ 5.5 mm	≥ 5.5 mm	≥ 5.5 mm	≥ 5.5 mm	≥ 5.5 mm	≥ 5.5 mm
according to DIN VDE 0884	according to DIN VDE 0884	according to DIN VDE 0884	according to DIN VDE 0884	according to DIN VDE 0884	according to DIN VDE 0884	according to DIN VDE 0884
according to DIN VDE 0884	according to DIN VDE 0884	according to DIN VDE 0884	according to DIN VDE 0884	according to DIN VDE 0884	according to DIN VDE 0884	according to DIN VDE 0884
non-destructive test 1 kV	non-destructive test 1 kV	non-destructive test 1 kV	non-destructive test 1 kV	non-destructive test 1 kV	non-destructive test 1 kV	non-destructive test 1 kV
acc. to IEC 801-4 severity 4	acc. to IEC 801-4 severity 4	acc. to IEC 801-4 severity 4	acc. to IEC 801-4 severity 4	acc. to IEC 801-4 severity 4	acc. to IEC 801-4 severity 4	acc. to IEC 801-4 severity 4
4 kV <sub>eff</sub> 1 min.					4 kV <sub>eff</sub> 1 min.	
-40 °C...+85 °C					-40 °C...+70 °C	
-25 °C...+60 °C					-25 °C...+40 °C	
-25 °C...+60 °C					-25 °C...+45 °C	

<sup>1)</sup> Not TTL-compatible

<sup>2)</sup> Conditionally level-compatible

# Opto-coupler on locking socket profile RS 40

RS 40



Ordering data				
Connection method	Input voltage	Function indicator	Screw connection (GSE)	Disconnect plug with screw connection (BL/SL)
	5 V <sup>2)</sup>	Yellow LED	<b>1118861001</b>	<b>1161560000</b>
	12 V <sub>0</sub>	Green LED	<b>1118761001</b>	<b>1161660000</b>
	24 V <sup>-</sup>	Yellow LED	<b>1160961001</b>	<b>1161760000</b> <b>1177860000<sup>1)</sup></b>
	24 V <sub>0</sub>	Yellow LED Green LED	<b>1117461001</b> <b>8065031001</b>	<b>1119460000</b>
	48 V <sub>0</sub>	Green LED	<b>1161061001</b>	<b>1161860000</b>
	115 V <sub>0</sub>	Green LED	<b>1161161001</b>	<b>1161960000</b>
	230 V <sup>-</sup>	Green LED	<b>1161461001</b>	<b>1162060000</b>
	230 V <sup>-</sup>	Red LED		<b>8182690000</b>

Connection data				
Insulation stripping length			7 mm	6 mm
Conductor cross-section		0.5...2.5 mm <sup>2</sup>	0.5...1.5 mm <sup>2</sup>	
			AWG 26...14	AWG 26...16
Dimensions				
Mounting width			11.2 mm	11.2 mm
Length (perpendicular to mounting rail)			70 mm	74 mm
Height TS/TS 35 x 7.5			56 mm/51.5 mm	56 mm/51.5 mm

<sup>1)</sup> Output 5 VTTL-compatible  
<sup>2)</sup> Conditionally level-compatible



# Opto coupler on locking socket with multiple interface RSM

## (Opto-couplers)

### RSM 4 OS

4 opto-couplers

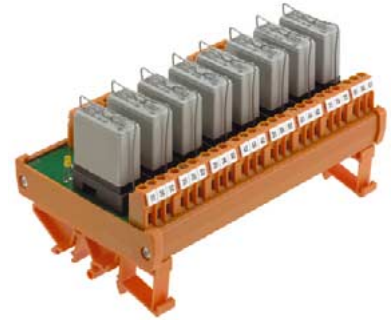
### RSM 8 OS

8 opto-couplers

#### Note!

During operation and maintenance please observe the relevant ESD measures.

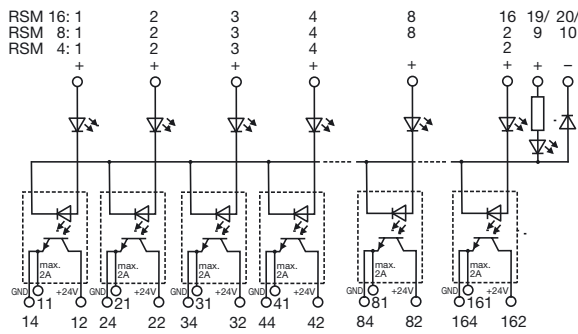
(ESD endangered area)



Also available as relay coupler, see page 84/85

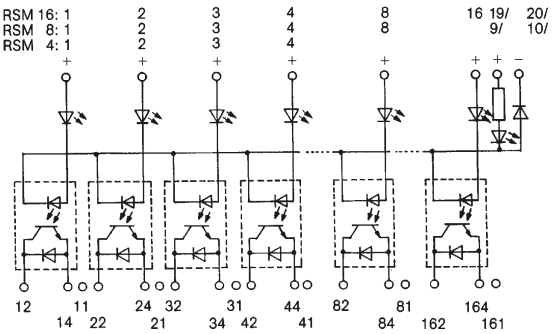
#### Schematic circuit diagram

Opto coupler 24 Vdc / 2A



#### DC voltage/positive switching (joint negative)

Standard Opto coupler 5...48 Vdc / 100 mA



#### Rated data

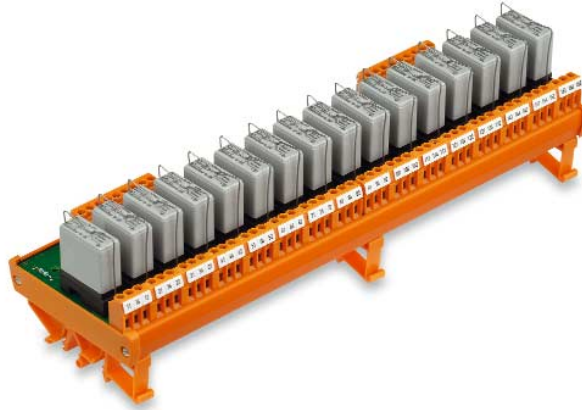
	5 V <sup>-1</sup> ±10 %	24 V <sup>-</sup> ±10 %	24 V <sup>0</sup> ±10 %	24 V <sup>-</sup> +10 %
Input voltage	5 V <sup>-1</sup> ±10 %	24 V <sup>-</sup> ±10 %	24 V <sup>0</sup> ±10 %	24 V <sup>-</sup> +10 %
Rated consumption – (W)	60 mW	400 mW	300 mW	288 mW
Rated consumption ~ (VA)	–	–	0.35 VA	–
Output operating voltage	5...48 V <sup>1)</sup>	5...48 V <sup>1)</sup>	5...48 V <sup>1)</sup>	24 V ±10 %
Voltage drop at max. load current	<1.6 V	<1.6 V	<1.6 V	≤0.4 V
Output current	0.1 A	0.1 A	0.1 A	2 A
Derating curve				
a = Continuous operation				
b = Switching mode				
Continuous current				
Pulse duration, limiting overload current (not periodic)	0.8 A/10 ms	0.8 A/10 ms	0.8 A/10 ms	12 A/10 ms
Max. reverse current (static current), at U	0.16 mA	0.16 mA	0.16 mA	12 mA
Switching frequency	100 Hz	100 Hz	20 Hz	max. 100 Hz
Storage temperature	-40 °C...+85 °C	-40 °C...+85 °C	-40 °C...+85 °C	-40 °C...+60 °C
Ambient temperature				
–, rowed on mounting rail without clearances	-25 °C...+60 °C	-25 °C...+60 °C	-25 °C...+60 °C	-25 °C...+60 °C
–, rowed with clearances x 20 mm	-25 °C...+60 °C	-25 °C...+60 °C	-25 °C...+60 °C	-25 °C...+60 °C
<b>Dimensions</b>				
Mounting width				
RSM 4	75 mm	75 mm	75 mm	75 mm
RSM 8	145 mm	145 mm	145 mm	145 mm
RSM 16	285 mm	285 mm	285 mm	285 mm
Length (perpendicular to mounting rail)	87 mm	87 mm	87 mm	87 mm

<sup>1)</sup> Not TTL-compatible

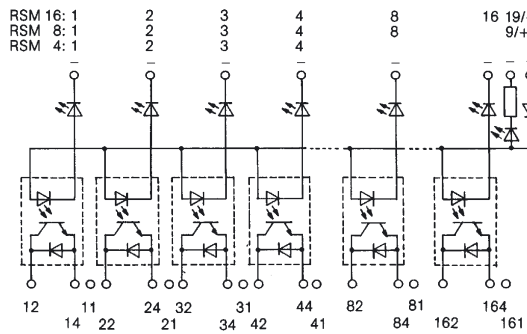
# Opto coupler on locking socket with multiple interface RSM

## RSM 16 OS

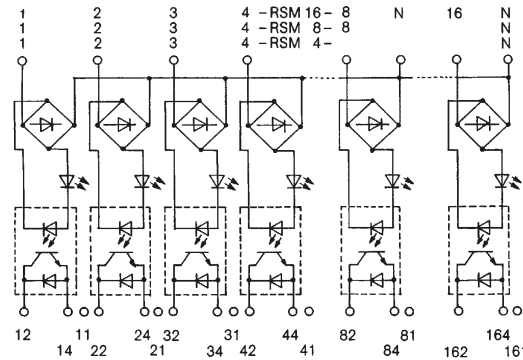
16 Opto couplers



### DC/negative switching (common positive)



### DC/AC voltage



### Ordering data

Conn. method	Input voltage	RSM 4 OS w/o. optocoupl.	4 optocoupl.	RSM 8 OS w/o. optocoupl.	8 optocoupl.	RSM 16 OS w/o. optocoupl.	16 optocoupl.	Positive switching <sup>3)</sup>	Negative switching <sup>4)</sup>	Cat. No.	Mount. width (mm)
Screw/	5 V <sup>-2)</sup>		•			•		•		1123661001	75
							•	•		1124061001	145
		•					•	•		1124461001	285
			•*					•		8017581001	75
			•*					•		1123861001	75
	24 V <sup>-</sup>			•				•	•	1123761001	75
				•				•		8003671001	145
					•*			•	•	8021391001	145
						•		•		1124261001	145
							•	•		8018221001	285
							•	•	•	8082471001	285
	24 V <sup>0</sup>		•*					•		1124661001	285
					•*			•		1125161001	75
								•		1125261001	145

\* equipped as standard with opto-coupler 5...48 Vdc / 100 mA

### Connection data

Insulation stripping length	7 mm										
Conductor cross-section	0.5...2.5 mm <sup>2</sup> /AWG 26...14										
Replacement opto-c.	Type	Input voltage	Output voltage	Output current	Cat. No.						
	OS	5 V <sup>-5)</sup> ±10 %	24 V <sup>-</sup> ±20 %	0.1 A	1121100000						
	OS	12 V <sup>-5)</sup> ±10 %	5...48 V <sup>-</sup>	0.1 A	1124800000						
	OS	12 V <sup>0</sup> ±10 %	5...48 V <sup>-</sup>	0.1 A	1121200000						
	OS	24 V <sup>-5)</sup> ±10 %	5...48 V <sup>-</sup>	0.1 A	1124900000						
	OS	24 V <sup>-5)</sup> ±10 %	24 V <sup>-</sup> +10 %	2.0 A	1170200000						
	OS	24 V <sup>-5)</sup> ±10 %	250 V <sup>-</sup>	0.1 A	1153200000						
	OS	24 V <sup>0</sup> ±10 %	5...48 V <sup>-</sup>	0.1 A	1121300000						

<sup>2)</sup> 5 V TTL Input voltage on request

<sup>3)</sup> Common negative potential, positive is switched

<sup>4)</sup> Common positive potential, negative is switched

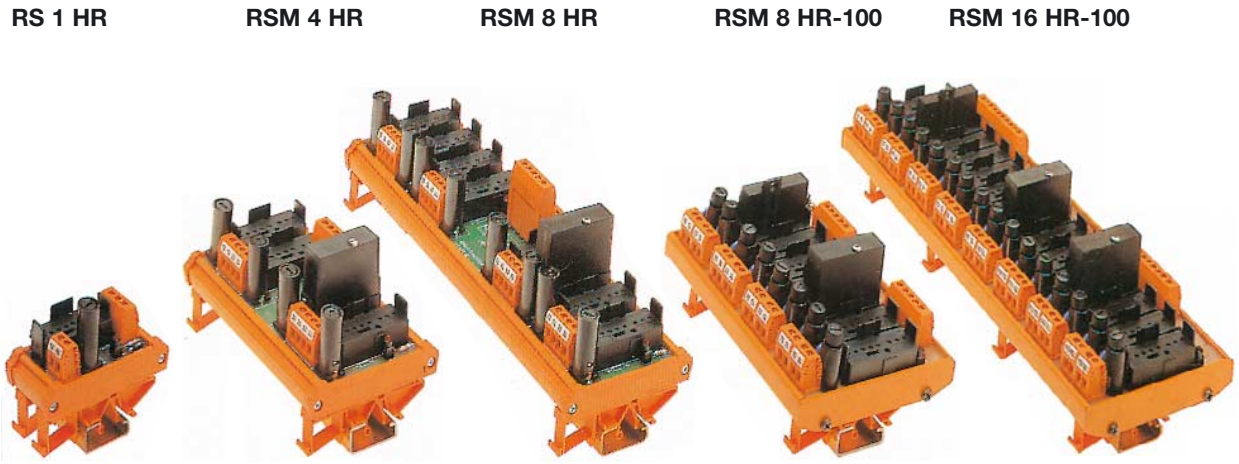
<sup>5)</sup> Not suitable for DC/AC version

# Opto coupler, locking socket for semi-conductor relays

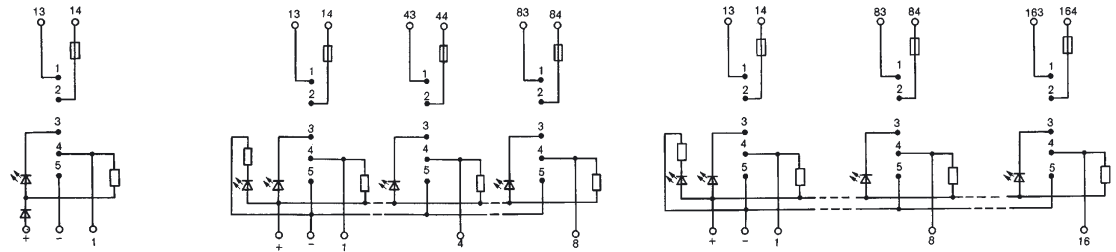
## Single and multiple socket interface-unit

- Advantages of semiconductor relays:
- Wear-free switching also with high switching frequencies
  - Bounce-free switching
  - No electromagnetic interferences
  - High insulation-voltage between load and control circuit

**Note!**  
The relevant ESD measures are to be observed during commissioning and maintenance (ESD endangered area)



### Schematic circuit diagram



Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
	RS 1 HR	1166961001	RSM 4 HR	1167061001 <sup>3)</sup>	RSM 8 HR	1167161001 <sup>3)</sup>	RSM 8 HR-100	1166261001 <sup>3)</sup>	RSM 16 HR-100*	1167261001 <sup>3)</sup>
<b>Rated data</b> (with input module) <sup>1)</sup>										
Input voltage, max.	250 V~		250 V~		250 V~		250 V~		250 V~	
Input current (per channel)	25 mA		25 mA		25 mA		25 mA		25 mA	
Max. output voltage	24 V0		24 V0		24 V0		24 V0		24 V0	
Output current (per channel), max.	Depending on module		Depending on module		Depending on module		Depending on module		Depending on module	
<b>Rated data</b> (with output module) <sup>1)</sup>										
Input voltage, max.:	24 V0		24 V0		24 V0		24 V0		24 V0	
Input current (per channel)	Depending on module		Depending on module		Depending on module		Depending on module		Depending on module	
Max. output supply voltage	250 V		250 V		250 V		250 V		250 V	
Max. output current (per channel)	Depending on module		Depending on module		Depending on module		Depending on module		Depending on module	
Auxiliary voltage	24 V- ±10 %		24 V- ±10 %		24 V- ±10 %		24 V- ±10 %		24 V- ±10 %	
Status indicator	LED red		LED red		LED red		LED red		LED red	
Fuse	5x20, 5 A quick		5x20, 5 A quick		5x20, 5 A quick		5x20, 5 A quick		5x20, 5 A quick	
Storage temperature	-40 °C...+70 °C		-40 °C...+70 °C		-40 °C...+70 °C		-40 °C...+70 °C		-40 °C...+70 °C	
Ambient temperature	-25 °C...+70 °C		-25 °C...+70 °C		-25 °C...+70 °C		-25 °C...+70 °C		-25 °C...+70 °C	
	Dependent on semiconductor relay used		Dependent on semiconductor relay used		Dependent on semiconductor relay used		Dependent on semiconductor relay used		Dependent on semiconductor relay used	
<b>Connection data</b>										
Conductor cross-section	0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>		0.5...2.5 mm <sup>2</sup>	
Screw connection	-		-		-		-		-	
Male connect. block DIN 41651 <sup>2)</sup>	-		-		10-pole		10-pole		20-pole	
„Sub-D“-connection <sup>2)</sup>	-		-		15-pole		15-pole		25-pole	
<b>Dimensions</b>										
Mounting width	35 mm		130 mm		249 mm		156 mm		305 mm	
Length (perpendicular to mounting rail)	87 mm		87 mm		87 mm		109 mm		109 mm	

<sup>1)</sup> The rating data depend on the used module  
<sup>2)</sup> on request

<sup>3)</sup> Mixed placement of input and output modules is not valid.

# Semi-conductor relays

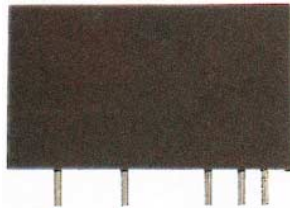
**Solid state relays for signal input and output**

**Input module HRE 24**  
DC/DC

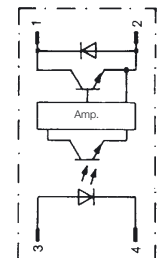
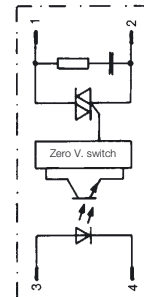
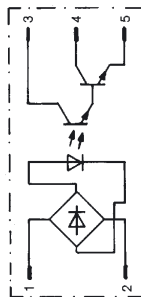
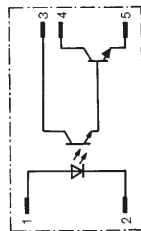
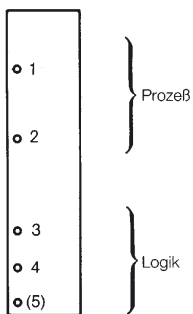
**Input module HRE 115/HRE 230**  
AC/DC

**Output module HRA 230**  
DC/AC

**Output module HRA 60**  
DC/DC



**Schematic circuit diagram**



Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
	HRE 24	117440000	HRE 115	117450000	HRE 230	117460000	HRA 230	117410000	HRA 60	117430000
<b>Rated data</b>										
<b>Input voltage</b>	<b>10...32 V- (process)</b>		<b>90...140 V0 (process)</b>		<b>180 V...280 V0 (process)</b>		<b>18...32 V- (Logic)</b>		<b>18...32 V- (Logic)</b>	
Input current at max. V	21.33 mA		10 mA		6.4 mA		-		-	
Input resistance	1.5 kΩ		14 kΩ		44 kΩ		2.2 kΩ		2.2 kΩ	
Switch-on voltage	-		-		-		3 V		3 V	
Switch-off voltage	-		-		-		1 V		1 V	
Max. output operating voltage	18...32 V (Logic) <sup>1)</sup>		18...32 V (Logic) <sup>1)</sup>		18...32 V (Logic) <sup>1)</sup>		24...250 V~ <sup>1)2)</sup> (process)		5...60 V~ <sup>1)2)</sup> (process)	
Voltage drop at max. load current	0.4 V		0.4 V		0.4 V		-		-	
Max. output current (Continuous test)	100 mA		100 mA		100 mA		3 A		3 A, resistive load	
Derating curve										
a = self-cooling b = mounted on 2 k/W heat sink Continuous current										
Min. Load current	-		-		-		20 mA		-	
Leakage current in off-condition at rated load voltage	max. 100 µA		max. 100 µA		max. 100 µA		6 mA		1 mA	
Surge current	-		-		-		75 A/20 ms		5 A/1 s	
Switch-on time	5 ms		20 ms		20 ms		≤ 1/2 Period		100 µs	
Switch-off time	5 ms		20 ms		20 ms		≤ 1/2 Period		750 µs	
Input impulse	-		-		-		unlimited, t <sub>min</sub> 100 µs		unlimited, t <sub>min</sub> 100 µs	
Storage temperature	-40 °C...+100 °C		-40 °C...+100 °C		-40 °C...+100 °C		-40 °C...+100 °C		-40 °C...+100 °C	
Ambient temperature	-20 °C...+ 70 °C		-25 °C...+ 70 °C		-25 °C...+ 70 °C		-25 °C...+ 70 °C		-25 °C...+ 70 °C	

<sup>1)</sup> 250 V max. in connection with HR modules. Only negative-switching when used on HR-socket!

<sup>2)</sup> For inductive loads the module must be protected with diode or varistor.



# Timers

The IT product family of electronic delay timers from Weidmüller are the optimum solution for industrial tasks.

**The product family IT offers:**

- Response delay (ITR)
- Wiping contact without control input (ITWo)
- Wiping contact with control input (ITWw)
- Turn-off delay without control input (ITTo)
- Turn off delay without control input (ITTw)
- Pulse generator (ITTT)
- Multifunction (ITM)
- Multifunction (ITMF)

**Designation of types:**

- I** = Industry
- T** = Timer
- R** = Response Delay
- Wo** = Wiping contact relay without control input
- Ww** = Wiping contact relay with control input
- To** = Turn -off delay without control input
- Tw** = Turn-off delay with control input
- TT** = Two Times
- M** = Multifunction
- MF** = Multifunction Four

**Time ranges and supply voltages of delay timer relays**

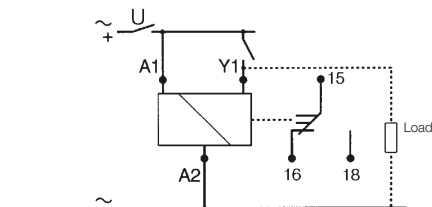
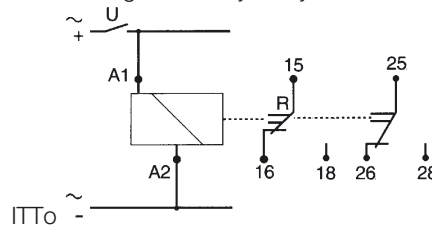
The modules' functions for 4 or 7 time can be precisely selected via the rotary button.

The multiple voltage ranges of the supply voltage allow for a wide area of use in industry (see table).

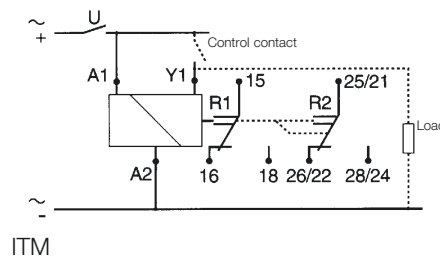
Product	Time	Range		Voltage supply
ITR	0.1s - 100h	0.1 s - 1 s	1 min - 10 min	24 VDC/24...24UVAC
ITWo, ITTT		1 s - 10 s	0.1 h - 1 h	
ITTw		0.1 min - 1 min	1 h - 10 h	
ITWw		10 h - 100 h		
ITMF, ITM				
ITTo	0.06 s - 160 s	0.06 s - 0.6 s	2 s - 20 s	24 V - 240 VAC
		0.25 s - 2.5 s	16 s - 160 s	24 VDC

**Output of the timing relays**

The load in every module is switched by a changeover relay (250 V, 8 A). The multifunction module (ITM) switches both changeover relays immediately or, one changeover relay immediately and the other changeover relay delayed.



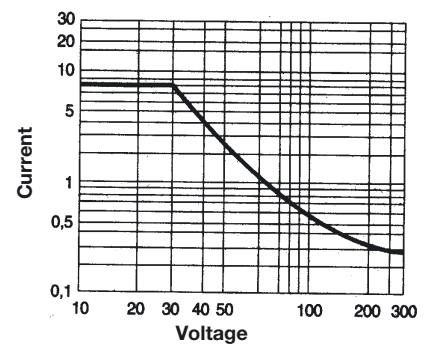
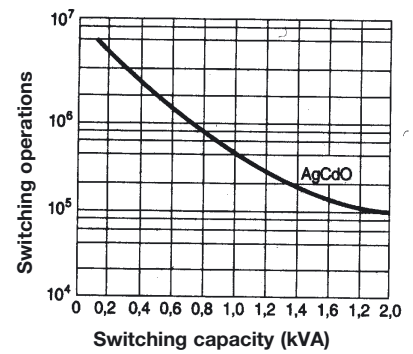
ITR, ITP, ITWo, ITWw, ITTw, ITTT, ITMF



**Characteristic data of output contacts**

**Limit values by resistive load**

Service life of contacts by resistive load



# Functions of the Timers

## Response delay ITR timer relay

As soon as the operating voltage is applied, the preset delay period T begins. After time period T has expired, output R connects the load.



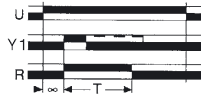
## Wiping contact timer relay without control input ITWo

When the operating voltage is applied, output R connects the load immediately. After the preset delay period T has expired, output R disconnects the load.



## Wiping contact timer relay with control input ITWw

As soon as the operating voltage is applied, a pulse (e. g. 50 ms) or a voltage is applied to control input Y1. Output R connects the load immediately. After the preset delay period T has expired, output R disconnects the load.



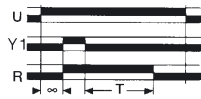
## Turn-off delay timer relay without control input ITTo

As soon as the operating voltage is applied, output R connects the load. Delay period T does not begin until the operating voltage is switched off. After delay period T has expired, output R disconnects the load.



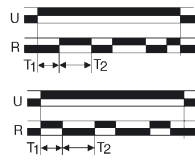
## Turn-off delay timer relay with control input ITTw

After the operating voltage has been applied and control input Y1 has been activated, output R connects the load for an indefinite period of time. When the control input is opened and after the preset time period T has expired, the output disconnects the load.



## Pulse generator ITTT

The repeat cycles starts with two individually adjustable times after applying the supply voltage. There is a different starting state for each delay.



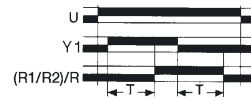
## Multifunction ITM/ITMF

### Function A: Response delay



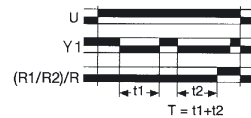
As soon as the operating voltage is applied, the preset delay period T begins. After time period T has expired, output R connects the load.

### Function Ac: Response delay and turn-off delay



As soon as operating voltage has been applied and control input Y1 has closed, delay period T begins. After time period T has expired, output R connects the load (delayed response). When control input Y1 is opened, the output disconnects the load after the preset time period has expired (delayed turn-off).

### Function At: Additive response delay



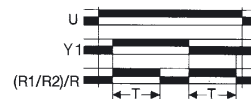
As soon as the operating voltage has been applied and delay period T has expired, output R connects the load. At control input Y1 the contact break intervals are accumulated (additive process). As soon as the operating voltage is switched off, the load at output R is disconnected.

### Function B: Wiping contact with control input



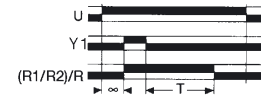
As soon as the operating voltage has been applied, a pulse (min 50 ms) or a voltage can be applied to control input Y1. Output R connects the load immediately. After delay period T has expired, output R disconnects the load.

### Function Bw: Wiping function



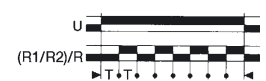
The operating voltage must be applied. As soon as a voltage is applied to control input Y1, output R connects the load for the preset time T. After time period T has expired, output R disconnects the load. As soon as the control input is opened, output R once more connects the load for the duration of time period T. After time period T has expired, output R disconnects the load.

### Function C: Turn-off delay with control input



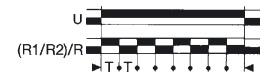
As soon as the operating voltage has been applied and control input Y1 has been activated, output R connects the load for an indefinite period of time. When the control input is opened and after the preset time period T has expired, the output disconnects the load.

### Function D: Pulse generator (begins in the zero position)



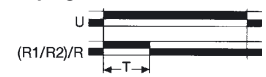
As soon as the operating voltage has been applied, output R simultaneously switches the load alternately between the zero position and operating position for the period of the preset time T. With this function, the cycle begins at the zero position.

### Function Di: Pulse generator (begins in the operating position)



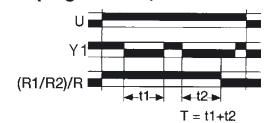
As soon as the operating voltage has been applied, output R simultaneously switches the load alternately between the zero position and operating position for the period of the preset time T. With this function, the cycle begins at the operating position.

### Function H: Wiping contact without control input



As soon as the operating voltage is applied, output R connects the load immediately. After delay period T has expired, output R disconnects the load.

### Function Ht: Wiping contact, additive



As soon as the operating voltage is applied, output R connects the load immediately. At control input Y1 the contact break intervals are accumulated (additive process) and when the preset delay period has expired, output R disconnects the load.

- U = Operating voltage
- R = Output relay or load
- T = Delay
- Y1 = Control input



## Timers

### Status LED

Two LED's show the status of the modules:

- green LED = supply voltage connected
- yellow LED = relay output active (not for ITTO)

### Marking

Marking is done on a removable tag or on the marking area. The function is printed on the **front** of the module.

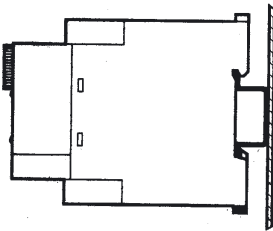
### Control lamp for verifying contact

A control lamp can be wired parallel to input Y1 to show the status of control input.

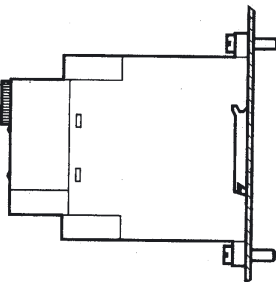
### Assembly

Mount direct onto DIN TS 35 mounting rails.

on DIN rail



on panel using M4 screws



### Approvals and standards

This relay has a high resistance to interference. The housing material is self-extinguishing (UL94/V0).

Manufacturing to IEC/VDE and UL/CSA approvals permit worldwide usage.

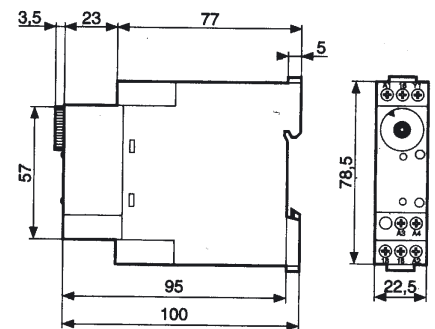
- IEC 255 static measuring relays
- IEC529 testers and test procedures
- IEC 664 regulations for high-voltage fuses for motor circuits
- IEC 801 EMC compatibility
- VDE 0110 insulation coordination for low-voltage electrical equipment
- VDE 0435 relays with fixed times

### Connection technology

Clamping yoke has the following capacities:

- 2 x 1.5 mm<sup>2</sup> with ferrule
- 2 x 2.5 mm<sup>2</sup> without ferrule
- 1 x 4 mm<sup>2</sup> without ferrule

### Dimensions IT



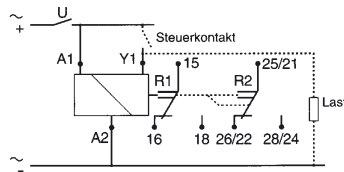
# Multifunctional Timers

- Response delay
- Response delay and turn-off delay
- Additive response delay
- Wiping contact with control input
- Wiping function
- Turn-off delay with control input
- Pulse generator (begins in the zero position)
- Pulse generator (begins in the operating position)
- Wiping contact without control input
- Wiping contact, additive

## ITM Multifunctional timer relay



### Schematic circuit diagram

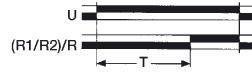


### Ordering data

Contact	changeover
Time periods	0.1 s - 100 h 1 s, 10 s, 1 min 1 h, 10 h, 100 h
Repeat accuracy (const. parameter)	± 0.5%
Accuracy of indication acc. to IEC 1812-1	± 10% (25 °C)
<b>Input</b>	
Input voltage	12 V...240 Vac/dc / 50...60 Hz
Voltage tolerance	85 - 110% U <sub>N</sub>
Duty factor	100 %
Rated power consumption	7 VA / 230 V~
Min pulse duration type	≥ 50 ms
Max. reset time at voltage interruption	≤ 100 ms
Protection against voltage interruption	> 10 ms
<b>Output</b>	
Contact	2 changeover
Contact material	AgCdO
Service life	- mechanical 5 x 10 <sup>6</sup> switching operations - electrical 10 <sup>5</sup> switching operations at 2000 VA resistive load
Switching current	- max. 8 A <sub>0</sub> / changeover contact - min. 100 mA <sub>0</sub>
Max. switching voltage	250 V <sub>0</sub>
Switching current	2000 VA / 80 W
<b>Status indicators</b>	
Voltage applied	green LED
Relay output active	yellow LED
Approvals	UL / CSA
Standards	IEC 529/IEC 664/IEC 801/IEC 255 VDE 0435/VDE 0110
Temperature	- Storage temperature -30°C...+70°C - Operating temperature -20°C...+60°C
Clearance/creepage path, acc. to IEC 664/VDE 0110	4 kV
Protection category IEC 529	IP 20 - Terminal block - Front IP 50
Mounting	DIN rail 35 mm
Installation category to IEC 664	Category III
<b>Connection</b>	
- with ferrule	2 x 1.5 mm <sup>2</sup>
- without ferrule	2 x 2.5 mm <sup>2</sup> / 1 x 4 mm <sup>2</sup>
Enclosure material	self extinguishing
Weight, typ.	110 g

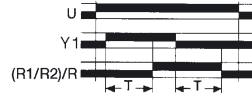
Type	Cat. No.
ITM	8362550000

### Function A: Response delay



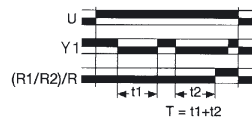
As soon as the operating voltage is applied, the preset delay period T begins. After time period T has expired, output R connects the load.

### Function Ac: Response delay and turn-off delay



As soon as operating voltage has been applied and control input Y1 has closed, delay period T begins. After time period T has expired, output R connects the load (delayed response). When control input Y1 is opened and after the preset time period T has expired, the output disconnects the load (delayed turn-off).

### Function At: Additive response delay



As soon as the operating voltage has been applied and delay period T has expired, output R connects the load. At control input Y1 the contact break intervals are accumulated (additive process). As soon as the operating voltage is switched off, the load at output R is disconnected.

### Function B: Wiping contact with control input



As soon as the operating voltage has been applied, a pulse (min 50 ms) or a voltage can be applied to control input Y1. Output R connects the load immediately. After delay period T has expired, output R disconnects the load.

### Function Bw: Wiping function



The operating voltage must be applied. As soon as a voltage is applied to control input Y1, output R connects the load for the preset time T. After time period T has expired, output R disconnects the load. As soon as the control input is opened, output R once more connects the load for the duration of time period T. After time period T has expired, output R disconnects the load.

### Function C: Turn-off delay with control input



As soon as the operating voltage has been applied and control input Y1 has been activated, output R connects the load for an indefinite period of time. When the control input is opened and after the preset time period T has expired, the output disconnects the load.

### Function D: Pulse generator (begins in the zero position)



As soon as the operating voltage has been applied, output R simultaneously switches the load alternately between the zero position and operating position for the period of the preset time T. With this function, the cycle begins at the zero position.

### Function Di: Pulse generator (begins in the operating position)



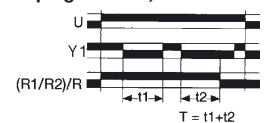
As soon as the operating voltage has been applied, output R simultaneously switches the load alternately between the zero position and operating position for the period of the preset time T. With this function, the cycle begins at the operating position.

### Function H: Wiping contact without control input



As soon as the operating voltage is applied, output R connects the load immediately. After delay period T has expired, output R disconnects the load.

### Function Ht: Wiping contact, additive



As soon as the operating voltage is applied, output R connects the load immediately. At control input Y1 the contact break intervals are accumulated (additive process) and when the preset delay period has expired, output R disconnects the load.

U = Operating voltage

R = Output relay or load

T = Delay

Y1 = Control input

# Timers

## ITTo

Turn-off delay timer relay **without** control input

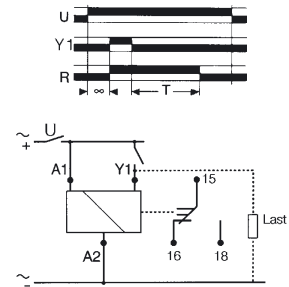
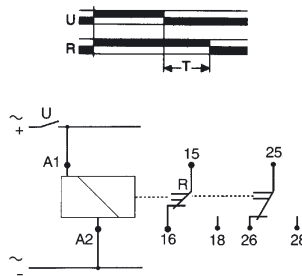


## ITTw

Turn-off delay timer relay **with** control input



### Schematic circuit diagram



Ordering data	
Contact	
Time periods	
Repeat accuracy (const. parameter)	
Anzeigegenauigkeit gemäß IEC 1812-1	
Input	
Input voltage	
Voltage tolerance	
Duty factor	
Rated power consumption	
Min. switch-on time for the supply	
Min pulse duration type	
Max. reset time at voltage interruption	
Protection against voltage interruption	
Output	
Contact	
Contact material	
Service life	- mechanical
	- electrical
Switching current	- max.
	- min.
Max. switching voltage	
Switching current	
Status indicators	
Voltage applied	
Relay output active	
Approvals	
Standards	
Temperature	- Storage temperature
	- Operating temperature
Clearance/creepage path, acc. to IEC 664/VDE 0110	
Protection category IEC 529 - Terminal block	
	- Front
Mounting	
Installation category to IEC 664	
Connection	
- with ferrule	
- without ferrule	
Enclosure material	
Weight, typ.	

Type	Cat. No.
<b>ITTo</b>	<b>836260000</b>
Changeover	
0.6 s -160 s	
(0.06 s - 0.6 s, 0.25 s - 2.5 s, 2 s - 20 s, 16 s - 160 s)	
± 0.5%	
± 10% (25 °C)	
<b>24 Vdc/ 24...240 Vac / 50...60 Hz</b>	
85 - 110% U <sub>N</sub>	
100 %	
0.5 W / 30 VA / 230 V~	
-	
≥ 50 ms	
≤ 100 ms	
> 10 ms	
Relay output	
2 changeover	
AgCdO	
5 x 10 <sup>6</sup> switching operations	
10 <sup>5</sup> switching operations at 1250 VA resistive load	
8 A <sub>0</sub> / changeover contact	
100 mA <sub>0</sub>	
250 V <sub>0</sub>	
1250 VA / 80 W	
green LED	
UL / CSA	
IEC 529/IEC 664/IEC 801/IEC 255	
VDE 0435/VDE 0110	
-30°C...+70°C	
-20°C...+60°C	
4 kV / 2	
IP 20	
IP 50	
DIN rail 35 mm	
Category III	
2 x 1.5 mm <sup>2</sup>	
2 x 2.5 mm <sup>2</sup> / 1 x 4 mm <sup>2</sup>	
self extinguishing	
100 g	

Type	Cat. No.
<b>ITTw</b>	<b>8362610000</b>
Changeover	
0.1 s -100 h	
(0.1 s - 1 s, 1 s -10 s, 0.1 min - 1 min, 1 min - 10 min, 0.1 h - 1 h, 1 h - 10h)	
± 0.5%	
± 10% (25 °C)	
<b>24 Vdc/ 24...240 Vac / 50...60 Hz</b>	
85 - 115% U <sub>N</sub> (110% for 240 V)	
100 %	
0.5 W / 24 V- / 1 W / 48 V- / 2 VA / 48 V~	
1.5 VA / 24 V~	
12 VA / 230 V~	
≥ 50 ms	
≤ 100 ms	
> 10 ms	
Relay output	
1 changeover	
AgCdO	
5 x 10 <sup>6</sup> switching operations	
10 <sup>5</sup> switching operations at 2000 VA resistive load	
8 A <sub>0</sub>	
100 mA <sub>0</sub>	
250 V <sub>0</sub>	
2000 VA / 80 W	
green LED	
yellow LED	
UL / CSA	
IEC 529/IEC 664/IEC 801/IEC 255	
VDE 0435/VDE 0110	
-30°C...+70°C	
-20°C...+60°C	
4 kV / 2	
IP 20	
IP 50	
DIN rail 35 mm	
Category III	
2 x 1.5 mm <sup>2</sup>	
2 x 2.5 mm <sup>2</sup> / 1 x 4 mm <sup>2</sup>	
self extinguishing	
100 g	

# Timers

## ITWo

Wiping contact timer relay **without** control input

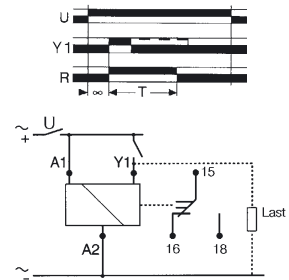
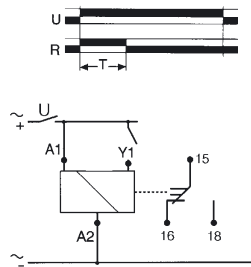


## ITWw

Wiping contact timer relay **with** control input



### Schematic circuit diagram



### Ordering data

	Type	Cat. No.	Type	Cat. No.
Contact	<b>ITWo</b>	<b>8362580000</b>	<b>ITWw</b>	<b>8362590000</b>
Time periods	Changeover		Changeover	
	0.1 s - 100 h		0.1 s - 100 h	
	(0.1 - 1 s, 1 s - 10 s, 0.1 min. - 1 min.,		(0.1 - 1 s, 1 s - 10 s, 0.1 min. - 1 min.,	
	1 min. - 10 min., 0.1 h - 1 h, 1 h - 10 h, 100 h)		1 min. - 10 min., 0.1 h - 1 h, 1 h - 10 h, 100 h)	
Repeat accuracy (const. parameter)	± 0.5%		± 0.5%	
Accuracy of indication acc. to IEC 1812-1	± 10% (25 °C)		± 10% (25 °C)	
<b>Input</b>				
Input voltage	<b>24 Vdc/ 24...240 Vac / 50...60 Hz</b>		<b>24 Vdc/ 24...240 Vac / 50...60 Hz</b>	
Voltage tolerance	85 - 115% U <sub>N</sub> (110% for 240 V)		85 - 115% U <sub>N</sub> (110% for 240 V)	
Duty factor	100 %		100 %	
Rated power consumption	0.5 W / 24 V- 1.5 VA / 24 V~ 12 VA / 230 V~		0.5 W / 24 V- / 1 W / 48 V- / 2 VA / 48 V~ 1.5 VA / 24 V~ 12 VA / 230 V~	
Min pulse duration type	≥ 50 ms		≥ 50 ms	
Max. reset time at voltage interruption	≤ 100 ms		≤ 100 ms	
Protection against voltage interruption	> 10 ms		> 10 ms	
<b>Output</b>	<b>Relay output</b>		<b>Relay output</b>	
Contact	1 changeover		1 changeover	
Contact material	AgCdO		AgCdO	
Service life	5 x 10 <sup>6</sup> switching operations		5 x 10 <sup>6</sup> switching operations	
	10 <sup>5</sup> switching operations at 2000 VA resistive load		10 <sup>5</sup> switching operations at 2000 VA resistive load	
Switching current	8 A <sub>0</sub>		8 A <sub>0</sub>	
	100 mA <sub>0</sub>		100 mA <sub>0</sub>	
Max. switching voltage	250 V <sub>0</sub>		250 V <sub>0</sub>	
Switching current	2000 VA / 80 W		2000 VA / 80 W	
<b>Status indicators</b>				
Voltage applied	green LED		green LED	
Relay output active	yellow LED		yellow LED	
Approvals	UL / CSA		UL / CSA	
Standards	IEC 529/IEC 664/IEC 801/IEC 255 VDE 0435/VDE 0110		IEC 529/IEC 664/IEC 801/IEC 255 VDE 0435/VDE 0110	
Temperature	- Storage temperature -30°C...+70°C		- Storage temperature -30°C...+70°C	
	- Operating temperature -20°C...+60°C		- Operating temperature -20°C...+60°C	
Clearance/creepage path. acc. to IEC 664/VDE 0110	4 kV / 2		4 kV / 2	
Protection category IEC 529 - Terminal block	IP 20		IP 20	
	IP 50		IP 50	
Mounting	DIN rail 35 mm		DIN rail 35 mm	
Installation category to IEC 664	Category III		Category III	
<b>Connection</b>				
- with ferrule	2 x 1.5 mm <sup>2</sup>		2 x 1.5 mm <sup>2</sup>	
- without ferrule	2 x 2.5 mm <sup>2</sup> / 1 x 4 mm <sup>2</sup>		2 x 2.5 mm <sup>2</sup> / 1 x 4 mm <sup>2</sup>	
Enclosure material	self extinguishing		self extinguishing	
Weight, typ.	100 g		100 g	

# Timers

## ITTT

Pulse generator

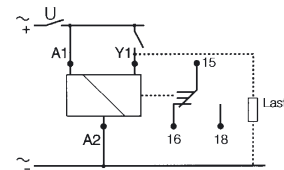
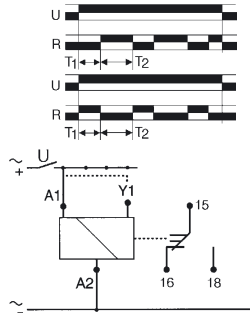


## ITMF

Multifunction - timer relay



### Schematic circuit diagram



Ordering data	
Contact	
Time periods	
Repeat accuracy (const. parameter)	
Accuracy of indication acc. to IEC 1812-1	
Input	
Input voltage	
Voltage tolerance	
Duty factor	
Rated power consumption	
Min pulse duration type	
Max. reset time at voltage interruption	
Protection against voltage interruption	
Output	
Contact	
Contact material	
Service life	- mechanical
	- electrical
Switching current	- max.
	- min.
Max. switching voltage	
Switching current	
Status indicators	
Voltage applied	
Relay output active	
Approvals	
Standards	
Temperature	- Storage temperature
	- Operating temperature
Clearance/creepage path. acc. to IEC 664/VDE 0110	
Protection category IEC 529 - Terminal block	
	- Front
Mounting	
Installation category to IEC 664	
Connection	
- with ferrule	
- without ferrule	
Enclosure material	
Weight, typ.	

Type	Cat. No.
<b>ITTT</b>	<b>8324050000</b>
Changeover	
0.1 s - 100 h	
(0.1 - 1 s, 1 s - 10 s, 0.1 min. - 1 min., 1 min. - 10 min., 0.1 h - 1 h, 1 h - 10 h, 100 h)	
± 0.5%	
± 10% (25 °C)	
<b>24 Vdc/ 24...240 Vac / 50...60 Hz</b>	
85 - 115% U <sub>N</sub> (110% for 240 V)	
100 %	
0.5 W / 24 V-	
1.5 VA / 24 V~	
12 VA / 230 V~	
≥ 50 ms	
≤ 100 ms	
> 10 ms	
Relay output	
1 changeover	
AgCdO	
5 x 10 <sup>6</sup> switching operations	
10 <sup>5</sup> switching operations at 2000 VA resistive load	
8 A <sub>0</sub>	
100 mA <sub>0</sub>	
250 V <sub>0</sub>	
2000 VA / 80 W	
green LED	
yellow LED	
UL / CSA	
IEC 529/IEC 664/IEC 801/IEC 255	
VDE 0435/VDE 0110	
-30°C...+70°C	
-20°C...+60°C	
4 kV / 2	
IP 20	
IP 50	
DIN rail 35 mm	
Category III	
2 x 1.5 mm <sup>2</sup>	
2 x 2.5 mm <sup>2</sup> / 1 x 4 mm <sup>2</sup>	
self extinguishing	
100 g	

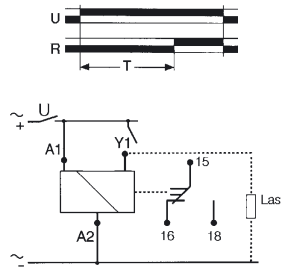
Type	Cat. No.
<b>ITMF</b>	<b>8287770000</b>
Changeover	
0.1 s - 100 h	
(0.1 - 1 s, 1 s - 10 s, 0.1 min. - 1 min., 1 min. - 10 min., 0.1 h - 1 h, 1 h - 10 h, 100 h)	
± 0.5%	
± 10% (25 °C)	
<b>24 Vdc/ 24...240 Vac / 50...60 Hz</b>	
85 - 115% U <sub>N</sub> (110% for 240 V)	
100 %	
0.5 W / 24 V- / 1 W / 48 V-	
1.5 VA / 24 V~ / 2 VA / 48 V~	
12 VA / 230 V~	
≥ 50 ms	
≤ 100 ms	
> 10 ms	
Relay output	
1 changeover	
AgCdO	
5 x 10 <sup>6</sup> switching operations	
10 <sup>5</sup> switching operations at 2000 VA resistive load	
8 A <sub>0</sub>	
100 mA <sub>0</sub>	
250 V <sub>0</sub>	
2000 VA / 80 W	
green LED	
yellow LED	
UL / CSA	
IEC 529/IEC 664/IEC 801/IEC 255	
VDE 0435/VDE 0110	
-30°C...+70°C	
-20°C...+60°C	
4 kV / 2	
IP 20	
IP 50	
DIN rail 35 mm	
Category III	
2 x 1.5 mm <sup>2</sup>	
2 x 2.5 mm <sup>2</sup> / 1 x 4 mm <sup>2</sup>	
self extinguishing	
100 g	

## ITR

Response delay timer relay



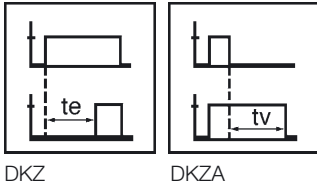
### Schematic circuit diagram



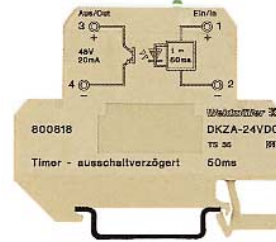
Ordering data	Type	Cat. No.
Contact	<b>ITR</b>	<b>8362570000</b>
Time periods	Changeover	
	0.1 s - 100 h	
	(0.1 - 1 s, 1 s - 10 s, 0.1 min. - 1 min.,	
	1 min. - 10 min., 0.1 h - 1 h, 1 h - 10 h, 100 h)	
Repeat accuracy (const. parameter)	± 0.5%	
Accuracy of indication acc. to IEC 1812-1	± 10% (25 °C)	
<b>Input</b>		
Input voltage	<b>24 Vdc / 24...240 Vac / 50...60 Hz</b>	
Voltage tolerance	85 - 115% U <sub>N</sub> (110% for 240 V)	
Duty factor	100 %	
Rated power consumption	0.5 W / 24 V-	
	1.5 VA / 24 V~	
	12 VA / 230 V~	
Min pulse duration type	≥ 50 ms	
Max. reset time at voltage interruption	≤ 100 ms	
Protection against voltage interruption	> 10 ms	
<b>Output</b>	<b>Relay output</b>	
Contact	1 changeover	
Contact material	AgCdO	
Service life	5 x 10 <sup>6</sup> switching operations	
	10 <sup>5</sup> switching operations at 2000 VA resistive load	
Switching current	8 A <sub>0</sub>	
	100 mA <sub>0</sub>	
Max. switching voltage	250 V <sub>0</sub>	
Switching current	2000 VA / 80 W	
<b>Status indicators</b>		
Voltage applied	green LED	
Relay output active	yellow LED	
Approvals	UL / CSA	
Standards	IEC 529/IEC 664/IEC 801/IEC 255	
	VDE 0435/VDE 0110	
Temperature	-30°C...+70°C	
	-20°C...+60°C	
Clearance/creepage path. acc. to IEC 664/VDE 0110	4 kV / 2	
Protection category IEC 529 - Terminal block	IP 20	
	IP 50	
Mounting	DIN rail 35 mm	
Installation category to IEC 664	Category III	
<b>Connection</b>		
- with ferrule	2 x 1.5 mm <sup>2</sup>	
- without ferrule	2 x 2.5 mm <sup>2</sup> / 1 x 4 mm <sup>2</sup>	
Enclosure material	self extinguishing	
Weight, typ.	100 g	

# Timers

## Signal conditioning DKZ/DKZA timer modules



- Components for extending short pulses
- Provides PLC versions with switch-on/off delay
- Fixed times

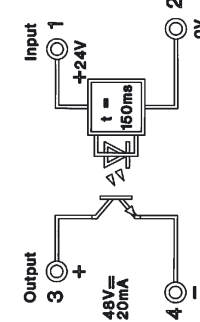
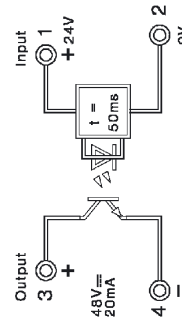
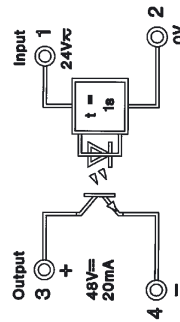


### DKZ 24 Vac/dc

### DKZA 24 Vac/dc

### DKZA 24 Vac/dc

#### Schematic circuit diagram

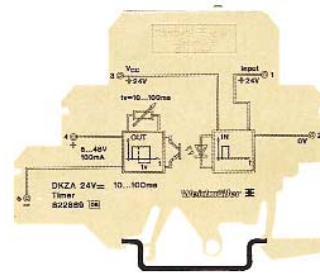
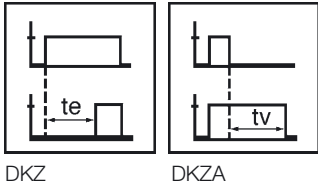


Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
For TS 32	DKZ 24 Vac/dc 32	<b>8008130000</b>	DKZA 24 Vdc 32	<b>8008120000</b>	DKZA 24 Vdc 32	<b>8020990000</b>
For TS 35	DKZ 24 Vac/dc 35	<b>8008190000</b>	DKZA 24 Vdc 35	<b>8008180000</b>	DKZA 24 Vdc 35	<b>8022110000</b>
<b>Technical data</b>						
Input						
Input voltage	24 Vac/dc ±10 %		24 Vdc ±18 %		24 Vdc ±10 %	
Input nominal current	5.1 mA <sub>dc</sub> /6.1 mA <sub>ac</sub> ±10 %		6.7 mA ±10 %		6.7 mA ±10 %	
Input current (at first-time power-up)			200 mA ±10 %		200 mA ±10 %	
Input power	130 mW ±10 % / 150 mVA ±10 %		160 mW ±10 %		160 mW	
Switch-on delay	1s					
Switch-off delay	≤ 0.7 ms		50 ms		150 ms	
Min. pulse duration of input voltage			2 ms		2.5 ms	
Output						
Max. output voltage	5...48 Vdc		5...48 Vdc		5...48 Vdc	
Max. output current	20 mA		20 mA		20 mA	
Reverse current, max. (closed-circuit current)	≤ 0,16 mA (at 48 V)		≤ 0,16 mA (at 48 V)		≤ 0,16 mA (at 48 V)	
Max. voltage drop at max. load current	≤ 1 V		≤ 1,6 V		≤ 1,6 V	
Max. switching frequency	0.9 Hz		20 Hz		20 Hz	
<b>Isolation coordinates acc. to DIN VDE 0160, Draft11/94</b>						
Rated voltage	300 V		300 V		300 V	
Rated impulse voltage	4 kV		4 kV		4 kV	
Overvoltage category	III		III		III	
Pollution severity	2		2		2	
Clearance and creepage distances	≥4 mm		≥4 mm		≥4 mm	
Voltage proof, input/output-TS	4 kV <sub>eff</sub>		4 kV <sub>eff</sub>		4 kV <sub>eff</sub>	
Operating temperature	without clearances -25 °C...+50 °C with clearances -25 °C...+50 °C		-25 °C...+50 °C -25 °C...+50 °C		-25 °C...+50 °C -25 °C...+50 °C	
Storage temperature	-40 °C...+85 °C		-40 °C...+85 °C		-40 °C...+85 °C	
Total width	6 mm		6 mm		6 mm	
Conductor	AWG 22...12		AWG 22...12		AWG 22...12	
Conductor cross-section	0.5...4 mm <sup>2</sup>		0.5...4 mm <sup>2</sup>		0.5...4 mm <sup>2</sup>	
Reverse polarity protection	ja		ja		ja	
<b>Accessories</b>						
End plate	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
	AP DKT4	<b>0687560000</b>	AP DKT4	<b>0687560000</b>	AP DKT4	<b>0687560000</b>
Dimensions see	Page 305		Page 305		Page 305	



# Timers

## Pulse conditioning DKZ/DKZA timer modules

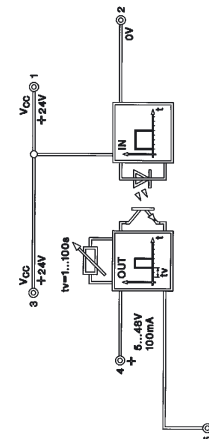
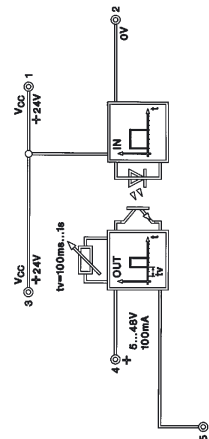
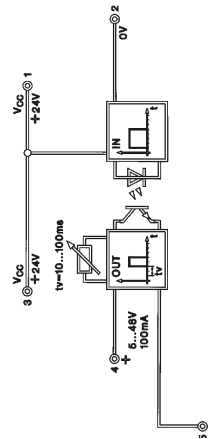


### Schematic circuit diagram

#### DKZ DK5

#### DKZ DK5

#### DKZ DK5



### Ordering data

For TS 32  
For TS 35  
With combi foot TS32/TS 35

### Technical data

Input	
Supply voltage	24 Vdc ± 20 %
Supply current	ca. 12 mA
Control voltage	
Control input current	
Output	
Output voltage	5...48 Vdc
Max. output current	100 mA
Internal voltage drop	≤ 1.6 V
Range of switch-on delay	10...100 ms (adjustable)

Type	Cat. No.
DKZ DK5	<b>8228680000</b>

Type	Cat. No.
DKZ DK5	<b>8243780000</b>

Type	Cat. No.
DKZ DK5	<b>8019650000</b>

### Isolation coordinates acc. to DIN VDE 0160, Draft11/94

Rated voltage	300 V
Rated impulse voltage	6 kV
Overvoltage category	IV
Pollution severity	2
Clearance and creepage distances	≥ 5.5 mm
Voltage proof, input/output-TS	4 kV <sub>eff</sub>
Operating temperature	without clearances -25 °C...+40 °C with clearances -25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Total width	6 mm
Conductor	AWG 22...12
Conductor cross-section	0.5...4 mm <sup>2</sup>

Rated voltage	300 V
Rated impulse voltage	6 kV
Overvoltage category	IV
Pollution severity	2
Clearance and creepage distances	≥ 5.5 mm
Voltage proof, input/output-TS	4 kV <sub>eff</sub>
Operating temperature	-25 °C...+40 °C -25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Total width	6 mm
Conductor	AWG 22...12
Conductor cross-section	0.5...4 mm <sup>2</sup>

Rated voltage	300 V
Rated impulse voltage	6 kV
Overvoltage category	IV
Pollution severity	2
Clearance and creepage distances	≥ 5.5 mm
Voltage proof, input/output-TS	4 kV <sub>eff</sub>
Operating temperature	-25 °C...+40 °C -25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Total width	6 mm
Conductor	AWG 22...12
Conductor cross-section	0.5...4 mm <sup>2</sup>

Rated voltage	300 V
Rated impulse voltage	6 kV
Overvoltage category	IV
Pollution severity	2
Clearance and creepage distances	≥ 5.5 mm
Voltage proof, input/output-TS	4 kV <sub>eff</sub>
Operating temperature	-25 °C...+40 °C -25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Total width	6 mm
Conductor	AWG 22...12
Conductor cross-section	0.5...4 mm <sup>2</sup>

### Accessories

Type	Cat. No.
End plate	AP DK5 <b>8268870000</b>

Type	Cat. No.
AP DK5	<b>8268870000</b>

Type	Cat. No.
AP DK5	<b>8268870000</b>

Type	Cat. No.
AP DK5	<b>8268870000</b>

Dimensions see

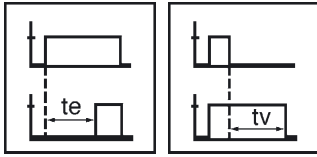
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# Timers

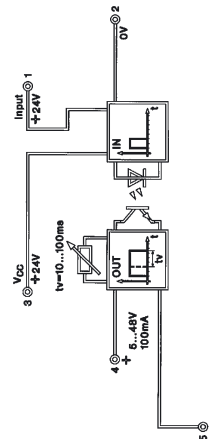
## Signal conditioning DKZA timer modules



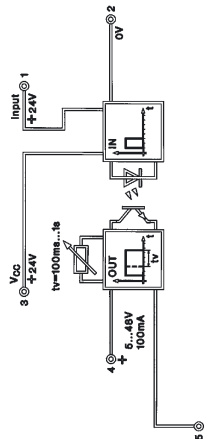
- Components for extending short pulses
- Provides PLC versions with switch-on/off delay
- Fixed times

### Schematic circuit diagram

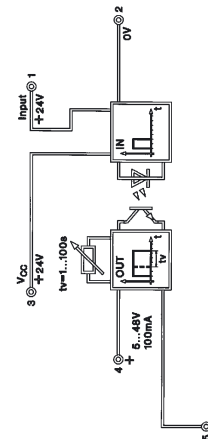
#### DKZA DK5



#### DKA DK5



#### DKZA DK5



### Ordering data

For TS 32

For TS 35

With combi foot TS 32/TS 35

### Technical data

Input:

Supply voltage

Supply current

Control voltage

Control input current

Min. pulse duration of input voltage

Output:

Output voltage

Max. output current

Internal voltage drop

Range of switch-off delay

Type Cat. No.

DKZA DK5 **822869000**

Type Cat. No.

DKZA DK5 **824377000**

Type Cat. No.

DKZA DK5 **801963000**

### Isolation coordinates acc. to DIN VDE 0160, Draft11/94

Rated voltage

Rated impulse voltage

Oversvoltage category

Pollution severity

Clearance and creepage distances

Voltage proof input/output-TS

Storage temperature

Operating temperature

without clearances

with clearances

Total width

Conductor

Conductor cross-section

300 V

6 kV

IV

2

≥ 5.5 mm

4 kV<sub>eff</sub>

-25 °C...+40 °C

-25 °C...+50 °C

-40 °C...+85 °C

6 mm

AWG 22...12

0.5...4 mm<sup>2</sup>

300 V

4 kV<sub>eff</sub>

IV

2

≥ 5.5 mm

6 kV

-40...+85 °C

-25...+40 °C

-25...+50 °C

6 mm

AWG 22...12

0.5...4 mm<sup>2</sup>

300 V

4 kV<sub>eff</sub>

IV

2

≥ 5.5 mm

6 kV

-40...+85 °C

-25...+40 °C

-25...+50 °C

6 mm

AWG 22...12

0.5...4 mm<sup>2</sup>

### Accessories

End plate

Dimensions see

Type Cat. No.

AP DK5 **826887000**

Page 305

Type Cat. No.

AP DK5 **826887000**

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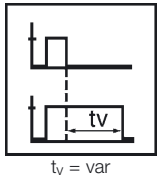
Type Cat. No.

AP DK5 **826887000**

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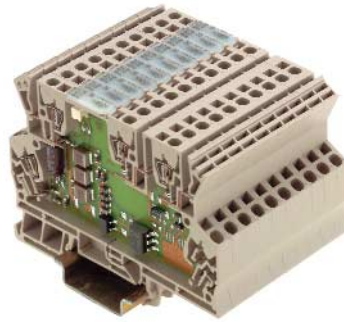
# Timers

## Turn off delay module MCZ TO



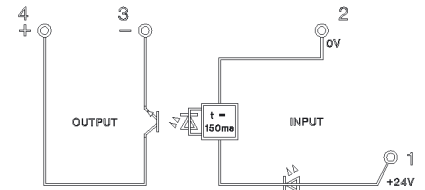
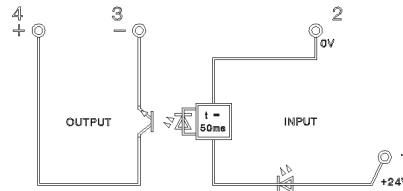
The timer module can be used for extending short pulses and fixed times. Provides PLC versions with switch off delay.

## MCZ TO 24 Vdc turn-off delay 50 ms



## MCZ TO 24 Vdc turn-off delay 150 ms

### Schematic circuit diagram



### Ordering data

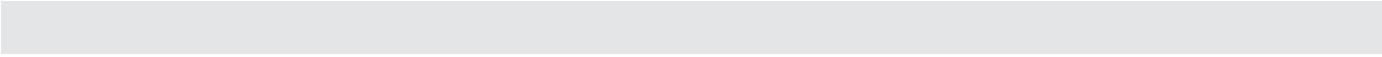
For TS 35

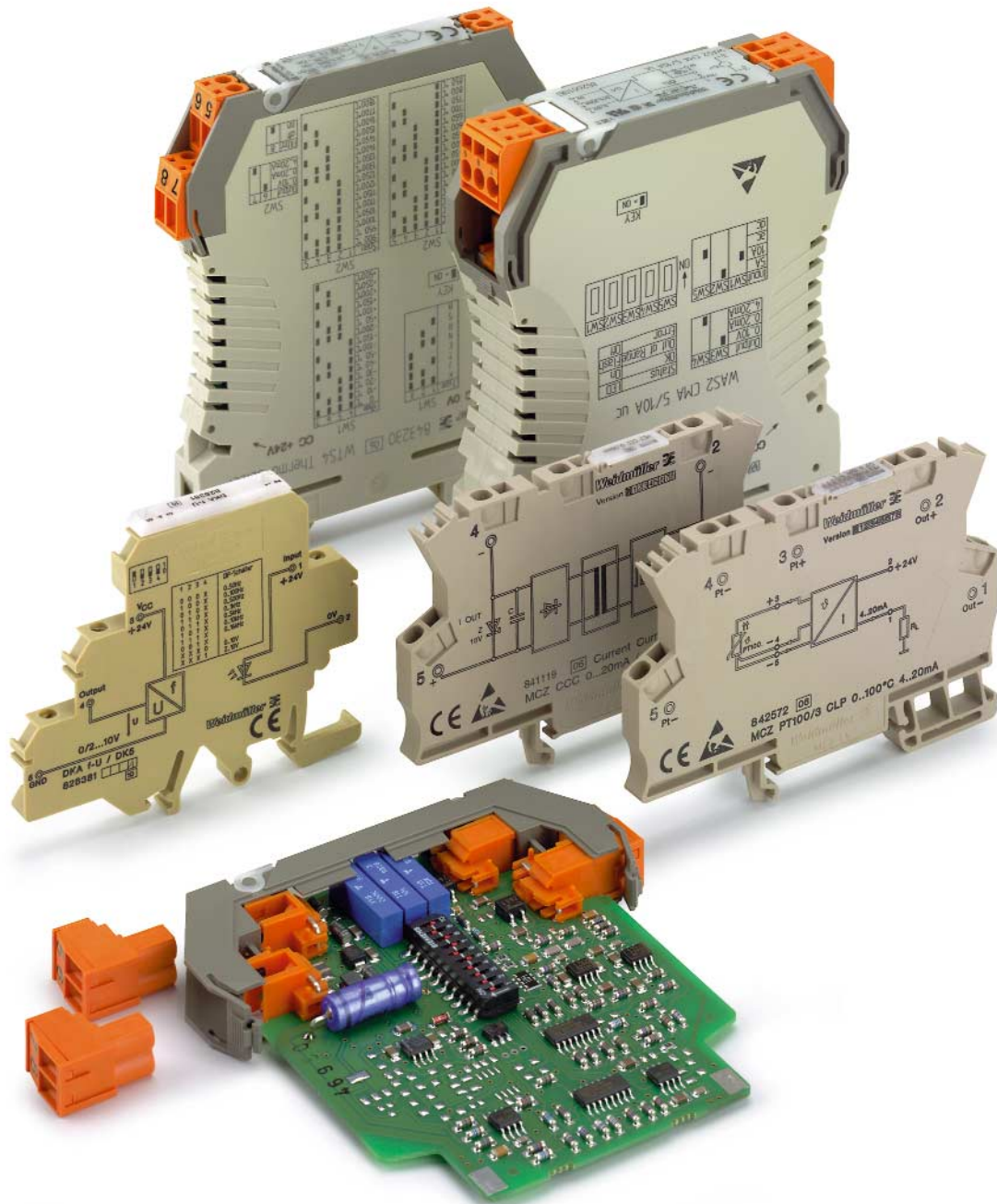
Type MCZ TO 24 Vdc turn-off delay 50 ms Cat. No. **832459000**

Type MCZ TO 24 Vdc turn-off delay 150 ms Cat. No. **828641000**

### Technical data

Input		Type		Cat. No.	
Input voltage	24 Vdc ± 10 %	MCZ TO 24 Vdc turn-off delay 50 ms	832459000	MCZ TO 24 Vdc turn-off delay 150 ms	828641000
Min. pulse duration	2 ms				
Power consumption	6.7 mA ± 10 %				
Input power	160 mW				
Power consumption when pulse applied	200 mA				
Output					
Output voltage	5...48 Vdc				
Max. output current	20 mA				
Max. voltage drop at max. load	≤ 1.6 V				
Impulse loading/limiting overload current	200 mA				
Reverse current at 48 V (static current)	max. 0,16 mA				
Switch-off delay	50 ms				
Switching frequency dc	20 Hz				
Insulation coordination/safe disconnection to EN 50178					
Rated voltage	300 V				
Rated impulse voltage	6 kV				
Overvoltage category	III				
Pollution severity	2				
Clearance and creepage distances	≥ 5.5 mm				
Voltage proof, input/output mounting rail	4 kVeff / 1 min				
Opto coupler	to VDE 0884				
Ambient temperature	-25 °C...+50 °C				
Storage temperature	-40 °C...+85 °C				
Conductor	AWG 22...12				
Conductor cross-section	1.5 mm <sup>2</sup>				
Approvals	CE, UL, CSA				
Total width	6 mm				







## Analogue Signal Processing

### The problem

The real world can be measured in many ways, for example, via temperature, humidity, air pressure and so forth. The parameters of these different physical qualities change continuously. Elements that monitor statuses and changes in statuses of a given environment, must reflect these continual changes. Within the framework of industrial monitoring tasks, the statuses of an environment are monitored by using sensors. These sensors should provide signals that enable connected evaluating and monitoring installations to draw detailed conclusions concerning the status of, for example, a production process. The sensor signals trace the continuous changes in the monitored range. The signals can be in analogue or digital form; which means in normal cases, an electrical voltage or current value is produced that corresponds proportionally to the monitored physical quantities. Increasing automation with the intention of achieving or maintaining certain predetermined statuses makes the processing of analogue values increasingly important. This is also true of fields beyond those where this has been necessary and standard for a long time, for example, processing technology in the chemical industry. Standard electrical signal values are the norm within the framework of this processing technology. Current values from 0...20 mA, 4...20 mA or voltage values from 0...10 V have been introduced as sensor output values for differing physical quantities. Weidmüller has taken account the need for increasing automation with the processing of these analogue signals, and offers a wide range of products that are designed for handling sensor signals. This means, units are made available for standard signals (0...20 mA, 4...20 mA, 0...10 V) that generate output signal values proportional to the variable input signals, and at the same time enable the safe separation of, for example, sensor circuits of an evaluation circuit. This safe separation is

particularly important to avoid mutual interference of multiple sensor circuits, for example, ground loops in interlinked measurement circuits. The wide range of products includes all functions for converting separation and monitoring signals. The different designs in connection with the respective functions cover practically all applications in industrial measurement technology. With these new products, Weidmüller offers the possibility of taking into account the demands of modern automation technology with the inclusion of analogue signals. These products guarantee an elementary function between signals from the field and the further processing systems. The mechanical characteristics of these products correspond to those of the well-known Weidmüller products and are part of a continuous, ongoing concept. The signal conditioners can be combined together with other Weidmüller products. They have been electrically and mechanically designed to ensure that only a minimum of wiring and maintenance costs are necessary.

### The product program

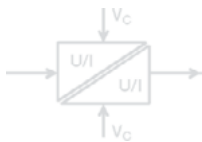
contains the following functions:

- Current transformer
- Voltage transformer
- Thermocouple conditioners for resistance thermometers
- Frequency signal conditioner
- Potentiometer conditioner
- AC signal conditioner
- Bridge measurement conditioner
- Limit value monitoring modules
- AD/DA converter

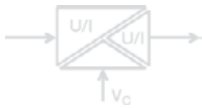
These products are categorised according to functionality as pure signal conversion, 2-way-isolation, 3-way-isolation and as passive separation.



## Analogue Signal Processing



**2-way-isolation** separates the signals galvanically and decouples the measurement circuits. In so doing it eliminates potential differences caused by long cable lengths and common reference points. Furthermore, the galvanic isolation offers protection against destruction by overvoltage, and against inductive and capacitive interferences.



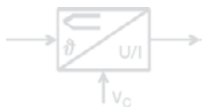
**3-way-isolation** also decouples the supply voltage from the input and output circuits, and enables the function with only one operating voltage.



The **passive isolator** offers a further elementary advantage; it needs no additional voltage supply. The supply to the modules ensues via the input circuit and is transferred to the output. This current loop supply is distinguished by very low power consumption.



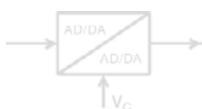
There are a large number of products available for measuring temperatures. RTD **PT100** signals, in 2-, 3- and 4-wire technology, are converted to standardised 0 – 20 mA, 4 – 20 mA and 0 – 10 V signals.



The modules which can be connected to commercially available **thermocouples** have cold junction compensation as standard. Furthermore, the modules amplify and linearize the voltage signals from the thermocouple. This guarantees an exact conditioning of analogue signals by eliminating sources of interference and errors.



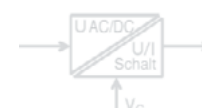
**Frequency converters** convert frequencies to standard analogue signals. This enables controllers connected in series to directly process impulse trains when making speed or rotational speed measurements.



It is inconceivable to think about automation without **analogue-digital-analogue converters**. To bring together the aforementioned analogue form of describing the environment and the customary digital processing, within the framework of process monitoring, it is necessary to convert analogue signals into digital signals. Weidmüller offers modules for the following standard input and output signals: 0...20 mA, 4...20 mA and 0...10 V. 8-bit and 12-bit digital modules are available. All modules have an added input for making instantaneous measurements.



**Current monitoring modules** enable the monitoring of current values up to 60 A in alternating or direct voltages. Over range or under range values trip the switching output. Modules with analogue outputs enable the continuous monitoring of currents via connected controls.



**Voltage monitoring modules** can be used to monitor direct and alternating voltages. Voltage fluctuations, resulting from switching operations or network overloads, can be reliably recognised and reported via the adjustable threshold function.

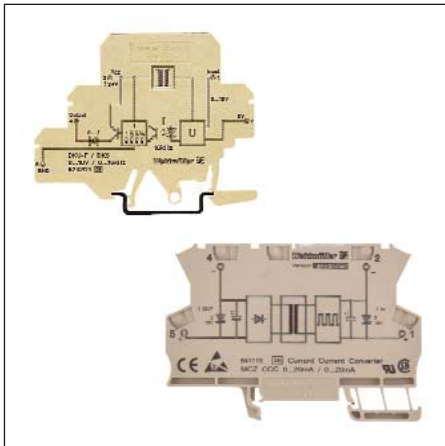


Modules for **monitoring of revolutions and torque** enable the control of cyclic movements on conveyor belts, ventilators and pumps. The output responds after a set amount of time, should the expected impulse not be received. The reliable potential-free relay contact, signals the interference to the responsible component group.



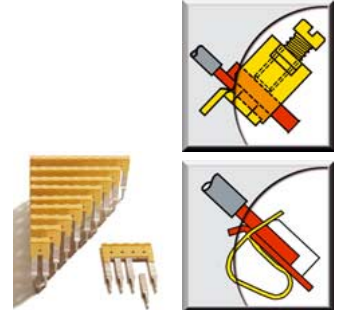
## Design Overview

### Mini Coupler / Mini Conditioner

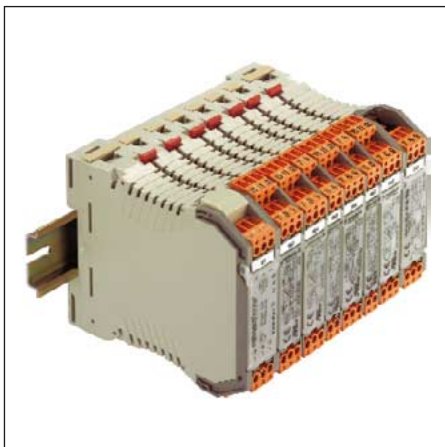


#### DK Mini Coupler / MCZ Mini Conditioner

- Extensive range of electronic functions in terminal format
- Pluggable cross-connections with mini conditioners
- Mini couplers with screw-in cross-connection combs
- Mini couplers with screw connections
- Mini conditioners with tension clamp connections

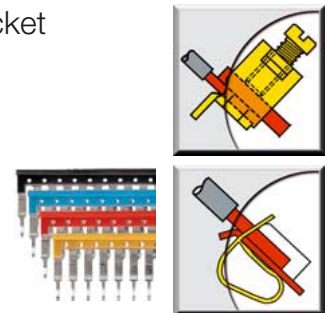


### WAVESERIES

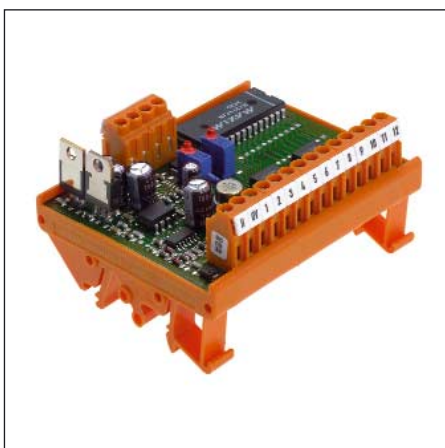


#### WAVEANALOG / WAVEANALOG PRO / WAVECONTROL

- Pluggable PCB for fast service when the configuration is changed
- Pluggable cross-connection in base socket housing to distribute the power supply, marking (CC) in the block diagram on the head plate
- Pluggable connections with optional screw or tension clamp connection



### RS profiles



#### Analog-/Digital-Converters

- Mounts onto TS 32 and TS 35 mounting rails
- Open, cost-saving design
- Variable housing width

## Selection Table of Functions

Function	Areas of application	Description	Versions	Page
<b>DC signal conditioners</b>	Signal conditioning, signal isolation, suppression of mass loops	DC input/fixed functions and configurable inputs and outputs	MCZ WAVEANALOG WAVEANALOG PRO	164 174-184 185
	Motor current limitation, pressure alarm, direct disconnection of connected modules, safety function	DC input/limit value monitoring	DK MCZ	172 173
<b>PT100 signal conditioners</b>	Temperature monitoring, noise rejection, electrical decoupling of visualization devices, suppression of mass loops, heating and cooling monitoring, overheating protection of motors	RTD input/fixed functions and configurable inputs and outputs	MCZ WAVEANALOG WAVEANALOG PRO	165 186-188 189
<b>Thermocouple conditioners</b>	Temperature monitoring, noise rejection, electrical decoupling of visualization devices, suppression of mass loops, heating and cooling monitoring, overheating protection of motors	Thermo input/fixed functions and configurable inputs and outputs	WAVEANALOG WAVEANALOG PRO	190 191
<b>Frequency signal conditioners</b>	Flow rate measurements, frequency converter monitoring, speed measurements, pulse processing	Input/fixed functions and configurable inputs and outputs	DK MCZ	167-168 166
<b>AD/DA converters</b>	Conditioning of voltage and current signals in 8-bit/12-bit digital form	8-bit AD/DA converter 12-bit AD/DA converter	RS	210-213
<b>Current monitoring</b>	Motor current monitoring, emergency lighting monitoring	AC input/measuring of sinusoidal and non sinusoidal signals up to 60A	DKI WAVECONTROL SMSI	172 196-199 200-203
<b>Voltage monitoring</b>	Under and overvoltage monitoring, operating status indication	One and three-phase overvoltage	SMSU	204-205
<b>Motion and rotational speed monitoring</b>	Downtime monitoring, conveyor-drive monitoring, monitoring of fans, pumps or pistons	PNP/NPN or NAMUR input/switching output	DKLW SMS	169 206
<b>Namur switching amplifier</b>	Switching amplifier	Namur input/switching output	EGV	207
<b>Setpoint device</b>	Testing measuring distances, defined input of analogue values	1 control input/+/-set value/ analogue output	EMA/SW24	208

## Selection Table

Function	Input	Output	Galvanic isolation	Voltage supply	Setting	Module width/mm	Connection type	Cat. No.	Page
DC/DC	0...20mA	0...20mA	yes	Without auxiliary pwr. current loop supply from input	Fixed	6	Tens. clamp	8411190000	164
	0...20mA	0...20mA	yes	Without auxiliary pwr. current loop supply from input	Fixed	17.5	Screw/ tens. clamp	8444950000/ 8444960000 (1-channel)	174
	0...20mA	0...20mA	yes	Without auxiliary pwr. current loop supply from input	Fixed	17.5	Screw/ tens. clamp	8463580000/ 8463590000 (2-channel)	174
	0...20mA	0...20mA	2-way	19.2...28.8Vdc/ Voltage supply of both sides	Fixed	12.5	Screw/ tens. clamp	8445070000/ 8445080000	176
	0...20mA	0...20mA	yes	18...30Vdc	Fixed/10 Hz	17.5	Screw/ tens. clamp	8540180000/ 8540190000	178
	0...20mA	0...20mA	3-way	18...30Vdc	Fixed/20 kHz	17.5	Screw/ tens. clamp	8447160000/ 8447170000	181
	0...20mA	4...20mA	2-way	19.2...28.8Vdc/ Voltage supply of both sides	Fixed	12.5	Screw/ tens. clamp	8446970000/ 8446990000	176
	0...20mA	4...20mA	yes	18...30Vdc	Fixed/10 Hz	17.5	Screw/ tens. clamp	8540250000/ 8540260000	181
	0...20mA	4...20mA	3-way	18...30Vdc	Fixed/20 kHz	17.5	Screw/ tens. clamp	8447190000/ 8447200000	181
	0...20mA	0...10V	2-way	19.2...28.8Vdc/ Voltage supply of both sides	Fixed	12.5	Screw/ tens. clamp	8447020000/ 8447030000	176
	0...20mA	0...10V	yes	18...30Vdc	Fixed/10 Hz	17.5	Screw/ tens. clamp	8540270000/ 8540280000	178
	0...20mA	0...10V	3-way	18...30Vdc	Fixed/20 kHz	17.5	Screw/ tens. clamp	8447220000/ 8447230000	181
	4...20mA	0...20mA	2-way	19.2...28.8Vdc/ Voltage supply of output side	Fixed	12.5	Screw/ tens. clamp	8444980000/ 8444990000	175
	4...20mA	0...20mA	yes	18...30Vdc	Fixed/10 kHz	17.5	Screw/ tens. clamp	8540200000/ 8540210000	179
	4...20mA	0...20mA	3-way	18...30Vdc	Fixed/20 kHz	17.5	Screw/ tens. clamp	8447250000/ 8447260000	182
	4...20mA	4...20mA	2-way	19.2...28.8Vdc/ Voltage supply of output side	Fixed	12.5	Screw/ tens. clamp	8445010000/ 8445020000	175
	4...20mA	4...20mA	yes	18...30Vdc	Fixed/10 Hz	17.5	Screw/ tens. clamp	8540180000/ 8540190000	178
	4...20mA	4...20mA	3-way	18...30Vdc	Fixed/20 kHz	17.5	Screw/ tens. clamp	8447160000/ 8447170000	182
	4...20mA	0...10V	2-way	19.2...28.8Vdc/ Voltage supply of output side	Fixed	12.5	Screw/ tens. clamp	8445040000/ 8445050000	175
	4...20mA	0...10V	yes	18...30Vdc	Fixed/10 Hz	17.5	Screw/ tens. clamp	8540230000/ 8540240000	179
	4...20mA	0...10V	3-way	18...30Vdc	Fixed/20 kHz	17.5	Screw/ tens. clamp	8447280000/ 8447290000	182
	0...10V	0...20mA	2-way	19.2...28.8Vdc/ Voltage supply of both sides	Fixed	12.5	Screw/ tens. clamp	8447050000/ 8447080000	177
	0...10V	0...20mA	yes	18...30Vdc	Fixed/10 Hz	17.5	Screw/ tens. clamp	8540310000/ 8540320000	180
	0...10V	0...20mA	3-way	18...30Vdc	Fixed/20 kHz	17.5	Screw/ tens. clamp	8447310000/ 8447320000	183
	0...10V	4...20mA	2-way	19.2...28.8V/ Voltage supply of both sides	Fixed	12.5	Screw/ tens. clamp	8447100000/ 8447110000	177
	0...10V	4...20mA	yes	18...30Vdc	Fixed/10 Hz	17.5	Screw/ tens. clamp	8540290000/ 8540300000	180
	0...10V	4...20mA	3-way	18...30Vdc	Fixed/20 kHz	17.5	Screw/ tens. clamp	8447340000/ 8447350000	183
	0...10V	0...10V	2-way	19.2...28.8Vdc/ Voltage supply of both sides	Fixed	12.5	Screw/ tens. clamp	8447130000/ 8447140000	177

## Selection Table

Function	Input	Output	Galvanic isolation	Voltage supply	Setting	Module width/mm	Connection type	Cat. No.	Page
	0...10V	0...10V	yes	18...30Vdc	Fixed/10 Hz	17.5	Screw/ tens. clamp	8540330000/ 8540340000	180
	0...10V	0...10V	3-way	18...30Vdc	Fixed/20 kHz	17.5	Screw/ tens. clamp	8447370000/ 8447380000	184
	Variable voltage and current (+/-20mV...+/-200V, +/-0.1mA...+/-100mA)	Variable voltage and current (-10V...+10V, -20mA...+20mA)	yes	20...253Vdc	DIP switch Potentiometer	12.5	Screw/ tens. clamp	8560740000/ 8560750000	185
	PT100/	(4)...20mA	no	19.2...28.8Vdc	DIP switch	12.5	Screw/ tens. clamp	8432210000/ 8432220000	186
<b>RTD/DC</b>	PT100/ 2-wire	0...10V	no	19.2...28.8Vdc	DIP switch Potentiometer	12.5	Screw/ tens. clamp	8432180000/ 8432190000	186
	PT100/ 2-wire	4...20mA	no	current loop supply in output	Fixed	6	Tens. clamp	8425720000	165
	PT100/ 3-wire	0(4)...20mA	no	19.2...28.8Vdc	DIP switch Potentiometer	12.5	Screw/ tens. clamp	8432150000/ 8432160000	187
	PT100/ 3-wire	0...10V	no	19.2...28.8Vdc	DIP switch Potentiometer	12.5	Screw/ tens. clamp	8432090000/ 8432130000	187
	PT100/0 4-wire	(4)...20mA	no	19.2...28.8Vdc	DIP switch Potentiometer	12.5	Screw/ tens. clamp	8432270000/ 8432280000	188
	PT100/ 4-wire	0...10V	no	19.2...28.8Vdc	DIP switch Potentiometer	12.5	Screw/ tens. clamp	8432240000/ 8432250000	188
	PT100/ 2-/3-/4-conduct. Ni100 Potentiometer: min. 0...100Ω max. 0...100kΩ R: 0...450Ω	0...10V 0...20mA 4...20mA	yes	18...30Vdc	DIP switch Potentiometer	17.5	Screw/ tens. clamp	8560700000/ 8560710000	189
	<b>Thermo/DC</b>	K, J, T, E, N, R, S, B							
	Thermo K, J, T, E, N, R, S, B	0...10V 0...20mA 4...20mA	no	19.2...28.8Vdc	DIP switch	12.5	Screw/ tens. clamp	8432300000/ 8432310000	190
	Thermocouples K, J, T, E, N, R, S, B	0...10V 0...20mA 4...20mA	yes	18...30Vdc	DIP switch Potentiometer	17.5	Screw/ tens. clamp	8560720000/ 8560730000	191
<b>Frequency/DC</b>	0...50/100/500Hz 0...1/5/10/16kHz	0(4)...20mA	no	21.6...26.4Vdc	DIP switch	6	Screw	8311870001	168
	0...50/100/500Hz 0...1/5/10/16kHz	0(4)...20mA	no	21.6...26.4Vdc	DIP switch	6	Screw	8311870001	168
	0...50/100/500Hz 0...1/5/10/16kHz	0...10V	no	21.6...26.4Vdc	DIP switch	6	Screw	8283810000	168
	0...20mA	0...1/5/10/16kHz	no	21.6...26.4Vdc	DIP switch	6	Screw	8258870000	167
	0...20mA	0...1/5/10/16kHz	no	21.6...26.4Vdc	DIP switch	6	Tens. clamp	8461480000	166
	4...20mA	0...1/5/10/16kHz	no	current loop supply in input	DIP switch	6	Screw	8081330000	167
	4...20mA	0...1/5/10/16kHz	no	current loop supply in input	DIP switch	6	Tens. clamp	8461490000	166
	0...10V	0...1/5/10/16kHz	no	21.6...26.4Vdc	DIP switch	6	Screw	8242040000	167
	0...10V	0...1/5/10/16kHz	no	21.6...26.4Vdc	DIP switch	6	Tens. clamp	8461470000	166
	Variable, programmable	Switching output PNP	no	19.2...28.8Vdc	Fixed	12	Screw	8248340000	170- 171
	<b>Limit value monitoring</b>	0...20mA	Switching output PNP 2-channel	no	19.2...28.8Vdc	Potentiometer	6	Screw	8031320000
	0...20mA	Switching output PNP 2-channel	no	19.2...28.8Vdc	Potentiometer	6	Tens. clamp	8227350000	173
	0...10V	Switching output PNP 2-channel	no	19.2...28.8Vdc	DIP switch Potentiometer	6	Screw	8019640000	172
	0...10V	Switching output PNP 2-channel	no	19.2...28.8Vdc	DIP switch Potentiometer	6	Tens. clamp	8260280000	173
	<b>AD convert.</b>	0...20mA	8-bit	no	19.2...28.8Vdc	Fixed	70	Screw	1160561001
	4...20mA	8-bit	no	19.2...28.8Vdc	Fixed	70	Screw	1168561001	210
	0...10V	8-bit	no	19.2...28.8Vdc	Fixed	70	Screw	1160361001	210
		8-bit	no	19.2...28.8Vdc	Fixed	70	Screw	1122361001	210
	0...20mA	12-bit	no	19.2...28.8Vdc	Fixed	70	Screw	1168461001	212
	4...20mA	12-bit	no	19.2...28.8Vdc	Fixed	70	Screw	1169161001	212
	0...10V	12-bit	no	19.2...28.8Vdc	Fixed	70	Screw	1168361001	212
		12-bit	no	19.2...28.8Vdc	Fixed	70	Screw	1168261001	212
		12-bit	no	19.2...28.8Vdc	Fixed	70	Screw	1168261001	212

## Selection Table

Function	Input	Output	Galvanic isolation	Voltage supply	Setting	Module width/mm	Connection type	Cat. No.	Page
<b>DA convert.</b>	8-bit	0...20mA	no	19.2...28.8Vdc	Fixed	70	Screw	1165860000	211
	8-bit	4...20mA	no	19.2...28.8Vdc	Fixed	70	Screw	1169260000	211
	8-bit	0...10V	no	19.2...28.8Vdc	Fixed	70	Screw	1160760000	211
	8-bit		no	19.2...28.8Vdc	Fixed	70	Screw	1123360000	211
	12-bit	0...20mA	no	19.2...28.8Vdc	Fixed	70	Screw	1166060000	213
	12-bit	4...20mA	no	19.2...28.8Vdc	Fixed	70	Screw	1165960000	213
	12-bit	0...10V	no	19.2...28.8Vdc	Fixed	70	Screw	1166160000	213
<b>Current monitoring</b>	0...1/5/10 Aac	1)	2-way	21.6...26.4Vdc	DIP sw./P*	22.5	Screw	8516560000	196
	0...1/5/10 Aac	1)	2-way	21.6...26.4Vdc	DIP sw./P*	22.5	Tens. clamp	8516570000	196
	0...20/40/60 Aac	1)	2-way	21.6...26.4Vdc	DIP sw./P*	22.5	Screw	8513340000	196
	0...20/40/60 Aac	1)	2-way	21.6...26.4Vdc	DIP sw./P*	22.5	Tens. clamp	8526600000	196
	0...1/5/10 Aac	2)	2-way	21.6...26.4Vdc	DIP switch	22.5	Screw	8523400000	197
	0...1/5/10 Aac	2)	2-way	21.6...26.4Vdc	DIP sw./P*	22.5	Tens. clamp	8523410000	197
	0...1/5/10 Aac	3)	2-way	12...30Vdc	DIP sw./P*	22.5	Screw	8528650000	197
	0...1/5/10 Aac	3)	2-way	12...30Vdc	DIP sw./P*	22.5	Tens. clamp	8528660000	197
	0...5/10 Aac	4)	2-way	21.6...26.4Vdc	DIP sw./P*	22.5	Screw	8526610000	198
	0...5/10 Aac	4)	2-way	21.6...26.4Vdc	DIP sw./P*	22.5	Tens. clamp	8526620000	198
	0...20/25/30 Aac	4)	2-way	21.6...26.4Vdc	DIP sw./P*	22.5	Screw	8545830000	198
	0...20/25/30 Aac	4)	2-way	21.6...26.4Vdc	DIP sw./P*	22.5	Tens. clamp	8545840000	198
	0...20/40/60 Aac	4)	2-way	21.6...26.4Vdc	DIP sw./P*	22.5	Screw	8513330000	199
	0...20/40/60 Aac	4)	2-way	21.6...26.4Vdc	DIP sw./P*	22.5	Tens. clamp	8526590000	199
	0.1...2A	Switching output PNP	no	18...30Vdc	Fixed	6	Screw		
	1...50mAdc	Opto-coupler	yes	10...250Vdc	Op. point	22.5	Screw	1157160000	200
	40...250mAdc	Opto-coupler	yes	10...250Vdc	Op. point	22.5	Screw	1156360000	200
	40...250mAdc	Opto-coupler	yes	10...250Vdc	Op. point	22.5	Screw	1156460000	201
	0.2...2.2Aac	Opto-coupler	yes	10...250Vdc	Op. point	22.5	Screw	1157360000	201
	1...5Aac	21.6...26.4Vdc	yes	10...250Vdc	Fixed	22.5	Screw	1112160000	201
	1...5Aac	5...48Vdc	yes	10...250Vdc	Fixed	22.5	Screw	8026930000	201
	1...5Aac	LED	yes	10...250Vdc	Fixed	22.5	Screw	1112060000	201
	40...250mAdc	NO 1-channel	yes	10...250Vdc	Op. point	22.5	Screw	1156660000	202
	40...250mAdc	NO 1-channel	yes	10...250Vdc	Op. point	22.5	Screw	1159960000	202
	0.2...2.2Aac	NO 1-channel	yes	10...250Vdc	Op. point	22.5	Screw	1156960000	203
	1...5Aac	NO 1-channel	yes	10...250Vdc	Fixed	22.5	Screw	1112260000	203
	<b>Voltage monitoring</b>	1-24Vdc	CO 1-channel	yes	21.6...26.4Vdc	Op. point	22.5	Screw	0555060000
1-230Vdc		CO 1-channel	yes	207...253Vac	Op. point	22.5	Screw	0555160000	205
18...24Vac		CO 1-channel	yes	18...27Vac	Op. point	22.5	Screw	1156760000	204
36...48Vac		CO 1-channel	yes	36...53Vac	Op. point	22.5	Screw	1157660000	204
83...110Vac		CO 1-channel	yes	83...121Vac	Op. point	22.5	Screw	1157760000	205
165...220Vac		CO 1-channel	yes	165...253Vac	Op. point	22.5	Screw	1157860000	205
200...260Vac		NO 1-channel	yes	200...299Vac	Op. point	22.5	Screw	1160160000	205
3 phase 165...230Vac	NO 2-channel	yes	165...230Vac	Op. point	22.5	Screw	1156560000	205	
3 phase 165...230Vac	NO/NC	yes	165...230Vac	Op. point	22.5	Screw	1178760000	205	
<b>Rotational-motion and r.p.m. monitoring</b>	P / N. switching 24Vdc	CO 1-channel	no	195.5...241.5Vac	Potentiometer	22.5	Screw	1110560000	206
<b>Namur switch amplifier Setpoint device</b>	Namur	NO 1-channel	no	21.6...26.4Vdc	no	22.5	Screw	1120360000	207
	Namur	PNP/NPN	no	21.6...26.4Vdc	no	22.5	Screw	1122460000	207
	0...24V	10.5...+10.5V	yes	21.6...26.4Vdc	Potentiometer	22.5	Screw	1172660000	208

- 1) Switch output / 1 changeover contact
- 2) 0...10 V, 0 (4)...20 mA switchable
- 3) 4...20 mA / current loop supply
- 4) Switch output / 1 changeover contact
- 5) 0...10 V, 0 (4)...20 mA switchable

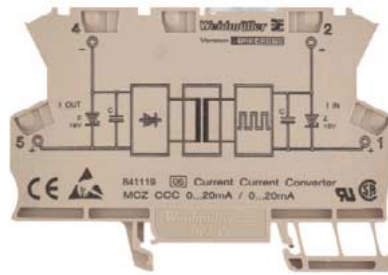
DIP switch./P\* = DIP switch / Potentiometer

# Passive Isolator

## MCZ CCC 0...20 mA/0...20 mA

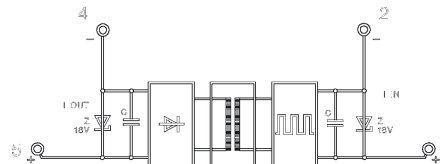
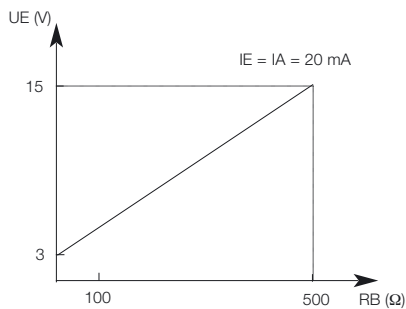


This module is a reasonably priced passive separator for galvanically separating standard 0.4...20 mA signals. It draws its power from the measurement signal and requires no further auxiliary power. The measurement signal is transmitted 1:1. The module is distinguished by its low power consumption as well as a response current <math>< 100 \mu\text{A}</math>.



### Block diagram

Working resistance diagram



### Ordering data

for TS 35

Type	Cat. No.
MCZ CCC 0...20 mA/0...20 mA without power supply	<b>8411190000</b>

### Technical data

Input	0...20 mA (max. 15 V)
Response current	<math>< 100 \mu\text{A}</math>
Voltage drop	2.5...3 V (at 20 mA)
Max. overload capacity at input	50 mA, 15 V
Output	0...20 mA (max. 10 V)
Set time (T99)	approx. 5 ms at 500 $\Omega$ working resistance impedance
Residual ripple	<math>< 10 \text{ mV}_{\text{eff}}</math>
Chopper frequency	approx. 200 kHz
Transmission error	<math>< 0.1 \text{ \%}</math> from end value, + 0.05 % from mean/100 $\Omega$ working resistance
Temperature effect	<math>< 50 \text{ ppm/K}</math> from measurement value for working resistance 0 $\Omega$
Voltage strength	
Input/output	510 $\text{V}_{\text{eff}}$
EMC	
	EMVG
	EN 50081-1
	EN 50082-2
Approvals	CE, UL, CSA
Ambient temperature	
- assembled without spacing	-25 °C...+40 °C
- assembled with 20 mm spacing	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Conductor	AWG 22...12
Conductor cross-section	1.5 $\text{mm}^2$
Overall width	6 mm
Dimensions and accessories see	Page 305



# RTD Thermocouple Conditioners

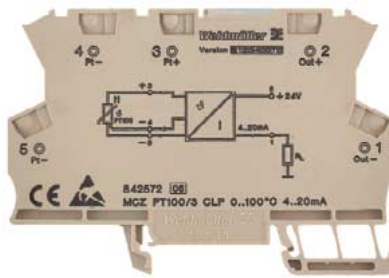
- for 2 and 3 wire sensors



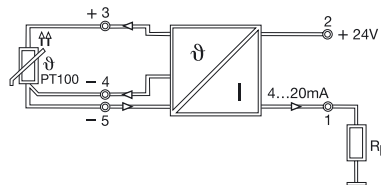
The temperature module converts measurement values from a PT 100 into analogue measurement signals. The module supplies the sensor with power. The module is distinguished by its accuracy and linearity.

## MCZ PT100/3 CLP

0...100 °C / 0...120 °C / 0...150 °C / 0...200 °C / 0...300 °C  
 -50...+150 °C / -40...100 °C



### Block diagram



### Ordering data

for TS 35

Type		Cat. No.
MCZ PT100/3 CLP	0...100 °C	<b>8425720000</b>
MCZ PT100/3 CLP	0...120 °C	<b>8483680000</b>
MCZ PT100/3 CLP	0...150 °C	<b>8604420000</b>
MCZ PT100/3 CLP	0...200 °C	<b>8473010000</b>
MCZ PT100/3 CLP	0...300 °C	<b>8473020000</b>
MCZ PT100/3 CLP	-50...+150 °C	<b>8473000000</b>
MCZ PT100/3 CLP	-40...100 °C	<b>8604430000</b>

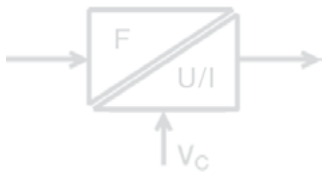
### Technical data

<b>Input</b>	<b>PT 100 (according to IEC 751)</b>
Connection	3-wire / 2-wire*
Max. wire resistance	each 50 Ω
Leadwire resistance effect	max. 0.006 °C/Ω
Supply current	0.8 mA
<b>Output</b>	<b>4...20 mA**</b>
Load	750 Ω at 24 V
Supply voltage	max: 30V / min: 9V+20mA x RL
Residual ripple of supply voltage	max: 1.5 V at 100 Hz
Set time	10 ms
Accuracy	Type, 0.2 % max. 0.5 % v. FSR
Linearity	<0.1 % v. FSR
Temperature coefficient	max. ±250 ppm/°C
Open circuit recognition	yes
<b>EMC</b>	EMVG
	EN 50081-1
	EN 50082-2
Approvals	CE, UL, CSA
Ambient temperature	0 °C...+50 °C
Storage temperature	-20 °C...+85 °C
Conductor	AWG 22...12
Conductor cross-section	1.5 mm <sup>2</sup>
Overall width	6 mm
* Putting a bridge between Pins 4 and 5	** current loop supplied
Dimensions and accessories see	Page 305



# Frequency Signal Conditioners

- Tension clamp connection
- LED-Display
- Adjustable frequency output



The option of reading-in the analogue signals from the field via counter inputs of the control is made possible by converting the analogue signals in to frequencies. It is recommended that twisted and shielded 2-wire cables are used.

## MCZ VFC

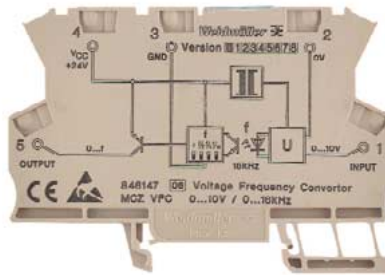
0...10 V

## MCZ CFC

0...20 mA

## MCZ CFC

4...20 mA CLP



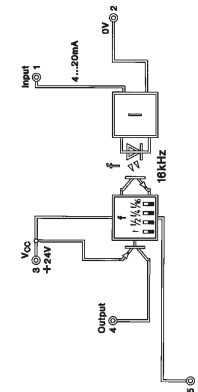
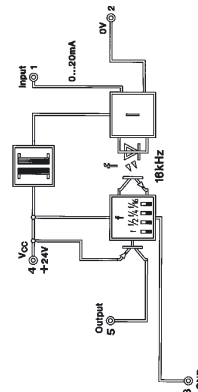
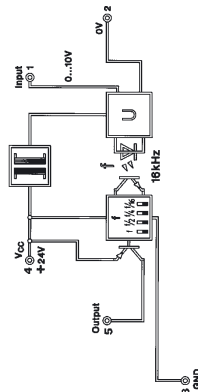
### Block diagram/settings

#### MCZ VFZ 0...10 V and MCZ CFC 0...20 mA

1	2	3	4	DIP switch
1	0	0	0	0...16 kHz
0	1	0	0	0...8 kHz
0	0	1	0	0...4 kHz
0	0	0	1	0...1 kHz

#### MCZ CFC 4...20 mA CLP

1	2	3	4	DIP switch
1	0	0	0	3.2...16 kHz
0	1	0	0	1.6...8 kHz
0	0	1	0	0.8...4 kHz
0	0	0	1	0.2...1 kHz



### Ordering data

for TS 35 W

Type Cat. No.  
MCZ VFC **8461470000**

Type Cat. No.  
MCZ CFC **8461480000**

Type Cat. No.  
MCZ CFC **8461490000**

### Technical data

Input ranges	0...10 V
Overload limits, input	30 V
Input resistance	100 kΩ
Voltage drop, input	
Output	
Output frequency, end value	1 kHz, 4 kHz, 8 kHz, 16 kHz
Frequency adjustment	DIL switch
Readjustment range	±10 %, internal
Output level	PNP, Ub- 0.7 V
Output current	max. 20 mA
Display	LED, pulsing
Supply voltage	24 Vdc ±10 %
Power consumption	14 mA, w/o load
Making current limit	200 mA
Polarisation protection	yes

Input ranges	0...20 mA
Overload limits, input	50 mA
Input resistance	50 Ω
Voltage drop, input	1 V at 20 mA
Output	
Output frequency, end value	1 kHz, 4 kHz, 8 kHz, 16 kHz
Frequency adjustment	DIL switch
Readjustment range	±10 %, internal
Output level	PNP, Ub- 0.7 V
Output current	max. 20 mA
Display	LED, pulsing
Supply voltage	24 Vdc ±10 %
Power consumption	14 mA w/o load
Making current limit	200 mA
Polarisation protection	yes

Input ranges	4...20 mA LP*
Overload limits, input	50 mA
Input resistance	
Voltage drop, input	5.8...6.4 at 20 mA
Output	
Output frequency, end value	1 kHz, 4 kHz, 8 kHz, 16 kHz
Frequency adjustment	DIL switch
Readjustment range	±10 %, internal
Output level	PNP, Ub- 0.7 V
Output current	max. 20 mA
Display	LED, pulsing
Supply voltage	24 Vdc ±20 %
Power consumption	14 mA w/o load
Making current limit	
Polarisation protection	yes

Accuracy 0.2 % v. FSR  
Temperature coefficient < 250 ppm/°C

Accuracy 0.2 % v. FSR  
Temperature coefficient < 250 ppm/°C

Accuracy 0.15 % v. FSR  
Temperature coefficient < 250 ppm/°C

### Coordination of insulation according to EN 50178

Voltage strength input/output	1 kVdc
Rated voltage	100 V
Rated surge voltage	1.5 kV
Overvoltage category	III
Voltage strength I/O to mounting rail	4 kV <sub>eff</sub> / 1 min
Operating temperature	0 °C...+50 °C
Storage temperature	-25 °C...+85 °C
Overall width	6 mm
Conductor cross-section	1.5 mm <sup>2</sup>

Voltage strength input/output	1 kVdc
Rated voltage	100 V
Rated surge voltage	1.5 kV
Overvoltage category	III
Voltage strength I/O to mounting rail	4 kV <sub>eff</sub> / 1 min
Operating temperature	0 °C...+50 °C
Storage temperature	-25 °C...+85 °C
Overall width	6 mm
Conductor cross-section	1.5 mm <sup>2</sup>

Voltage strength input/output	1 kVdc
Rated voltage	150 V
Rated surge voltage	2.5 kV
Overvoltage category	III
Voltage strength I/O to mounting rail	4 kV <sub>eff</sub> / 1 min
Operating temperature	0 °C...+50 °C
Storage temperature	-25 °C...+85 °C
Overall width	6 mm
Conductor cross-section	1.5 mm <sup>2</sup>

Dimensions and accessories see

Page 305

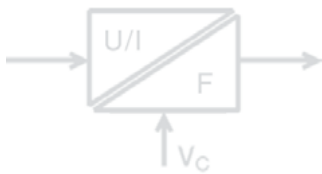
Page 305

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\* without DC/DC converter input supply via current loop

# Frequency Signal Conditioners

- Screw connection
- LED-Display
- Adjustable frequency output

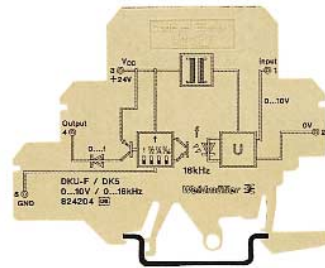


For EMC reasons, frequency processing modules must be used in conjunction with shielded cables. This measure prevents interference of analogue and frequency signals by other signal cables and vice versa.

## DKA U/f

## DKA I/f

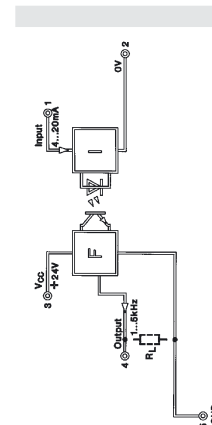
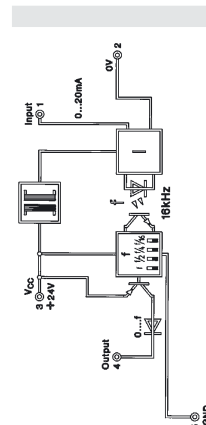
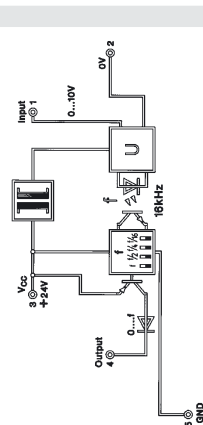
## DKA I/f\*



### Block diagram/settings

#### DKA U/f and DKA I/f

1	2	3	4	DIP switch
1	0	0	0	0...16 kHz
0	1	0	0	0...8 kHz
0	0	1	0	0...4 kHz
0	0	0	1	0...1 kHz



### Ordering data

for TS 32	Y
for TS 35	W
with combi foot TS 32/TS 35	

### Technical data

Input ranges	0...10 V
Overload limits, input	100 V
Input resistance	100 kΩ
Voltage drop, input	
Output	
Output frequency, end value	1 kHz, 4 kHz, 8 kHz, 16 kHz
Frequency adjustment	DIL switch
Readjustment range	±10 %, internal
Output level	PNP, Ub- 0.7 V
Output current	max. 20 mA
Display	LED, pulsing
Decoupling diode	present
Supply voltage	24 Vdc ±10 %
Power consumption	14 mA, w/o load
Making current limit	200 mA
Polarisation protection	yes

Accuracy	0.2 % v. FSR
	<250 ppm/°C

### Coordination of insulation to DIN VDE 0160, Draft 11/94

Voltage strength input/output	1 kVdc
Rated voltage	
Rated surge voltage	
Overvoltage category	
Voltage strength to mounting rail	4 kVeff
Operating temperature	0 °C...+50 °C
Storage temperature	-25 °C...+60 °C
Overall width	6 mm
Conductor cross-section	0.5...4 mm <sup>2</sup>

### Accessories

End plate	AP DK5	8268870000
Dimensions and accessories see	Page 305	

Type	Cat. No.
DKA U/f	8242040000

Input ranges	0...10 V
Overload limits, input	100 V
Input resistance	100 kΩ
Voltage drop, input	
Output	
Output frequency, end value	1 kHz, 4 kHz, 8 kHz, 16 kHz
Frequency adjustment	DIL switch
Readjustment range	±10 %, internal
Output level	PNP, Ub- 0.7 V
Output current	max. 20 mA
Display	LED, pulsing
Decoupling diode	present
Supply voltage	24 Vdc ±10 %
Power consumption	14 mA w/o load
Making current limit	200 mA
Polarisation protection	yes
Accuracy	0.2 % v. FSR
	<250 ppm/°C

Voltage strength input/output	1 kVdc
Rated voltage	
Rated surge voltage	
Overvoltage category	
Voltage strength to mounting rail	4 kVeff
Operating temperature	0 °C...+50 °C
Storage temperature	-25 °C...+60 °C
Overall width	6 mm
Conductor cross-section	0.5...4 mm <sup>2</sup>

Type	Cat. No.
AP DK5	8268870000
Dimensions and accessories see	Page 305

Type	Cat. No.
DKA I/f	8258870000

Input ranges	0...20 mA
Overload limits, input	50 mA
Input resistance	50 Ω
Voltage drop, input	1 V at 20 mA
Output	
Output frequency, end value	1 kHz, 4 kHz, 8 kHz, 16 kHz
Frequency adjustment	DIL switch
Readjustment range	±10 %, internal
Output level	PNP, Ub- 0.8 V
Output current	max. 20 mA
Display	LED, pulsing
Decoupling diode	present
Supply voltage	24 Vdc ±10 %
Power consumption	14 mA w/o load
Making current limit	200 mA
Polarisation protection	yes
Accuracy	0.2 % v. FSR
	<250 ppm/°C

Voltage strength input/output	1 kVdc
Rated voltage	
Rated surge voltage	
Overvoltage category	
Voltage strength to mounting rail	4 kVeff
Operating temperature	0 °C...+50 °C
Storage temperature	-25 °C...+60 °C
Overall width	6 mm
Conductor cross-section	0.5...4 mm <sup>2</sup>

Type	Cat. No.
AP DK5	8268870000
Dimensions and accessories see	Page 305

Type	Cat. No.
DKA I/f *	8081330000

Input ranges	4...20 mA
Overload limits, input	50 mA
Input resistance	max. 320 Ω at 20 mA
Voltage drop, input	max. 6.4 V at 20 mA
Output	
Output frequency, end value	5 kHz (1...5 kHz)
Frequency adjustment	
Readjustment range	
Output level	Ub- 3 V
Output current	max. 20 mA
Display	
Decoupling diode	present
Supply voltage	19.2...28.8 Vdc
Power consumption	<13 mA w/o load
Making current limit	
Polarisation protection	yes
Accuracy	0.15 % v. FSR
	<250 ppm/°C 2

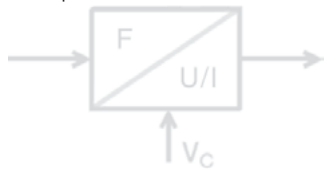
Voltage strength input/output	4 kVeff
Rated voltage	150 V
Rated surge voltage	2.5 kV
Overvoltage category	III
Voltage strength to mounting rail	4 kVeff
Operating temperature	0 °C...+50 °C
Storage temperature	-25 °C...+60 °C
Overall width	6 mm
Conductor cross-section	0.5...4 mm <sup>2</sup>

Type	Cat. No.
AP DK5	8268870000
Dimensions and accessories see	Page 305

\* without DC/DC converter  
Input current loop supplied

# Frequency Signal Conditioners

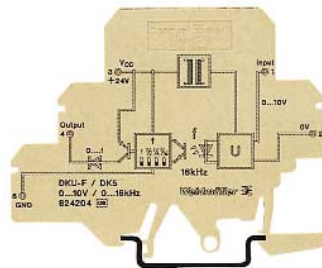
- Screw connection
- LED-Display
- Adjustable frequency output
- multiplex capable



For EMC reasons, frequency processing modules must be used in conjunction with shielded cables. This measure prevents interference of analogue and frequency signals by other signal cables and vice versa.

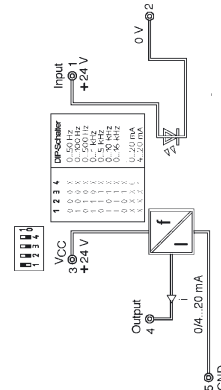
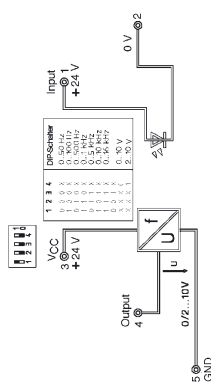
DKA f/U

DKA f/I



## Block diagram/settings

1	2	3	4	DIP switch
0	0	0	X	0...50 Hz
1	0	0	X	0...100 Hz
0	1	0	X	0...500 Hz
1	1	0	X	0...1 kHz
0	1	1	X	0...5 kHz
1	0	1	X	0...10 kHz
1	1	1	X	0...16 kHz
0	0	1	X	Customer specific
X	X	X	0	0...20 mA / 0...10 V
X	X	X	1	4...20 mA / 2...10 V



## Ordering data

for TS 32	Y
for TS 35	W
with combi foot TS 32/TS 35	

## Technical data

Input ranges	
Overload limits, input	
Input resistance	
Voltage drop, input	
Output	
Output frequency, end value	
Frequency adjustment	
Readjustment range	
Output level	
Output current	
Display	
Decoupling diode	
Supply voltage	24 Vdc ±10 %
Power consumption	32 mA + I <sub>Load</sub>
Making current limit	
Polarisation protection	yes
Accuracy	0.5 % (8-bit resolution)

## Coordination of insulation to DIN VDE 0160, Draft 11/94

Voltage strength input/output	2.5 kV
Rated voltage	
Rated surge voltage	
Overvoltage category	
Voltage strength to mounting rail	4 kV <sub>eff</sub>
Operating temperature	0 °C...+50 °C
Storage temperature	-25 °C...+60 °C
Overall width	6 mm
Conductor cross-section	0.5...4 mm <sup>2</sup>

Dimensions and accessories see

## Type Cat. No.

DKA f/U **8283810001**

0...50/100/500 Hz  
0...1/5/10/16 kHz

10 kΩ

0/2...10 V

DIL switch

24 Vdc ±10 %

32 mA + I<sub>Load</sub>

yes

0.5 % (8-bit resolution)

2.5 kV

4 kV<sub>eff</sub>

0 °C...+50 °C

-25 °C...+60 °C

6 mm

0.5...4 mm<sup>2</sup>

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## Type Cat. No.

DKA f/I **8311870001**

0...50/100/500 Hz  
0...1/5/10/16 kHz

10 kΩ

0/4...20 mA

DIL switch

24 Vdc ±10 %

32 mA + I<sub>Load</sub>

yes

0.5 % (8-bit resolution)

2.5 kV

4 kV<sub>eff</sub>

0 °C...+50 °C

-25 °C...+60 °C

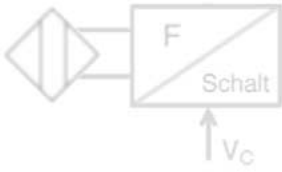
6 mm

0.5...4 mm<sup>2</sup>

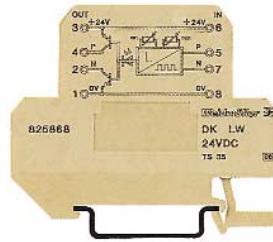
Page 305

# Monitoring Revolutions

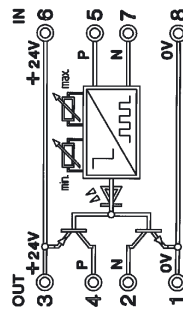
## DK LW



If only one revolution limit is to be evaluated, the potentiometer for  $f_{max}$  must be set to end stop or the potentiometer for  $f_{min}$  to left stop. Then only the other is in each case active for setting the limit value.



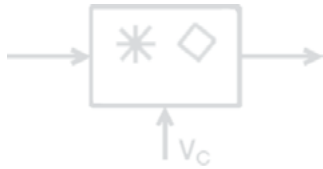
### Block diagram/settings



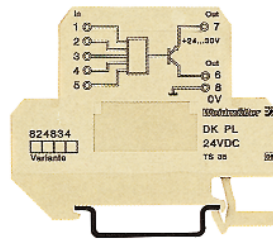
Ordering data	Type	Cat. No.
for TS 32		Y
for TS 35		W
<b>Technical data</b>		
Input	Initiators, NPN or PNP	
Number of inputs	1	
Input frequency	10 - 6250 U/min.	
Range selection	3 switchable revolutions ranges: 10-130, 100-1300, 1000-7800 r.p.m.	
Fine adjustment	2 potentiometers for upper/lower revs limit	
Input nominal level	24 Vdc = High, 0 V = Low	
Overload limits	30 Vdc	
Switching threshold	High >18 V, Low <7 V	
Pulse duration	>0.5 ms	
Input current	approx. 3.5 mA (24 V)	
Reverse polarity protection	yes	
Output	Optional PNP or NPN	
Function	Output active, if f within set revs limit	
Output level	Ub- 1.8 V	
Output current	20 mA max.	
Decoupling diode	yes	
Status LED	green LED	
Short-circuit proof	no	
Operating voltage	24 V -10 % + 20 %	
Power consumption	<10 mA, w/o load, without initiator	
Reverse polarity protection	yes	
Galvanic isolation	no	
Voltage strength to mounting rail	4 kV <sub>eff</sub>	
Operating temperature	0...+50 °C	
Storage temperature	-40...+60 °C	
Overall width	12 mm	
Conductor cross-section	0.5...4 mm <sup>2</sup>	
Insulation stripping length	7 mm	
<b>Others</b>	Initiator power supply via module possible	
<b>Accessories</b>	Type	Cat. No.
End plate	AP DKT4	0687560000
Dimensions and accessories see	Page 278	

# Preprocessing Logic

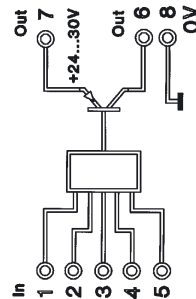
- Screw connection
- logic function and time function combined
- individually programmable (further functions on request)



## DK PL



### Block diagram



### Ordering data

for TS 32	Y
for TS 35	W

Type	Cat. No.
on request	
DK PL	<b>824834000*</b>

### Technical data

Logical function	Programmable, see note
Number of inputs	5
Input nominal level	24 Vdc = High, 0 V = Low
Overload limits	30 Vdc
Switching threshold	High >18 V, Low <7 V
Pulse duration	>1 ms
Input current	approx. 1.5 mA per input (24 V)
Output	PNP
Output level	U <sub>b</sub> - 1 V
Output current	20 mA max.
Decoupling diode	no
Status LED	green LED
Short-circuit proof	no
Operating voltage	24 V ±20 %
Power consumption	<10 mA
Reverse polarity protection	yes
Galvanic isolation	no
Voltage strength to mounting rail	4 kV <sub>eff</sub>
Operating temperature	0 °C...+50 °C
Storage temperature	-40 °C...+60 °C
Overall width	12 mm
Conductor cross-section	0.5...4 mm <sup>2</sup>
Insulation stripping length	7 mm

### Accessories

Type	Cat. No.
End plate	AD DKT4 <b>0687560000</b>
Ordering example: RS FLIP-FLOP	<b>8248340002</b>
Dimensions see	Page 278

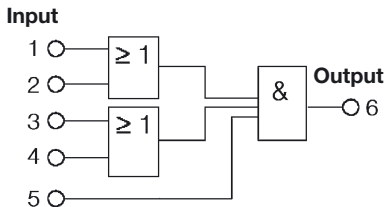
\* (not programmed - function next page)

**Remark:**

The module is programmed according to customers specifications. Up to 5 inputs can be linked with various logic and timer functions, e.g.: AND, OR, EXOR, NAND, NOR, EXNOR, delay elements, etc. The output is either low or high active.

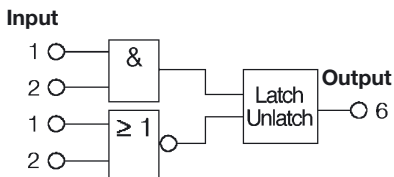
**824834 0001 DKPL**  
A = (E1 OR E2) AND (E3 OR E4) AND E5

State	5	4	3	2	1	Output
1	0	0	0	0	0	0
2	0	0	0	0	1	0
3	0	0	0	1	0	0
4	0	0	0	1	1	0
5	0	0	1	0	0	0
6	0	0	1	0	1	0
7	0	0	1	1	0	0
8	0	0	1	1	1	0
9	0	1	0	0	0	0
10	0	1	0	0	1	0
11	0	1	0	1	0	0
12	0	1	0	1	1	0
13	0	1	1	0	0	0
14	0	1	1	0	1	0
15	0	1	1	1	0	0
16	0	1	1	1	1	0
17	1	0	0	0	0	0
18	1	0	0	0	1	0
19	1	0	0	1	0	0
20	1	0	0	1	1	0
21	1	0	1	0	0	0
22	1	0	1	0	1	1
23	1	0	1	1	0	1
24	1	0	1	1	1	1
25	1	1	0	0	0	0
26	1	1	0	0	1	1
27	1	1	0	1	0	1
28	1	1	0	1	1	1
29	1	1	1	0	0	0
30	1	1	1	0	1	1
31	1	1	1	1	0	1
32	1	1	1	1	1	1



**824834 0002 DKPL**  
Inputs 1 and 2 have the function of a RS FLIP-FLOP  
Inputs 3, 4 and 5 have no function

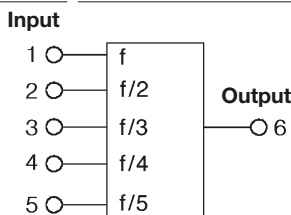
Input	Output
2 1	6
0 0	0 (is stored)
0 1	No change of stored state
1 0	No change of stored state
1 1	1 (is stored)
Inputs 3, 4 and 5 no function	No change of stored state



**824834 0003 DKPL - Frequency divider**  
Inputs 1 - 5 determine the divider factor  
Input 1 = divider factor 1:  $F_{OUT} = F_{IN} \cdot 1$   
Input 2 = divider factor 2:  $F_{OUT} = F_{IN} \cdot 2$   
Input 5 = divider factor 5:  $F_{OUT} = F_{IN} \cdot 5$ ;  $F_{IN} \text{ max.} = 12 \text{ kHz}$

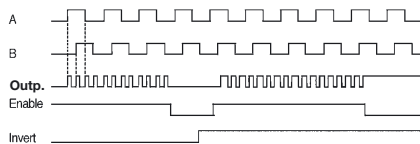
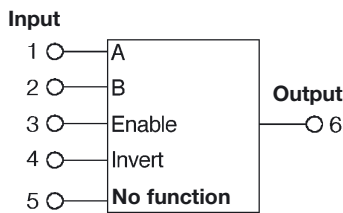
Input	Output
1	$f_{out} = f_{in}$
2	$f_{out} = f_{in} / 2$
3	$f_{out} = f_{in} / 3$
4	$f_{out} = f_{in} / 4$
5	$f_{out} = f_{in} / 5$

Note: An new divider factor can only be used if operating voltage is switched off.  $f_{in} \text{ max.} = 12 \text{ kHz}$



**824834 0004 DKPL**  
Input 1: Signal A of an incremental generator  
Input 2: Signal B 90° is shifted  
Input 3: Enable High Active  
Input 4: Output signal inverts High Active  
Input 5: No function  
Output: For each slope of signal A or B, the output is set to 20 - 30 Us.  
(I.e.:  $F_{out} = 4 \times F_{in}$ )  
 $F_{in} \text{ max.} = 1 \text{ kHz}$

Connection	Description
1	A Signal A 90° leading $F_{max} = 1 \text{ kHz}$
2	B Signal B 90° following $F_{max} = 1 \text{ kHz}$
3	Enable Output is released
4	Invert Output signal invert
5	No function
6	$f_{out} = 4 \times f_{A/B} \text{ (max. } 4 \text{ kHz)}$

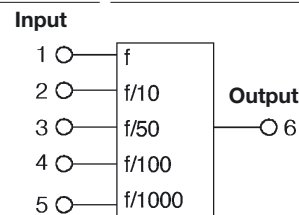


**824834 0005 DKPL**  
Length of input signal between 80 and 100 ms.  
Length of output signal 100 ms, only 2 pulses,  
Relation pulse-interruption 1:1.  
The positive slope of the input signal has to be analysed. Only input E1 is used.

**824834 0006 DKPL**  
Input 1:  $F_{OUT} = F_{IN}$   
Input 2:  $F_{OUT} = F_{IN} \cdot 10$

Input	Output
1	$f_{out} = f_{in}$
2	$f_{out} = f_{in} / 10$
3	$f_{out} = f_{in} / 50$
4	$f_{out} = f_{in} / 100$
5	$f_{out} = f_{in} / 1000$

Note: A new divider factor can only be used if the operating voltage is switched off.  $f_{in} \text{ max.} = 3 \text{ kHz}$



**824834 0007 DKPL**

Input	Output
1 2 3 4 5	Out
L L X X X	No function
H L X X X	$f = 1 \text{ Hz}$
L H X X X	$f = 10 \text{ Hz}$
H H X X X	$f = 1 \text{ Hz}$

L -> 0 V or connection open  
H -> +24 ...30 Vdc  
X -> no effect on output function, L or H

**824834 0008 DKPL**

Input	Output
1 2	
H H	H
L H	L

**824834 0010 DKPL**  
RS FLIP-FLOP with superior S - input (connection 2)  
Input connections 3, 4 and 5 must have 0 V or remain open!

Connection 1 Logic	Connection 2 S-Input	Logic	Connection 6 Output	Logic
0 V or open	L	0 V or open	L	previous state is stored
+24 Vdc	H	0 V or open	L	0 V
0 V or open	L	+24 Vdc	H	+24 Vdc
+24 Vdc	H	+24 Vdc	H	+24 Vdc

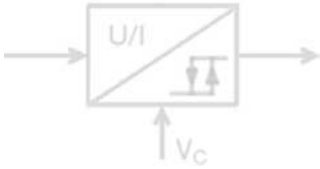
**824834 0501 DKPL**  
The module allows the input frequency at connection 1 (0...max. 50 kHz) to be divided with 2 fixed divider factors. Depending on connection 2, the output frequency is transmitted from output connection 6.  
Connections 3, 4 and 5 have no function.

Connect. 2 Logic	Factor	Inp. frequency	Outp. frequency
0 V or open	L	75	0...30 kHz
+24 Vdc	H	27	0...10,8 kHz

# Threshold Monitoring

## Current sensor

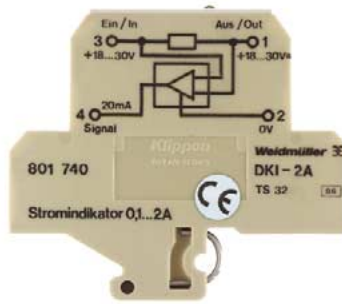
- Screw connection
- Mounts onto on mounting rail
- Wide spectrum of functions
- In part, individually adjustable



### DKSC 0-10 V

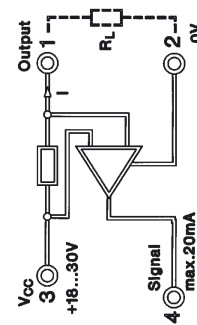
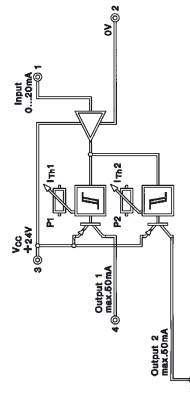
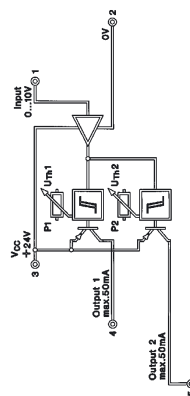
### DKSC 0-20 mA

### DKI 2A



#### Block diagram/settings

S1	S2	DIP switch
on	on	10...100 mV
on	off	30 mV...1 V
off	X	300 mV...10 V



#### Ordering data

for TS 32	Y
for TS 35	W
with combi foot TS 32/TS 35	

#### Technical data

Input signal	0...10 V
Input resistance	60 kΩ
Voltage drop, input	1 V
Cut-off frequency	100 Hz
Switchable input range	DIL switch for 3 ranges
Switching point settings	2 threshold Uth 1 and Uth 2 with 2 front potentiometers each 1 %
Hysteresis	each 1 %
Output	double switch output
Output level	per PNP, Ub- 1.2 V
Output current	50 mA
Function	lin <Uth1: output 1 active lin >Uth2: output 2 active
Status LED	no
Operating voltage	24 Vdc ±20 %
Power consumption	approx. 15 mA
Galvanic isolation	no
Voltage strength to mounting rail	4 kVeff
Operating temperature	0 °C...+50 °C
Storage temperature	-25 °C...+60 °C
Overall width	6 mm
Conductor cross-section	0.5...4 mm <sup>2</sup>

#### Type Cat. No.

DKSC 0-10 V **8019640000**

#### Type Cat. No.

DKSC 0-20 mA **8031320000**

#### Type Cat. No.

DKI 2A **8017400000**  
DKI 2A **8017410000**

#### EMC resistance

Burst acc. to EN 61000-4-4	Input/outputs	Test severity 4, self restoring
	Power supply	Test severity 4, self restoring
ESD acc. to EN 61000-4-2	Contact discharge	Test severity 4
	Air discharge	Test severity 3

#### Accessories

End plate	AP DK5	<b>8268870000</b>
Dimensions see	Page 278	

#### Type Cat. No.

AP DK5 **8268870000**

Page 278

#### Type Cat. No.

AP DKT4 **0687560000**

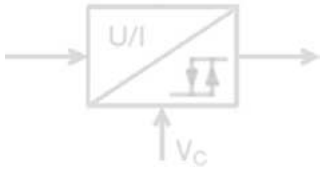
Page 278



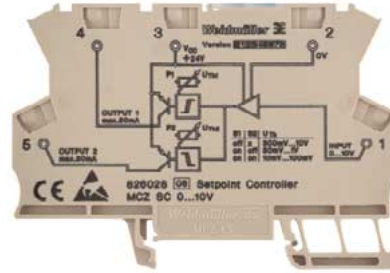
# Threshold Monitoring

## MCZ SC 0...10 Vdc

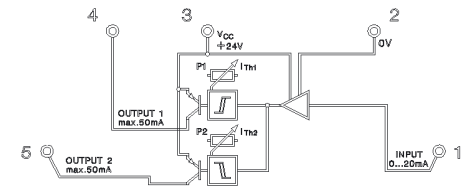
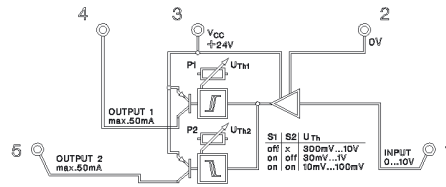
## MCZ SC 0...20 mA



The Setpoint Controller allows cost effective units to be built for monitoring analogue signals. An upper and lower limit value, which covers the entire signal range, can be set by the user via 2 potentiometers. The respective statuses of the upper and lower limit value are indicated at the 2 digital outputs (upper limit value under/over flow; lower limit value under/over flow).



### Block diagram



Ordering data	Type	Cat. No.	Type	Cat. No.
for TS 35	MCZ SC 24 V/0...10V	8260280000	MCZ SC 24 V/0...20 mA	8227350000
<b>Technical data</b>				
<b>Voltage supply</b>				
Supply voltage	24 Vdc ± 20 %		24 Vdc ± 20 %	
Supply current	15 mA		15 mA	
<b>Input</b>				
Input voltage	0...10 V		0.5...20 mA	
Input resistance	60 kΩ		50 Ω	
Voltage drop at full scale			1 V	
Max. input current			40 mA	
Cut-off frequency	100 Hz		100 Hz	
<b>Transmission behaviour</b>				
Threshold voltage ranges of $U_{th}$		S1 S2 Temperature coefficient $T_k$		Temperature coefficient $T_k$ 250 ppm max.
	10...100 mV	on on 500 ppm max.		
	0.03...1 V	on off 250 ppm max.		
	0.3...10 V	off x 250 ppm max.		
Setting of switching threshold	via 2 potentiometers (12 turns)		via 2 potentiometers (12 turns)	
Hysteresis of switching threshold	1 % of the end value		1 % of the end value	
Function of output 1	active High for $U_{input} < U_{th1}$ (set via P1)		active High for $I_{input} < I_{th1}$ (set via P1)	
Function of output 2	active High for $U_{input} > U_{th2}$ (set via P2)		active High for $I_{input} > I_{th2}$ (set via P2)	
Response time	< 250 μs (switch threshold at 90% of the max. input signal; $R_L \leq 1$ kΩ)		< 250 μs (switch threshold at 90% of the max. input signal; $R_L \leq 1$ kΩ)	
<b>Output</b>				
Output current per output	2 channel switching PNP max. 50 mA		2 channel switching PNP max. 50 mA	
Voltage drop at output transistor	< 1.2 V at 50 mA		< 1.2 V at 50 mA	
<b>Insulation coordination/safe separation to EN 50178</b>				
Separation input / output	none		none	
Dielectric strength I/O to mounting rail	4 kVeff / 1 min		4 kVeff / 1 min	
Ambient temperature	0 °C...+50 °C		0 °C...+50 °C	
Storage temperature	-25 °C...+60 °C		-25 °C...+60 °C	
Conductor	AWG 22...12		AWG 22...12	
Conductor cross-section	1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>	
Approvals	CE, UL, CSA		CE, UL, CSA	
Overall width	6 mm		6 mm	
Dimensions and accessories see	Page 305		Page 305	

# Passive Isolator DC/DC

## WAVEANALOG DC/DC

- input loop powered
- galvanic isolation
- 1-, 2-channel versions
- low power consumption
- safe separation

### Approvals:

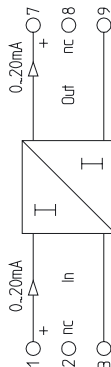


#### Block diagram



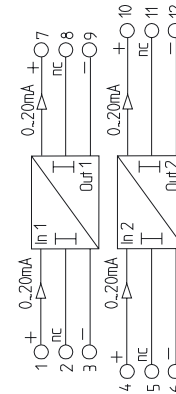
## CCC LP (1 channel)

0(4) ... 20 mA / 0(4) ... 20 mA



## CCC LP (2 channel)

0(4) ... 20 mA / 0(4) ... 20 mA



Ordering data	
Screw connection 1 channel	
Tension clamp connection 1 channel	
Screw connection 2 channel	
Tension clamp connection 2 channel	
Input/output	

#### Technical data\* (per channel)

<b>Input signal</b>	0 ... 20 mA (4 ... 20 mA)
Input voltage max.	18 V
Input current max.	50 mA
Operating current	< 100 $\mu$ A
Voltage drop	approx. 3 V at $R_L = 0 \Omega$ $I_{in} = 20$ mA approx. 13 V at $R_L = 500 \Omega$ at $I_{in} = 20$ mA
<b>Output signal</b>	0 ... 20 mA (4 ... 20 mA)
Load resistance	$\leq 500 \Omega$
Accuracy at $T_U = 23^\circ\text{C}$	< 0.1% of FS
Influence of load resistance	< 0.1% from measurement value per 100 $\Omega$ load resistance
Temperature coefficient	50 ppm / K of FS
Set time	4.5 ms at 500 $\Omega$ working resistance
Residual ripple	< 20 mV <sub>eff</sub>
Chopper frequency	approx. 170 kHz

#### General

Operating temperature	-25 $^\circ\text{C}$ ... +70 $^\circ\text{C}$
Storage temperature	-40 $^\circ\text{C}$ ... +80 $^\circ\text{C}$
Dimensions L / H / W mm	92.4 / 112.5 / 17.5
Approvals	CE, UL, CSA, GL

#### Coordination of insulation according to EN 50178, 04/98 (safe separation)

Rated voltage	300 V
Rated surge voltage	6 kV
Overtoltage category	III
Contamination class	2
Clearance and creepage distance	$\geq 5.5$ mm
Isolation voltage, voltage strength	
Input/output, channel / channel	4 kV <sub>eff</sub> / 1 s
Input/output to mounting rail	4 kV <sub>eff</sub> / 1 min
Standards/specifications	EN 50178 (safe separation)
EMC standards	EN 50081, EN 50082, EN 55011
Dimensions and accessories see	Page 298 + 308

\* $T_U = 23^\circ\text{C}$  single module

Type	Cat. No.
WAS5 CCC LP	<b>8444950000</b>
WAZ5 CCC LP	<b>8444960000</b>
0(4) ... 20 mA / 0(4) ... 20 mA	

0 ... 20 mA (4 ... 20 mA)	
18 V	
50 mA	
< 100 $\mu$ A	
approx. 3 V at $R_L = 0 \Omega$ $I_{in} = 20$ mA approx. 13 V at $R_L = 500 \Omega$ at $I_{in} = 20$ mA	
0 ... 20 mA (4 ... 20 mA)	
$\leq 500 \Omega$	
< 0.1% of FS	
< 0.1% from measurement value per 100 $\Omega$ load resistance	
50 ppm / K of FS	
4.5 ms at 500 $\Omega$ working resistance	
< 20 mV <sub>eff</sub>	
approx. 170 kHz	

-25 $^\circ\text{C}$ ... +70 $^\circ\text{C}$	
-40 $^\circ\text{C}$ ... +80 $^\circ\text{C}$	
92.4 / 112.5 / 17.5	
CE, UL, CSA, GL	

#### Coordination of insulation according to EN 50178, 04/98 (safe separation)

300 V	
6 kV	
III	
2	
$\geq 5.5$ mm	
4 kV <sub>eff</sub> / 1 s	
4 kV <sub>eff</sub> / 1 min	
EN 50178 (safe separation)	
EN 50081, EN 50082, EN 55011	
Page 298 + 308	

Type	Cat. No.
WAS5 CCC LP	<b>8463580000</b>
WAZ5 CCC LP	<b>8463590000</b>
0(4) ... 20 mA / 0(4) ... 20 mA	

0 ... 20 mA (4 ... 20 mA)	
18 V	
50 mA	
< 100 $\mu$ A	
approx. 3 V at $R_L = 0 \Omega$ $I_{in} = 20$ mA approx. 13 V at $R_L = 500 \Omega$ at $I_{in} = 20$ mA	
0 ... 20 mA (4 ... 20 mA)	
$\leq 500 \Omega$	
< 0.1% of FS	
< 0.1% from measurement value per 100 $\Omega$ load resistance	
50 ppm / K of FS	
4.5 ms at 500 $\Omega$ working resistance	
< 20 mV <sub>eff</sub>	
approx. 170 kHz	

-25 $^\circ\text{C}$ ... +70 $^\circ\text{C}$	
-40 $^\circ\text{C}$ ... +80 $^\circ\text{C}$	
92.4 / 112.5 / 17.5	
CE, UL, CSA, GL	

#### Coordination of insulation according to EN 50178, 04/98 (safe separation)

300 V	
6 kV	
III	
2	
$\geq 5.5$ mm	
4 kV <sub>eff</sub> / 1 s	
4 kV <sub>eff</sub> / 1 min	
EN 50178 (safe separation)	
EN 50081, EN 50082, EN 55011	
Page 298 + 308	

# DC/DC-Signal Conditioners

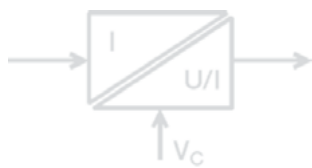
## WAVEANALOG DC/DC

- voltage supply on output side
- 2-way-isolation
- analogue signal conditioning
- galvanic isolation between input/output signal
- Input loop powered
- cross-connectable voltage supply via cross-connectors

### Approvals:



### Block diagram



## CCC DC

4 ... 20 mA / 4 ... 20 mA



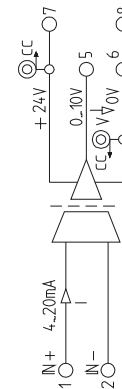
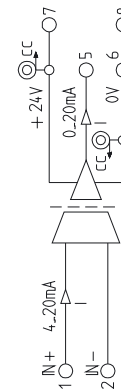
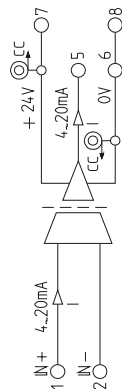
## CCC DC

4 ... 20 mA / 0 ... 20 mA



## CVC DC

4 ... 20 mA / 0 ... 10 V



### Ordering data

Screw connection	Type	Cat. No.
Tension clamp connection	WAS4 CCC DC	<b>8444980000</b>
Input/output	WAZ4 CCC DC	<b>8444990000</b>
	4 ... 20 mA / 4 ... 20 mA	

Type	Cat. No.
WAS4 CCC DC	<b>8445010000</b>
WAZ4 CCC DC	<b>8445020000</b>
4 ... 20 mA / 0 ... 20 mA	

Type	Cat. No.
WAS4 CVC DC	<b>8445040000</b>
WAZ4 CVC DC	<b>8445050000</b>
4 ... 20 mA / 0 ... 10 V	

Type	Cat. No.
WAS4 CVC DC	<b>8445040000</b>
WAZ4 CVC DC	<b>8445050000</b>
4 ... 20 mA / 0 ... 10 V	

### Technical data\*

<b>Input signal</b>	4 ... 20 mA
Input voltage max.	7 V
Input current max.	25 mA
<b>Output signal</b>	4 ... 20 mA
Load resistance	≤ 500 Ω
Accuracy at Tu=23 °C	± 0.2% of FS
Temperature coefficient	≤ 250 ppm / K of FS
Response time	≤ 30 ms (typ. 20 ms)
Cut-off frequency (-3 dB)	≥ 15 Hz (typ. 20 Hz)

4 ... 20 mA
7 V
25 mA
0 ... 20 mA
≤ 500 Ω
± 0.2% of FS
≤ 250 ppm / K of FS
≤ 30 ms (typ. 20 ms)
≥ 15 Hz (typ. 20 Hz)

4 ... 20 mA
7 V
25 mA
0 ... 20 mA
≤ 500 Ω
± 0.2% of FS
≤ 250 ppm / K of FS
≤ 30 ms (typ. 20 ms)
≥ 15 Hz (typ. 20 Hz)

4 ... 20 mA
7 V
25 mA
0 ... 10 V
≥ 1 kΩ
± 0.2% of FS
≤ 250 ppm / K of FS
≤ 30 ms (typ. 20 ms)
≥ 15 Hz (typ. 20 Hz)

### General

Voltage supply	24 Vdc ±20% (19.2 ... 28.8 Vdc)
Power consumption	< 32 mA at I <sub>out</sub> = 20 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C (mounted)
Storage temperature	-20 °C ... +85 °C
Dimensions L / H / W mm	92.4 / 112.5 / 12.5
Approvals	CE, UL, CSA

24 Vdc ±20% (19.2 ... 28.8 Vdc)
< 32 mA at I <sub>out</sub> = 20 mA
≤ 2 A
0 °C ... +55 °C (mounted)
-20 °C ... +85 °C
92.4 / 112.5 / 12.5
CE, UL, CSA

24 Vdc ±20% (19.2 ... 28.8 Vdc)
< 32 mA at I <sub>out</sub> = 20 mA
≤ 2 A
0 °C ... +55 °C (mounted)
-20 °C ... +85 °C
92.4 / 112.5 / 12.5
CE, UL, CSA

24 Vdc ±20% (19.2 ... 28.8 Vdc)
< 20 mA at I <sub>out</sub> = 10 mA
≤ 2 A
0 °C ... +55 °C (mounted)
-20 °C ... +85 °C
92.4 / 112.5 / 12.5
CE, UL, CSA

### Coordination of insulation according to EN 50178, 04/98

Rated voltage	300 V
Rated surge voltage	4 kV
Overvoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 3 mm
Isolation voltage, voltage strength	≥ 3 mm
Input/output to mounting rail	4 kV <sub>eff</sub> / 1 min

300 V
4 kV
III
2
≥ 3 mm
≥ 3 mm
4 kV <sub>eff</sub> / 1 min

300 V
4 kV
III
2
≥ 3 mm
≥ 3 mm
4 kV <sub>eff</sub> / 1 min

300 V
4 kV
III
2
≥ 3 mm
≥ 3 mm
4 kV <sub>eff</sub> / 1 min

Standards/specifications	EN 50178
EMC standards	EN 50081, EN 50082, EN 55011

EN 50178
EN 50081, EN 50082, EN 55011

EN 50178
EN 50081, EN 50082, EN 55011

EN 50178
EN 50081, EN 50082, EN 55011

Dimensions and accessories see	Page 298 + 308
*T <sub>U</sub> = 23 °C single module	

Page 298 + 308
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# DC/DC-Signal Conditioners

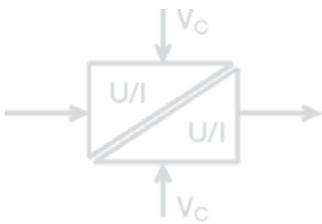
## WAVEANALOG DC/DC

- voltage supply on both sides
- 2-way-isolation
- analogue signal conditioning
- galvanic isolation between input/output signal
- cross-connectable voltage supply via cross-connectors

### Approvals:



### Block diagram



## CCC DC

0 ... 20 mA / 0 ... 20 mA



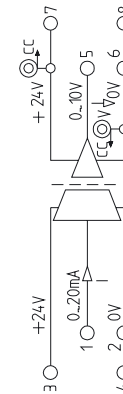
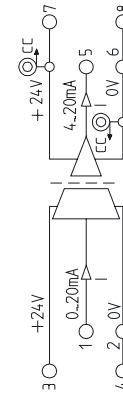
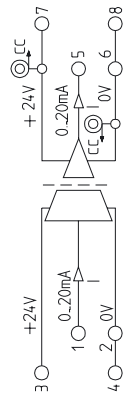
## CCC DC

0 ... 20 mA / 4 ... 20 mA



## CVC DC

0 ... 20 mA / 0 ... 10 V



### Ordering data

Screw connection	Type	Cat. No.
Tension clamp connection	WAS4 CCC DC	<b>8445070000</b>
Input/output	WAZ4 CCC DC	<b>8445080000</b>

Type	Cat. No.
WAS4 CCC DC	<b>8445070000</b>
WAZ4 CCC DC	<b>8445080000</b>

Type	Cat. No.
WAS4 CCC DC	<b>8446970000</b>
WAZ4 CCC DC	<b>8446990000</b>

Type	Cat. No.
WAS4 CVC DC	<b>8447020000</b>
WAZ4 CVC DC	<b>8447030000</b>

### Technical data\*

<b>Input signal</b>	0 ... 20 mA
Input current max	25 mA
Input resistance	50 Ω
<b>Output signal</b>	0 ... 20 mA
Load resistance	≤ 500 Ω
Accuracy at Tu=23 °C	± 0.2% of FS
Temperature coefficient	≤ 250 ppm / K of FS
Response time	≤ 30 ms (typ. 16 ms)
Cut-off frequency (-3 dB)	≥ 15 Hz (typ. 25 Hz)

Type	Cat. No.
WAS4 CCC DC	<b>8445070000</b>
WAZ4 CCC DC	<b>8445080000</b>

Type	Cat. No.
WAS4 CCC DC	<b>8446970000</b>
WAZ4 CCC DC	<b>8446990000</b>

Type	Cat. No.
WAS4 CVC DC	<b>8447020000</b>
WAZ4 CVC DC	<b>8447030000</b>

### General

Voltage supply	24 Vdc ±20% (19.2 ... 28.8 Vdc)
Power consumption input	< 11 mA at I <sub>in</sub> = 20 mA
Power consumption output	< 32 mA at I <sub>out</sub> = 20 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C (mounted)
Storage temperature	-20 °C ... +85 °C
Dimensions L / H / W mm	92.4 / 112.5 / 12.5
Approvals	CE, UL, CSA

Type	Cat. No.
WAS4 CCC DC	<b>8445070000</b>
WAZ4 CCC DC	<b>8445080000</b>

Type	Cat. No.
WAS4 CCC DC	<b>8446970000</b>
WAZ4 CCC DC	<b>8446990000</b>

Type	Cat. No.
WAS4 CVC DC	<b>8447020000</b>
WAZ4 CVC DC	<b>8447030000</b>

### Coordination of insulation according to EN 50178, 04/98

Rated voltage	300 V
Rated surge voltage	4 kV
Overvoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 3 mm
Isolation voltage, voltage strength	≥ 3 mm
Input/output to mounting rail	4 kV <sub>eff</sub> / 1 min
Standards/specifications	EN 50178
EMC standards	EN 50081, EN 50082, EN 55011
Dimensions and accessories see	Page 298 + 308

Type	Cat. No.
WAS4 CCC DC	<b>8445070000</b>
WAZ4 CCC DC	<b>8445080000</b>

Type	Cat. No.
WAS4 CCC DC	<b>8446970000</b>
WAZ4 CCC DC	<b>8446990000</b>

Type	Cat. No.
WAS4 CVC DC	<b>8447020000</b>
WAZ4 CVC DC	<b>8447030000</b>

\*Tu = 23 °C single module

# DC/DC Signal Conditioners

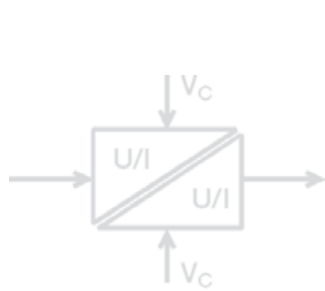
## WAVEANALOG DC/DC

- voltage supply on both sides
- 2-way-isolation
- analogue signal conditioning
- galvanic isolation between input/output signal
- cross-connectable voltage supply via cross-connectors

### Approvals:

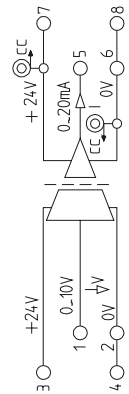


### Block diagram



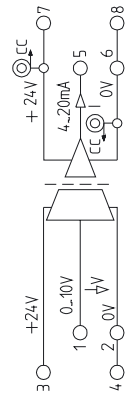
## VCC DC

0 ... 10 V / 0 ... 20 mA



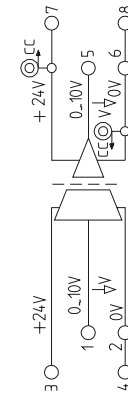
## VCC DC

0 ... 10 V / 4 ... 20 mA



## VCC DC

0 ... 10 V / 0 ... 10 V



### Ordering data

Screw connection	Type	Cat. No.
Tension clamp connection	WAS4 VCC DC	<b>8447050000</b>
Input/output	WAZ4 VCC DC	<b>8447080000</b>

Type	Cat. No.
WAS4 VCC DC	<b>8447050000</b>
WAZ4 VCC DC	<b>8447080000</b>

Type	Cat. No.
WAS4 VCC DC	<b>8447100000</b>
WAZ4 VCC DC	<b>8447110000</b>

Type	Cat. No.
WAS4 VCC DC	<b>8447130000</b>
WAZ4 VCC DC	<b>8447140000</b>

### Technical data\*

<b>Input signal</b>	0 ... 10 V
Input voltage max.	15 V
Input resistance	500 kΩ
<b>Output signal</b>	0 ... 20 mA
Load resistance	≤ 500 Ω
Accuracy at Tu=23°C	± 0.2% of FS
Temperature coefficient	≤ 250 ppm / K of FS
Response time	≤ 30 ms (typ. 25 ms)
Cut-off frequency (-3 dB)	≥ 13 Hz (typ. 17 Hz)

0 ... 10 V	15 V	500 kΩ	0 ... 20 mA	≤ 500 Ω	± 0.2% of FS	≤ 250 ppm / K of FS	≤ 30 ms (typ. 25 ms)	≥ 13 Hz (typ. 17 Hz)
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0 ... 10 V	15 V	500 kΩ	4 ... 20 mA	≤ 500 Ω	± 0.2% of FS	≤ 250 ppm / K of FS	≤ 30 ms (typ. 25 ms)	≥ 13 Hz (typ. 17 Hz)
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0 ... 10 V	15 V	500 kΩ	0 ... 10 V	≥ 1 kΩ	± 0.2% of FS	≤ 250 ppm / K of FS	≤ 30 ms (typ. 25 ms)	≥ 13 Hz (typ. 17 Hz)
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### General

Voltage supply	24 Vdc ±20% (19.2 ... 28.8 Vdc)
Power consumption input	< 11 mA at U <sub>in</sub> = 10 V
Power consumption output	< 32 mA at I <sub>out</sub> = 20 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C (mounted)
Storage temperature	-20 °C ... +85 °C
Dimensions L / H / W mm	92.4 / 112.5 / 12.5
Approvals	CE, UL, CSA

24 Vdc ±20% (19.2 ... 28.8 Vdc)	< 11 mA at U <sub>in</sub> = 10 V	< 32 mA at I <sub>out</sub> = 20 mA	≤ 2 A	0 °C ... +55 °C (mounted)	-20 °C ... +85 °C	92.4 / 112.5 / 12.5	CE, UL, CSA
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24 Vdc ±20% (19.2 ... 28.8 Vdc)	< 11 mA at U <sub>in</sub> = 10 V	< 32 mA at I <sub>out</sub> = 20 mA	≤ 2 A	0 °C ... +55 °C (mounted)	-20 °C ... +85 °C	92.4 / 112.5 / 12.5	CE, UL, CSA
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24 Vdc ±20% (19.2 ... 28.8 Vdc)	< 11 mA at U <sub>in</sub> = 10 V	< 20 mA at I <sub>out</sub> = 10 mA	≤ 2 A	0 °C ... +55 °C (mounted)	-20 °C ... +85 °C	92.4 / 112.5 / 12.5	CE, UL, CSA
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### Coordination of insulation according to EN 50178, 04/98

Rated voltage	300 V
Rated surge voltage	4 kV
Overvoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 3 mm
Isolation voltage, voltage strength	4 kV <sub>eff</sub> / 1 min
Standards/specifications	EN 50178
EMC standards	EN 50081, EN 50082, EN 55011
Dimensions and accessories see	Page 298 + 308

300 V	4 kV	III	2	≥ 3 mm	4 kV <sub>eff</sub> / 1 min	EN 50178	EN 50081, EN 50082, EN 55011	Page 298 + 308
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300 V	4 kV	III	2	≥ 3 mm	4 kV <sub>eff</sub> / 1 min	EN 50178	EN 50081, EN 50082, EN 55011	Page 298 + 308
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300 V	4 kV	III	2	≥ 3 mm	4 kV <sub>eff</sub> / 1 min	EN 50178	EN 50081, EN 50082, EN 55011	Page 298 + 308
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\*T<sub>U</sub> = 23 °C single module

# DC/DC Signal Conditioners

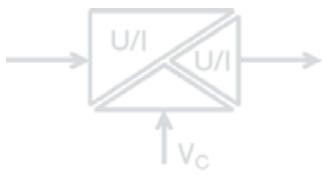
## WAVEANALOG DC/DC

- 3-way-isolation
- analogue signal conditioning
- indication LED
- cross-connectable voltage supply via cross-connectors

### Approvals:



Block diagram



## CCC

0 ... 20 mA / 0 ... 20 mA



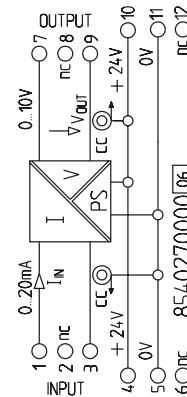
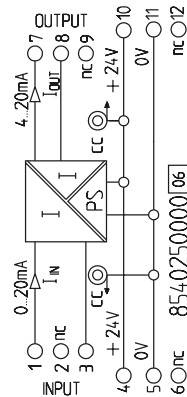
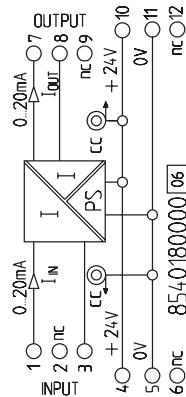
## CCC

0 ... 20 mA / 4 ... 20 mA



## CVC

0 ... 20 mA / 0 ... 10 V



Ordering data
Screw connection
Tension clamp connection
Input/output

Type	Cat. No.
WAS5 CCC	<b>8540180000*</b>
WAZ5 CCC	<b>8540190000*</b>
Input/output	0 ... 20 mA / 0 ... 20 mA

Type	Cat. No.
WAS5 CCC	<b>8540250000</b>
WAZ5 CCC	<b>8540260000</b>
Input/output	0 ... 20 mA / 4 ... 20 mA

Type	Cat. No.
WAS5 CVC	<b>8540270000</b>
WAZ5 CVC	<b>8540280000</b>
Input/output	0 ... 20 mA / 0 ... 10 V

Technical data**	
<b>Input signal</b>	0 ... 20 mA
Input current max	25 mA
Input resistance	≤ 110 Ω
<b>Output signal</b>	0 ... 20 mA
Load resistance	≤ 600 Ω
Accuracy at Tu=23 °C	0.2%
Temperature coefficient	± 250 ppm / K
Response time	≤ 45 ms
Cut-off frequency (-3 dB)	10 Hz

<b>Input signal</b>	0 ... 20 mA
Input current max	25 mA
Input resistance	≤ 110 Ω
<b>Output signal</b>	4 ... 20 mA
Load resistance	≤ 600 Ω
Accuracy at Tu=23 °C	0.2%
Temperature coefficient	± 250 ppm / K
Response time	≤ 45 ms
Cut-off frequency (-3 dB)	10 Hz

<b>Input signal</b>	0 ... 20 mA
Input current max	25 mA
Input resistance	≤ 110 Ω
<b>Output signal</b>	0 ... 10 V
Load resistance	≥ 1 kΩ
Accuracy at Tu=23 °C	0.2%
Temperature coefficient	± 250 ppm / K
Response time	≤ 45 ms
Cut-off frequency (-3 dB)	10 Hz

<b>Input signal</b>	0 ... 20 mA
Input current max	25 mA
Input resistance	≤ 110 Ω
<b>Output signal</b>	0 ... 10 V
Load resistance	≥ 1 kΩ
Accuracy at Tu=23 °C	0.2%
Temperature coefficient	± 250 ppm / K
Response time	≤ 45 ms
Cut-off frequency (-3 dB)	10 Hz

General	
Voltage supply	24 Vdc ±25% (18 Vdc ... <b>24 Vdc</b> ... 30 Vdc)
Power consumption	< 1.5 W at I <sub>out</sub> = 20 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C when mounted horizontally
Storage temperature	-20 °C ... +85 °C
Dimensions L / H / W mm	92.4 / 112.5 / 17.5
Approvals	CE, cUL

Voltage supply	24 Vdc ±25% (18 Vdc ... <b>24 Vdc</b> ... 30 Vdc)
Power consumption	< 1.5 W at I <sub>out</sub> = 20 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C when mounted horizontally
Storage temperature	-20 °C ... +85 °C
Dimensions L / H / W mm	92.4 / 112.5 / 17.5
Approvals	CE, cUL

Voltage supply	24 Vdc ±25% (18 Vdc ... <b>24 Vdc</b> ... 30 Vdc)
Power consumption	< 1.5 W at I <sub>out</sub> = 20 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C when mounted horizontally
Storage temperature	-20 °C ... +85 °C
Dimensions L / H / W mm	92.4 / 112.5 / 17.5
Approvals	CE, cUL

Voltage supply	24 Vdc ±25% (18 Vdc ... <b>24 Vdc</b> ... 30 Vdc)
Power consumption	< 1.3 W at I <sub>out</sub> = 5 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C when mounted horizontally
Storage temperature	-20 °C ... +85 °C
Dimensions L / H / W mm	92.4 / 112.5 / 17.5
Approvals	CE, cUL

Coordination of insulation according to EN 50178, 04/98	
Rated voltage	300 V
Rated surge voltage	4 kV
Overvoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 3 mm
Coupling capacity	1 nF
Input / output to supply	1 nF
Isolation voltage, voltage strength	4 kV <sub>eff</sub> / 1 min
Input/output to mounting rail	4 kV <sub>eff</sub> / 1 min
Standards/specifications	EN 50178
EMC standards	EN 50081, EN 50082, EN 55011
Dimensions and accessories see	Page 298 + 308

Rated voltage	300 V
Rated surge voltage	4 kV
Overvoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 3 mm
Coupling capacity	1 nF
Input / output to supply	1 nF
Isolation voltage, voltage strength	4 kV <sub>eff</sub> / 1 min
Input/output to mounting rail	4 kV <sub>eff</sub> / 1 min
Standards/specifications	EN 50178
EMC standards	EN 50081, EN 50082, EN 55011
Dimensions and accessories see	Page 298 + 308

Rated voltage	300 V
Rated surge voltage	4 kV
Overvoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 3 mm
Coupling capacity	1 nF
Input / output to supply	1 nF
Isolation voltage, voltage strength	4 kV <sub>eff</sub> / 1 min
Input/output to mounting rail	4 kV <sub>eff</sub> / 1 min
Standards/specifications	EN 50178
EMC standards	EN 50081, EN 50082, EN 55011
Dimensions and accessories see	Page 298 + 308

Rated voltage	300 V
Rated surge voltage	4 kV
Overvoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 3 mm
Coupling capacity	1 nF
Input / output to supply	1 nF
Isolation voltage, voltage strength	4 kV <sub>eff</sub> / 1 min
Input/output to mounting rail	4 kV <sub>eff</sub> / 1 min
Standards/specifications	EN 50178
EMC standards	EN 50081, EN 50082, EN 55011
Dimensions and accessories see	Page 298 + 308

\*\* Tu = 23 °C single module  
\* Input/output 4 ... 20 mA/4 ... 20 mA possible

# DC/DC Signal Conditioners

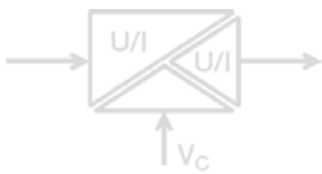
## WAVEANALOG DC/DC

- 3-way-isolation
- analogue signal conditioning
- indication LED
- cross-connectable voltage supply via cross-connectors

### Approvals:

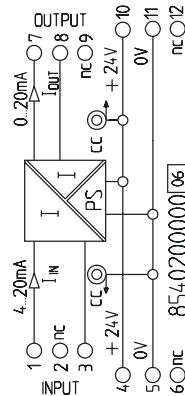


Block diagram



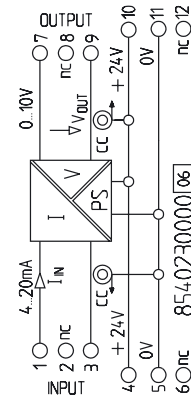
## CCC

4 ... 20 mA / 0 ... 20 mA



## CVC

4 ... 20 mA / 0 ... 10 V



Ordering data
Screw connection
Tension clamp connection
Input/output

Technical data
<b>Input signal</b>
Input signal max
Input resistance
<b>Output signal</b>
Load resistance
Accuracy at Tu=23 °C
Temperature coefficient
Response time
Cut-off frequency (-3 dB)

General*
Voltage supply
Power consumption
Current carrying capacity of cross-connection
Operating temperature
Storage temperature
Dimensions L / H / W mm
Approvals

Coordination of insulation according to EN 50178, 04/98
Rated voltage
Rated surge voltage
Overvoltage category
Contamination class
Clearance and creepage distance
Coupling capacity
Input / output to supply
Isolation voltage, voltage strength
Input/output to mounting rail
Standards/specifications
EMC standards

Dimensions and accessories see
--------------------------------

Type	Cat. No.
WAS5 CCC	8540200000
WAZ5 CCC	8540210000

4 ... 20 mA
25 mA
≤ 110 Ω
0 ... 20 mA
≤ 600 Ω
0.2%
± 250 ppm / K
≤ 45 ms
10 Hz

24 Vdc ±25%
(18 Vdc ... 24 Vdc ... 30 Vdc)
< 1.5 W at I <sub>out</sub> = 20 mA
≤ 2 A
0 °C ... +55 °C
when mounted horizontally
-20 °C ... +85 °C
92.4 / 112.5 / 17.5
CE, cUL

300 V
4 kV
III
2
≥ 3 mm
1 nF
4 kV <sub>eff</sub> / 1 min
EN 50178
EN 50081, EN 50082, EN 55011

Page 298 + 308
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Type	Cat. No.
WAS5 CVC	8540230000
WAZ5 CVC	8540240000

4 ... 20 mA
25 mA
≤ 110 Ω
0 ... 10 V
≥ 1 kΩ
0.2%
± 250 ppm / K
≤ 45 ms
10 Hz

24 Vdc ±25%
(18 Vdc ... 24 Vdc ... 30 Vdc)
< 1.3 W at I <sub>out</sub> = 5 mA
≤ 2 A
0 °C ... +55 °C
when mounted horizontally
-20 °C ... +85 °C
92.4 / 112.5 / 17.5
CE, cUL

300 V
4 kV
III
2
≥ 3 mm
1 nF
4 kV <sub>eff</sub> / 1 min
EN 50178
EN 50081, EN 50082, EN 55011

Page 298 + 308
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\*T<sub>U</sub> = 23 °C single module



# DC/DC Signal Conditioners

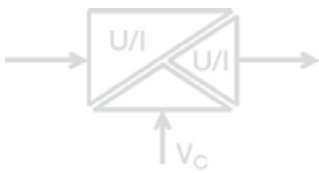
## WAVEANALOG DC/DC

- 3-way-isolation
- analogue signal conditioning
- indication LED
- cross-connectable voltage supply via cross-connectors

### Approvals:



#### Block diagram



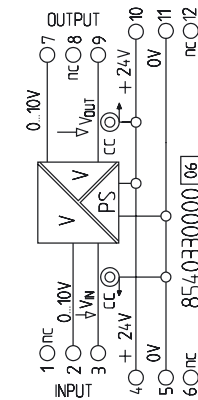
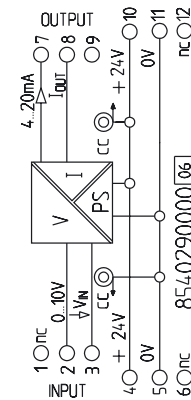
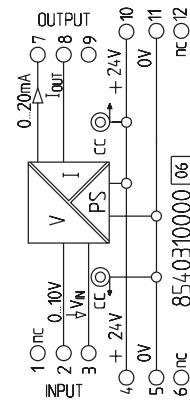
**VCC**  
0 ... 10 V / 0 ... 20 mA



**VCC**  
0 ... 10 V / 4 ... 20 mA



**VVC**  
0 ... 10 V / 0 ... 10 V



#### Ordering data

Screw connection	WAS5 VCC	8540310000
Tension clamp connection	WAZ5 VCC	8540320000
Input/output	0 ... 10 V / 0 ... 20 mA	

Type	Cat. No.
WAS5 VCC	8540310000
WAZ5 VCC	8540320000
Input/output	0 ... 10 V / 0 ... 20 mA

Type	Cat. No.
WAS5 VCC	8540290000
WAZ5 VCC	8540300000
Input/output	0 ... 10 V / 4 ... 20 mA

Type	Cat. No.
WAS5 VVC	8540330000
WAZ5 VVC	8540340000
Input/output	0 ... 10 V / 0 ... 10 V

#### Technical data\*

<b>Input signal</b>	0 ... 10 V
Input voltage max.	15 V
Input resistance	typ. 100 kΩ
<b>Output signal</b>	0 ... 20 mA
Load resistance	≤ 600 Ω
Accuracy at Tu=23 °C	0.2%
Temperature coefficient	± 250 ppm / K
Response time	≤ 45 ms
Cut-off frequency (-3 dB)	10 Hz

0 ... 10 V	15 V	typ. 100 kΩ	0 ... 20 mA	≤ 600 Ω	0.2%	± 250 ppm / K	≤ 45 ms	10 Hz
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0 ... 10 V	15 V	typ. 100 kΩ	4 ... 20 mA	≤ 600 Ω	0.2%	± 250 ppm / K	≤ 45 ms	10 Hz
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0 ... 10 V	15 V	typ. 100 kΩ	0 ... 10 V	≥ 1 kΩ	0.2%	± 250 ppm / K	≤ 45 ms	10 Hz
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#### General

Voltage supply	24 Vdc ±25% (18 Vdc ... <b>24 Vdc</b> ... 30 Vdc)
Power consumption	< 1.5 W at I <sub>out</sub> = 20 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C when mounted horizontally
Storage temperature	-20 °C ... +85 °C
Dimensions L / H / W mm	92.4 / 112.5 / 17.5
Approvals	CE, cUL

24 Vdc ±25% (18 Vdc ... <b>24 Vdc</b> ... 30 Vdc)	< 1.5 W at I <sub>out</sub> = 20 mA	≤ 2 A	0 °C ... +55 °C when mounted horizontally	-20 °C ... +85 °C	92.4 / 112.5 / 17.5	CE, cUL
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24 Vdc ±25% (18 Vdc ... <b>24 Vdc</b> ... 30 Vdc)	< 1.5 W at I <sub>out</sub> = 20 mA	≤ 2 A	0 °C ... +55 °C when mounted horizontally	-20 °C ... +85 °C	92.4 / 112.5 / 17.5	CE, cUL
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24 Vdc ±25% (18 Vdc ... <b>24 Vdc</b> ... 30 Vdc)	< 1.3 W at I <sub>out</sub> = 5 mA	≤ 2 A	0 °C ... +55 °C when mounted horizontally	-20 °C ... +85 °C	92.4 / 112.5 / 17.5	CE, cUL
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#### Coordination of insulation according to EN 50178, 04/98

Rated voltage	300 V
Rated surge voltage	4 kV
Overvoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 3 mm
Coupling capacity	1 nF
Input / output to supply	1 nF
Isolation voltage, voltage strength	4 kV <sub>eff</sub> / 1 min
Input/output to mounting rail	4 kV <sub>eff</sub> / 1 min
Standards/specifications	EN 50178
EMC standards	EN 50081, EN 50082, EN 55011

300 V	4 kV	III	2	≥ 3 mm	1 nF	1 nF	4 kV <sub>eff</sub> / 1 min	4 kV <sub>eff</sub> / 1 min	EN 50178	EN 50081, EN 50082, EN 55011
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300 V	4 kV	III	2	≥ 3 mm	1 nF	1 nF	4 kV <sub>eff</sub> / 1 min	4 kV <sub>eff</sub> / 1 min	EN 50178	EN 50081, EN 50082, EN 55011
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300 V	4 kV	III	2	≥ 3 mm	1 nF	1 nF	4 kV <sub>eff</sub> / 1 min	4 kV <sub>eff</sub> / 1 min	EN 50178	EN 50081, EN 50082, EN 55011
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Dimensions and accessories see	Page 298 + 308
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Page 298 + 308
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Page 298 + 308
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Page 298 + 308
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\*T<sub>U</sub> = 23 °C single module

# DC/DC Signal Conditioners

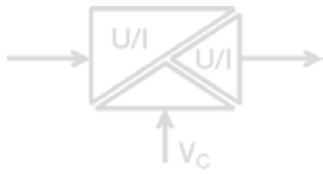
## WAVEANALOG DC/DC 20 kHz

- 3-way-isolation
- transmission frequency 20 kHz
- analogue signal conditioning
- cross-connectable voltage supply via cross-connectors

### Approvals:



#### Block diagram



## CCC HF

0 ... 20 mA / 0 ... 20 mA



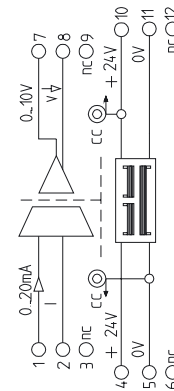
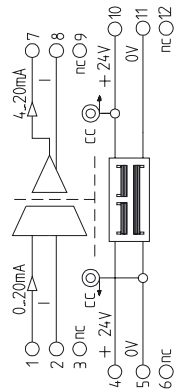
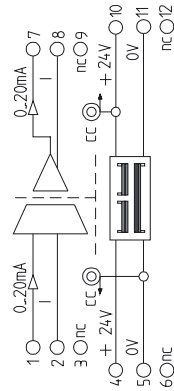
## CCC HF

0 ... 20 mA / 4 ... 20 mA



## CVC HF

0 ... 20 mA / 0 ... 10 V



#### Ordering data

Screw connection	Type	Cat. No.
Tension clamp connection	WAS5 CCC HF	<b>8447160000*</b>
Input/output	WAZ5 CCC HF	<b>8447170000*</b>
	0 ... 20 mA / 0 ... 20 mA	

#### Technical data\*\*

<b>Input signal</b>	0 ... 20 mA
Input current max	50 mA
Input resistance	50 Ω
<b>Output signal</b>	0 ... 20 mA
Load resistance	≤ 500 Ω
Accuracy at Tu=23 °C	< 0.2% of FS
Temperature coefficient	≤ 250 ppm / K of FS
Response time	≤ 40 μs (typ. 30 μs)
Cut-off frequency (-3 dB)	≥ 15 kHz (typ. 20 kHz)

#### General

Voltage supply	24 Vdc ±25% (18 ... 30 Vdc)
Power consumption	< 1.5 W at I <sub>out</sub> = 20 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C
Storage temperature	-20 °C ... +85 °C
Dimensions L / H / W mm	92.4 / 112.5 / 17.5
Approvals	CE, UL, CSA

#### Coordination of insulation according to EN 50178, 04/98

Rated voltage	300 V
Rated surge voltage	4 kV
Overtoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 3 mm
Coupling capacity	
Input / output to supply	1 nF
Isolation voltage, voltage strength	
Input/output to mounting rail	4 kV <sub>eff</sub> / 1 min

#### Standards/specifications

EMC standards	EN 50178 EN 50081, EN 50082, EN 55011
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Dimensions and accessories see

Page 298 + 308

#### Ordering data

Screw connection	Type	Cat. No.
Tension clamp connection	WAS5 CCC HF	<b>8447190000</b>
Input/output	WAZ5 CCC HF	<b>8447200000</b>
	0 ... 20 mA / 4 ... 20 mA	

#### Technical data\*\*

<b>Input signal</b>	0 ... 20 mA
Input current max	50 mA
Input resistance	50 Ω
<b>Output signal</b>	4 ... 20 mA
Load resistance	≤ 500 Ω
Accuracy at Tu=23 °C	< 0.2% of FS
Temperature coefficient	≤ 250 ppm / K of FS
Response time	≤ 40 μs (typ. 30 μs)
Cut-off frequency (-3 dB)	≥ 15 kHz (typ. 20 kHz)

#### General

Voltage supply	24 Vdc ±25% (18 ... 30 Vdc)
Power consumption	< 1.5 W at I <sub>out</sub> = 20 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C
Storage temperature	-20 °C ... +85 °C
Dimensions L / H / W mm	92.4 / 112.5 / 17.5
Approvals	CE, UL, CSA

#### Coordination of insulation according to EN 50178, 04/98

Rated voltage	300 V
Rated surge voltage	4 kV
Overtoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 3 mm
Coupling capacity	
Input / output to supply	1 nF
Isolation voltage, voltage strength	
Input/output to mounting rail	4 kV <sub>eff</sub> / 1 min

#### Standards/specifications

EMC standards	EN 50178 EN 50081, EN 50082, EN 55011
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Page 298 + 308

#### Ordering data

Screw connection	Type	Cat. No.
Tension clamp connection	WAS5 CVC HF	<b>8447220000</b>
Input/output	WAZ5 CVC HF	<b>8447230000</b>
	0 ... 20 mA / 0 ... 10 V	

#### Technical data\*\*

<b>Input signal</b>	0 ... 20 mA
Input current max	50 mA
Input resistance	50 Ω
<b>Output signal</b>	0 ... 10 V
Load resistance	≥ 2 kΩ
Accuracy at Tu=23 °C	< 0.2% of FS
Temperature coefficient	≤ 250 ppm / K of FS
Response time	≤ 40 μs (typ. 30 μs)
Cut-off frequency (-3 dB)	≥ 15 kHz (typ. 20 kHz)

#### General

Voltage supply	24 Vdc ±25% (18 ... 30 Vdc)
Power consumption	< 1.3 W at I <sub>out</sub> = 5 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C
Storage temperature	-20 °C ... +85 °C
Dimensions L / H / W mm	92.4 / 112.5 / 17.5
Approvals	CE, UL, CSA

#### Coordination of insulation according to EN 50178, 04/98

Rated voltage	300 V
Rated surge voltage	4 kV
Overtoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 3 mm
Coupling capacity	
Input / output to supply	1 nF
Isolation voltage, voltage strength	
Input/output to mounting rail	4 kV <sub>eff</sub> / 1 min

#### Standards/specifications

EMC standards	EN 50178 EN 50081, EN 50082, EN 55011
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Page 298 + 308

\*\*T<sub>U</sub> = 23 °C single module

\* Input/output 4 ... 20 mA/4 ... 20 mA possible

# DC/DC Signal Conditioners

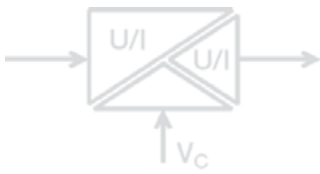
## WAVEANALOG DC/DC 20 kHz

- 3-way-isolation
- transmission frequency 20 kHz
- analogue signal conditioning
- cross-connectable voltage supply via cross-connectors

### Approvals:

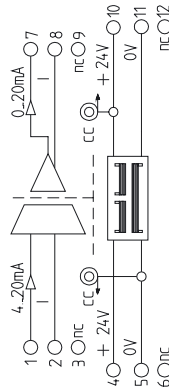


#### Block diagram



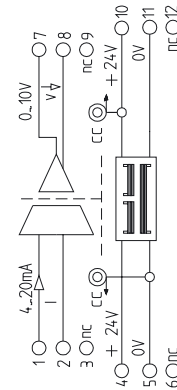
## CCC HF

4 ... 20 mA / 0 ... 20 mA



## CVC HF

4 ... 20 mA / 0 ... 10 V



Ordering data
Screw connection
Tension clamp connection
Input/output

Technical data*
<b>Input signal</b>
Input current max
Input resistance
<b>Output signal</b>
Load resistance
Accuracy at Tu=23 °C
Temperature coefficient
Response time
Cut-off frequency (-3 dB)

General
Voltage supply
Power consumption
Current carrying capacity of cross-connection
Operating temperature
Storage temperature
Dimensions L / H / W mm
Approvals

Coordination of insulation according to EN 50178, 04/98
Rated voltage
Rated surge voltage
Overvoltage category
Contamination class
Clearance and creepage distance
Coupling capacity
Input / output to supply
Isolation voltage, voltage strength
Input/output to mounting rail
Standards/specifications
EMC standards
Dimensions and accessories see

Type	Cat. No.
WAS5 CCC HF	<b>8447250000</b>
WAZ5 CCC HF	<b>8447260000</b>

4 ... 20 mA
50 mA
50 Ω
0 ... 20 mA
≤ 500 Ω
< 0.2% of FS
≤ 250 ppm / K of FS
≤ 40 μs (typ. 30 μs)
≥ 15 kHz (typ. 20 kHz)

24 Vdc ±25% (18 ... 30 Vdc)
< 1.5 W at I <sub>out</sub> = 20 mA
≤ 2 A
0 °C ... +55 °C
-20 °C ... +85 °C
92.4 / 112.5 / 17.5
CE, UL, CSA

300 V
4 kV
III
2
≥ 3 mm
1 nF
4 kV <sub>eff</sub> / 1 min
EN 50178
EN 50081, EN 50082, EN 55011
Page 298 + 308

Type	Cat. No.
WAS5 CVC HF	<b>8447280000</b>
WAZ5 CVC HF	<b>8447290000</b>

4 ... 20 mA
50 mA
50 Ω
0 ... 10 V
≥ 2 kΩ
< 0.2% of FS
≤ 250 ppm / K of FS
≤ 40 μs (typ. 30 μs)
≥ 15 kHz (typ. 20 kHz)

24 Vdc ±25% (18 ... 30 Vdc)
< 1.3 W at I <sub>out</sub> = 5 mA
≤ 2 A
0 °C ... +55 °C
-20 °C ... +85 °C
92.4 / 112.5 / 17.5
CE, UL, CSA

300 V
4 kV
III
2
≥ 3 mm
1 nF
4 kV <sub>eff</sub> / 1 min
EN 50178
EN 50081, EN 50082, EN 55011
Page 298 + 308

\*T<sub>U</sub> = 23 °C single module

# DC/DC Signal Conditioners

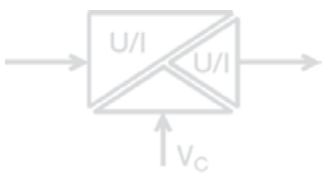
## WAVEANALOG DC/DC 20 kHz

- 3-way-isolation
- transmission frequency 20 kHz
- analogue signal conditioning
- cross-connectable voltage supply via cross-connectors

### Approvals:

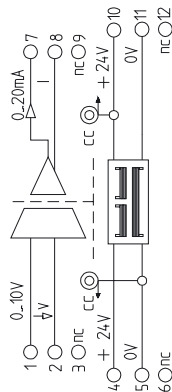


#### Block diagram



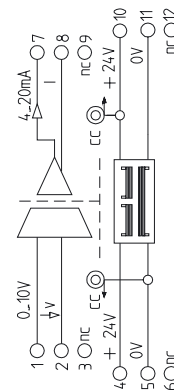
## VCC HF

0 ... 10 V / 0 ... 20 mA



## VCC HF

0 ... 10 V / 4 ... 20 mA



Ordering data
Screw connection
Tension clamp connection
Input/output

Technical data*
<b>Input signal</b>
Input voltage max.
Input resistance
<b>Output signal</b>
Load resistance
Accuracy at $T_u=23\text{ }^\circ\text{C}$
Temperature coefficient
Response time
Cut-off frequency (-3 dB)

General
Voltage supply
Power consumption
Current carrying capacity of cross-connection
Operating temperature
Storage temperature
Dimensions L / H / W mm
Approvals

Coordination of insulation according to EN 50178, 04/98
Rated voltage
Rated surge voltage
Overvoltage category
Contamination class
Clearance and creepage distance
Coupling capacity
Input / output to supply
Isolation voltage, voltage strength
Input/output to mounting rail
Standards/specifications
EMC standards
Dimensions and accessories see

Type	Cat. No.
WAS5 VCC HF	<b>8447310000</b>
WAZ5 VCC HF	<b>8447320000</b>
0 ... 10 V / 0 ... 20 mA	

0 ... 10 V
15 V
500 k $\Omega$
0 ... 20 mA
$\leq 500\ \Omega$
$\pm 0.2\%$ of FS
$\leq 250\text{ ppm} / \text{K}$ of FS
$\leq 40\ \mu\text{s}$ (typ. 30 $\mu\text{s}$ )
$\geq 15\text{ kHz}$ (typ. 20 kHz)

24 Vdc $\pm 25\%$ (18 ... 30 Vdc)
$< 1.5\text{ W}$ at $I_{out} = 20\text{ mA}$
$\leq 2\text{ A}$
0 $^\circ\text{C}$ ... +55 $^\circ\text{C}$
-20 $^\circ\text{C}$ ... +85 $^\circ\text{C}$
92.4 / 112.5 / 17.5
CE, UL, CSA

300 V
4 kV
III
2
$\geq 3\text{ mm}$
1 nF
4 kV $_{eff}$ / 1 min
EN 50178
EN 50081, EN 50082, EN 55011
Page 298 + 308

Type	Cat. No.
WAS5 VCC HF	<b>8447340000</b>
WAZ5 VCC HF	<b>8447350000</b>
0 ... 10 V / 4 ... 20 mA	

0 ... 10 V
15 V
500 k $\Omega$
4 ... 20 mA
$\leq 500\ \Omega$
$\pm 0.2\%$ of FS
$\leq 250\text{ ppm} / \text{K}$ of FS
$\leq 40\ \mu\text{s}$ (typ. 30 $\mu\text{s}$ )
$\geq 15\text{ kHz}$ (typ. 20 kHz)

24 Vdc $\pm 25\%$ (18 ... 30 Vdc)
$< 1.5\text{ W}$ at $I_{out} = 20\text{ mA}$
$\leq 2\text{ A}$
0 $^\circ\text{C}$ ... +55 $^\circ\text{C}$
-20 $^\circ\text{C}$ ... +85 $^\circ\text{C}$
92.4 / 112.5 / 17.5
CE, UL, CSA

300 V
4 kV
III
2
$\geq 3\text{ mm}$
1 nF
4 kV $_{eff}$ / 1 min
EN 50178
EN 50081, EN 50082, EN 55011
Page 298 + 308

\* $T_u = 23\text{ }^\circ\text{C}$  single module

# DC/DC Signal Conditioners

## WAVEANALOG DC/DC 20 kHz

- 3-way-isolation
- transmission frequency 20 kHz
- analogue signal conditioning
- cross-connectable voltage supply via cross-connectors

## VVC HF

0 ... 10 V / 0 ... 10 V



### Approvals:



## VVC HF

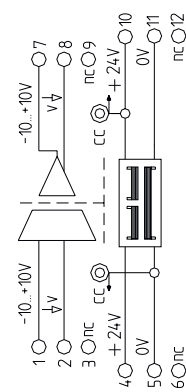
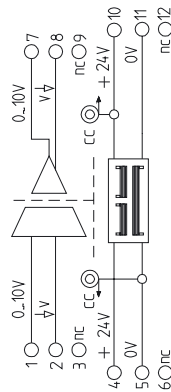
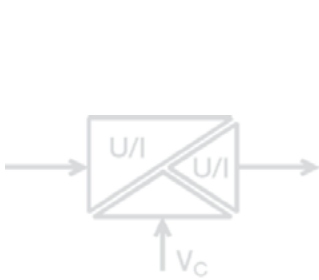
-10 ... +10 V / -10 ... +10 V



### Approvals:



### Block diagram



Ordering data
Screw connection
Tension clamp connection
Input/output

Technical data*	
<b>Input signal</b>	0 ... 10 V
Input voltage max.	15 V
Input resistance	500 kΩ
<b>Output signal</b>	0 ... 10 V
Load resistance	≥ 2 kΩ
Accuracy at Tu=23 °C	± 0.2% of FS
Temperature coefficient	≤ 250 ppm / K of FS
Response time	≤ 40 μs (typ. 30 μs)
Cut-off frequency (-3 dB)	≥ 15 kHz (typ. 20 kHz)

General	
Voltage supply	24 Vdc ±25% (18 ... 30 Vdc)
Power consumption	< 1.3 W at I <sub>out</sub> = 5 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C
Storage temperature	-20 °C ... +85 °C
Dimensions L / H / W mm	92.4 / 112.5 / 17.5
Approvals	CE, UL, CSA

Coordination of insulation according to EN 50178, 04/98	
Rated voltage	300 V
Rated surge voltage	4 kV
Overvoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 3 mm
Coupling capacity	
Input / output to supply	1 nF
Isolation voltage, voltage strength	
Input/output to mounting rail	4 kV <sub>eff</sub> / 1 min
Standards/specifications	EN 50178
EMC standards	EN 50081, EN 50082, EN 55011
Dimensions and accessories see	Page 298 + 308

Type	Cat. No.
WAS5 VVC HF	<b>8447370000</b>
WAZ5 VVC HF	<b>8447380000</b>

0 ... 10 V
15 V
500 kΩ
0 ... 10 V
≥ 2 kΩ
± 0.2% of FS
≤ 250 ppm / K of FS
≤ 40 μs (typ. 30 μs)
≥ 15 kHz (typ. 20 kHz)

24 Vdc ±25% (18 ... 30 Vdc)
< 1.3 W at I <sub>out</sub> = 5 mA
≤ 2 A
0 °C ... +55 °C
-20 °C ... +85 °C
92.4 / 112.5 / 17.5
CE, UL, CSA

300 V
4 kV
III
2
≥ 3 mm
1 nF
4 kV <sub>eff</sub> / 1 min
EN 50178
EN 50081, EN 50082, EN 55011
Page 298 + 308

Type	Cat. No.
WAS5 VVC HF	<b>8561610000</b>
WAZ5 VVC HF	<b>8587000000</b>

-10 ... +10 V
± 15 V
500 kΩ
-10 ... +10 V
≥ 2 kΩ
± 0.2% of measurement range
≤ 250 ppm / K of measurement range
≤ 40 μs (typ. 30 μs)
≥ 15 kHz (typ. 20 kHz)

24 Vdc ±25% (18 ... 30 Vdc)
< 1.3 W at I <sub>out</sub> = 5 mA
≤ 2 A
0 °C ... +55 °C
-20 °C ... +85 °C
92.4 / 112.5 / 17.5
CE, cUL

300 V
4 kV
III
2
≥ 3 mm
1 nF
4 kV <sub>eff</sub> / 1 min
EN 50178
EN 50081, EN 50082, EN 55011
Page 298 + 308

\*Tu = 23 °C single module

# DC/DC Signal Conditioners (Configurable)

## WAVEANALOG PRO DC/DC

- universally adjustable via DIP switch
- adjustment help via Internet
- 3-way-isolation
- voltage supply from 20 - 230 V ac/dc
- low power loss
- adjustable transmission frequency
- indication LED

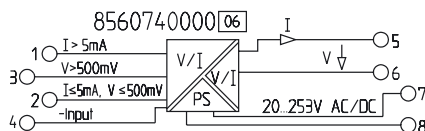
### Approvals:



#### Block diagram



## PRO DC/DC



#### Ordering data

Screw connection	Type	Cat. No.
Tension clamp connection	WAS4 PRO DC/DC	<b>8560740000</b>
Input/output	WAZ4 PRO DC/DC	<b>8560750000</b>
	configurable	

#### Technical data\*

##### Input (adjustable)

Voltage uni-/bipolar adjustable  
Voltage calibrated ranges

Current uni-/bipolar adjustable  
Current calibrated ranges

Input resistance  
at current input range < 5 mA / > 5 mA  
at voltage input

Input capacity  
at current input

Voltage input range < 500 mV / > 500 mV

Overload capacity  
at current input range < 5 mA / > 5 mA  
Voltage input range < 500 mV / > 500 mV

##### Output (adjustable)

Voltage uni-/bipolar adjustable  
Voltage calibrated ranges

Current uni-/bipolar adjustable  
Current calibrated ranges

Offset

Load  
at output current  
at output voltage

Offset

Residual ripple  
Adjustment zero pot.  
Adjustment span pot.

Gain error

Temperature coefficient  
Cut-off frequency

#### General

Voltage supply

Power consumption

Frequency range

Operating temperature

Storage temperature

Factory setting

Dimensions L/H/B mm

Weight

Approvals

#### Coordination of insulation according to EN 50178, 04/98

Rated voltage

Rated surge voltage

Overvoltage category

Contamination class

Test voltage

#### Type

20 mV ... 200 V  
0 ... ±60 mV, 0 ... ±100 mV, 0 ... ±150 mV, 0 ... ±300 mV,  
0 ... ±500 mV, 0 ... ±1V, 0 ... ±5V, 0 ... ±10 V, 0 ... ±100 V

0.1 mA ... 100 mA  
0 ... ±0.3 mA, 0 ... ±1 mA, 0 ... ±5 mA, 0 ... ±16 mA,  
0 ... 20 mA, 0 ... 50 mA

approx. 100 Ω / approx. 5 Ω  
approx. 1 MΩ

approx. 1 nF  
approx. 1 nF / approx. 500 pF

< 75 mA / < 300 mA  
max. < 20 mA / < 3 mA continuous current

0 ... 10 V  
0 ... ±10 V, 2 ... 10 V, 0 ... ±5 V, 1 ... 5 V

0 ... 20 mV  
0 ... ±20 mA, 4 ... 20 mA

-100%, -50%, 0%, 50%, 100% of measuring span of the  
chosen output range

< 12 V (600 Ω at 20 mA)  
< 10 mA (1 KΩ at 10 V)  
20 µA and. 10 mV

< 10 mVeff  
+25% measuring span of the chosen output range

0.33 ... 3.30 x end value of chosen input range  
< 0.1% of FS

< 60 ppm/K of FS

> 10 kHz, < 10 Hz switch

20 ... 230 V ac/dc +10%

approx. 1 W

48 ... 62 Hz

-10 °C ... +70 °C

-40 °C ... +85 °C

0 ... 10 V / 0 ... 10 V 10 Hz

92.4 / 112.5 / 12.5

approx. 100 g

CE, cUL, GL

600 V

5 kV, 1.2/50 us, acc. to IEC 255-4

III

2

4 KVeff input against output against auxiliary power

EN 50178

DIN EN 61326, EN 61326/A1, EN 50081-2, EN 61000-6-2

### Adjustment help WAVEtool

The service tool enables quick and uncomplicated configuration of WAVEANALOG PRO. Download from Internet: <http://www.weidmueller.de> → Products → Downloads (see page 192)

### Switch position/setting options

Input	Switch							
	S1				S2			
Input range	1	2	3	4	1	2	3	4
0 ... ±60 mV								■
0 ... ±100 mV	■							■
0 ... ±150 mV		■						■
0 ... ±300 mV	■	■						■
0 ... ±500 mV			■					■
0 ... ±1 V	■	■	■			■	■	■
0 ... ±5 V		■	■	■		■	■	■
0 ... ±10 V	■	■	■	■		■	■	■
0 ... ±100 V				■			■	■
0 ... ± ~0.3 mA	■	■	■	■		■	■	■
0 ... ±1 mA		■	■	■		■	■	■
0 ... ±5 mA	■	■	■	■		■	■	■
0 ... ±10 mA			■	■		■	■	■
0 ... ±20 mA	■	■	■	■		■	■	■
0 ... ±50 mA		■	■	■		■	■	■
0 ... ±20 mA*	■	■	■	■		■	■	■

\*Offset conversion not calibrated

Switch S2		4
calibrated ranges		■
Span pot. activated: input range x 0.33 ... x 3.30		

Output	Switch				
	S1		S3		
Output range	5	6	7	1	2
0 ... ±10 V				■	■
2 ... 10 V	■				
0 ... ±5 V		■		■	■
1 ... 5 V	■	■		■	■
0 ... ±20 mA			■		
4 ... 20 mA		■	■		

Offset	Switch			
	S1		S2	
(in % of output voltage)	8	9	10	5
0 %				■
-100 %	■			■
-50 %		■		■
+50 %	■	■		■
+100 %			■	■

Zero pot. activated: additional ±25 %

Switch S3		3
Bandwidth 10 kHz		
Bandwidth 10 Hz		■

Set range can be documented on side of housing.

■ = on  
= off

Dimensions and accessories see page 298 + 308

\*T<sub>U</sub> = 23 °C single module

# RTD Signal Conditioners

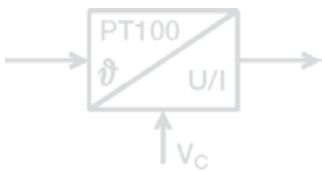
## WAVEANALOG RTD

- 2-wire technology
- configurable temperature range  
-200 °C ... +800 °C
- Configurable output current range  
0 ... 20 mA / 4 ... 20 mA
- cross-connectable voltage supply  
via cross-connectors

### Approvals:



### Block diagram



## PT100/2

0(4) ... 20 mA



## PT100/2

0 ... 10 V



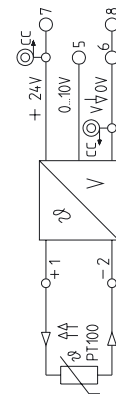
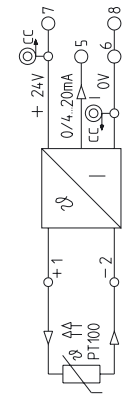
## Switch position/setting options

Tmin	1	2	3	Span	4	5	6
0 °C	■	■	■	40 ... 50 °C	■	■	■
-10 °C	■	■	■	50 ... 75 °C	■	■	■
-20 °C	■	■	■	75 ... 110 °C	■	■	■
-40 °C	■	■	■	110 ... 165 °C	■	■	■
-60 °C	■	■	■	165 ... 245 °C	■	■	■
-80 °C	■	■	■	245 ... 360 °C	■	■	■
-100 °C	■	■	■	360 ... 540 °C	■	■	■
-200 °C	■	■	■	540 ... 800 °C	■	■	■

Output <sup>1)</sup>	7
Range	7
0 ... 20 mA	■
4 ... 20 mA	■

<sup>1)</sup> only modules with current output

■ = on  
= off



### Ordering data

Screw connection	Type	Cat. No.
Tension clamp connection	WTS4 PT100/2 C	8432210000*
Input/output	WTZ4 PT100/2 C	8432220000*
	PT100/2 / 0(4) ... 20 mA	

Type	Cat. No.
WTS4 PT100/2 C	8432210000*
WTZ4 PT100/2 C	8432220000*
PT100/2 / 0(4) ... 20 mA	

Type	Cat. No.
WTS4 PT100/2 V	8432180000*
WTZ4 PT100/2 V	8432190000*
PT100/2 / 0 ... 10 V	

### Technical data\*\*\*

Input signal	PT100/2-wire
Temperature range	-200 ... +800 °C
Supply current	1.45 mA
Conductor resistance	
Output signal	PT100/2-wire
Load resistance	0(4) ... 20 mA
Accuracy at Tu=23 °C	≤ 500 Ω
Temperature coefficient	± 0.5% of measurement range
Measurement range ≥ 200 K	≤ 200 ppm / °C (typ. 80 ppm / °C)
100 K ≤ measurement range < 200 K	≤ 250 ppm / °C (typ. 100 ppm / °C)
40 K ≤ measurement range < 100 K	≤ 500 ppm / °C

Input signal	PT100/2-wire
Temperature range	-200 ... +800 °C
Supply current	1.45 mA
Conductor resistance	
Output signal	PT100/2-wire
Load resistance	0 ... 10 V
Accuracy at Tu=23 °C	≥ 1 kΩ
Temperature coefficient	± 0.5% of measurement range
Measurement range ≥ 200 K	≤ 200 ppm / °C (typ. 80 ppm / °C)
100 K ≤ measurement range < 200 K	≤ 250 ppm / °C (typ. 100 ppm / °C)
40 K ≤ measurement range < 100 K	≤ 500 ppm / °C

Input signal	PT100/2-wire
Temperature range	-200 ... +800 °C
Supply current	1.45 mA
Conductor resistance	
Output signal	PT100/2-wire
Load resistance	0 ... 10 V
Accuracy at Tu=23 °C	≥ 1 kΩ
Temperature coefficient	± 0.5% of measurement range
Measurement range ≥ 200 K	≤ 200 ppm / °C (typ. 80 ppm / °C)
100 K ≤ measurement range < 200 K	≤ 250 ppm / °C (typ. 100 ppm / °C)
40 K ≤ measurement range < 100 K	≤ 500 ppm / °C

### General

Voltage supply	24 Vdc ±20% (19.2 ... 28.8 Vdc)
Power consumption	< 48 mA at I <sub>out</sub> = 20 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C
Storage temperature	-20 °C ... +85 °C
Standards/specifications	EN 50178, IEC 751
EMC standards	EN 50081, EN 50082, EN 55011
Dimensions L / H / W mm	92.4 / 112.5 / 12.5
Approvals	CE, UL, CSA
Dimensions and accessories see	Page 298 + 308

Voltage supply	24 Vdc ±20% (19.2 ... 28.8 Vdc)
Power consumption	< 48 mA at I <sub>out</sub> = 20 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C
Storage temperature	-20 °C ... +85 °C
Standards/specifications	EN 50178, IEC 751
EMC standards	EN 50081, EN 50082, EN 55011
Dimensions L / H / W mm	92.4 / 112.5 / 12.5
Approvals	CE, UL, CSA
Dimensions and accessories see	Page 298 + 308

Voltage supply	24 Vdc ±20% (19.2 ... 28.8 Vdc)
Power consumption	< 38 mA at I <sub>out</sub> = 10 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C
Storage temperature	-20 °C ... +85 °C
Standards/specifications	EN 50178, IEC 751
EMC standards	EN 50081, EN 50082, EN 55011
Dimensions L / H / W mm	92.4 / 112.5 / 12.5
Approvals	CE, UL, CSA
Dimensions and accessories see	Page 298 + 308

\* without balancing

\*\*\* T<sub>U</sub> = 23 °C single module

### Preconfigured modules

	Input	Output		
		0 ... 20 mA	4 ... 20 mA	0 ... 10 V
Screw connection	0 ... 100 °C	8432210001	8432210011	8432180001
	special balancing	8432219999**	8432219999**	8432189999**
Tension clamp connection	0 ... 100 °C	8432220001	8432220011	8432190001
	special balancing	8432229999**	8432229999**	8432199999**

\*\*You must indicate the temperature range when ordering  
Please indicate additional output signal of current output

### Aids

- Voltage supply 24 Vdc, 50 mA
- Simulator for PT 100 or precision-resistance-decade
- Ampere-/voltmeter which can be calibrated to an accuracy of >0.1 % of the end value.



# RTD Signal Conditioners

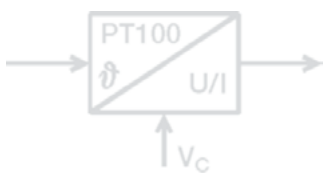
## WAVEANALOG RTD

- 3-wire technology
- configurable temperature range  
-200 °C ... +800 °C
- configurable output current range  
0 ... 20 mA / 4 ... 20 mA
- cross-connectable voltage supply  
via cross-connectors

### Approvals:



### Block diagram



## PT100/3

0(4) ... 20 mA



## PT100/3

0 ... 10 V



### Switch position/setting options

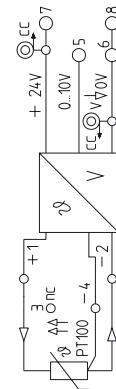
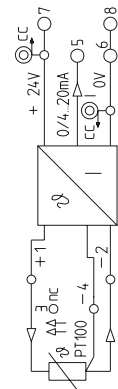
Tmin	1	2	3	Span	4	5	6
0 °C	■	■	■	40 ... 50 °C	■	■	■
-10 °C	■	■	■	50 ... 75 °C	■	■	■
-20 °C	■	■	■	75 ... 110 °C	■	■	■
-40 °C	■	■	■	110 ... 165 °C	■	■	■
-60 °C	■	■	■	165 ... 245 °C	■	■	■
-80 °C	■	■	■	245 ... 360 °C	■	■	■
-100 °C	■	■	■	360 ... 540 °C	■	■	■
-200 °C	■	■	■	540 ... 800 °C	■	■	■

### Output<sup>1)</sup>

Range	7
0 ... 20 mA	■
4 ... 20 mA	■

<sup>1)</sup> only modules with current output

■ = on  
= off



### Ordering data

Screw connection	Type	Cat. No.
Tension clamp connection	WTS4 PT100/3 C	<b>8432150000*</b>
Input/output	WTZ4 PT100/3 C	<b>8432160000*</b>
	PT100/3 / 0(4) ... 20 mA	

Type	Cat. No.
WTS4 PT100/3 C	<b>8432150000*</b>
WTZ4 PT100/3 C	<b>8432160000*</b>
PT100/3 / 0(4) ... 20 mA	

Type	Cat. No.
WTS4 PT100/3 V	<b>8432090000*</b>
WTZ4 PT100/3 V	<b>8432130000*</b>
PT100/3 / 0 ... 10 V	

### Technical data\*\*\*

<b>Input signal</b>	PT100/3-wire
Temperature range	-200 ... +800 °C
Supply current	1.45 mA
Conductor resistance	≤ 50 Ω
<b>Output signal</b>	0(4) ... 20 mA
Load resistance	≤ 500 Ω
Accuracy at Tu=23 °C	± 0.5% of measurement range
Temperature coefficient	
Measurement range ≥ 200 K	≤ 200 ppm / °C (typ. 80 ppm / °C)
100 K ≤ measurement range < 200 K	≤ 250 ppm / °C (typ. 100 ppm / °C)
40 K ≤ measurement range < 100 K	≤ 500 ppm / °C (typ. 200 ppm / °C)

Type	Cat. No.
WTS4 PT100/3 V	<b>8432090000*</b>
WTZ4 PT100/3 V	<b>8432130000*</b>
PT100/3 / 0 ... 10 V	

<b>Input signal</b>	PT100/3-wire
Temperature range	-200 ... +800 °C
Supply current	1.45 mA
Conductor resistance	≤ 50 Ω
<b>Output signal</b>	0 ... 10 V
Load resistance	≥ 1 kΩ
Accuracy at Tu=23 °C	± 0.5% of measurement range
Temperature coefficient	
Measurement range ≥ 200 K	≤ 200 ppm / °C (typ. 80 ppm / °C)
100 K ≤ measurement range < 200 K	≤ 250 ppm / °C (typ. 100 ppm / °C)
40 K ≤ measurement range < 100 K	≤ 500 ppm / °C (typ. 200 ppm / °C)

### General

Voltage supply	24 Vdc ±20% (19.2 ... 28.8 Vdc)
Power consumption	< 48 mA at I <sub>out</sub> = 20 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C
Storage temperature	-20 °C ... +85 °C
Standards/specifications	EN 50178, IEC 751
EMC standards	EN 50081, EN 50082, EN 55011
Dimensions L / H / W mm	92.4 / 112.5 / 12.5
Approvals	CE, UL, CSA
Dimensions and accessories see	Page 298 + 308

Voltage supply	24 Vdc ±20% (19.2 ... 28.8 Vdc)
Power consumption	< 38 mA at I <sub>out</sub> = 10 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C
Storage temperature	-20 °C ... +85 °C
Standards/specifications	EN 50178, IEC 751
EMC standards	EN 50081, EN 50082, EN 55011
Dimensions L / H / W mm	92.4 / 112.5 / 12.5
Approvals	CE, UL, CSA
Dimensions and accessories see	Page 298 + 308

Voltage supply	24 Vdc ±20% (19.2 ... 28.8 Vdc)
Power consumption	< 38 mA at I <sub>out</sub> = 10 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0 °C ... +55 °C
Storage temperature	-20 °C ... +85 °C
Standards/specifications	EN 50178, IEC 751
EMC standards	EN 50081, EN 50082, EN 55011
Dimensions L / H / W mm	92.4 / 112.5 / 12.5
Approvals	CE, UL, CSA
Dimensions and accessories see	Page 298 + 308

\* without balancing

\*\*\* T<sub>U</sub> = 23 °C single module

### Preconfigured modules

	Input	Output		
	0 ... 100 °C	0 ... 20 mA	4 ... 20 mA	0 ... 10 V
<b>Screw connection</b>		<b>8432150001</b>	<b>8432150011</b>	<b>8432090001</b>
	special balancing	<b>8432159999**</b>	<b>8432159999**</b>	<b>8432099999**</b>
<b>Tension clamp connection</b>	0 ... 100 °C	<b>8432160001</b>	<b>8432160011</b>	<b>8432130001</b>
	special balancing	<b>8432169999**</b>	<b>8432169999**</b>	<b>8432139999**</b>

\*\* You must indicate the temperature range when ordering  
Please indicate additional output signal of current output

### Aids

- Voltage supply 24 Vdc, 50 mA
- Simulator for PT 100 or precision-resistance-decade
- Ampere-/voltmeter which can be calibrated to an accuracy of >0.1 % of the end value.

# RTD Signal Conditioners

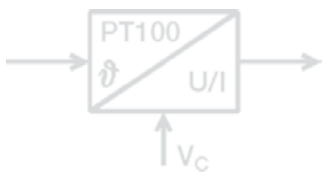
## WAVEANALOG RTD

- 2-, 3- and 4-wire technology
- configurable temperature range  
-200 °C ... +800 °C
- configurable output current range  
0 ... 20 mA / 4 ... 20 mA
- cross-connectable voltage supply  
via cross-connectors

### Approvals:



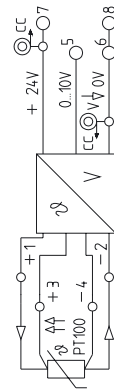
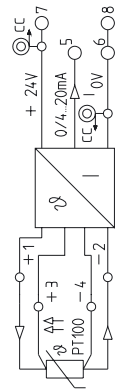
### Block diagram



**PT100/4**  
0(4) ... 20 mA



**PT100/4**  
0 ... 10 V



### Switch position/setting options

Tmin	1	2	3	Span	4	5	6
0 °C	■	■	■	40 ... 50 °C	■	■	■
-10 °C	■	■	■	50 ... 75 °C	■	■	■
-20 °C	■	■	■	75 ... 110 °C	■	■	■
-40 °C	■	■	■	110 ... 165 °C	■	■	■
-60 °C	■	■	■	165 ... 245 °C	■	■	■
-80 °C	■	■	■	245 ... 360 °C	■	■	■
-100 °C	■	■	■	360 ... 540 °C	■	■	■
-200 °C	■	■	■	540 ... 800 °C	■	■	■

Output 1)		PT 100		
Range	7	8	9	10
0 ... 20 mA	■	■	■	■
4 ... 20 mA	■	■	■	■
		2 - wire	■	■
		3 - wire	■	■
		4 - wire	■	■

1) only modules with current output ■ = on  
= off

### Ordering data

Screw connection

Tension clamp connection

Input/output

### Technical data\*\*\*

#### Input signal

Temperature range

Supply current

Conductor resistance

#### Output signal

Load resistance

Accuracy at Tu=23 °C

100 K ≤ measurement range < 600 K

Measurement range ≤ 100 K

Measurement range ≥ 600 K

Temperature coefficient

Measurement range ≥ 200 K

100 K ≤ measurement range < 200 K

40 K ≤ measurement range < 100 K

### General

Voltage supply

Power consumption

Current carrying capacity of cross-connection

Operating temperature

Storage temperature

Standards/specifications

EMC standards

Dimensions L / H / W mm

Approvals

Dimensions and accessories see

\* without balancing

\*\*\* Tu = 23 °C single module

Type Cat. No.

WTS4 PT100/4 C **8432270000\***

WTZ4 PT100/4 C **8432280000\***

PT100/4 / 0(4) ... 20 mA

PT100/4-wire

-200 ... +800 °C

1.45 mA

≤ 50 Ω (3- & 4-wire)

0(4) ... 20 mA

≤ 500 Ω

± 0.1% of measurement range

± 0.1 K

± 0.2% of measurement range

≤ 200 ppm / °C

(typ. 80 ppm / °C)

≤ 225 ppm / °C

(typ. 90 ppm / °C)

≤ 450 ppm / °C

(typ. 180 ppm / °C)

Type Cat. No.

WTS4 PT100/4 V **432240000\***

WTZ4 PT100/4 V **432250000\***

PT100/4 / 0 ... 10 V

PT100/4-wire

-200 ... +800 °C

1.45 mA

≤ 50 Ω (3- & 4-wire)

0 ... 10 V

≥ 1 kΩ

± 0.1% of measurement range

± 0.1 K

± 0.2% of measurement range

≤ 200 ppm / °C

(typ. 80 ppm / °C)

≤ 225 ppm / °C

(typ. 90 ppm / °C)

≤ 450 ppm / °C

(typ. 180 ppm / °C)

### Preconfigured modules

	Input	Output		
		0 ... 20 mA	4 ... 20 mA	0 ... 10 V
<b>Screw connection</b>	0 ... 100 °C	<b>8432270001</b>	<b>8432270011</b>	<b>8432240001</b>
	special balancing	<b>8432279999**</b>		<b>8432249999**</b>
<b>Tension clamp connection</b>	0 ... 100 °C	<b>8432280001</b>	<b>8432280011</b>	<b>8432250001</b>
	special balancing	<b>8432289999**</b>		<b>8432259999**</b>

\*\* Please indicate the temperature range and the sensor type (2-, 3- or 4-wire).

Please indicate additional output signal of current output

### Aids

- Voltage supply 24 Vdc, 50 mA
- Simulator for PT 100 or precision-resistance-decade
- Ampere-/voltmeter which can be calibrated to an accuracy of >0.1 % of the end value.

# RTD-Signal Isolating Transformer (Configurable)

## WAVEANALOG PRO RTD

- measurement from PT 100, Ni 100, R, potentiometer
- universally adjustable via DIP switch
- 3-way-isolation
- status LED
- linearization
- cross-connectable voltage supply via cross-connectors

### Approvals:



### Block diagram



### Ordering data

Screw connection
Tension clamp connection
Input/output

### Technical data\*

#### Input (adjustable)

PT100/2-/3-/4-wire: -200°C to 850°C
Ni100 : -60°C to +250°C
Potentiometer: min: 0...100Ω / max:0...100kΩ
Resistance: 0 ... 450Ω /

#### Output (adjustable)

Output voltage	0...10 V
Offset voltage	max. 0.05 V
Load resistance	≥ 1 kΩ
Output current	0/4 ... 20 mA
Offset current	max. 100 μA
Load resistance	≤ 600 Ω
Accuracy, slow/fast step response	

#### Step response (switchable via DIP switch)

RTD, R	typ. fast	slow
Potentiometer	< 1.2 s	< 2.2 s
Temperature coefficient	measurement range ≥ 200 K	≤ 200 ppm / °C
	100 K ≤ measurement range < 200 K	≤ 250 ppm / °C
	40 K ≤ measurement range < 100 K	≤ 400 ppm / °C

#### Max. wire resistance:

Influence of wire resistances:	50 Ω for 3- and 4-wire
Open circuit recognition:	max. + 0.25°C at 50 Ω wire resistance
Range of man. fine adjustment	Output signal > 10 V or > 20 mA, LED blinks
Status LED:	≥ ± 5%, from ver. 1: ≥ 12.5%, potentiometer ≥ 12.5 %...25 %

### General

Supply voltage	18 Vdc ... 24 Vdc ... 30 Vdc
Power consumption	830 mW ... 880 mW ... 980mW @ I <sub>out</sub> = 20 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0...55°C
Storage temperature	-20...85°C
Factory setting	PT 100/3 0 ... 100 °C / 4 ... 20 mA
Dimensions L/H/B mm	No manual fine adjustment; slow step response
Weight	92.4 / 112.5 / 17.5
Approvals	approx. 100 g
	CE, cUL, GL

### Coordination of insulation according to DIN EN 50178, 04/91

Rated voltage	300 V
Surge voltage	4 kV
Overvoltage category	III
Contamination class	2
Clearance and creepage distance	3 mm
Test voltage	2 kV <sub>eff</sub>

### Standards/specifications

EMC standards	EN 50178, IEC751
Dimensions and accessories see	EN 50081, EN50082, EN55011
	Page 298 + 308

\* T<sub>J</sub> = 23 °C single module

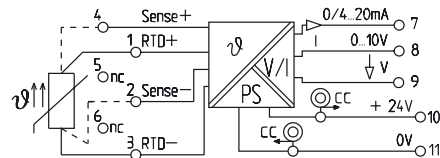
## PRO RTD



### Adjustment help

#### WAVEtool

This service tool enables quick and uncomplicated configuration of WAVEANALOG PRO. Download from Internet: <http://www.weidmueller.de> → Products → Downloads (see page 192)



Type	Cat. No.
WAS5 PRO RTD	<b>8560700000</b>
WAZ5 PRO RTD	<b>8560710000</b>
configurable	

PT100/2-/3-/4-wire: -200°C to 850°C

Ni100 : -60°C to +250°C

Potentiometer: min: 0...100Ω / max:0...100kΩ

Resistance: 0 ... 450Ω /

Output voltage	0...10 V	
Offset voltage	max. 0.05 V	
Load resistance	≥ 1 kΩ	
Output current	0/4 ... 20 mA	
Offset current	max. 100 μA	
Load resistance	≤ 600 Ω	
Accuracy, slow/fast step response		
Step response (switchable via DIP switch)		
RTD, R	typ. fast	slow
Potentiometer	< 1.2 s	< 2.2 s
Temperature coefficient	measurement range ≥ 200 K	≤ 200 ppm / °C
	100 K ≤ measurement range < 200 K	≤ 250 ppm / °C
	40 K ≤ measurement range < 100 K	≤ 400 ppm / °C

Max. wire resistance:	50 Ω for 3- and 4-wire
Influence of wire resistances:	max. + 0.25°C at 50 Ω wire resistance
Open circuit recognition:	Output signal > 10 V or > 20 mA, LED blinks
Range of man. fine adjustment	≥ ± 5%, from ver. 1: ≥ 12.5%, potentiometer ≥ 12.5 %...25 %
Status LED:	Module active: LED lit / open circuit: LED blinks
	Error: LED off

Supply voltage	18 Vdc ... 24 Vdc ... 30 Vdc
Power consumption	830 mW ... 880 mW ... 980mW @ I <sub>out</sub> = 20 mA
Current carrying capacity of cross-connection	≤ 2 A
Operating temperature	0...55°C
Storage temperature	-20...85°C
Factory setting	PT 100/3 0 ... 100 °C / 4 ... 20 mA
Dimensions L/H/B mm	No manual fine adjustment; slow step response
Weight	92.4 / 112.5 / 17.5
Approvals	approx. 100 g
	CE, cUL, GL

Rated voltage	300 V
Surge voltage	4 kV
Overvoltage category	III
Contamination class	2
Clearance and creepage distance	3 mm
Test voltage	2 kV <sub>eff</sub>

### Standards/specifications

EMC standards	EN 50178, IEC751
Dimensions and accessories see	EN 50081, EN50082, EN55011
	Page 298 + 308

Input	Switch 1		
	1	2	3
PT100 2-wire	■	■	■
PT100 3-wire		■	■
PT100 4-wire.	■		■
R 2-wire			■
Ni100 2-wire	■	■	
Ni100 3-wire		■	
Ni100 4-wire	■		
Potentiometer			

■ = on  
□ = off

∅ <sub>min</sub>	R <sub>min</sub>	Pot.min	Switch 1			
			4	5	6	7
0°C	0 Ω	0%	■	■	■	■
-10°C	10 Ω	10%	■	■	■	
-20°C	20 Ω	20%	■	■	■	■
-25°C	20 Ω	25%	■	■		
-30°C	30 Ω	30%	■	■	■	■
-40°C	40 Ω	40%	■	■		
-50°C	50 Ω	50%	■	■	■	■
-60°C	60 Ω	60%	■			
-70°C	70 Ω	70%		■	■	■
-80°C	80 Ω	80%		■	■	■
-90°C	90 Ω			■	■	■
-100°C	100 Ω			■		
-150°C	150 Ω				■	■
-200°C	200 Ω				■	
Special range						■

T	R	pot.	Switch 2				
			1	2	3	4	5
40K	20Ω	20%	■	■	■	■	■
50K	25Ω	25%	■	■	■	■	■
60K	30Ω	30%	■	■	■	■	■
70K	35Ω	35%	■	■	■		
80K	40Ω	40%	■	■	■	■	■
90K	45Ω	45%	■	■	■		
100K	50Ω	50%	■	■	■	■	■
110K	55Ω	55%	■	■			
120K	60Ω	60%	■	■	■	■	■
125K	62.5Ω	62.5%	■	■	■	■	■
130K	65Ω	65%	■	■	■	■	■
140K	70Ω	70%	■	■			
150K	75Ω	75%	■	■	■	■	■
160K	80Ω	80%	■	■	■		
170K	85Ω	85%	■	■	■	■	■
180K	90Ω	90%	■				
190K	95Ω	95%		■	■	■	■
200K	100Ω	100%		■	■	■	■
250K	125Ω	---		■	■	■	■
300K	150Ω	---		■	■	■	■
350K	175Ω	---		■	■	■	■
400K	200Ω	---		■	■	■	■
450K	225Ω	---		■	■	■	■
500K	250Ω	---		■			
550K	275Ω	---		■	■	■	■
600K	300Ω	---		■	■	■	■
650K	325Ω	---		■	■	■	■
700K	350Ω	---		■			
750K	375Ω	---		■	■	■	■
800K	400Ω	---		■			
850K	425Ω	---		■	■	■	■
900K	450Ω	---		■			

Output	Switch 2	
	6	7
0...10V	■	
0...20mA		
4...20mA	■	

Switching on the manual fine adjustment	
man. adj..	S.1
off	8
on	■

Time of step response	S.2
	8
slow	■
fast	

# Thermo-Signal Conditioners

## WAVEANALOG Thermo

- thermocouples K, J, T, E, N, R, S, B configurable
- temperature range -200 °C ... +1820 °C
- no adjustment necessary
- cold junction compensation
- configurable output signal
- cross-connectable voltage supply via cross-connectors

### Approvals:



#### Block diagram



#### Ordering data

Screw connection

Tension clamp connection

Input/output

#### Technical data\*

##### Input signal

Types

##### Output signal

Load resistance

##### Output signal

Load resistance

##### Output signal

Load resistance

Accuracy at  $T_u = 23\text{ °C}$

Temperature coefficient

Response time without filter

Response time with filter

#### General

Voltage supply

Power consumption

Current carrying capacity of cross-connection

Open circuit recognition

Operating temperature

Storage temperature

Standards/specifications

EMC standards

Dimensions L / H / W mm

Approvals

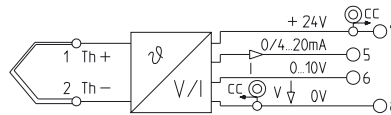
Dimensions and accessories see

\*  $T_u = 23\text{ °C}$  single module

## Thermo Select

°C / 0 ... 20 mA,

4 ... 20 mA, 0 ... 10 V



Type	Cat. No.
WTS4 Thermo Select	<b>8432300000</b>
WTZ4 Thermo Select	<b>8432310000</b>
°C / 0 ... 20 mA	
°C / 4 ... 20 mA	
°C / 0 ... 10 V	

Thermocoupler acc. to IEC584 (fully insulated)

K -200 ... +1372 °C

J -200 ... +1200 °C

T -200 ... +400 °C

E -200 ... +1000 °C

N -200 ... +1300 °C

R -50 ... +1760 °C

S -50 ... +1760 °C

B +50 ... +1820 °C

0 ... 20 mA

≤ 500 Ω

4 ... 20 mA

≤ 500 Ω

0 ... 10 V

≥ 1 kΩ

Type K -200°C ... -150°C ± (5K + 0.1% of set range)

-150°C ... 1200°C ± (3K + 0.1% of set range)

1200°C ... 1372°C ± (4K + 0.1% of set range)

Type J -200°C ... -150°C ± (4K + 0.1% of set range)

-150°C ... 1200°C ± (3K + 0.1% of set range)

Type T -200°C ... -150°C ± (5K + 0.1% of set range)

-150°C ... 400°C ± (3K + 0.1% of set range)

Type E -200°C ... -150°C ± (4K + 0.1% of set range)

-150°C ... 1000°C ± (3K + 0.1% of set range)

Type N -200°C ... -150°C ± (6K + 0.1% of set range)

-150°C ... 1300°C ± (3K + 0.1% of set range)

Type R -50°C ... 200°C ± (10K + 0.1% of set range)

200°C ... 1760°C ± (6K + 0.1% of set range)

Type S -50°C ... 200°C ± (10K + 0.1% of set range)

200°C ... 1760°C ± (6K + 0.1% of set range)

Type B 50°C ... 250°C ± (25K + 0.1% of set range)

250°C ... 500°C ± (10K + 0.1% of set range)

500°C ... 1820°C ± (6K + 0.1% of set range)

± (200 ppm v. Span

+ 0.075 K) /K

1.1 s

6 s

24 Vdc ±20% (19.2 ... 28.8 Vdc)

< 38 mA at  $I_{out} = 20\text{ mA}$

≤ 2 A

LED blinks (output value: > 20 mA and. > 10 V)

0 °C ... +55 °C

-20 °C ... +85 °C

EN 50178, IEC584

EN 50081, EN 50082, EN 55011

92.4 / 112.5 / 12.5

CE, UL, CSA

Page 298 + 308

## Switch position/setting options

SW 1				SW 2					
Type	1	2	3	Span	1	2	3	4	5
K	■	■	■	100 °C	■	■	■	■	■
J	■	■	■	150 °C	■	■	■	■	■
T	■	■	■	200 °C	■	■	■	■	■
E	■	■	■	250 °C	■	■	■	■	■
N	■	■	■	300 °C	■	■	■	■	■
R	■	■	■	350 °C	■	■	■	■	■
S	■	■	■	400 °C	■	■	■	■	■
B	■	■	■	450 °C	■	■	■	■	■
SW 1				500 °C	■	■	■	■	■
Tmin				550 °C	■	■	■	■	■
0 °C				600 °C	■	■	■	■	■
-10 °C				650 °C	■	■	■	■	■
-20 °C				700 °C	■	■	■	■	■
-30 °C				750 °C	■	■	■	■	■
-40 °C				800 °C	■	■	■	■	■
-50 °C				850 °C	■	■	■	■	■
-100 °C				900 °C	■	■	■	■	■
-150 °C				950 °C	■	■	■	■	■
-200 °C				1000 °C	■	■	■	■	■
+50 °C				1050 °C	■	■	■	■	■
+100 °C				1100 °C	■	■	■	■	■
+150 °C				1150 °C	■	■	■	■	■
+200 °C				1200 °C	■	■	■	■	■
+250 °C				1250 °C	■	■	■	■	■
+500 °C				1300 °C	■	■	■	■	■
SW 2				1350 °C	■	■	■	■	■
Output				1400 °C	■	■	■	■	■
0 - 10 V				1450 °C	■	■	■	■	■
0 - 20 mA				1500 °C	■	■	■	■	■
4 - 20 mA				1600 °C	■	■	■	■	■
Filter				1700 °C	■	■	■	■	■
off				1800 °C	■	■	■	■	■
on									

■ = on  
□ = off

# Thermo Signal Isolating Transformers (Configurable)

## WAVEANALOG PRO Thermo

- 3-way-isolation
- thermocouples  
K, J, T, E, N, R, S, B configurable
- temperature range  
-200 °C ... +1820 °C
- no adjustment necessary
- cold junction compensation
- configurable output signal
- cross-connectable voltage supply via cross-connectors

### Approvals:



### Block diagram



### Ordering data

Screw connection  
Tension clamp connection  
Input/output

### Technical data\*

#### Input (adjustable)

Accuracy at Tu = 23 °C

#### Output (adjustable)

Output voltage: 0...10 V  
 Offset voltage: Max. 0.05 V  
 Load resistance: ≥ 1 KΩ  
 Output current: 0/4 ... 20 mA  
 Offset current: max. 100 μA  
 Load resistance: ≤ 600 Ω  
 Step response: max. 1.4 s  
 at connected filter function: max. 7.5 s  
 Max. wire resistance: 50 Ω for 3- and 4-wire  
 Open circuit recognition: Output signal > 10 V or > 20 mA, LED blinks  
 Range of man. fine adjustment: ≥ ±5%  
 Status LED: Module active: LED lights up / open circuit: LED blinks  
 Error: LED off

### General

Supply voltage: 18 Vdc ... 24 Vdc ... 30 Vdc  
 Power consumption: 800 mV ... 850 mW ... 950 mW @ I output = 20 mA  
 Current carrying capacity of cross-connection: ≤ 2 A  
 Operating temperature: 0 °C ... +55 °C  
 Storage temperature: -20 ... +85 °C

### Standards/specifications

EN 50178, IEC751  
 EMC standards: EN 50081, EN50082, EN55011

### Factory setting

Type K 0 ... 1000 °C / 4 ... 20 mA; no filter;  
 No manual fine adjustment  
 92.4 / 112.5 / 17.5  
 100 g

### Approvals

CE, cUL, GL  
 Dimensions and accessories see Page 298 + 308

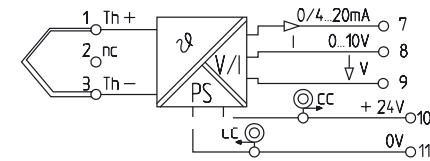
\* Tu = 23 °C single module

## PRO Thermo



### Adjustment help WAVE TOOL

This service tool enables quick and uncomplicated configuration of WAVEANALOG PRO. Download from the Internet:  
<http://www.weidmueller.de>  
 → Products → Downloads  
 (see page 192)



Type	Cat. No.
WAS5 PRO Thermo	8560720000
WAZ5 PRO Thermo	8560730000

configurable

Thermocouples acc. to EN 60584-1

Type K, J, E, N, R, S, B via DIP switch selectable

Type K -200°C ... -150°C ± (5K + 0.1% of set range)

-150°C ... 1200°C ± (3K + 0.1% of set range)

1200°C ... 1372°C ± (4K + 0.1% of set range)

Type J -200°C ... -150°C ± (4K + 0.1% of set range)

-150°C ... 1200°C ± (3K + 0.1% of set range)

Type T -200°C ... -150°C ± (5K + 0.1% of set range)

-150°C ... 400°C ± (3K + 0.1% of set range)

Type E -200°C ... -150°C ± (4K + 0.1% of set range)

-150°C ... 1000°C ± (3K + 0.1% of set range)

Type N -200°C ... -150°C ± (6K + 0.1% of set range)

-150°C ... 1300°C ± (3K + 0.1% of set range)

Type R -50°C ... 200°C ± (10K + 0.1% of set range)

200°C ... 1760°C ± (6K + 0.1% of set range)

Type S -50°C ... 200°C ± (10K + 0.1% of set range)

200°C ... 1760°C ± (6K + 0.1% of set range)

Type B 50°C ... 250°C ± (25K + 0.1% of set range)

250°C ... 500°C ± (10K + 0.1% of set range)

500°C ... 1820°C ± (6K + 0.1% of set range)

0...10 V

Max. 0.05 V

≥ 1 KΩ

0/4 ... 20 mA

max. 100 μA

≤ 600 Ω

max. 1.4 s

max. 7.5 s

50 Ω for 3- and 4-wire

Output signal > 10 V or > 20 mA, LED blinks

≥ ±5%

Module active: LED lights up / open circuit: LED blinks

Error: LED off

Selection the thermocoupler			
Type	SW1		
	1	2	3
K	■	■	■
J	■	■	■
T	■	■	■
E	■	■	■
N	■	■	■
R	■	■	■
S	■	■	■
B	■	■	■

Selection of minimum temperature						
θ <sub>min</sub>	SW1					
	4	5	6	7	8	9
0°C	■	■	■	■	■	■
-10°C	■	■	■	■	■	■
-20°C	■	■	■	■	■	■
-30°C	■	■	■	■	■	■
-40°C	■	■	■	■	■	■
-50°C	■	■	■	■	■	■
-100°C	■	■	■	■	■	■
-150°C	■	■	■	■	■	■
-200°C	■	■	■	■	■	■
+50°C	■	■	■	■	■	■
+100°C	■	■	■	■	■	■
+150°C	■	■	■	■	■	■
+200°C	■	■	■	■	■	■
+250°C	■	■	■	■	■	■
500°C	■	■	■	■	■	■
Special range	■	■	■	■	■	■

Selection of temperature span					
Span	SW2				
	1	2	3	4	5
100°C	■	■	■	■	■
150°C	■	■	■	■	■
200°C	■	■	■	■	■
250°C	■	■	■	■	■
300°C	■	■	■	■	■
350°C	■	■	■	■	■
400°C	■	■	■	■	■
450°C	■	■	■	■	■
500°C	■	■	■	■	■
550°C	■	■	■	■	■
600°C	■	■	■	■	■
650°C	■	■	■	■	■
700°C	■	■	■	■	■
750°C	■	■	■	■	■
800°C	■	■	■	■	■
850°C	■	■	■	■	■
900°C	■	■	■	■	■
950°C	■	■	■	■	■
1000°C	■	■	■	■	■
1050°C	■	■	■	■	■
1100°C	■	■	■	■	■
1150°C	■	■	■	■	■
1200°C	■	■	■	■	■
1250°C	■	■	■	■	■
1300°C	■	■	■	■	■
1350°C	■	■	■	■	■
1400°C	■	■	■	■	■
1450°C	■	■	■	■	■
1500°C	■	■	■	■	■
1600°C	■	■	■	■	■
1700°C	■	■	■	■	■
1800°C	■	■	■	■	■

■ = on  
 □ = off

### Coordination of insulation acc. to DIN EN 50178, 04/98

Rated voltage	300 V
Surge voltage	4 kV
Overvoltage category	III
Contamination class	2
Clearance & creep. distance	3 mm
Test voltage	2 kV <sub>eff</sub>

Selection of output		
Output	SW2	
	6	7
0...10V	■	■
0...20mA	■	■
4...20mA	■	■

### Switching on the manual fine adjustment

SW1	
man. adjust.	8
off	■
on	■

### Switching on the filter function

Filter	SW2	
	8	9
off	■	■
on	■	■



## Adjustment Help WAVE TOOL

The adjustment help – **WAVE TOOL** – enables quick and uncomplicated configuration of **WAVEANALOG PRO DC**, **WAVEANALOG PRO RTD**, **WAVEANALOG PRO THERMO**.

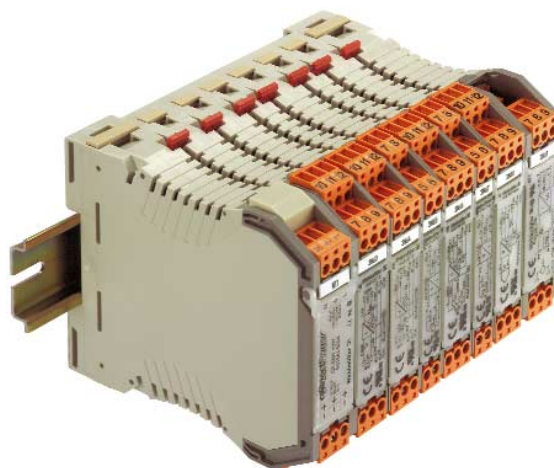
### Menu for selecting the functions



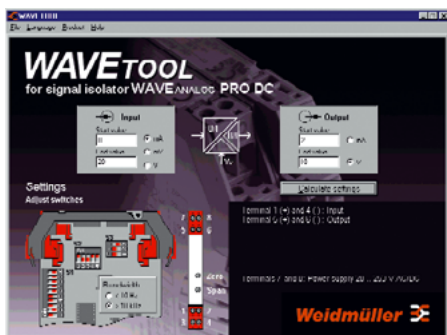
Once the required input and output parameters have been entered, the program determines the correct switch setting and gives instructions for the electrical connection of the module. Where necessary, it also determines and displays the required calibration values. The entire process can be printed out or saved as a PDF file for installation documentation purposes.

### Download from the Internet:

<http://www.weidmueller.de> ⇨ Products ⇨ Download



### For configuring the current/voltage isolating transformer



### Printout of protocol for the documentation

**WAVE TOOL**  
for signal isolator WAVEANALOG PRO RTD

**Note:** Weidmüller Interface GmbH

**Input:** Type: PT100 / 4-wire  
Start value: 0°C / 32°F  
End value: 100°C / 212°F

**Output:** Output voltage: 0 .. 10 V  
Response time: slow 2,2s  
Fine calibration: off

**Settings:** Adjust switches

**Weidmüller**

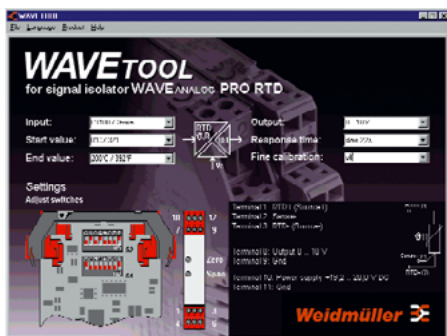
Weidmüller Interface GmbH & Co.  
P.O. Box 3030  
D-32729 Detmold  
T: +49-(0)5231-14-0  
F: +49-(0)5231-14-2083  
Date: 02.04.02

Terminal 1: RTD+ (Source+)  
Terminal 2: Sense-  
Terminal 3: RTD- (Source-)  
Terminal 4: Sense+

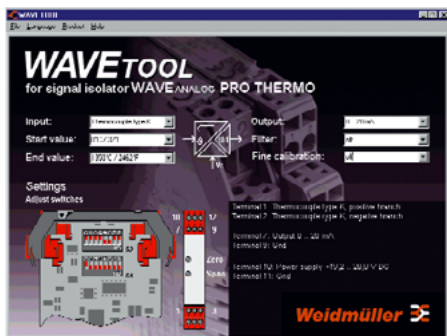
Terminal 8: Output 0 .. 10 V  
Terminal 9: Gnd

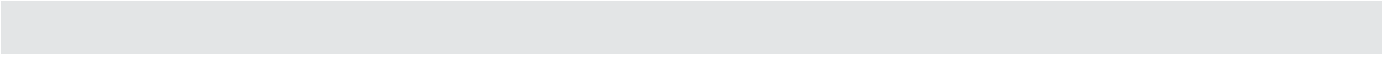
Terminal 10: Power supply +18 .. 30 V DC  
Terminal 11: Gnd

### For configuring the temperature signal isolating transformer



### For configuring the thermo signal isolating transformer







## Current monitoring

Monitoring flows of currents enables a constant control of individual devices and installation components.

Discrepancies or disruptions arising in the electrical circuit can easily be evaluated as breakdowns. Targeted rectifying procedures can be taken.

The **WAVECONTROL** range of products convert sinusoidal/non-sinusoidal AC/DC currents up to 60 A to standard analogue signals. The measurement processes are based on 2 basic principles.

One principle is alternating currents up to 10 A ac and 50/60 Hz are measured using the **transformer process**. The module is looped directly into the measurement circuit.

A **Hall-effect** element comes in to operation at 10 A ac/dc.

The potential-free wire is inserted through the module, allowing currents up to 60 A ac/dc to be measured.

Quite often, there are high-frequency parts of signals on the wire to be measured. In order to be able to take these parts of the signals into consideration, so-called **TRMS converters (TRUE Root Mean Square)** are connected to the Hall sensors. This enables measurements up to 2 kHz, independent of the shape of the curve.

Standard signals (0...20, 4...20 mA, 4...20 A current loop supply, 0...10 V) or a switch output are on offer.

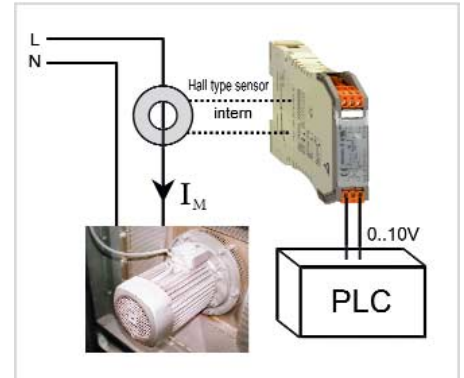
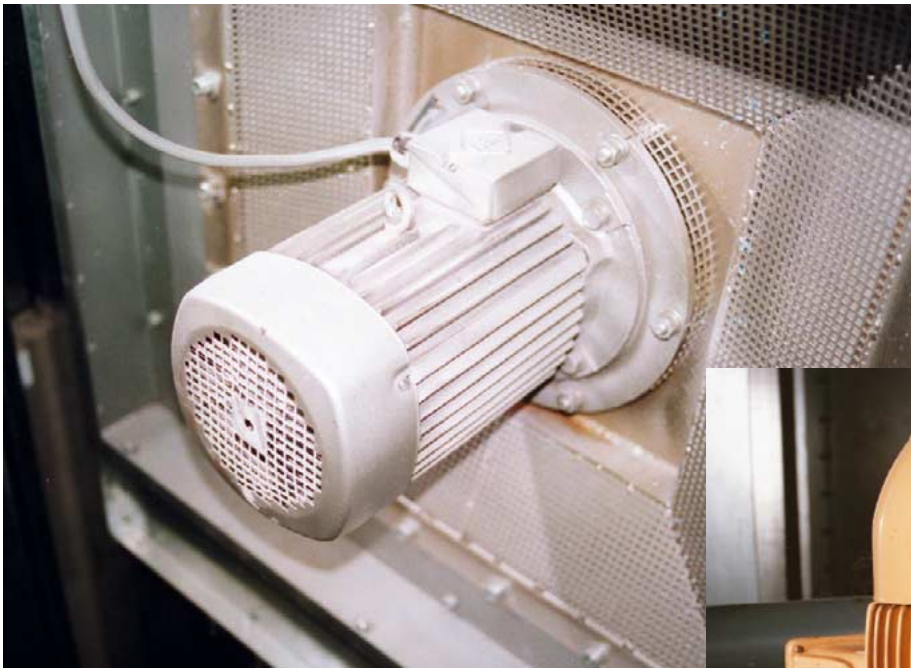


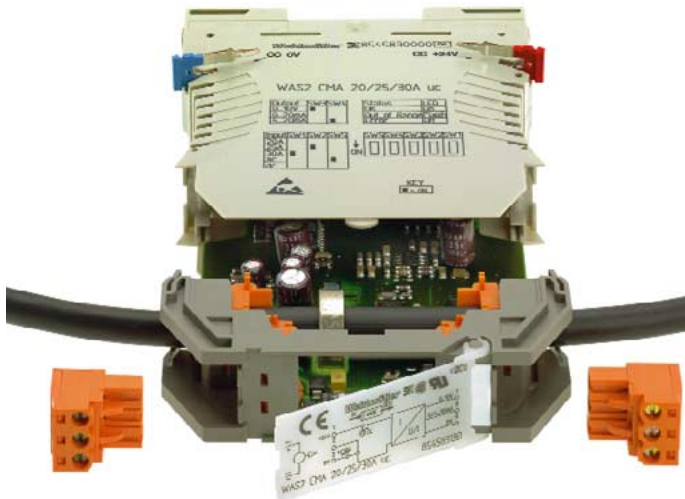
Fig.: Monitoring motor currents



Monitoring a motor in a cooling system



Monitoring a pump in a sewage treatment plant



Galvanically isolated measurement circuit

Measurements of direct and alternating currents possible

TRMS versions for measuring non sinusoidal signals

Measurement range switch without calibration

Relay version with selectable hysteresis

Selectable working and closed-circuit current process for defined statuses (optional as normally open or normally closed contact)

Error indication via LED indication

Less wiring costs thanks to cross-connections

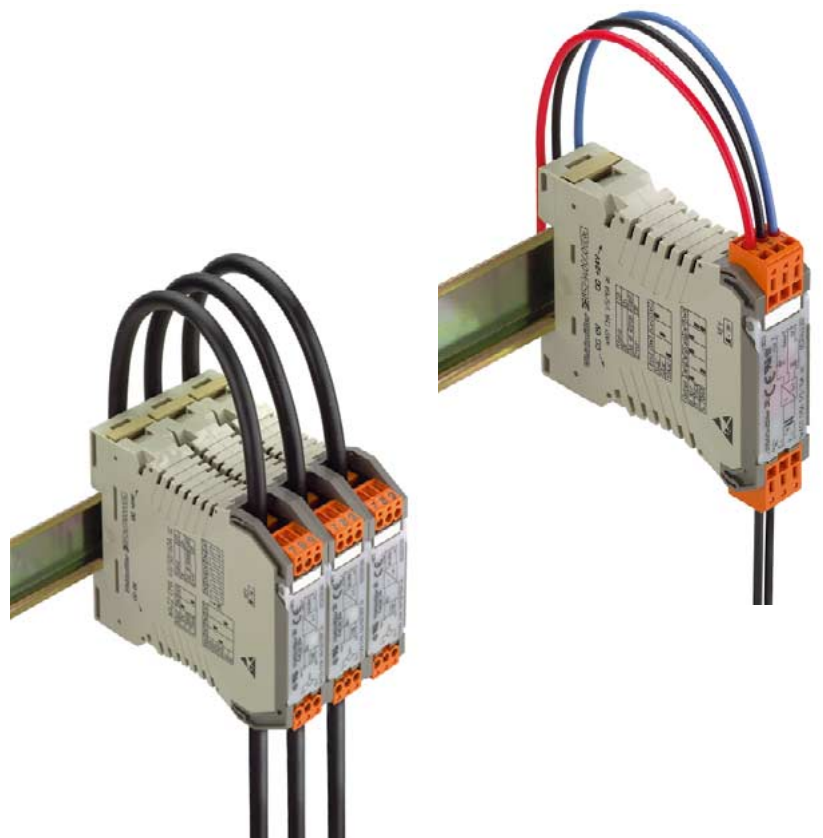
Very good marking options

Fast commissioning – pluggable replacement PCBs

Connection technology – screw or tension clamp via socket block

Tool-free mounting

Coding elements in the connections – false plugging not possible



# Current Monitoring

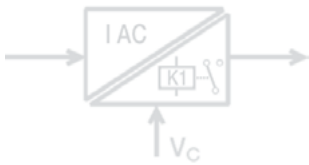
## WAVECONTROL

- current ranges adjustable via DIP switch
- cross-connectable voltage supply via cross-connectors
- selectable hysteresis
- selectable working and closed-circuit current principle

## Approvals:



### Block diagram



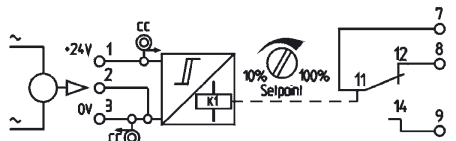
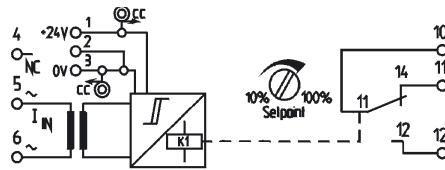
## WAS2 CMR WAZ2 CMR

1/5/10 A ac  
selectable with  
relay output



## WAS2 CMR WAZ2 CMR

20/40/60A ac  
selectable with  
relay output



### Ordering data

Screw connection	WAS2 CMR 1/5/10A ac	<b>8516560000</b>	1
Tension clamp connection	WAZ2 CMR 1/5/10A ac	<b>8516570000</b>	1

### Technical data\*

<b>Input</b>	
Input current	1A ac/5A ac/10A ac selectable (without additional adjustment)
Input frequency	50Hz/60Hz
Pass through diameter	8mm
Measuring principle	transformer coupled
Connection type	screw or tension clamp connection
Measurement circuit voltage	250Vac

### Output

Max. measuring circuit	100A for 1s
<b>Output</b>	
Contact set	1 changeover contact
Min. switching voltage	6Vdc/6Vac
Max. switching voltage	60Vdc/250Vac
Continuous current AC	3A
Continuous current DC	0.7A
Max. switching current	7A
Min. switching current	100mA
Status LED	green LED
Threshold	10% ... 100% adjustable via front potentiometer
Hysteresis	approx. 5% or approx. 10% selectable from set threshold
Temperature coefficient	≤ 800 ppm/K
Response time (10 ... 90%)	typ. 700 ms
Working/closed-circuit current principle	selectable

### Coordination of insulation acc. to DIN EN 50178, 04/98

Rated voltage	300V
Surge voltage	4kV
Overvoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 3 mm
Test voltage	4kV eff

### General

Supply	
Supply voltage	21.6Vdc...24Vdc...26.4Vdc
Power consumption at rated voltage	8.3 mA (relay not switched) 24 mA (relay switched)
Reverse polarity protection	yes
Current carrying capacity of the cross-connection	≤ 2 A
Operating temperature range	0 ... 50°C
Storage/transport	-20 ... +70°C
Factory setting	Input range: 5A ac; hysteresis 10%, working current principle
Dimensions L/H/B (mm)	92.4/112.4/22.5
Weight	150g
Approvals	CE, cUL
Dimensions and accessories see	Page 298 + 308

\* T<sub>J</sub> = 23 °C single module

### Ordering data

Type	WAS2 CMR 20/40/60A ac	<b>8513340000</b>	1
Type	WAZ2 CMR 20/40/60A ac	<b>8526600000</b>	1

### Technical data\*

<b>Input</b>	
Input current	20A ac/40A ac/60A ac selectable (without additional adjustment)
Input frequency	50Hz/60Hz
Pass through diameter	8mm
Measuring principle	transformer coupled
Connection type	screw or tension clamp connection
Measurement circuit voltage	400Vac, higher voltages dependent on wire insulation

### Output

Max. measuring circuit	dependent on wire cross-section
<b>Output</b>	
Contact set	1 changeover contact
Min. switching voltage	6Vdc/6Vac
Max. switching voltage	60Vdc/250Vac
Continuous current AC	3A
Continuous current DC	0.7A
Max. switching current	7A
Min. switching current	100mA
Status LED	green LED
Threshold	10% ... 100% adjustable via front potentiometer
Hysteresis	approx. 5% or approx. 10% selectable from set threshold
Temperature coefficient	≤ 250 ppm/K
Response time (10 ... 90%)	typ. 700 ms
Working/closed-circuit current principle	selectable

### Coordination of insulation acc. to DIN EN 50178, 04/98

Rated voltage	300V
Surge voltage	4kV
Overvoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 3 mm
Test voltage	4kV eff

### General

Supply	
Supply voltage	21.6Vdc...24Vdc...26.4Vdc
Power consumption at rated voltage	23 mA (relay not switched) 47 mA (relay switched)
Reverse polarity protection	yes
Current carrying capacity of the cross-connection	≤ 2 A
Operating temperature range	0 ... 50°C
Storage/transport	-20 ... +70°C
Factory setting	Input range: 40A ac; hysteresis 10% working current principle
Dimensions L/H/B (mm)	92.4/112.4/22.5
Weight	150g
Approvals	CE, cUL
Dimensions and accessories see	Page 298 + 308

# Current Monitoring

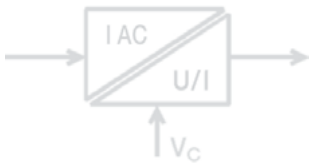
## WAVECONTROL

- input and output range adjustable via DIP switch
- no calibration required
- cross-connectable voltage supply via cross-connectors

### Approvals:



#### Block diagram



## WAS1 CMA WAZ1 CMA

1/5/10A ac selectable with analogue output  
0...20 mA /  
4...20 mA  
0...10 V



## WAS1 LP CMA WAZ1 LP CMA

1/5/10 A ac selectable with analogue output  
4...20 mA  
loop powered



#### Ordering data

Screw connection

Tension clamp connection

#### Technical data\*

##### Input

Input current

Input frequency

Accuracy

Measuring principle

Connection type

Measurement circuit voltage

Max. measuring circuit

##### Output

Current/voltage selectable

Output voltage

Offset voltage

Load resistance

Output signal limit

Output current

Offset current

Load resistance

Status LED

Temperature coefficient

Response time (10 ... 90%)

#### Coordination of insulation acc. to DIN EN 50178, 04/98

(safe separation)

Rated voltage

Surge voltage

Overvoltage category

Contamination class

Clearance and creepage distance

Test voltage

#### General

Supply

Supply voltage

Power consumption at rated voltage

Reverse polarity protection

Operating temperature range

Storage/transport

Factory setting

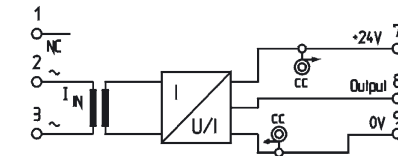
Dimensions L/H/W (mm)

Weight

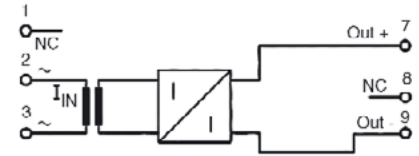
Approvals

Dimensions and accessories see

\* T<sub>U</sub> = 23 °C single module



Type	Cat. No.	Qty.
WAS1 CMA 1/5/10A ac	8523400000	1
WAZ1 CMA 1/5/10A ac	8523410000	1



Type	Cat. No.	Qty.
WAS1 LP CMA 1/5/10A ac	8528650000	1
WAZ1 LP CMA 1/5/10A ac	8528660000	1

1 A ac/5 A ac/10 A ac selectable (without additional adjustment)

50 Hz/60 Hz

0.5% FSR

transformer coupled

Screw or tension clamp connection

250 Vac

100 A for 1s

0 ... 10 V

0 ... 20 mA

4 ... 20 mA

0 ... 10 V

max. 0.05 V

≥ 1 K Ω

approx. 13 V and 24 mA

0/4 ... 20 mA

max. 100 μA

≤ 600 Ω

green LED

ON → OK; blinks → signal out of range; OFF → Error

≤ 200 ppm/K

typ. 700 ms

1A ac/5A ac/10A ac selectable (without additional adjustment)

50 Hz/60 Hz

0.5% FSR

transformer coupled

Screw or tension clamp connection

250 Vac

100 A for 1s

4 ... 20mA current loop supply

approx. 24 mA

4 ... 20 mA

max. 100 μA

≤ 550 Ω (at 24 V) RL = (Vcc - 13V) / 20 mA

Dependent on voltage Vcc

green LED

ON → OK; blinks → signal out of range; OFF → Error

≤ 200 ppm/K

typ. 700 ms

# Current Monitoring

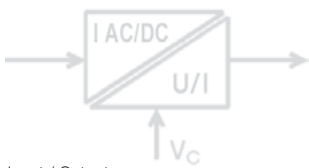
## WAVECONTROL

- input and output range adjustable via DIP switch
- no calibration required
- true TRMS value measurements
- hall sensor measurement method

## Approvals:



### Block diagram



Input / Output configurable

Ordering data	
Screw connection	
Tension clamp connection	
Technical data*	
Input	
Input current	5 A uc/10 A uc selectable (without additional adjustment)
Input frequency	0 Hz - 2 kHz (True RMS to DC Converter)
Accuracy	1% (0 Hz - 1 kHz) Crest factor 3 FSR 2% (0 Hz - 2 kHz) Crest factor 5 FSR
Measuring principle	Contact-free current monitoring using Hall sensor
Connection type	Push-through connection
Pass through diameter	8 mm
Measurement circuit voltage	400 Vac, higher voltages dependent on wire insulation
Max. measuring circuit	dependent on wire cross-section
Output	
Current/voltage selectable	0 ... 10 V 0 ... 20 mA 4 ... 20 mA
Output voltage	0 ... 10 V
Offset voltage	max. 0.08 V
Load resistance	≥ 1 KΩ
Output signal limit	approx. 13 V and. 24 mA
Output current	0/4 ... 20 mA
Offset current	max. 150 μA
Load resistance	≤ 600 Ω
Status LED	green LED ON → OK; blinks → signal out of range; OFF → Error
Temperature coefficient	≤ 650 ppm/K
Response time (10 ... 90%)	typ. 700 ms
Coordination of insulation acc. to DIN EN 50178, 04/98 (safe separation)	
Rated voltage	300 V
Surge voltage	6 kV
Overtoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 5.5 mm
Test voltage	4 kV eff
General	
Supply	
Supply voltage	21.6 Vdc...24 Vdc...26.4 Vdc
Power consumption at rated voltage	50 mA at I <sub>out</sub> = 20 mA
Reverse polarity protection	yes
Operating temperature range	0 ... 50 °C
Storage/transport	-20 ... +70 °C
Factory setting	0 ... 5A uc; 4 ... 20 mA
Dimensions L/H/B (mm)	92.4/112.4/22.5
Weight	150 g
Approvals	CE, cUL
Dimensions and accessories see	Page 298 + 308

\* Tu = 23 °C single module

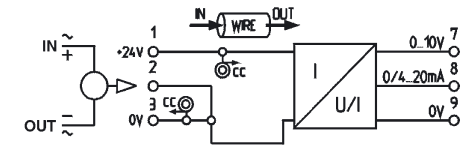
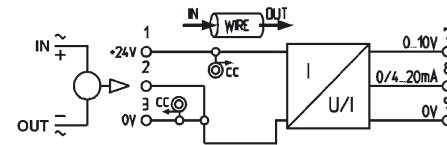
## WAS2 CMA WAZ2 CMA

5/10A ac/dc selectable with analogue output  
0 ... 20 mA/  
4 ... 20 mA/  
0 ... 10 V



## WAS2 CMA WAZ2 CMA

20/25/30A ac/dc selectable with analogue output  
0 ... 20 mA/  
4 ... 20 mA/  
0 ... 10 V



Type	Cat. No.	Qty.
WAS2 CMA 5/10A uc	<b>8526610000</b>	1
WAZ2 CMA 5/10A uc	<b>8526620000</b>	1
Technical data*		
Input		
Input current	5 A uc/10 A uc selectable (without additional adjustment)	
Input frequency	0 Hz - 2 kHz (True RMS to DC Converter)	
Accuracy	1% (0 Hz - 1 kHz) Crest factor 3 FSR 2% (0 Hz - 2 kHz) Crest factor 5 FSR	
Measuring principle	Contact-free current monitoring using Hall sensor	
Connection type	Push-through connection	
Pass through diameter	8 mm	
Measurement circuit voltage	400 Vac, higher voltages dependent on wire insulation	
Max. measuring circuit	dependent on wire cross-section	
Output		
Current/voltage selectable	0 ... 10 V 0 ... 20 mA 4 ... 20 mA	
Output voltage	0 ... 10 V	
Offset voltage	max. 0.08 V	
Load resistance	≥ 1 KΩ	
Output signal limit	approx. 13 V and. 24 mA	
Output current	0/4 ... 20 mA	
Offset current	max. 150 μA	
Load resistance	≤ 600 Ω	
Status LED	green LED ON → OK; blinks → signal out of range; OFF → Error	
Temperature coefficient	≤ 650 ppm/K	
Response time (10 ... 90%)	typ. 700 ms	
Coordination of insulation acc. to DIN EN 50178, 04/98 (safe separation)		
Rated voltage	300 V	
Surge voltage	6 kV	
Overtoltage category	III	
Contamination class	2	
Clearance and creepage distance	≥ 5.5 mm	
Test voltage	4 kV eff	
General		
Supply		
Supply voltage	21.6 Vdc...24 Vdc...26.4 Vdc	
Power consumption at rated voltage	50 mA at I <sub>out</sub> = 20 mA	
Reverse polarity protection	yes	
Operating temperature range	0 ... 50 °C	
Storage/transport	-20 ... +70 °C	
Factory setting	0 ... 5A uc; 4 ... 20 mA	
Dimensions L/H/B (mm)	92.4/112.4/22.5	
Weight	150 g	
Approvals	CE, cUL	
Dimensions and accessories see	Page 298 + 308	

Type	Cat. No.	Qty.
WAS2 CMA 20/25/30A uc	<b>8545830000</b>	1
WAZ2 CMA 20/25/30A uc	<b>8545840000</b>	1
Technical data*		
Input		
Input current	20/25/30 A uc selectable (without additional adjustment)	
Input frequency	0 Hz - 2 kHz (True RMS to DC Converter)	
Accuracy	1% (0Hz - 1kHz) Crest factor 3 FSR 2% (0Hz - 2kHz) Crest factor 5 FSR	
Measuring principle	Contact-free current monitoring using Hall sensor	
Connection type	Push-through connection	
Pass through diameter	8 mm	
Measurement circuit voltage	400 Vac, higher voltages dependent on wire insulation	
Max. measuring circuit	dependent on wire cross-section	
Output		
Current/voltage selectable	0 ... 10 V 0 ... 20 mA 4 ... 20 mA	
Output voltage	0 ... 10 V	
Offset voltage	max. 0.08 V	
Load resistance	≥ 1 KΩ	
Output signal limit	approx. 13 V and. 24 mA	
Output current	0/4 ... 20 mA	
Offset current	max. 150 μA	
Load resistance	≤ 600 Ω	
Status LED	green LED ON → OK; blinks → signal out of range; OFF → Error	
Temperature coefficient	≤ 650 ppm/K	
Response time (10 ... 90%)	typ. 700 ms	
Coordination of insulation acc. to DIN EN 50178, 04/98 (safe separation)		
Rated voltage	300 V	
Surge voltage	6 kV	
Overtoltage category	III	
Contamination class	2	
Clearance and creepage distance	≥ 5.5 mm	
Test voltage	4 kV eff	
General		
Supply		
Supply voltage	21.6 Vdc...24 Vdc...26.4 Vdc	
Power consumption at rated voltage	50 mA at I <sub>out</sub> = 20 mA	
Reverse polarity protection	yes	
Operating temperature range	0 ... 50 °C	
Storage/transport	-20 ... +70 °C	
Factory setting	0 ... 25 A uc; 4 ... 20mA	
Dimensions L/H/B (mm)	92.4/112.4/22.5	
Weight	150g	
Approvals	CE, cUL	
Dimensions and accessories see	Page 298 + 308	



# Current Monitoring

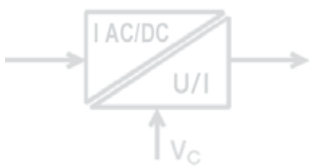
## WAVECONTROL

- input and output range adjustable via DIP switch
- no calibration required
- cross-connectable voltage supply via cross-connectors
- true TRMS value measurements
- hall sensor measurement method

## Approvals:

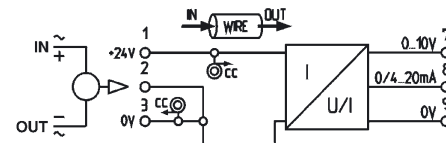


### Block diagram



## WAS2 CMA WAZ2 CMA

40/50/60A ac/dc  
selectable with  
analogue output  
0 ... 20 mA/  
4 ... 20 mA/  
0 ... 10 V



### Ordering data

Screw connection

Tension clamp connection

### Technical data\*

#### Input

Input current

Input frequency

Accuracy

Measuring principle

Connection type

Pass through diameter

Measurement circuit voltage

Max. measuring circuit

#### Output

Current/voltage selectable

Output voltage

Offset voltage

Load resistance

Output signal limit

Output current

Offset current

Load resistance

Status LED

Temperature coefficient

Response time (10 ... 90%)

### Coordination of insulation acc. to DIN EN 50178, 04/98

(safe separation)

Rated voltage

Surge voltage

Overvoltage category

Contamination class

Clearance and creepage distance

Test voltage

### General

Supply

Supply voltage

Power consumption at rated voltage

Reverse polarity protection

Operating temperature range

Storage/transport

Factory setting

Dimensions L/H/W (mm)

Weight

Approvals

Dimensions and accessories see

\* Tu = 23 °C single module

Type	Cat. No.	Qty.
WAS2 CMA 40/50/60A uc	8513330000	1
WAZ2 CMA 40/50/60A uc	8526590000	1

# Current Monitoring

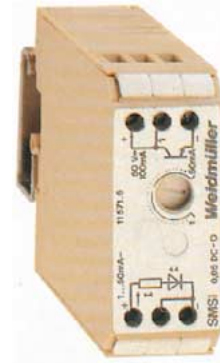
- For AC/DC
- With and without adjustable switching threshold
- Opto-coupler output

## SMSI DC O

With adjustable switching threshold

Up to 50 mA

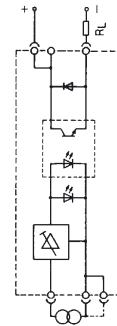
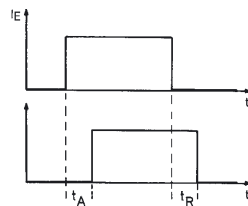
Up to 250 mA



This series is particularly suitable for monitoring small currents from 50 mA to 5 A.

The adjustable switching threshold activates optionally one relay- or opto-coupler output each.

### Block diagram/ timing diagram



### Ordering data

Type	Cat. No.	Type	Cat. No.
SMSI 0.05 DC O	1157160000	SMSI 0.25 DC O	1156360000

### Technical data

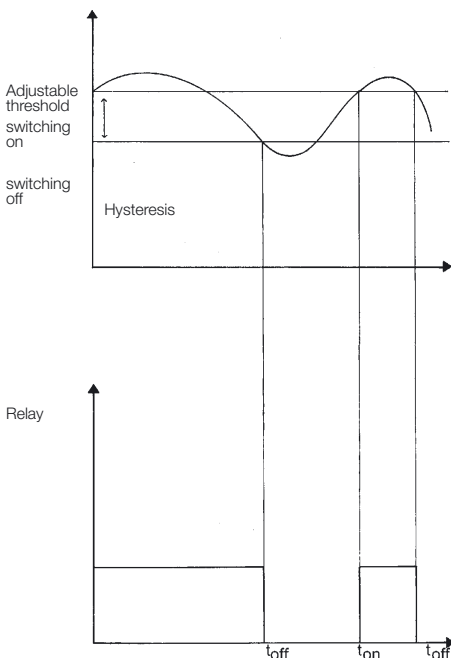
Measurement circuit voltage	10 V... 250 Vdc	10 V... 250 Vdc
<b>Max. permissible current in measurement circuit</b>	<b>70 mA</b>	<b>350 mA</b>
Rated consumption – (W)	200 mW	750 mW
Rated consumption – (VA)	–	–
<b>Adjustable switching threshold</b>	<b>1 mA...50 mA</b>	<b>40 mA...250 mA</b>
Hysteresis between turn-on and turn-off point	0.5 % (50 mA)...5 % (1 mA)	2% (250 mA)...10% (40 mA)
Activation time $t_A$	< 10 ms	< 3 ms
Reaction time $t_R$	< 10 ms	< 3 ms
Voltage drop at input	< 4 V	< 3 V
Output voltage	5 V...50 Vdc	5 V...50 V–
Max. continuous output current	100 mA	100 mA
Saturation voltage	≤ 1.3 V	≤ 1.3 V
Auxiliary voltage	–	–
Auxiliary voltage rated consumption	–	–
Auxiliary voltage rated data	–	–
Storage temperature	–25 °C...+60 °C	–25 °C...+60 °C
Ambient temperature	–, assembled without spacing on TS –, assembled with ≥ 20 mm spacing on TS	–25 °C...+40 °C –25 °C...+50 °C

### Coordination of insulation according to VDE, Draft 11/94

Overvoltage category, input	II	II
Overvoltage category, output	I	I
Overvoltage category, input 1-input 2,	I	I
Output 1-output 2, input-output	III	III
Contamination class	2	2

### Dimensions and connection data

see page 306 + 307	Fig. V	Fig. V
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## SMSI AC O

With adjustable switching threshold  
up to 250 mA Up to 2.5 A



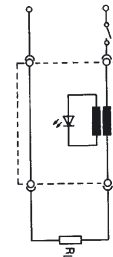
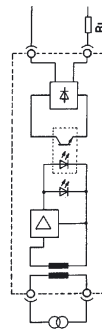
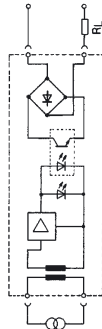
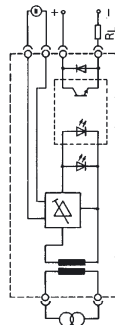
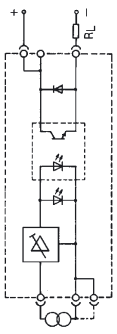
## SMSI AC O

Current monitoring units with transistor output up to 5 A  
without switching threshold



## SMSI AC

Current monitoring with indicator up to 5 A  
without switching threshold



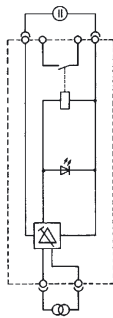
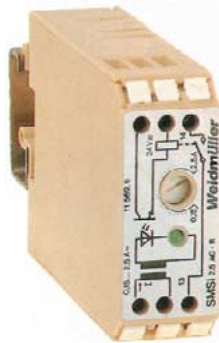
Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
SMSI 0.25 AC O	1156460000	SMSI 2.5 AC O	1157360000	SMSI 5 AC O	1112160000	SMSI 5 AC O	8026930000	SMSI 5 AC	1112060000
10 V...250 Vac		10 V...250 Vac		5...250 Vav		5...250 Vac		5...250 Vac	
<b>300 mA</b>		<b>2.8 A</b>		<b>1 A...5 A</b>		<b>1 A...5 A</b>		<b>1 A...5 A</b>	
-		-		-		-		-	
1075 mVA		250 mVA		-		-		-	
<b>40 mA...250 mA</b>		<b>0.2 A...2.2 A</b>		-		-		-	
≤ 5%		≤ approx. 35%		-		-		-	
≤ 40 ms		≤ 55 ms		≤ 10 ms		≤ 10 ms		-	
≤ 15 ms		≤ 20 ms		≤ 20 ms		≤ 20 ms		-	
< 4.3 V~eff (I = 250 mA)		< 100 mV~eff (I = 10 A)		< 200 mV		< 200 mV		< 200 mV	
5 V...50 V~		5 V...50 V~		24 Vuc ± 10%		5...48 Vdc		-	
100 mA		100 mA		100 mA		100 mA		-	
≤ 1.3 V		≤ 1.3 V		< 3.2 V		< 1.6 V		-	
		24 Vuc ± 10%							
		550 mW~/1150 mVA~							
		23 mA~/47 mA~							
-25 °C...+60 °C		-25 °C...+60 °C		-40 °C...+60 °C		-40 °C...+60 °C		-40 °C...+60 °C	
-25 °C...+40 °C		-25 °C...+40 °C		-25 °C...+40 °C		-25 °C...+40 °C		-25 °C...+40 °C	
-25 °C...+50 °C		-25 °C...+50 °C		-25 °C...+50 °C		-25 °C...+50 °C		-25 °C...+50 °C	
II		II		II		II		II	
I		I		I		I		I	
III		III		III		III		III	
2		2		2		2		2	
Fig. V		Fig. V		Fig. II		Fig. II		Fig. II	

# Current Monitoring

- For AC/DC
- Adjustable switching threshold
- Relay output

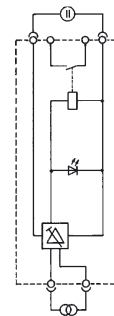
## SMSI DC R

With adjustable switching threshold  
up to 250 mA



## SMSI AC R

With adjustable switching threshold  
up to 250 mA



### Ordering data

Type	Cat. No.
SMSI 0.25 DC R	1156660000

Type	Cat. No.
SMSI 0.25 AC R	1159960000

### Technical data

Measurement circuit voltage	10 V...250 Vdc	10 V...250 Vac
<b>Max. permissible current in measurement circuit</b>	<b>350 mA</b>	<b>300 mA</b>
Rated consumption ~ (VA)	750 mVA (I = 250 mA)	1075 mVA (I = 250 mA)
Voltage drop at input	≤ 3 V (I = 250 mA)	≤ 3 V (I = 250 mA)
<b>Adjustable switching threshold</b>	<b>40 mA...250 mA~</b>	<b>40 mA...250 mA~</b>
Hysteresis between turn-on and turn-off point	2% (250 mA)<IHY<10% (40 mA)	≤ 5%
Activation time tA	-	≤ 25 ms
Reaction time tR	≤ 12 ms	≤ 15 ms
Recovery	-	-
Output voltage	250 V	250 V
Max. continuous output current	3 A	3 A
Auxiliary voltage	24 V~ ±10%	24 V~ ±10%
Rated consumption auxiliary voltage	250 mW/450 mVA	250 mW/450 mVA
Max. switching current	8 A	8 A
Contact	1 NO <sup>1)</sup>	1 NO <sup>1)</sup>
Contact material	AgNi, gold-flashed	AgNi, gold-flashed
Storage temperature	-25 °C...+60 °C	-25 °C...+60 °C
Ambient temperature	-25 °C...+40 °C	-25 °C...+40 °C
- , assembled without spacing on TS	-25 °C...+40 °C	-25 °C...+40 °C
- , assembled with ≥ 20 mm spacing on TS	-25 °C...+50 °C	-25 °C...+50 °C

### Coordination of insulation to DIN VDE 0160,Draft 11/94

Overvoltage category, input, output	II	II
Overvoltage category, input1-input2, Output1-output 2, input-output	III	III
Contamination class	2	2

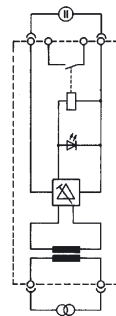
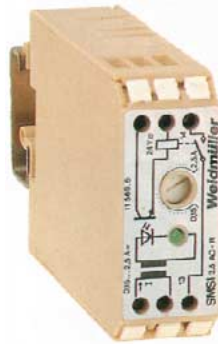
### Dimensions and connection data

see page 307	Fig. V	Fig. V
	<sup>1)</sup> NC on request	

# Current Monitoring

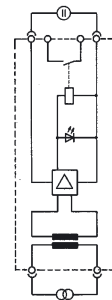
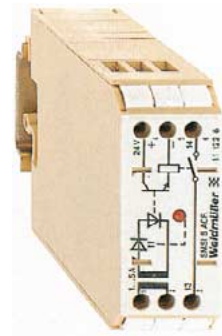
## SMSI AC R

With adjustable switching threshold up to 2.5 A



## SMSI AC R

Current monitoring with relay output up to 5 A without switching threshold



### Ordering data

Type	Cat. No.
SMSI 2.5 AC R	1156960000

### Technical data

Measurement circuit voltage	10 V...250 Vac
<b>Max. permissible current in measurement circuit</b>	<b>3 A</b>
Rated consumption ~ (VA)	250 mVA (I = 2.5 A)
Voltage drop at input	< 0.1 V (I = 2.5 A)
<b>Adjustable switching threshold</b>	<b>0.2...2.2 A</b>
Hysteresis between turn-on and turn-off point	≤ approx. 5%
Activation time tA	≤ 45 ms
Reaction time tR	≤ 30 ms
Recovery	< 75 ms
Output voltage	250 V
Max. continuous output current	3 A
Auxiliary voltage	24 Vdc ±10%
Rated consumption auxiliary voltage	1000 mW
Max. switching current	5 A
Contact	1 NO <sup>1)</sup>
Contact material	AgNi, gold-plated 3 μm
Storage temperature	-40 °C...+60 °C
Ambient temperature	
- , assembled without spacing on TS	-25 °C...+40 °C
- , assembled with ≥ 20 mm spacing on TS	-25 °C...+50 °C

### Coordination of insulation to DIN VDE 0160, Draft 11/94

Overvoltage category, input, output	II
Overvoltage category, input1-input2, Output1-output 2, input-output	III
Contamination class	2

### Dimensions and connection data

see page 307	Fig. V
--------------	--------

Type	Cat. No.
SMSI 5 AC R	1112260000

### Technical data

Measurement circuit voltage	10 V...250 Vac
<b>Max. permissible current in measurement circuit</b>	<b>1 A...5 A</b>
Rated consumption ~ (VA)	1 VA (I = 5 A)
Voltage drop at input	< 1 VA (I = 5 A)
<b>Adjustable switching threshold</b>	<b>0.2...2.2 A</b>
Hysteresis between turn-on and turn-off point	≤ approx. 5%
Activation time tA	≤ 45 ms
Reaction time tR	≤ 30 ms
Recovery	< 75 ms
Output voltage	250 V
Max. continuous output current	3 A
Auxiliary voltage	24 Vdc ±10%
Rated consumption auxiliary voltage	1000 mW
Max. switching current	8 A
Contact	1 NO <sup>1)</sup>
Contact material	AgNi, gold-plated 3 μm
Storage temperature	-40 °C...+60 °C
Ambient temperature	
- , assembled without spacing on TS	-25 °C...+40 °C
- , assembled with ≥ 20 mm spacing on TS	-25 °C...+50 °C

### Coordination of insulation to DIN VDE 0160, Draft 11/94

Overvoltage category, input, output	II
Overvoltage category, input1-input2, Output1-output 2, input-output	III
Contamination class	2

### Dimensions and connection data

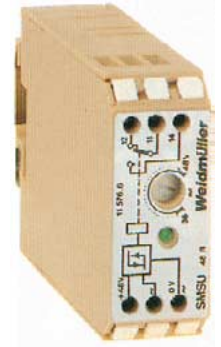
see page 307	Fig. V
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# Voltage Monitoring

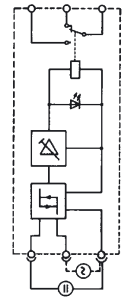
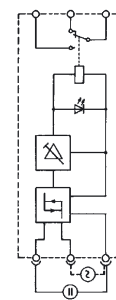
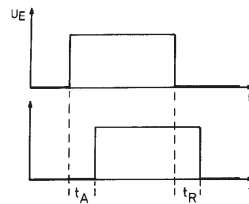
- Voltage monitoring from 18 to 299 V
- One and three phase version
- Adjustable switching threshold

## SMSU 24 R

## SMSU 48 R



### Block diagram/ timing diagram



### Ordering data

Type	Cat. No.	Type	Cat. No.
SMSU 24 R	115760000	SMSU 48 R	115766000

### Technical data

#### Voltage monitoring range (also Supply voltage)

Rated consumption – (W)  
 Rated consumption – (VA)

#### Adjustable switch-off threshold

Hysteresis/factory setting  
 Switching points

Activation time  $t_A$

Reaction time  $t_R$

Derating curve

a = assembled without spacing on mounting rail

b = assembled with  $\geq 20$  mm spacing on mounting rail

18 Vdc...27 Vdc or  
 18 Vac...27 Vac/50 Hz

< 0.8 W  
 < 0.9 VA

18 Vuc...24 Vuc

1%...10%/5%

< 4 s

< 300 ms

36 Vdc...53 Vdc or  
 36 Vac...53 Vac/50 Hz

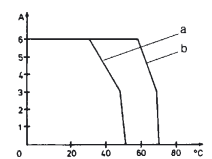
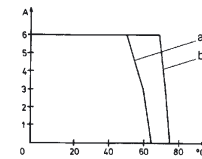
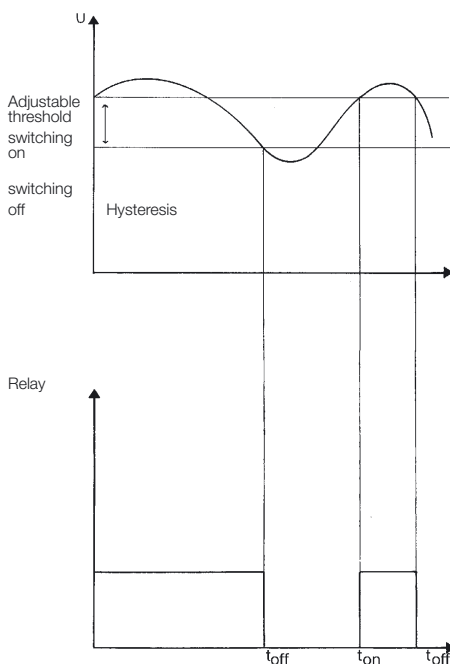
< 1 W  
 < 1.5 VA

36 Vuc...48 Vuc

1%...10%/5%

< 2.5 s

< 300 ms



Max. output voltage	250 V~
Max. switching current	8 A
Max. continuous output current	3 A
Contact	1 changeover contact
Contact material	AgNi 0.15 gold-flashed
Switching capacity (resistive load)	2000 VA
Fuse	
Storage temperature	-40 °C...+60 °C
Ambient temperature	
- , assembled without spacing on TS	-25 °C...+50 °C
- , assembled with $\geq 20$ mm spacing on TS	-25 °C...+60 °C
<b>Coordination of insulation to DIN VDE 0160, Draft 11/94</b>	
Overvoltage category, input, input 1-input 2, output	
Overvoltage category, input-output, output 1-output 2	
Contamination class	
Dimensions and connection data see page 306	

Max. output voltage	250 V~
Max. switching current	8 A
Max. continuous output current	3 A
Contact	1 changeover contact
Contact material	AgNi 0.15 gold-flashed
Switching capacity (resistive load)	2000 VA
Fuse	
Storage temperature	-40 °C...+60 °C
Ambient temperature	
- , assembled without spacing on TS	-25 °C...+50 °C
- , assembled with $\geq 20$ mm spacing on TS	-25 °C...+60 °C
<b>Coordination of insulation to DIN VDE 0160, Draft 11/94</b>	
Overvoltage category, input, input 1-input 2, output	
Overvoltage category, input-output, output 1-output 2	
Contamination class	
Dimensions and connection data see page 306	

**SMSU 110 R**

**SMSU 220 R**

**SMSU 260 R**

**SMSU 3x220 R**

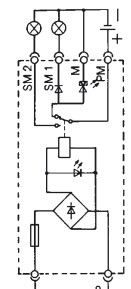
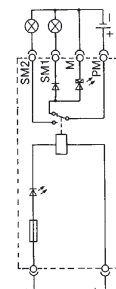
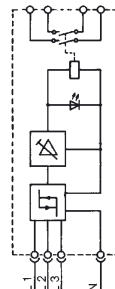
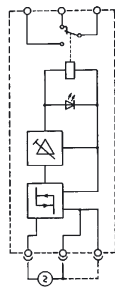
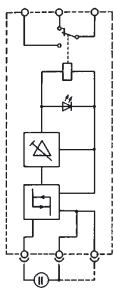
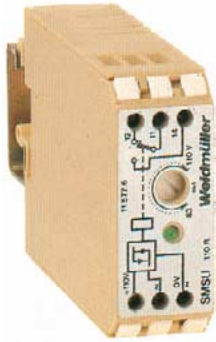
Three-phase with adjustable switching threshold

**SMSU 1-24 DC**

Single-phase without switching threshold

**SMSU 1-230 AC/DC**

Single-phase without adjustable switching threshold



Type	Cat. No.
SMSU 110 R	1157760000

Type	Cat. No.
SMSU 220 R	1157860000

Type	Cat. No.
SMSU 260 R	1160160000

Type	Cat. No.
SMSU	
3x220 R, 2 NO	1156560000
3x220 R, 1 NC/1 NO	1178760000

Type	Cat. No.
SMSU 24 DC	0555060000

Type	Cat. No.
SMSU 230 AC/DC	0555160000

<b>83 Vdc...121 Vdc or</b>
<b>83 Vac...121 Vac/50 Hz</b>
< 1.6 W
< 1.5 W
<b>83 Vuc...110 Vuc</b>
1%...10%/5%
-
< 4 s
< 300 ms

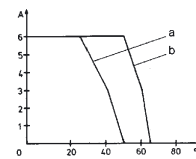
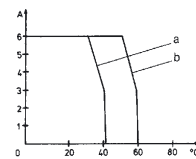
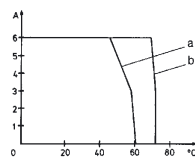
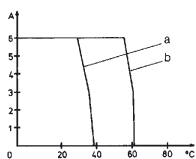
<b>165 Vac...253 Vac/50 Hz</b>
-
< 10 VA
<b>165 Vac...220 Vac</b>
1%...15%/5%
-
< 3 s
< 2 s

<b>200 V...299 Vac/50 Hz</b>
-
< 10 VA
<b>200 V...260 V</b>
1%...15%/5%
-
< 3 s
< 2 s

<b>165 V...230 Vac 50 Hz</b>
-
9 VA (L3); 60 mA (L 1/L 2)
150 V~...205 V~
-7%
-
< 4 s
< 80 ms

<b>24 Vdc ± 10%</b>
<b>0.5 W</b>
-
-
-
-
On: 18.5 V, off: 5 V
15 ms
10 ms

<b>230 Vdc ±10%</b>
<b>0.9 W</b>
1.1 W
-
-
-
On: 140 V~/130 V~, off: 70 V~/80 V~
-
-



250 V~
8 A
3 A
1 changeover contact
AgNi 0.15 gold-flashed
2000 VA
-40 °C...+60 °C
-25 °C...+30 °C
-25 °C...+55 °C

250 V~
8 A
3 A
1 changeover contact
AgNi 0.15 gold-flashed
2000 VA
-40 °C...+60 °C
-25 °C...+45 °C
-25 °C...+60 °C

250 V~
8 A
3 A
1 changeover contact
AgNi 0.15 gold-flashed
2000 VA
-40 °C...+60 °C
-25 °C...+45 °C
-25 °C...+60 °C

250 V~
8 A
3 A
2 NO (115656)
1 NO/1 NC (117876)
AgCdO, gold-flashed
5x10 <sup>7</sup> switching operations
2x10 <sup>5</sup> switching operations
10 <sup>5</sup> switching operations
-40 °C...+60 °C
-5 °C...+40 °C
-5 °C...+55 °C

24 V~ ± 10%
1 A
1 changeover contact
AgNi, gold-flashed
10 <sup>5</sup> switching operations
100 mA
-40 °C...+60 °C
-25 °C...+40 °C
-25 °C...+50 °C

24 V~ ± 10%
1 A
1 changeover contact
AgNi, gold-flashed
10 <sup>5</sup> switching operations
100 mA
-40 °C...+60 °C
-25 °C...+40 °C
-25 °C...+50 °C

II  
III  
2

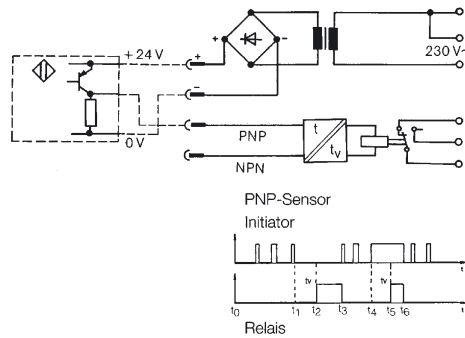
# Movement and Rotational Speed Monitoring

## SMS SIZA

Rotational speed monitoring



### Block diagram



### Ordering data

Type	Cat. No.
SMS/SIZA	1110560000

### Description

Power supply with delayed turn-off relay output for three-conductor DC initiators (NPN or PNP).

The transformer supplies the initiator with 24 V DC. The initiator signal activates the relay, at which time the adjustable turn-off delay becomes effective. This module is particularly suitable for monitoring cyclic movements, e.g. down-times monitoring of conveyor drives, ventilators and pumps or stroke monitoring of valves, die cutters and drilling heads.

A contact element actuates the initiator at regular intervals. If these pulses cease, i.e. the proximity switch is continuously actuated ( $t_1-t_2$ ) or deactivated ( $t_1-t_3$ ), the relay transmits a signal after the set time has elapsed. During normal operation, the time function bridges the gaps between regular pulses ( $t_0-t_2$ ).

### Technical data

Operating voltage	230 Vdc +5 –15%
Initiator type/initiator voltage	P or N switched/24 Vdc
Output voltage	250 V
Continuous current	4 A
Max. switching capacity (resistive load)	2000 VA
Contact	1 changeover contact
Contact material	AgNi 0.15 gold-flashed
Mechanical service life	> 10 <sup>7</sup> switching operations
Time range	0.5...5 s

### Coordination of insulation to VDE DIN 0160, draft11/94

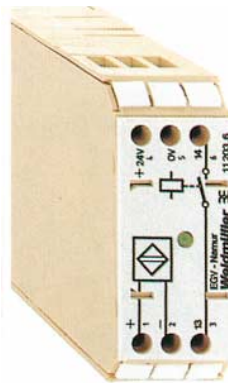
Rated voltage	300 V
Rated surge voltage	4 kV
Overvoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 3 mm
EMC	EN 50 081-1/50 082-2

Accessories and dimensions see page 307

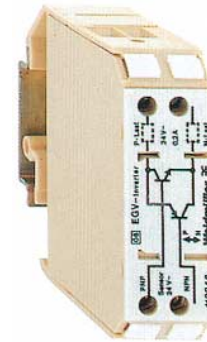
Fig. VI

# Namur Switch Amplifiers

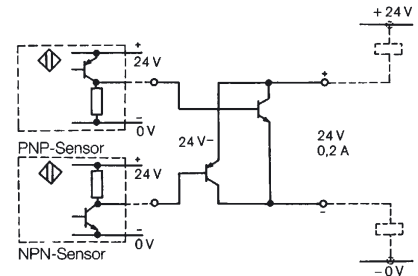
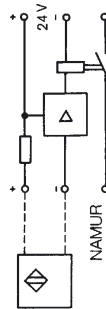
## EGV-Namur



## EGV-Inverter



### Block diagram



### Ordering data

Type	Cat. No.
EGV Namur	1120360000

Type	Cat. No.
EGV Inverter	1122460000

### Description

Switching amplifier for 2-wire Namur initiators with relay output. Enables the use of economic Namur initiators with short design lengths. This is particularly valid for areas where initiators are subjected to heavy mechanical stresses, and often need to be replaced. A potential-free NO contact is available on the output side for switching larger ratings (2000 VA). The Namur initiator can be directly connected to the module. LED function indicators indicate switching statuses.

This module inverts the switching function of electronic outputs. A PNP output is changed into an NPN output with the load connected unilaterally against the positive potential (the negative potential is switched through). An NPN output is changed into a PNP output with the load connected unilaterally to the frame potential (the positive potential is switched through). The module reduces the inventory of sensors and electronic switches with PNP/NPN outputs to a single type.

### Technical data

Input voltage	24 Vdc ±10%
Initiator type/initiator voltage	approx. 8 Vdc
Output voltage, -current	250 Vac/dc
Continuous current	3 A
Max. switching capacity (resistive load)	2000 VA
Contact	1 NO
Contact material	AgNi 0.15 gold-flashed
Mechanical service life	> 10 <sup>7</sup> switching operations
Ambient temperature	40 °C mounted

24 Vdc ± 10% (closed circuit current < 10 mA)
24 Vdc ± 10% (switching threshold approx. 15 V)
200 mA

### Coordination of insulation to VDE DIN 0160, draft11/94

Rated voltage	300 V
Rated surge voltage	4 kV
Overvoltage category	III
Contamination class	2
Clearance and creepage distance	≥ 3 mm
EMC	EN 50 081, EN 50 082, EN50 011

EN 50 081, EN 50 082, EN50 011
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Accessories and dimensions see page 307

Fig. VI

Fig. V



# Set Point Generator

## EMA/SW 24

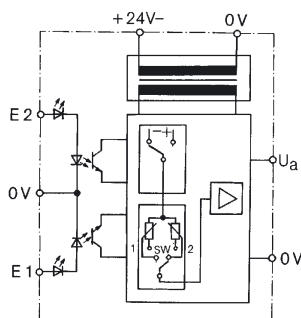
- Set point generator
- switchable  $-10.5\text{ V}/+10.5\text{ V}$



Set point 1 or set point 2 can be switched to the module's output as required. The changeover is performed safely separated via the control input E1. The output voltage values (0...10.5 V) can be set using the spindle operated potentiometers SW1 and SW2. The control input E\* determines the polarity safely separated ( $-10.5\text{ V} \dots 0\text{ V} \dots +10\text{ V}$ ).

Control input E1: 0 V = set point 1, 24 V = set point 2,

Control input E2: 0 V = positive set point, 24 V = negative set point



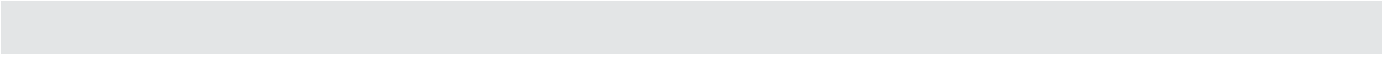
electronic changeover switch

### Ordering data

Type	Cat. No.
EMA/SW	1172660000

### Technical data

Input signal/measurement range	0=0 V, 1=+24 V
Control voltage	24 V $\pm 20\%$
Max. input current	$\leq 7\text{ mA}$ at 24 V
Display	each control input: red LED
Setting	via trimming potentiometer 25 rotations nom.
<b>Output signal</b>	<b>adjustable from <math>-10.5\text{ V} \dots +10.5\text{ V}</math></b>
Output	Voltage output selection by E1/E2
Output current	max. $\pm 25\text{ mA}$ at $U_{\text{rated}}=24\text{ V}$ –
Load resistance	min. $400\ \Omega$ at $U_{\text{rated}}=24\text{ V}$
Slew-Rate	0.168 V/ $\mu\text{s}$
Supply voltage $U_B$	24 V $\pm 20\%$ , 30 mA ( $R_L = \infty$ )
Residual ripple	30 mV/106 kHz (at $U_{\text{max}}$ )
Reaction time	rising 50 $\mu\text{s}$ decreasing 80 $\mu\text{s}$
Isolation voltage, voltage strength	
Input/output/supply	1 kV-
Input-Output/TS	4 kV <sub>eff</sub>
Storage temperature	$-20\text{ }^\circ\text{C} \dots +70\text{ }^\circ\text{C}$
Operating temperature	0 $^\circ\text{C} \dots +50\text{ }^\circ\text{C}$
<b>Insulation coordination according to EN 50 178</b>	
Overtoltage category	III
Contamination class	2
Accessories, dimensions and connection data see page 307	Fig. V



# 8-Bit Analogue/Digital Converters

## Hold function (H):

The converter can, for example, by means of the hold function (H) be matched to the cycle time of a PLC. Holding and release of the conversion. The Hold input (H) is internally connected to 0 V via a resistor. In order to store the last signal, the Hold input (H) must be supplied with 24 V.

## Enable function (E):

The Enable circuit (E) allows several converters, e.g. on an input card of a PLC, to be switched on. The Enable input (E) is connected internally to 0 V via a resistor. In order to make the connection to the PLC, one converter must be disconnected. The other converters are supplied with 24 V (at least 12 V). This causes the converters at the output to be highly resistive.

RS/U-D8



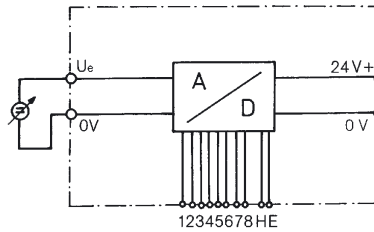
RS/I-D 8



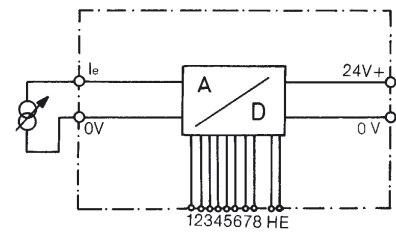
Functions table (example)

Terminal PIN								Digital value/ digital value	Analog voltage Analog voltage
MSB	E8	E7	E6	E5	E4	E3	LSB		
0	0	0	0	0	0	0	0	0	0 V
0	0	0	0	0	0	0	0	1	
0	0	0	0	0	0	0	1	0	
0	0	0	0	0	0	1	1		
-	-	-	-	-	-	-	-	-	
1	1	1	1	1	1	1	0	1	
1	1	1	1	1	1	1	1	0	
1	1	1	1	1	1	1	1	1	+10 V

Block diagram



Block diagram



## Ordering data

Type	Cat. No.
RS/U-D 8	1122361001

Type	Cat. No.
RS/U-D 8	1160361001

Type	Cat. No.
RS/I-D 8	1160561001

Type	Cat. No.
RS/I-D 8	1168561001

## Technical data

<b>Input signal</b>	<b>-10 V...+10 V</b>
Max. input voltage	≤ 55 μA
Max. input current	≥ 200 kΩ
Input resistance	5 kHz at Full-Scale (Sinus) <sup>1)</sup>
Max. limit frequency	78 mV c 1 LSB
Resolution	
<b>Output signal</b>	<b>8 Bit</b> (1 Bit prefix)
Output current	≤ 25 mA (as source)
Output level	approx. 17 V c H, 0 V c L
Prefix	MSB: H c positive, L c negative
Transmission error	±1 LSB
Conversion time	≤ 4 μs
Supply	24 V-, ±20 %, 35 mA (plus output current)
Connection arrangement	
	Terminal 1 LSB
	⋮
	Terminal 8 MSB
	Terminal 9 Enable <sup>2)</sup>
	Terminal 10 Hold
Hold function:	High c +24 V c storage of last converted value
	Low c 0 V c free conversion
Storage temperature	-40 °C...+85 °C
Operating temperature	0 °C...+50 °C
EMC EN 50 081-1/50 082-2	

<b>Input signal</b>	<b>0...10 V</b>
Max. input voltage	≤ 25 μA
Max. input current	≥ 400 kΩ
Input resistance	5 kHz at Full-Scale (Sinus) <sup>1)</sup>
Max. limit frequency	39 mV c 1 LSB
Resolution	
<b>Output signal</b>	<b>8 Bit</b>
Output current	≤ 25 mA (as source)
Output level	approx. 17 V c H, 0 V c L
Prefix	
Transmission error	±1 LSB
Conversion time	≤ 4 μs
Supply	24 V-, ±20 %, 35 mA (plus output current)
Connection arrangement	
	Terminal 1 LSB
	⋮
	Terminal 8 MSB
	Terminal 9 Enable <sup>2)</sup>
	Terminal 10 Hold
Hold function:	High c +24 V c storage of last converted value
	Low c 0 V c free conversion
Storage temperature	-40 °C...+85 °C
Operating temperature	0 °C...+50 °C

<b>Input signal</b>	<b>0...20 mA</b>
Max. input voltage	3.5 V
Max. input current	25 mA
Input resistance	≥ 51 Ω
Max. limit frequency	5 kHz at Full-Scale (Sinus) <sup>1)</sup>
Resolution	78 μA c 1 LSB
<b>Output signal</b>	<b>8 Bit</b>
Output current	≤ 25 mA (as source)
Output level	approx. 17 V c H, 0 V c L
Prefix	
Transmission error	±1 LSB
Conversion time	≤ 4 μs
Supply	24 V-, ±20 %, 35 mA (plus output current)
Connection arrangement	
	Terminal 1 LSB
	⋮
	Terminal 8 MSB
	Terminal 9 Enable <sup>2)</sup>
	Terminal 10 Hold
Hold function:	High c +24 V c storage of last converted value
	Low c 0 V c free conversion
Storage temperature	-40 °C...+85 °C
Operating temperature	0 °C...+50 °C

<b>Input signal</b>	<b>4...20 mA</b>
Max. input voltage	3.5 V
Max. input current	25 mA
Input resistance	≥ 51 Ω
Max. limit frequency	5 kHz at Full-Scale (Sinus) <sup>1)</sup>
Resolution	62.5 μA c 1 LSB
<b>Output signal</b>	<b>8 Bit</b>
Output current	≤ 25 mA (as source)
Output level	approx. 17 V c H, 0 V c L
Prefix	
Transmission error	±1 LSB
Conversion time	≤ 4 μs
Supply	24 V-, ±20 %, 35 mA (plus output current)
Connection arrangement	
	Terminal 1 LSB
	⋮
	Terminal 8 MSB
	Terminal 9 Enable <sup>2)</sup>
	Terminal 10 Hold
Hold function:	High c +24 V c storage of last converted value
	Low c 0 V c free conversion
Storage temperature	-40 °C...+85 °C
Operating temperature	0 °C...+50 °C

<sup>1)</sup> 1 LSB-Accuracy

<sup>2)</sup> Enable: 24 V = tristate  
0 V = free conversion

# 8-Bit Digital/Analogue Converters

RS/D 8-U

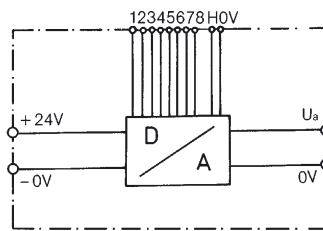


RS/D 8-I



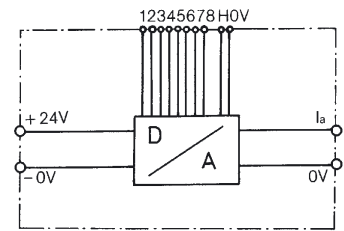
Block diagram

Pin assignment



Block diagram

Pin assignment

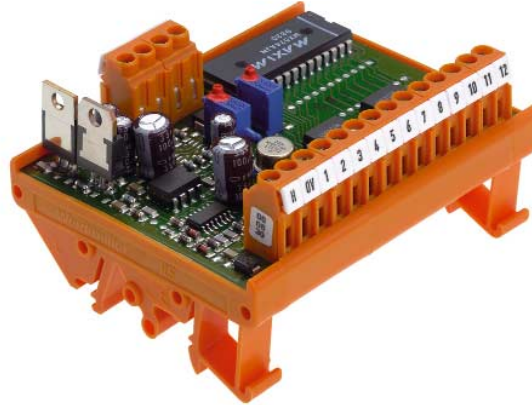


Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
		RS/D 8-U	1123361001	RS/D 8-U	1160761001	RS/D 8-I	1165861001	RS/D 8-I
<b>Technical data</b>								
<b>Input signal</b>	<b>8 Bit (1 Bit prefix)</b>		<b>8 Bit</b>		<b>8 Bit</b>		<b>8 Bit</b>	
Max. input voltage	5...24 V (typ. 24 V)		5...24 V (typ. 24 V)		5...24 V (typ., max. 30 V) c H		5...24 V (type., max. 30 V) c H	
Max. input current	2.5 mA		2.5 mA		50 kΩ per input		50 kΩ per input	
Input resistance	50 kΩ per input		50 kΩ per input		50 kΩ per input		50 kΩ per input	
Prefix	MSB: H c positive, L c negative							
Resolution	78 mV c 1 LSB		39 mV c 1 LSB		78 μA c 1 LSB		62.5 μA c 1 LSB	
<b>Output signal</b>	<b>-10 V...+10 V</b>		<b>0...10 V</b>		<b>0...20 mA</b>		<b>4...20 mA</b>	
Output current	≤ 10 mA max. current		≤ 10 mA		0...20 mA (as source)		4...20 mA (as source)	
Offset	≤ 20 mV		≤ 20 mV		max. 0.08 mA		4 mA	
Load resistance	≥ 1 kΩ		≥ 1 kΩ		≤ 500 Ω		≤ 500 Ω	
Transmission error	±1 LSB		±1 LSB		±1 LSB		±1 LSB	
Conversion time	≤ 30 μs		≤ 30 μs		≤ 30 μs		≤ 30 μs	
Supply	24 V-, ±20 %, 25 mA (plus output current)		24 V-, ±20 %, 25 mA (plus output current)		24 V-, ±20 %, 25 mA (plus output current)		24 V-, ±20 %, 25 mA (plus output current)	
Connection arrangement	Terminal 1 LSB		Terminal 1 LSB		Terminal 1 LSB		Terminal 1 LSB	
	⋮		⋮		⋮		⋮	
	Terminal 8 MSB		Terminal 8 MSB		Terminal 8 MSB		Terminal 8 MSB	
	Terminal 9 Hold		Terminal 9 Hold		Terminal 9 Hold		Terminal 9 Hold	
	Terminal 10 0 V		Terminal 10 0 V		Terminal 10 0 V		Terminal 10 0 V	
	Hold function:		Hold function:		Hold function:		Hold function:	
	High c +24 V c storage of last converted value		High c +24 V c storage of last converted value		High c +24 V c storage of last converted value		High c +24 V c storage of last converted value	
	Low c 0 V c free conversion		Low c 0 V c free conversion		Low c 0 V c free conversion		Low c 0 V c free conversion	
Storage temperature	-40 °C...+85 °C		-40 °C...+85 °C		-40 °C...+85 °C		-40 °C...+85 °C	
Operating temperature	0 °C...+50 °C		0 °C...+50 °C		0 °C...+50 °C		0 °C...+50 °C	
EMC EN 50 081-1/50 082-2								

# 12-Bit Analogue/Digital Converters

## Hold function (H):

The converter can, for example, by means of the hold function (H) be matched to the cycle time of a PLC. Holding and release of the conversion. The Hold input (H) is internally connected to 0 V via a resistor. In order to store the last signal, the hold input (H) must be supplied with 24 V.

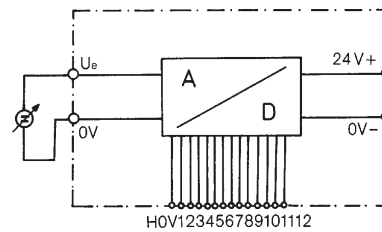


Functions table (example)

Digital value/ digital value	Terminal													
	PIN													
	MSB	12	11	10	9	8	7	6	5	4	3	2	1	LSB
4 mA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	1	1	0
20 mA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	1	1	1	1	1	1	1	1	1	1	1	0	1
	1	1	1	1	1	1	1	1	1	1	1	1	1	0
	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Block diagram

Block diagram



## Ordering data

Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
RS/U-D 12	<b>1168261001</b>	RS/U-D 12	<b>1168361001</b>	RS/I-D 12	<b>1168461001</b>	RS/I-D 12	<b>1169161001</b>

## Technical data

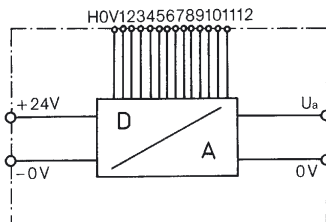
Input signal/measurement range	<b>-10...+10 V</b>	<b>0...10 V</b>	<b>0...20 mA</b>	<b>4...20 mA</b>
Max. input voltage	±15 V	15 V		
Max. input current			30 mA	30 mA
Input resistance	100 kΩ	100 kΩ	500 Ω	500 Ω
Prefix	MSB: H c positive, L c negative			
Resolution	4.88 mV c 1 LSB	2.44 mV c 1 LSB	4.9 μA c 1 LSB	4 μA c 1 LSB
<b>Output signal</b>	<b>12 Bit</b> (1 Bit prefix)	<b>12 Bit</b>	<b>12 Bit</b>	<b>12 Bit</b>
Output current	≤ 25 mA (as source)	≤ 25 mA (as source)	≤ 25 mA (as source)	≤ 25 mA (as source)
Output level	24 V c H, 0 V c L	24 V c H, 0 V c L	24 V c H, 0 V c L	24 V c H, 0 V c L
Load resistance				
Transmission error	±1 LSB	±1 LSB	±1 LSB	±1 LSB
Conversion time	≤ 50 μs	≤ 50 μs	≤ 50 μs	≤ 50 μs
Temperature coefficient	1 LSB *	1 LSB *	1 LSB *	1 LSB *
Supply	24 V-, ±20 %	24 V-, ±20 %	24 V-, ±20 %	24 V-, ±20 %
Max. power loss	4 W	4 W	4 W	4 W
Connection arrangement	Terminal 1 LSB : : Terminal 12 MSB	Terminal 1 LSB : : Terminal 12 MSB	Terminal 1 LSB : : Terminal 12 MSB	Terminal 1 LSB : : Terminal 12 MSB
Hold function:	High c +24 V c storage of digital signal Low c 0 V c enabling the conversion cycle	High c +24 V c storage of digital signal Low c 0 V c enabling the conversion cycle	High c +24 V c storage of digital signal Low c 0 V c enabling the conversion cycle	High c +24 V c storage of digital signal Low c 0 V c enabling the conversion cycle
Storage temperature	-40 °C...+80 °C	-40 °C...+80 °C	-40 °C...+80 °C	-40 °C...+80 °C
Operating temperature	0 °C...+50 °C	0 °C...+50 °C	0 °C...+50 °C	0 °C...+50 °C
EMC EN 50 081-1/50 082-2				

# 12-Bit Digital/Analogue Converters



Block diagram

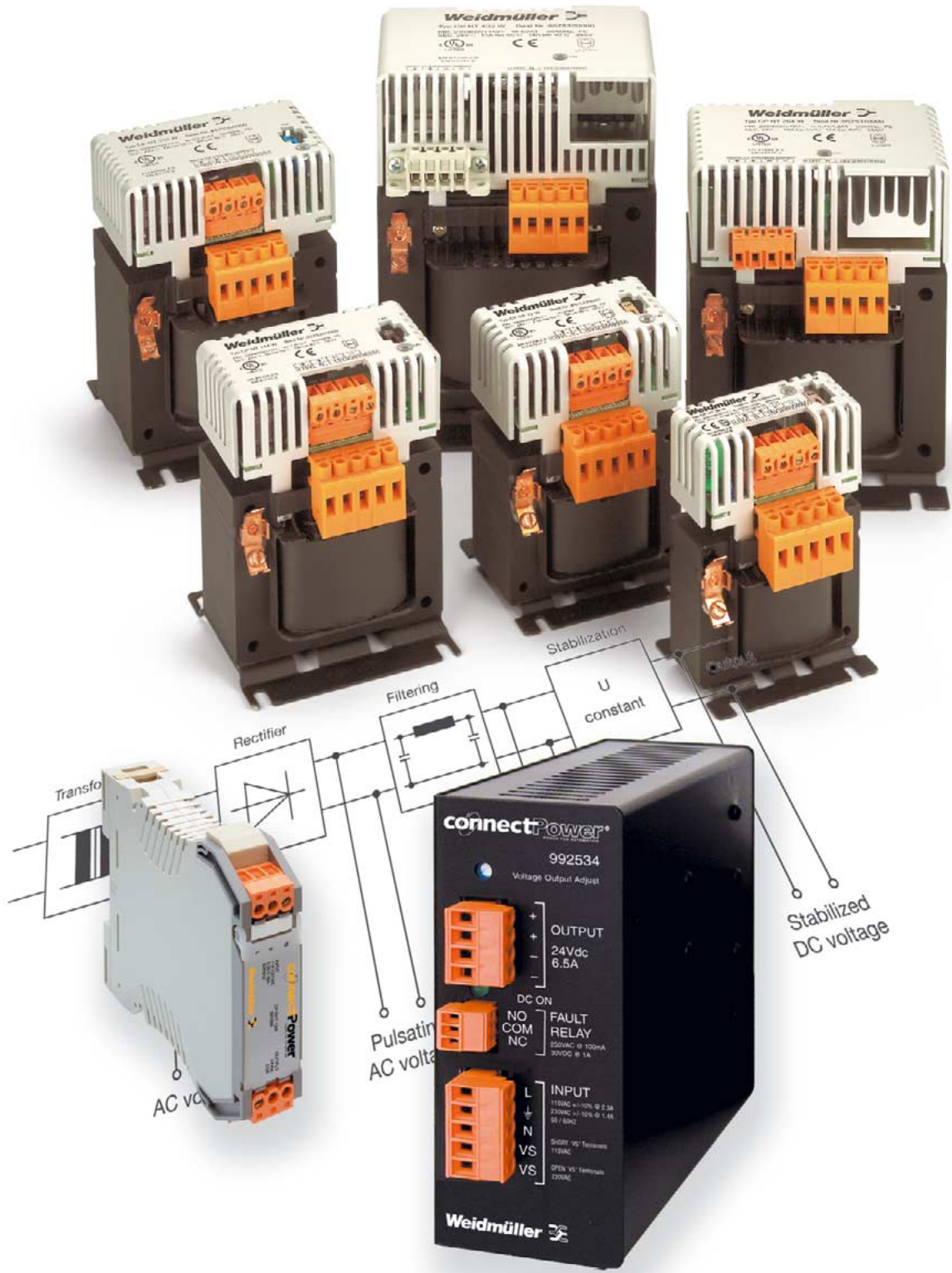
Block diagram



Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
	RS/D 12-U	1160861001	RS/D 12-U	1166161001	RS/D 12-I	1166061001	RS/D 12-I	1165961001
<b>Technical data</b>								
Input signal/measurement range	<b>12 Bit</b> (1 Bit as prefix)		<b>12 Bit</b>		<b>12 Bit</b>		<b>12 Bit</b>	
Max. input voltage	24 V-, ±20 %		24 V-, ±20 %		24 V-, ±20 %		24 V-, ±20 %	
Input current, I <sub>nom</sub>	4.2 mA		4.2 mA		4.2 mA		4.2 mA	
Input resistance	5.7 kΩ		5.7 kΩ		5.7 kΩ		5.7 kΩ	
Prefix	MSB: H c positive, L c negative							
Resolution	4.88 mV c 1 LSB		2.44 mV c 1 LSB		4.9 μA c 1 LSB		4 μA c 1 LSB	
<b>Output signal</b>	<b>-10 V...+10 V</b>		<b>0 V...10 V</b>		<b>0...20 mA</b>		<b>4...20 mA</b>	
Output current	≤ 10 mA		≤ 10 mA		0...20 mA (as source)		4...20 mA (as source)	
Output level								
Load resistance	≥ 1 kΩ		≥ 1 kΩ		≤ 500 Ω		≤ 500 Ω	
Transmission error	±1 LSB		±1 LSB		±1 LSB		±1 LSB	
Conversion time	≤ 4 μs		≤ 4 μs		≤ 4 μs		≤ 4 μs	
Temperature coefficient	±100 ppm from FSR/°C		±100 ppm from FSR/°C		±100 ppm from FSR/°C		±100 ppm from FSR/°C	
Supply	24 V-, ±20 %, 40 mA		24 V-, ±20 %, 40 mA		24 V-, ±20 %, 60 mA		24 V-, ±20 %, 60 mA	
Max. power loss								
Connection arrangement	Terminal 1 LSB : : : Terminal 12 MSB		Terminal 1 LSB : : : Terminal 12 MSB		Terminal 1 LSB : : : Terminal 12 MSB		Terminal 1 LSB : : : Terminal 12 MSB	
Hold function:	High c +24 V c storage of analogue signal Low c 0 V c enabling the conversion cycle		High c +24 V c storage of analogue signal Low c 0 V c enabling the conversion cycle		High c +24 V c storage of analogue signal Low c 0 V c enabling the conversion cycle		High c +24 V c storage of analogue signal Low c 0 V c enabling the conversion cycle	
Storage temperature	-40 °C...+85 °C		-40 °C...+85 °C		-40 °C...+85 °C		-40 °C...+85 °C	
Operating temperature	0 °C...+50 °C		0 °C...+50 °C		0 °C...+50 °C		0 °C...+50 °C	
EMC EN 50 081-1/50 082-2								

Analogue Signal Processing

# Power Supplies



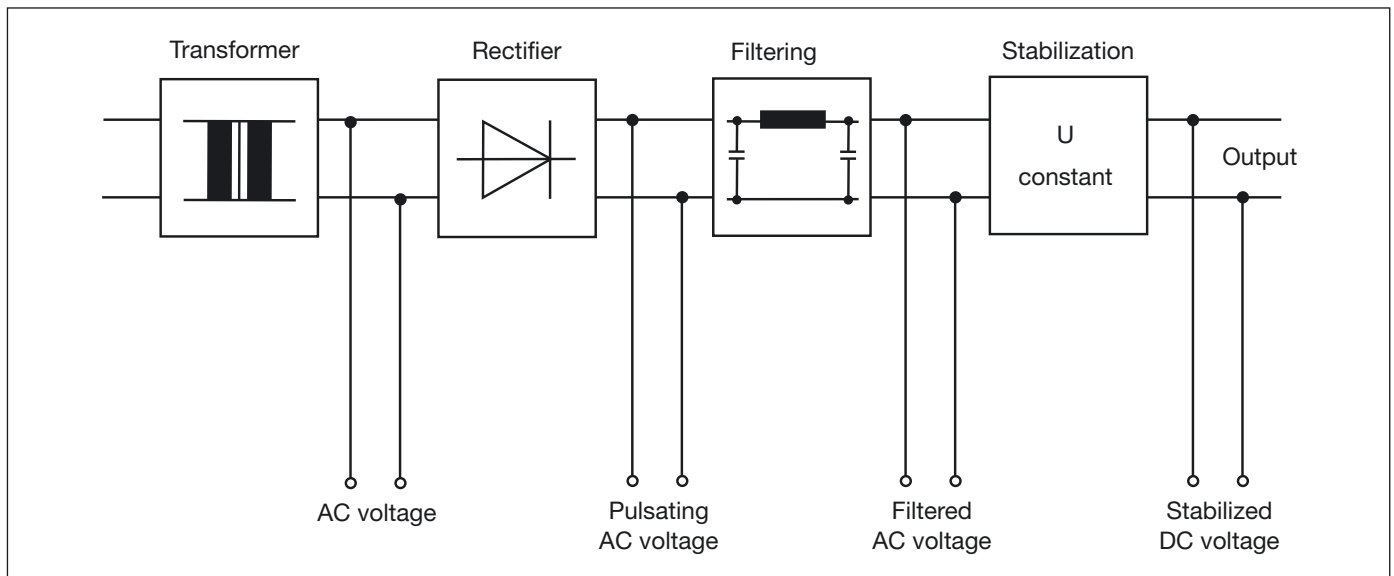


## Power Supplies

Transformers and power supplies are important links in the supply of power to automation systems. They are the core of each and every switchgear cabinet. At the same time, a control voltage of 24V for the supply of all electrical components has become established worldwide. Other voltages are though still used.

The power supply must be chosen with extreme care, because it is crucial for the reliable functioning of all the components it supplies. Power supplies are composed of a transfer system that transfers energy of one alternating voltage to another alternating voltage by means of electromagnetic induction.

The secondary alternating voltage is transformed into a pulsing direct voltage via a rectifier, and then smoothed by means of a filter circuit. In the case of stabilized power supplies, the output voltage is held constant by a stabilizing unit.



Power supplies from Weidmüller have proven themselves over many years in the supply of power to electronics modules. They are CE certified and comply with DIN EN 50081-1 and DIN EN 50082-2 (from 1. April 2002 EN 61000-6-2). Therefore, they can be safely used in industry, in small installations and also in residential areas. They have a proven performance, tested under the harshest environmental conditions.

Weidmüller offers power supply modules that are suitable for industrial use:

- non-stabilized transformer power supplies:
- primary switched-mode chopper-type regulators
- DC/DC converters
- in-phase regulated power supplies

### Input voltage in accordance with DIN IEC 38

The tolerance range of a valid mains voltage of 230Vac / 400Vac will be extended by  $\pm 10\%$  from the year 2003. Weidmüller power supplies already fulfil the applicable regulations in accordance with DIN IEC 38.

### World-wide use

Weidmüller power supplies carry international approvals for world-wide use in many different applications. They are used in applications in mechanical engineering, industrial automation, systems engineering, the power supply industry, production lines and building technology.

### Temperature range

Power supplies continuously create power loss that is released as heat. This heat is dissipated via a heat sink and the surface of the housing. Depending on the type, Weidmüller power supplies can be used in ambient temperature up to  $60^{\circ}\text{C}$ . The power supply to be installed, depends on the ambient temperature.

### Compact construction

Weidmüller power supplies can be used in limited spaces due to their compact design and low basic area requirements. This saves space in the switchgear cabinet and reduces costs.

## Power Supplies

### Standards and regulatories

DIN EN 50178 DIN VDE 0160	Equipping electrical power installations with electronics equipment
DIN EN 61558	Safety of transformers, power supplies and similar
DIN EN 60950 IEC 950 DIN VDE 0805	Safety of facilities used in information technology
DIN EN 60742 DIN VDE 0550 T.1	Regulations for small transformers
DIN VDE 0550 T.3	Special regulations for isolating and control power transformers
DIN VDE 0551	Regulations for safety transformers
DIN VDE 0106 T.101	Basic requirements for safe isolation in electrical equipment
DIN VDE 0113 T.1	Electrical equipping of industrial machinery
DIN IEC 68	Basic environmental testing procedures
IEC 38	Additional advice on status of international standards and European harmonization of nominal mains voltage 230/400 V
DIN EN 61131-2	Programmable controllers

### The following guidelines are also applicable:

73/23 EWG	Use of electrical equipment within certain voltage ranges (guidelines concerning low voltages)
89/336 EWG	Electromagnetic Compatibility (EMC guidelines)
98/37 EG	Safety of machines (guidelines concerning machines)

# compactPower

POWER FOR AUTOMATION

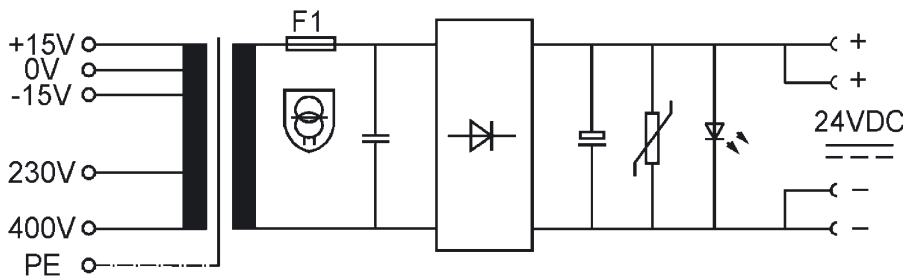
## Single-phase non-stabilized power supplies CompactPower

Compact power supplies are important links for the power supply of control systems. They are used where process or control voltages are required that are not the same as the mains voltage. Transformers create the galvanic separation of the input and output circuits. The minimal requirement is given in VDE 0550 with 2000V. The appropriate construction enables Weidmüller's transformers power supplies to fulfill the stringent safety requirements in accordance with DIN-EN 61558. That is why they can be used to generate the safety extra-low voltage (SELV).

The connection to the mains from the input side is made by means of a screw type terminal. The devices are designed for a nominal voltage of -230V +/- ~15V or 400V +/- ~15V, 50/60Hz. The secondary alternating current is conducted to a bridge rectifier, which rectifies the voltage. The rectifier is connected to a capacitor on the input side in order to reduce high

frequency disturbances caused by the rectifier diodes. The pulsing DC voltage from the rectifier is filtered by means of electrolytic capacitors to a maximum ripple of typically 5% eff. This DC voltage is then conducted to the output terminals; these being designed as

plug-and-screw terminals. The output is equipped with a varistor to dampen voltage peaks. An LED diode, equally connected to the output voltage, indicates operating status.



### Well-balanced spectrum of power for optimum efficiency

The output currents of the appropriately graduated group sizes are defined via two ambient temperatures. The choice of the group size is adjusted to offer the maximum usage of the components.

### Adjusted to standard voltages ~230 / 400V according to IEC 38 by +/- ~15V tapping

Six possible nominal voltages (AC) can be connected by choosing the corresponding terminals:  
215, 230, 245, 385, 400, 415 V

### Reliable protection against short-circuit and overload

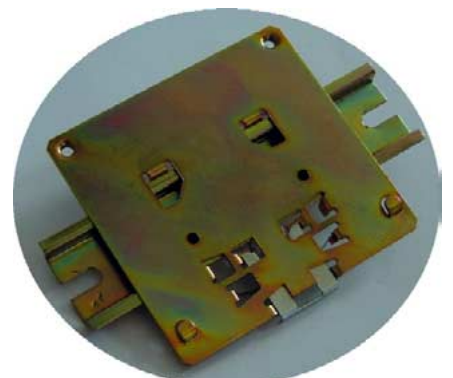
The integrated, secondary-side fuse (FKS), up to group size CP NT 192W, protects against overload and short-circuits. This protection is achieved for the devices CP NT 264W and CP NT 432W by means of a thermal switch built into the transformer.

### Easy mounting

Key-hole assembly eases mounting tasks and saves time. A snap-on fixing element for DIN rails is available as an accessory for devices up to 144 Watts. This ensures easiest possible mounting; insert into the device and secure by means of the two screws!

### Transformer vacuum-varnished impregnated, painted black

- No droning
- Moisture cannot penetrate into the windings
- Windings mechanically stabilized
- Improved heat dissipation from the windings
- Good heat radiation



**NEW**

**NEW**

**NEW**

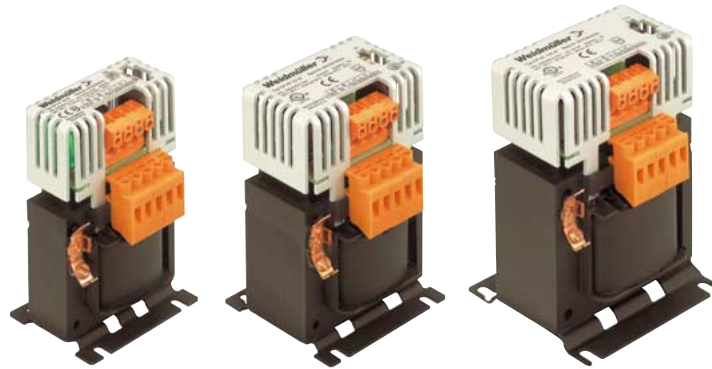
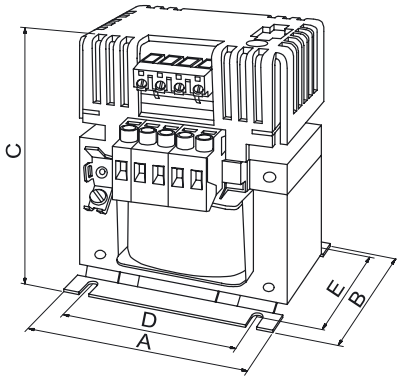


CP NT 36

CP NT 72

CP NT 144

Single-phase non-stabilized power supplies



Technical data			
<b>Ordering data</b>	Cat. No.	Cat. No.	Cat. No.
Max. power	<b>8575260000</b> 36 Watt	<b>8575270000</b> 72 Watt	<b>8575280000</b> 144 Watt
<b>Primary</b>			
Rated voltage	230V / 400V with additional connection options ± 15V; 50/ 60 Hz.; PE	230V / 400V with additional connection options ± 15V; 50/ 60 Hz.; PE	230V / 400V with additional connection options ± 15V; 50/ 60 Hz.; PE
Input current	0.35 A / 0.2 A	0.56 A / 0.32 A	0.95 A / 0.55 A
Ext. back-up fuse	0.63 / 0.63 At	1.0 / 0.63 At	1.6 / 1.0 At
Max. connection	2.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>
Connection technology	Screw connection	Screw connection	Screw connection
<b>Secondary</b>			
Voltage	= 24V SELV; acc. to EN 61131-2; Ripple < 5%	= 24V SELV; acc. to EN 61131-2; Ripple < 5%	= 24V SELV; acc. to EN 61131-2; Ripple < 5%
Current at 55° C	1 A	2.5 A	5 A
Current at 40° C	1.5 A	3 A	6 A
Max. connection	4 x 2.5 mm <sup>2</sup>	4 x 2.5 mm <sup>2</sup>	4 x 2.5 mm <sup>2</sup>
Connection technology	Screw connection, pluggable	Screw connection, pluggable	Screw connection, pluggable
Suppressor	Varistor	Varistor	Varistor
Operation indicator	Green LED	Green LED	Green LED
<b>Mechanic</b>			
Outside dimensions (A x B x C)	78 x 68 x 123 mm	84 x 85 x 125 mm	96 x 92 x 135 mm
Fixing dimension (D x E)	56 x 47.5 mm, M4	64 x 65 mm, M4	84 x 75 mm, M5
Fixing method	Key hole mounting	Key hole mounting	Key hole mounting
Weight	1.5 kg	2.1 kg	3.1 kg
<b>General</b>			
Approvals	UL, UR	UL, UR	UL, UR
Fuses	3 At Flat-pin plug fuse	5 At Flat-pin plug fuse	7,5 At Flat-pin plug fuse
Insulation resistance	4 KV	4 KV	4 KV
Standards	EN 61558-2-4 and -6 EN 61131-2	EN 61558-2-4 and -6 EN 61131-2	EN 61558-2-4 and -6 EN 61131-2
<b>Accessories</b>			
Socket plate for mounting rail	CP RP 36 W	CP RP 72 W	CP RP 144 W
Mounting rail fixing	<b>8588900000</b>	<b>8588910000</b>	<b>8588920000</b>

**NEW**

**NEW**

**NEW**

**CP NT 192**



**CP NT 264**



**CP NT 432**



Cat. No.	<b>8575300000</b>
Power	192 Watt
Input Voltage	230V / 400V with additional connection options
Output Voltage	± 15V; 50/ 60 Hz.; PE
Output Current	1.3 A / 0.7 A
Output Power	2.0 / 1.25 At
Terminal Area	2.5 mm <sup>2</sup>
Connection	Screw connection
Protection	= 24V SELV;
Compliance	Acc. to EN 61131-2;
Ripple	Ripple < 5%
Current	7 A
Current	8 A
Terminal Area	4 x 2.5 mm <sup>2</sup>
Connection	Screw connection, pluggable
Component	Varistor
Indicator	Green LED
Dimensions	105 x 105 x 145 mm
Dimensions	80 x 86 mm, M5
Mounting	Key hole mounting
Weight	4.3 kg
Certification	UL, UR
Fuse	15 At flat-pin plug fuse
Voltage	4 KV
Compliance	EN 61558-2-4 and -6
Compliance	EN 61131-2

Cat. No.	<b>8575310000</b>
Power	264 Watt
Input Voltage	230V / 400V with additional connection options
Output Voltage	± 15V; 50/ 60 Hz.; PE
Output Current	1.8 A / 1 A
Output Power	3.15 / 1.6 At
Terminal Area	2.5 mm <sup>2</sup>
Connection	Screw connection
Protection	= 24V SELV;
Compliance	Acc. to EN 61131-2;
Ripple	Ripple < 5%
Current	10 A
Current	11 A
Terminal Area	4 x 2.5 mm <sup>2</sup>
Connection	Screw connection, pluggable
Component	Varistor
Indicator	Green LED
Dimensions	120 x 113 x 165 mm
Dimensions	90 x 94 mm, M5
Mounting	Key hole mounting
Weight	6,1 kg
Certification	UL, UR
Protection	Thermo-switch
Voltage	4 KV
Compliance	EN 61558-2-4 and -6
Compliance	EN 61131-2

Cat. No.	<b>8575320000</b>
Power	432 Watt
Input Voltage	230V / 400V with additional connection options
Output Voltage	± 15V; 50/ 60 Hz.; PE
Output Current	2.5 A / 1.3 A
Output Power	4.0 / 2.0 At
Terminal Area	2.5 mm <sup>2</sup>
Connection	Screw connection
Protection	= 24V SELV;
Compliance	Acc. to EN 61131-2;
Ripple	Ripple < 5%
Current	15 A
Current	18 A
Terminal Area	4 x 2.5 mm <sup>2</sup>
Connection	Screw connection, pluggable
Component	Varistor
Indicator	Green LED
Dimensions	135 x 135 x 185 mm
Dimensions	104 x 106 mm, M5
Mounting	Key hole mounting
Weight	9.1 kg
Certification	UL, UR
Protection	Thermo-switch
Voltage	4 KV
Compliance	EN 61558-2-4 and -6
Compliance	EN 61131-2

# Power Supplies

## Single-phase non-stabilized power supplies

### System EG-T/AC

- EG-housings
- Can be mounted onto TS 32 or TS 35 or with mounting accessories on any even ground

**EG-T/AC**  
230 V~/24 V-



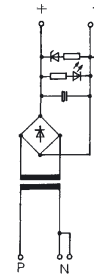
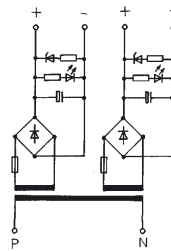
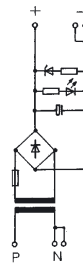
**EG-T/AC**  
230 V~/2x24 V-



**EG-T/AC**  
230 V~/24 V



### Schematic circuit diagram



Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
	EG-T/AC	1179860000	EG-T/AC	1179960000	EG-T/AC	1180060000
<b>Rated data</b>						
<b>Input voltage</b>	230 V~, +5% -15%		230 V~, +5% -15%		230 V~, +5% -15%	
Frequency	50/60 Hz		50/60 Hz		50/60 Hz	
Rated consumption	2.8 VA		3.6 VA		6.3 VA / 4.7 W	
<b>Output voltage</b>	Load-dependent, s. diagram		Load-dependent, s. diagram		Load-depend., s. diagram (±32 V)	
Max. output current	40 mA at 24 V dc		2 x 40 mA at 24 V dc		90 mA at U <sub>a</sub> > 15 V dc	
Open-line operation	not permanent, I <sub>Lmin</sub> = 8 mA		not permanent, I <sub>Lmin</sub> = 8 mA		not permanent, I <sub>Lmin</sub> = 8 mA	
Housing	EG 3		EG 4, with thick AP		EG 4	
Overall Width	22.5 mm		26.5 mm		22.5 mm	
Overall Depth	95 mm		112 mm		112 mm	
Overall Height	58 mm		75 mm		75 mm	
Storage temperature	-20 °C...+85 °C		-20 °C...+85 °C		-20 °C...+85 °C	
Operating temperature	0 °C...+50 °C		0 °C...+50 °C		0 °C...+50 °C	
Residual ripple	<25% at 40 mA		<25% at 40 mA		<25% at 90 mA	
Fuse	50 mAT, secondary, TR 5		2 x 50 mAT, secondary, TR 5		-	
Transformer in accordance with	VDE 0550		VDE 0551		VDE 0551	
<b>Insulation coordination acc. to EN 50178</b>						
Overvoltage category input	II		II		II	
Overvoltage category output	I		I		I	
Overvoltage category input-output	III		III		III	
Pollution severity	2		2		2	
Load diagram (T <sub>u</sub> = 25 °C)	U <sub>off</sub> [V]		U <sub>off</sub> [V]		U <sub>off</sub> [V]	
	Time-dependent fuse failure		Time-dependent fuse failure			
<b>Accessories</b>						
Accessories, dimensions and connection data see	Page 307 / fig. V		Page 307 / fig. VI		Page 307 / fig. VI	



**Primary switched-mode power supplies ConnectPower**

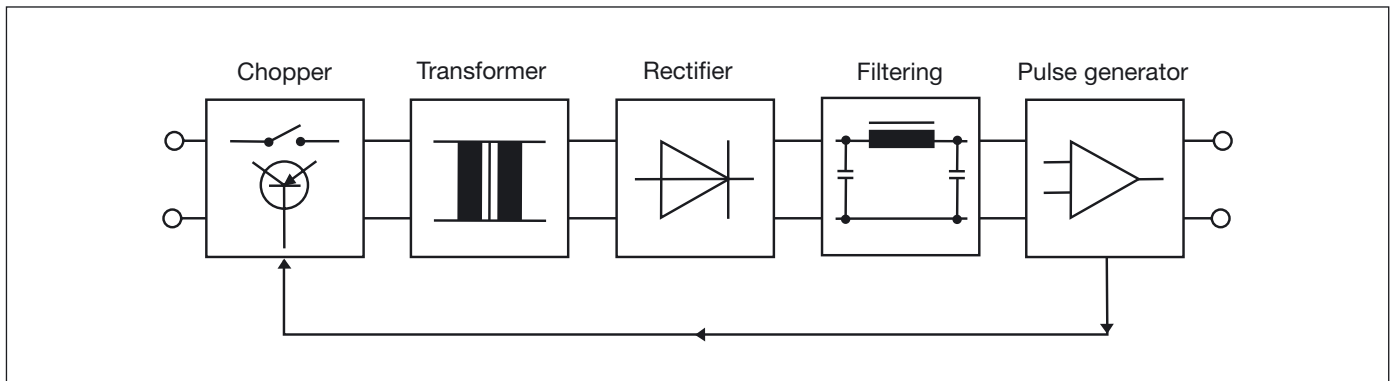
Switched-mode power supplies from the ConnectPower range are suitable for universal usage, thanks to the varying voltage input range of 85 Vac to 265 Vac. The devices are interference-suppressed in accordance with DIN EN 55022 Class B. At the same time they fulfil the demands for safety extra low voltages SELV in accordance with IEC 950 and DIN EN 61558. The primary switched-mode power supplies are rated from 12W to 300W and have a short-circuit feedback control on the output side.

The power supplies can be used for applications in both industrial automation and building automation.

**Fundamental method of functioning**

Primary switched-mode power supplies are distinguished by their high efficiency and compact dimensions, as well as their moderate development of heat. The mains voltage is rectified directly. The rectified voltage is then chopped with a higher frequency compared to that of the mains frequency.

This is followed by a transformer, which, thanks to the high switching frequency, can be of small proportions. It transforms the voltage with the switching frequency to the required value. The voltage is then subsequently rectified, and smoothed by a filter. The feedback control is achieved by wide-pulse modulation; the switch on and off times of the chopper-transformer are influenced in such a manner that ensures that the output voltage remains stable.

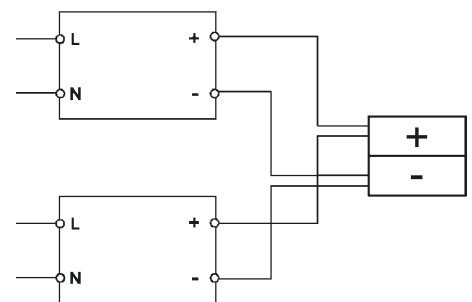


**Current division and redundancy**

Weidmüller's switched-mode power supplies can be connected in series, in order to increase power or redundancy.

There are two fundamental technologies: active and passive current division. Active current division requires a higher switching complexity. The advantage is the even loadings of the devices. Passive current division means less complex switching,

lower costs, but a softer characteristic output curve and a less exact division of the current. The output voltages of the individual devices must be adjusted exactly (+/- 100-200mV) before being connected in parallel.



**Power factor correction (PFC)**

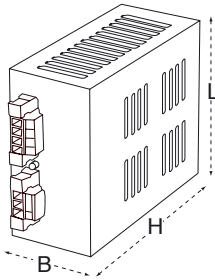
The PFC (**P**ower **F**actor **C**orrection) ensures a sinusoidal current consumption of the switched-mode power supplies from the mains supply. A side effect is the regulation of the power factor of approximately 1.



# Power Supplies



## Primary switched-mode power supplies



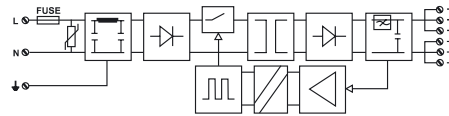
CP-SNT 12W



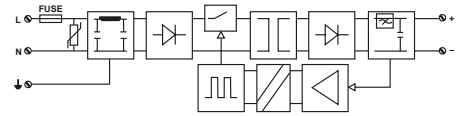
CP-SNT 24W



**Diagram/schematic circuit diagram**



– secondary through plug-in jumpers ZQV cross-connectable to other WAVE-modules



Ordering data	
Output voltage/max. current	
Input voltage	Minimum typical Maximum
Input current	at 115 Vac at 230 Vac at 125 Vdc at 250 Vdc
Input protection	Fuse Making current Overtoltage protection
Switching frequency	
Efficiency at max. load	
Max. ripple	
Regulation	Load (10-100% load) at input voltage
Overload protection	
Max. capacity at output	
Hold time	at 115 Vac
(Max. output current following input loss)	at 230 Vac
Storage temperature	
Operating temperature	
Humidity	Operating temperature Storage temperature
Galvanic isolation	Input-output Input/output to mounting rail Input to earth Output to earth
Wire diameter	
Dimensions in mm (L x W x H)	
Weight	
Mounts on mounting rail	
<b>Approvals/certifications</b>	

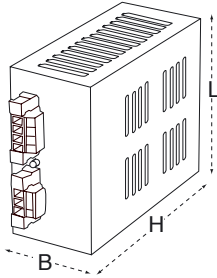
Type	Cat. No.
CP-SNT 12 W	
<b>24 Vdc / 0.5 A</b>	<b>9918840024</b>
Input voltage	85 Vac, 120 Vdc 115-230 Vac ±10%, 50/60 Hz 265 Vac, 300 Vdc
Input current	at 115 Vac at 230 Vac at 125 Vdc at 250 Vdc
Input protection	2 A slow fuse (internal)
Switching frequency	100 kHz PWM
Efficiency at max. load	80%
Max. ripple	0.1% RMS
Regulation	0.6% 0.2% 85 Vac - 265 Vac ein
Overload protection	Overvoltage switch-off with automatic reset plus thermal switch-off
Max. capacity at output	8 000 µF
Hold time	at 115 Vac
(Max. output current following input loss)	at 230 Vac
Storage temperature	-40 °C...+85 °C
Operating temperature	-20 °C...+50 °C max. full rated load Derating: 33% at 60 °C
Humidity	20 - 85% RH w/o condensation
Galvanic isolation	3 kV RMS 4 kV RMS 1.5 kV RMS 500 V RMS
Wire diameter	26-12 AWG (0.1-4.0 mm <sup>2</sup> )
Dimensions in mm (L x W x H)	90 x 18 x 112.5
Weight	110 g
Mounts on mounting rail	TS 35
<b>Approvals/certifications</b>	
CSA, UL, CE	

Type	Cat. No.
CP-SNT 24 W	
<b>24 Vdc / 1 A</b>	<b>9928890024</b>
<b>28 Vdc / 1 A</b>	<b>9928890028</b>
<b>15 Vdc / 1.5 A</b>	<b>9928890015</b>
<b>12 Vdc / 1.5 A</b>	<b>9928890012</b>
<b>5 Vdc / 2 A</b>	<b>9928890005</b>
Input voltage	85 Vac, 120 Vdc 115-230 Vac ± 10 %, 50/60 Hz 265 Vac, 300 Vdc
Input current	460 mA RMS ± 20% 250 mA RMS ± 20% 235 mA ± 20% 120 mA ± 20%
Input protection	2 A slow fuse (internal)
Switching frequency	100 kHz PWM
Efficiency at max. load	78%
Max. ripple	0.2% RMS
Regulation	0.5% 0.2%
Overload protection	Overvoltage switch-off with automatic reset plus thermal switch-off
Max. capacity at output	8 000 µF
Hold time	35 ms
(Max. output current following input loss)	160 ms
Storage temperature	-40 °C...+85 °C
Operating temperature	-20 °C...+50 °C max. full rated load Derating : 33% at 60°C
Humidity	20 - 85% RH w/o condensation
Galvanic isolation	20 - 90% RH 3 kV RMS 4 kV RMS 1.5 kV RMS 500 V RMS
Wire diameter	26-12 AWG (0.1-4.0 mm <sup>2</sup> )
Dimensions in mm (L x W x H)	90.5 x 52 x 62.5
Weight	160 g
Mounts on mounting rail	TS 35
<b>Approvals/certifications</b>	
CSA, UL, CE	

# Power Supplies



## Primary switched-mode power supplies

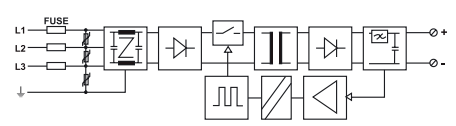
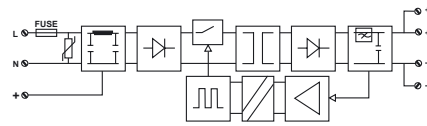


Diagram/schematic circuit diagram

CP-SNT 55W



CP-SNT 55W



Ordering data	
Output voltage/max. current	
Input voltage	Minimum typical Maximum
Input current	at 115 Vac at 360 Vac at 230 Vac at 125 Vdc at 250 Vdc
Input protection	Fuse Making current Overtolerance
Switching frequency	
Efficiency at max. load	
Max. ripple	
Regulation	load (10-100% load) at Input voltage
Overload protection	
Max. capacity at output	
Hold time	at 115 Vac at 360 Vac
(Max. output current following input loss)	at 230 Vac at 480 Vac
Storage temperature	
Operating temperature	
Humidity	Operating temperature Storage temperature
Galvanic isolation	Input-output Input/output to mounting rail Input to earth Output to earth
Wire diameter	
Dimensions in mm (L x W x H)	
Weight	
Mounts on mounting rail	
Approvals/certifications	
Accessories	
Mounting bracket for mounting on a wall	

Type	Cat. No.
CP-SNT 55 W	
24 Vdc-28 Vdc / 2.3 A	9927480024
48 Vdc / 1.04 A	9927480048
12 Vdc - 15 Vdc / 3 A	9927480012
5 Vdc / 3 A	9927480005
85 Vac, 120 Vdc	
115-230 Vac ±10 %, 50/60 Hz	
265 Vac, 300 Vdc	
1.10 A RMS ± 20%	
0.55 A RMS ± 20%	
590 mA ± 20%	
315 mA ± 20%	
2 A slow fuse (internal)	
Thermistor	
Varistor	
100 kHz PWM	
78%	
<50 mV RMS	
1.0%	
0.8%	
Overvoltage switch-off with automatic reset plus thermal switch-off	
10 000 µF	
30 ms	
180 ms	
-40 °C...+85 °C	
-20 °C...+40 °C max. full rated load	
Derating: 24 V-2.1 A at 50 °C, 24 V-1.5 A at 60 °C	
20 - 85% RH w/o condensation	
20 - 90% RH	
3 kV RMS	
3 kV RMS	
1.5 kV RMS	
500 V RMS	
26-12 AWG (0.1-4.0 mm <sup>2</sup> )	
98 x 57 x 131	
478 g	
TS 35	
CSA, UL, CE	
Cat. No.	
7920560000	

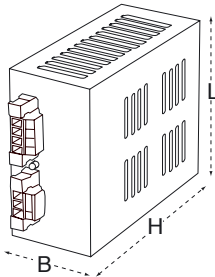
Type	Cat. No.
CP-SNT 55 W	
24 Vdc / 2.3 A	9917790324
306 Vac	
360 - 480 Vac	
550 Vac	
120 mA RMS / Phase	
100 mA RMS / Phase	
3 x 1A slow fuse (internal)	
Thermistor	
Varistor	
100 kHz	
85%	
<50 mV RMS	
1.0%	
0.8%	
Overvoltage switch-off with automatic reset plus thermal switch-off	
10 000 µF	
120 ms	
120 ms	
-40 °C...+85 °C	
0 °C...+50 °C max. full rated load	
Derating: 10% at 60 °C	
20 - 85% RH w/o condensation	
20 - 90% RH w/o condensation	
3 kV	
3 kV	
1.5 kV	
500 V	
26-12 AWG (0.1-4.0 mm <sup>2</sup> )	
108 x 60 x 168	
526 g	
TS 35	
cUL, UL, CE	
Cat. No.	
7920560000	

## Power Supplies

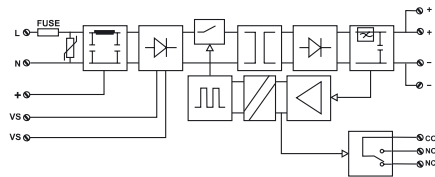


CP-SNT 160W

### Primary switched-mode power supplies



Diagram/schematic circuit diagram

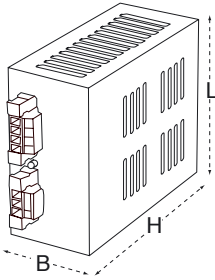


Ordering data		Type	Cat. No.
Output voltage/max. current		CP-SNT 160 W	
		<b>24 Vdc-28 Vdc / 6.5 A</b>	<b>9925340024</b>
		<b>48 Vdc / 3.5 A</b>	<b>9925340048</b>
		<b>12 Vdc-15 Vdc / 8 A</b>	<b>9925340012</b>
		<b>5 Vdc / 8 A</b>	<b>9925340005</b>
Input voltage	Minimum	<b>85 Vac / 195 Vac / 275 Vdc</b>	
	Typical	<b>115 Vac / 230 Vac ±10%, (adjustable) 50/60Hz</b>	
	Maximum	<b>138 Vac / 250 Vac / 375 Vdc</b>	
Input current	at 115 Vac	<b>2.9 RMS ± 20%</b>	
(Mean value; serves as reference only)	at 230 Vac	<b>1.45 A RMS ± 20%</b>	
	at 125 Vdc		
	at 250 Vdc		
Input protection	Fuse	6.3 A slow fuse (internal)	
	Making current	Thermistor	
	Overvoltage	Varistor	
Switching frequency		65 kHz PWM	
Efficiency at max. load		85%	
Max. ripple		0.2% RMS	
Regulation	load (10-100% load)	1.0%	
	at Input voltage	0.5%	
Overload protection		Overvoltage switch-off with automatic reset plus output overvoltage protection	
Max. capacity at output		6 000 µF	
Parallel switchable		up to 3 devices (passive current division)	
Hold time	at 115 Vac		
(Max. output current following input loss)	at 230 Vac		
Storage temperature		-40 °C...+85 °C	
Operating temperature		0 °C...+50 °C max. full rated load Derating: 24 V - 5.2 A at 60 °C	
Humidity	Operating temperature	20 - 85% RH w/o condensation	
	Storage temperature	20 - 90% RH	
Galvanic isolation	Input-output	3 kV RMS	
	Input/output to mounting rail	3 kV RMS	
	Input to earth	1.5 kV RMS	
	Output to earth	500 V RMS	
Wire diameter		26-12 AWG (0.1-4.0 mm <sup>2</sup> )	
Dimensions in mm (L x W x H)		127 x 57 x 175	
Weight		880 g	
Mounts on mounting rail		TS 35	
Differential relay		Changeover contact, 30 Vdc / 125 Vac @ 1A max. 5 Vdc @ 10 mA min	
Approvals/certifications		CSA, UL, CE	
Accessories		Cat. No.	
Mounting bracket for mounting on a wall		<b>7920560000</b>	

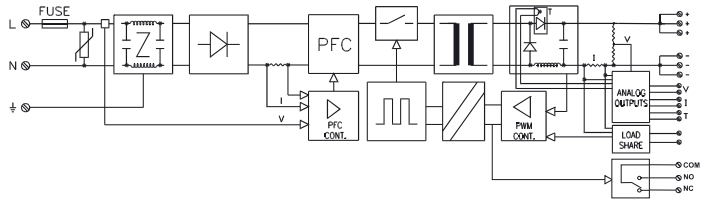
# Power Supplies



## CP-SNT 300W



### Diagram/schematic circuit diagram

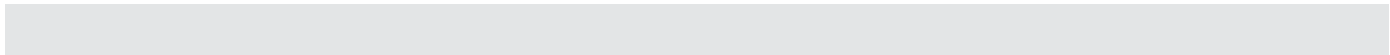


### Ordering data

Type CP-SNT 300W Cat. No. 9916250024

### Rated data

<b>Input voltage</b>	min.	<b>86Vac, 100Vdc</b>	
	typical	<b>115-230Vac ± 10% 50/60Hz</b>	
	max.	<b>265Vac, 200Vdc</b>	
<b>Input current at 300 W</b>	at 115Vac	<b>3.3A ± 10%</b>	
	at 230Vac	<b>1.65A ± 10%</b>	
	at 100Vdc	<b>3.7A ± 10%</b>	
	at 200Vdc	<b>1.85A ± 10%</b>	
Dielectric power factor input		0.99	
Input current		Sinusoidal	
Topology		Boost PFC / forwards PWM	
Input circuit		Current: Thermistor Voltage: Varistor	
Switching frequency		100kHz ± 5%	
Efficiency		at max.load 80% typ.	
Making time		at 115 Vac: 1.5 sec. typ.	at 230 Vac: 0.7 sec. typ.
Output ripple		at 120Hz: 20mVac RMS	at 100kHz: 2mV Vss
Regulation	Load (10-100%)	0.2%	
	Voltage (86-265Vac rms)	0.1%	
Suppressor	Oversvoltage	Vout > 30Vdc	
	Undersvoltage	Vout < 14Vdc	
	Thermal	at Vout = 22 Vdc, Iout > 13.8A	at Vout = 24 Vdc, Iout > 13.5A
		Heat sink temperature > 100°C	
		at Vout = 28 Vdc, Iout > 11.6A	
<b>Adjustable output voltage</b>		<b>22Vdc - 28Vdc (pot. adj.)</b>	
<b>Rated output current</b>		<b>at Vout = 22Vdc - 13.6A</b>	
		<b>at Vout = 24Vdc - 12.5A</b>	
		<b>at Vout = 28Vdc - 10.7A</b>	
LED indicator		Current limiting: LED yellow	Error: LED red On: LED green
Remote switching ON/OFF		REMOTE on/off, via external switching contact that can switch the power supply unit on or off with 12 Vdc to 24 Vdc.	
Interference		Power supply goes to fault mode oversvoltage, undervoltage or over temperature for more than 2 sec. differential relay drops out	
The 300 W power supply offers the following additional functions		<ul style="list-style-type: none"> <li>– universal input voltage with PFC (active power factor corrections)</li> <li>– analogue monitoring function of the output voltage 0...30 V corresponds to 0...10 V ± 3% of the output current 0...15 A corresponds to 0...10 V ± 3% of the internal temperature 0...100°C corresponds to 0...10 V ± 3%</li> <li>– Differential relay, 1 changeover, closed-circuit current principle</li> </ul>	
Monitoring output impedance		10kΩ min. or 1 mA max.	
Parallel switchable		Current increase up to 60 A by switching in parallel of up to 5 SNT 300 W power supplies (active current division)	
Max. capacity at output		10000µF	
Voltage stability	at 115Vac	40 ms	
	at 230Vac	40 ms	
Temperature	Storage temperature	-40°C to +85°C	
	Operating temperature	-15°C to +50°C (at 100 % ED)	
	Derating	Output current derating of approx. 20 % at 60°C	
Insulation voltage	Input / output: 3000 V rms		
	Input / output: TS: 4000 V rms		
	Input / PE: 2500 V rms		
	Output / PE: 500 V rms		
<b>Dimensions (L x W x H)</b>		155mm x 240mm x 101mm	
Weight		1180g	
Approvals		CSA, UL, CE, IEC950	
Mounts on mounting rail		TS 35	
<b>Accessories</b>		Cat. No.	
Mounting bracket for mounting on a wall		<b>7920560000</b>	



# Power Supplies

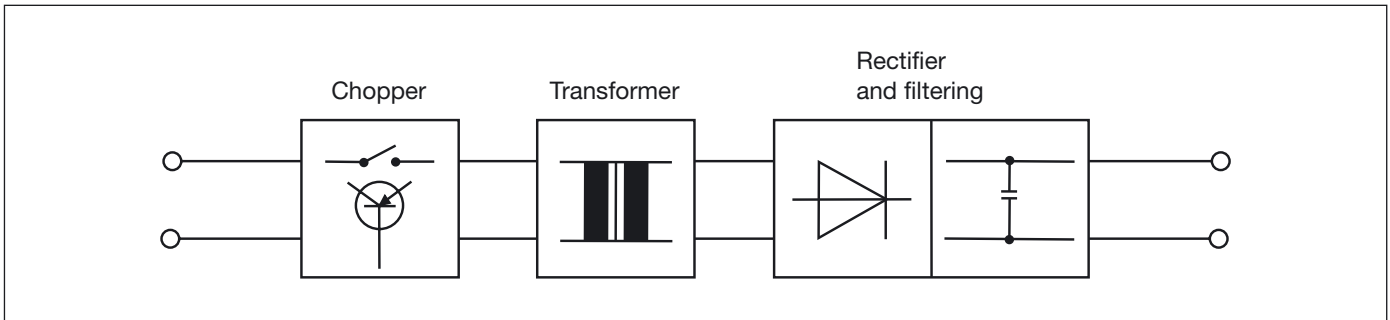
## DC voltage converter

DC voltage converter (DC/DC converter) are intended in particular for the decentralized power supply of circuits, assemblies and modules. DC voltage converter are often required for emergency generators to supply electrical devices from batteries or other DC systems.

It is possible, with the help of a DC/DC converter, to supply both sides of analogue coupling modules without neutralising the galvanic separation of the modules. Weidmüller DC/DC converter are offered in rail mountable enclosures.

## Fundamental method of functioning

DC/DC converter are a variant of chopper-type regulators. The DC voltage at the input is chopped together with the switching frequency, and transformed to the required value by a transformer. The voltage is subsequently rectified, smoothed and stabilised.

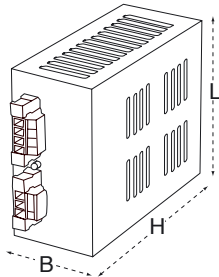




## Power Supplies



### DC/DC converter



**CP-DCDC 50W**  
12 Vdc Input



**CP-DCDC 50W**  
24 Vdc Input



Ordering data		Type	Cat. No.	Type	Cat. No.
<b>Output voltage/max. current</b>		CP-DCDC 50 W		CP-DCDC 50W	
		<b>22 - 24 Vdc at 2A</b>	<b>9919371224</b>	<b>22-24 Vdc at 2 A</b>	<b>9919372424</b>
		<b>15 Vdc at 3 A</b>	<b>9919371215</b>	<b>15 Vdc at 3 A</b>	<b>9919372415</b>
		<b>12 Vdc at 3 A</b>	<b>9919371212</b>	<b>12 Vdc at 3 A</b>	<b>9919372412</b>
		<b>5 Vdc at 8 A</b>	<b>9919371205</b>	<b>5 Vdc at 8 A</b>	<b>9919372405</b>
<b>Input voltage</b>		<b>12 Vdc</b>		<b>24 Vdc</b>	
	<b>Minimum</b>	<b>9 Vdc</b>		<b>18 Vdc</b>	
	<b>Typical</b>	<b>12 Vdc</b>		<b>24 Vdc</b>	
	<b>Maximum</b>	<b>16 Vdc</b>		<b>30 Vdc</b>	
Input protection	Fuse	internal		internal	
Switching frequency		200 kHz		200 kHz	
Overload protection		Overvoltage switch-off with automatic reset		Overvoltage switch-off with automatic reset	
Max. capacity at output					
Hold time					
Storage temperature		-40 °C...+85 °C		-40 °C...+85 °C	
Operating temperature		0 °C...+40 °C max. full rated load		0 °C...+40 °C max. full rated load	
Humidity	Operating temperature	20 - 85% RH		20 - 85% RH	
	Storage temperature	20 - 90% RH w/o condensation		20 - 90% RH w/o condensation	
Wire diameter		26-12 AWG (0.1-4.0 mm <sup>2</sup> )		26-12 AWG (0.1-4.0 mm <sup>2</sup> )	
Dimensions in mm (L x W x H)		98 x 57 x 131		98 x 57 x 131	
Weight		417 g		417 g	
Mounts on mounting rail		TS 35		TS 35	
<b>Approvals/certifications</b>		CSA, UL, CE		CSA, UL, CE	
<b>Accessories</b>			Cat. No.		Cat. No.
Mounting bracket for mounting on a wall			<b>7920560000</b>		<b>7920560000</b>



# Power Supplies

## DC/DC converter

### EMA/DC 12

12 V-/2x15 V-

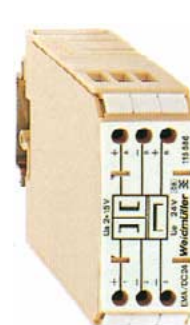
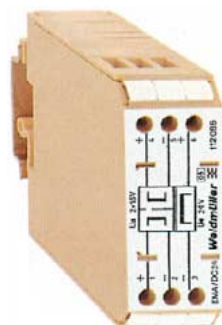
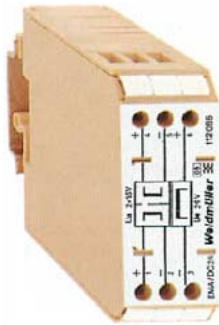
### EMA/DC 24

24 V-/2x15 V-

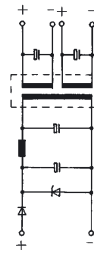
### EMA/DC 24

24 V-/2x15 V-

## System EMA/DC



### Schematic circuit diagram



Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
	EMA/DC 12	1120860000	EMA/DC 24	1120960000	EMA/DC 24	1156860000
<b>Rated data</b>						
<b>Input voltage</b>	12 V-, ±10%		24 V-, ±10%		24 V-, -5%/+15%	
Rated consumption	1.44 W		<2 W		<1.44 W	
<b>Output voltage</b>	2 x 15 V-, ±5%		2 x 15 V-, ±5%		2 x 15 V dc, ±5%	
Output current, max.	1 x 20 mA, 1 x 40 mA*		1 x 20 mA, 1 x 40 mA*		1 x 20 mA, 1 x 40 mA*	
Switching frequency	typ. 30 kHz		typ. 30 kHz		typ. 30 kHz	
Housing	EG 3		EG 3		EG 3	
Overall width	22.5 mm		22.5 mm		22.5 mm	
Overall depth	95 mm		95 mm		95 mm	
Overall height	58 mm		58 mm		58 mm	
Insulation resistance	10 <sup>9</sup> Ω		10 <sup>9</sup> Ω		10 <sup>9</sup> Ω	
Storage temperature	-20 °C...+85 °C		-20 °C...+85 °C		-40 °C...+85 °C	
Operating temperature	0 °C...+50 °C		0 °C...+50 °C		0 °C...+50 °C	
Residual ripple	-		-		max. 45 mV <sub>SS</sub>	
Fuse	-		-		PTC	
<b>Insulation coordination acc. to EN 50178</b>						
Overvoltage category Input	II		II		II	
Overvoltage category output	I		I		I	
Overvoltage category input-output	III		III		III	
Pollution severity	2		2		2	
Load diagram (T <sub>u</sub> = 25 °C)	-		-		-	
<b>Accessories</b>						
Dimensions and connection data see	Page 307 / fig. V		Page 307 / fig. V		Page 307 / fig. V	

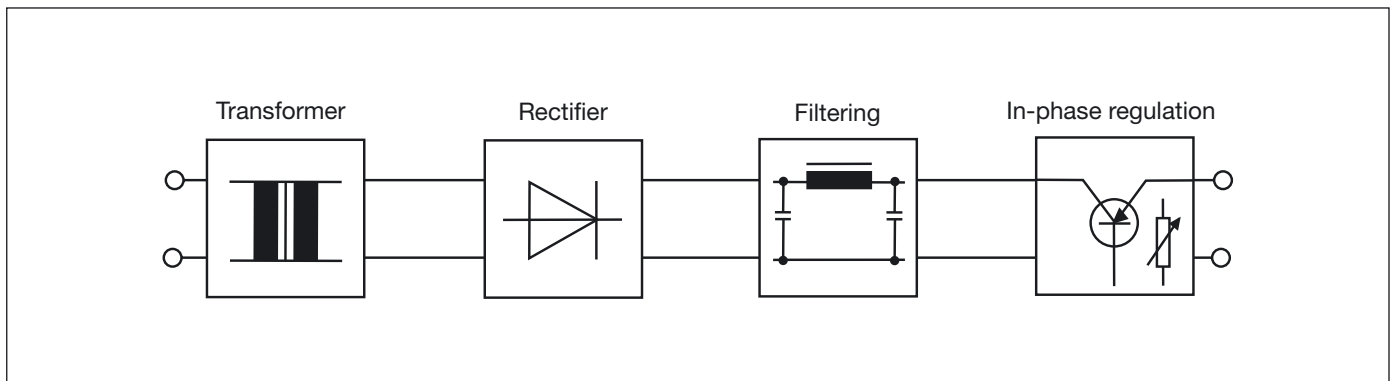
## Power Supplies

### In-phase regulated power supplies

In-phase regulation is still a common method of regulation. As well as the good regulating options, it offers a low residual ripple of the output voltage. In-phase regulated power supplies are used mainly for supplying power to laboratories and applications where low power is required.

### Fundamental method of functioning

The rectified voltage output is fed by the transformer in the required power to a transistor as an actuator. An on-load tap changer ensures that the voltage is constantly available at the output.



# Power Supplies

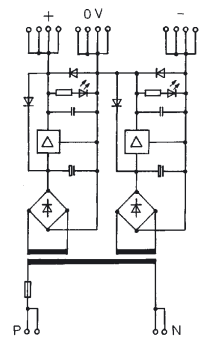
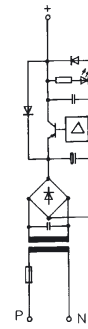
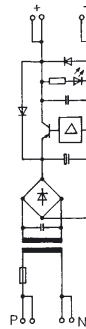
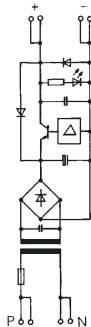
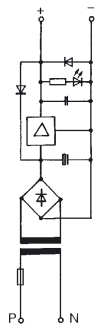
## In-phase regulated power supplies

**RS-T/AC**  
 230 V~/5 V-  
 230 V~/12 V-  
 230 V~/15 V-  
 230 V~/24 V-

## System RS-T/AC



### Schematic circuit diagram



Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
	RS-T/AC	1169461001	RS-T/AC	1169560000	RS-T/AC	1169660000	RS-T/AC	1169761001	RS-T/AC	8014351001
<b>Rated data</b>										
<b>Input voltage</b>	230 V~, +5% -15%		230 V~, +5% -15%		230 V~, +5% -15%		230 V~, +5% -15%		230 V~, +5% -15%	
Frequency	50/60 Hz		50/60 Hz		50/60 Hz		50/60 Hz		50/60 Hz	
Rated consumption	22 VA		33 VA		37 VA		53 VA		20 VA	
<b>Output voltage</b>	5 V-, ±5%		12 V-, ±10%		15 V-, ±10%		24 V-, ±10%		±15 V-, ±5%	
Output current	1 A/100% ED		1 A/100% ED		1 A/100% ED		0.9 A/100% ED		2 x 300 mA/ 100% ED	
Output current at 20 mV <sub>ss</sub>	1 A		1 A		1 A		0.9 A at 50 mV <sub>ss</sub>			
Residual ripple										
<b>Output current, max.</b>	<b>Short-circuit current 1.8 A</b>		<b>Short-circuit current 1.25 A</b>		<b>Short-circuit current 1.25 A</b>		<b>Short-circuit current &lt;1.8 A</b>			
Capacitive load	-		max. 2200 µF		max. 2200 µF		max. 2200 µF			
Overall width	160 mm		216 mm		216 mm		235 mm		150 mm	
Overall depth	87 mm		87 mm		87 mm		87 mm		87 mm	
Overall height	88 mm		102 mm		102 mm		106.5 mm		115 mm	
Storage temperature	-20 °C...+70 °C		-20 °C...+70 °C		-20 °C...+70 °C		-20 °C...+70 °C		-20 °C...+70 °C	
Operating temperature	0 °C...+40 °C		0 °C...+40 °C		0 °C...+40 °C		0 °C...+40 °C		0 °C...+50 °C	
Fuse, 5 x 20 mm	125 mA <sub>T</sub> , primary, 5 x 20 DIN 41662		200 mA <sub>T</sub> , primary, 5 x 20 DIN 41571		200 mA <sub>T</sub> , primary, 5 x 20 DIN 41571		315 mA <sub>T</sub> , primary, 5 x 20 DIN 41662		100 mA <sub>T</sub> , primary, 5 x 20 DIN 41662	
Transformer acc. to	VDE 0551		VDE 0551		VDE 0551		VDE 0551		VDE 0551	
<b>Insulation coordination acc. to EN 50178</b>										
Overvoltage category input	II		II		II		II		II	
Overvoltage category output	I		I		I		I		I	
Overvoltage category	III		III		III		III		III	
Input-output										
Pollution severity	2		2		2		2		2	

## Power Supplies

### In-phase regulated power supplies

#### System RS-T/AC

**RS-T/AC**  
 230 V~/5 V-  
 230 V~/12 V-  
 230 V~/±15 V-  
 115/230 V~/24 V-

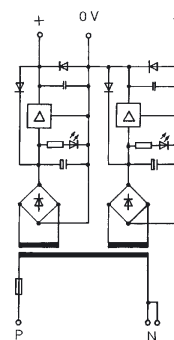
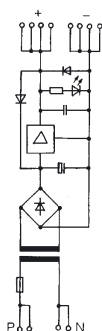


### EG-T/AC

230 V~/± 15 V-



#### Schematic circuit diagram



Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
	RS-T/AC	<b>1175661001</b>	RS-T/AC	<b>1175761001</b>	RS-T/AC 230	<b>1120661001</b>	RS-T/AC 115	<b>1120761001</b>
<b>Rated data</b>								
<b>Input voltage</b>	<b>230 V~, +5% -15%</b>		<b>230 V~, +5% -15%</b>		<b>115/230 V~, +5% -15%</b>		<b>230 V~, +5% -15%</b>	
Frequency	50/60 Hz		50/60 Hz		50/60 Hz		50/60 Hz	
Rated consumption	8.8 VA		12 VA		13 VA		10 VA	
<b>Output voltage</b>	<b>5 V-, ±5%</b>		<b>12 V-, ±5%</b>		<b>24 V-, ±5%</b>		<b>±15 V dc ±5%</b>	
Output current	400 mA		300 mA		200 mA		2 x 70 mA/100% ED	
Output current at 20 mV <sub>ss</sub>	460 mA		310 mA		250 mA			
Residual ripple								
Power loss at control at I <sub>Rated</sub>	<2 W		<2.5 W		<3 W			
<b>Output current, max.</b>	<b>460 mA</b>		<b>310 mA</b>		<b>250 mA</b>			
Housing							2 x EG 4	
Overall width	85 mm		85 mm		85 mm		45 mm	
Overall depth	70 mm		70 mm		70 mm		75 mm	
Overall height	72 mm		72 mm		72 mm		112 mm	
Storage temperature	-20 °C...+85 °C		-20 °C...+85 °C		-20 °C...+85 °C		-20 °C...+85 °C	
Operating temperature	0 °C...+50 °C		0 °C...+50 °C		0 °C...+50 °C		0 °C...+50 °C	
Residual ripple							<10 mV <sub>ss</sub> at I <sub>Rated</sub>	
Fuse	5 x 20 mm 100 mA <sub>T</sub> , primary, 5 x 20 DIN 41662		5 x 20 mm 100 mA <sub>T</sub> , primary, 5 x 20 DIN 41662		5 x 20 mm 250 mA <sub>T</sub> , primary at 115 V 100 mA <sub>T</sub> , primary at 220 V DIN 41571 VDE 0551		40 mA <sub>T</sub> , primary, 5 x 20 mm (DIN 41662)	
Transformer acc. to	VDE 0551		VDE 0551		VDE 0551		VDE 0551	
<b>Insulation coordination acc. to EN 50178</b>								
Overvoltage category Input	II		II		II		II	
Overvoltage category output	I		I		I		I	
Overvoltage category								
Input-output	III		III		III		III	
Pollution severity	2		2		2		2	
<b>Accessories</b>								
Accessories, dimensions and connection data see							Page 307 / fig. VI	

# Power Supplies

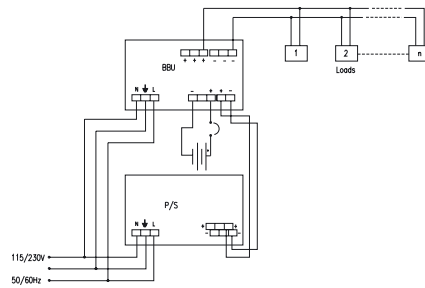
## Features:

- 12 and 24 Vdc output versions available
- Universal AC input and 120 Vdc up to 300 Vdc
- 2 A charging current and max. 15 A load current
- Form C relay for AC error and load status
- Inputs for activating/connecting discharge cycle
- LED display

## UPS Control module



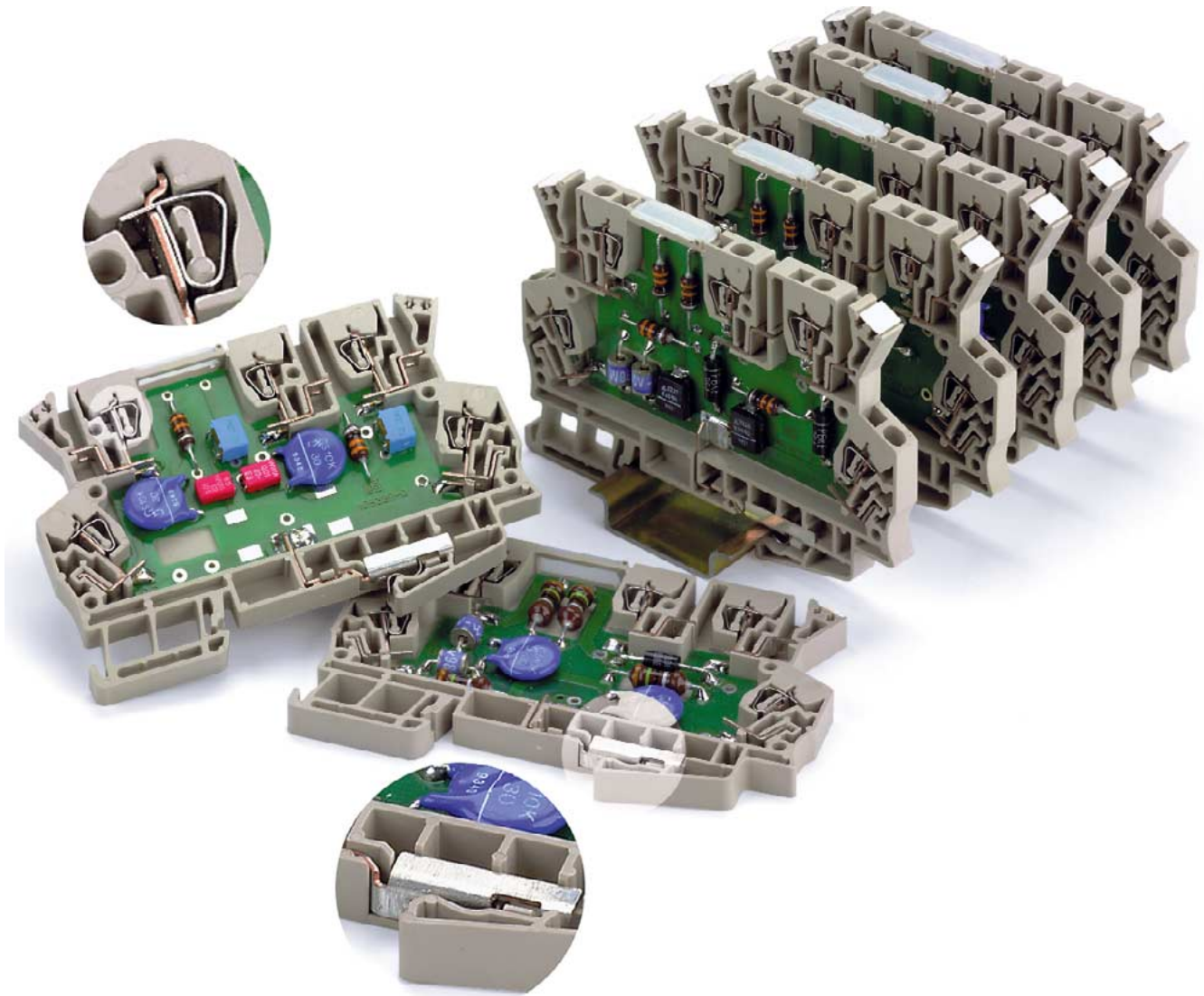
## Schematic circuit diagram



Ordering data		Type	Cat. No.
		Battery 12 Vdc	<b>on request</b>
		Battery 24 Vdc	<b>on request</b>
Rated data			
Input voltage		115-230 Vac $\pm 10\%$ , 50/60Hz	
Input current	at 115 Vac	550 mA RMS $\pm 20\%$	
	at 230 Vac	350 mA RMS $\pm 20\%$	
	at 125 Vdc	235 mA $\pm 20\%$	
	at 250 Vdc	120 mA $\pm 20\%$	
Input protection	Fuse	2 A inert fuse Wickmann	
	Input current	Thermistor	
	Overvoltage	Varistor	
Output		12 Vdc syst.	24 Vdc syst.
Load voltage		12-14 V	24-28 V
Load current		3 A max.	2 A max.
Switching time		5 ms	5 ms
General			
Inputs		BBU connect	
Outputs		Activate discharge cycle	
Diagnostic LEDs		AC error	
		Charge status	
		Battery connected	
		Charge status low	
		Reverse polarity	
		AC error	
		Charge status: (trickle, bulk / float)	
Input/output isolation		3 KV RMS	
Input to earth		1.5 KV RMS	
Wire diameter		22-12 AWG	
Dimensions in mm		(0.5-4.0 mm <sup>2</sup> )	



# Overvoltage Protection



## Overvoltage Protection

The electronic equipping of electrical installations is becoming increasingly complex. PLC controls and PC applications are replacing hard-wired relay technology. Interferences from overvoltage or switching actions that enter installations cause failures or damage to the installation components. Appropriate overvoltage protection measures can largely eliminate this damage.

### Protection elements

Gas-filled overvoltage arresters (gas-filled arrester), voltage dependent resistors (varistors) and voltage dependent diodes (suppressor diodes) are used as voltage limiters.

#### • Gas discharge tubes

Gas discharge tubes are composed of a metal-plated aluminium-oxide tube or glass as an isolating body, which is connected, vacuum-tight, with two or three electrodes made from a special alloy. The gas discharger, filled with a noble gas, discharges the overvoltage-loaded energy to earth and returns to a high resistant state, once the overvoltage has faded, to connection voltages (<100V) and short-circuit currents <0.1A. A back-up fuse is necessary. Gas discharge tubes are used that are not tritium doted.

The rated data of the gas discharges are contained in the catalogue in accordance with CCITT (volume IX, K, 12)

#### DC pull-in voltage

This value is determined with a  $du/dt$  of approx. 100 V/s (statistical behaviour). The tolerance is as much as +/- 20%.

#### Impulse sparkover voltage

This value is determined with a  $du/dt$  of approx. 1000 kV/ $\mu$ s (dynamic behaviour). Typical values are <800V.

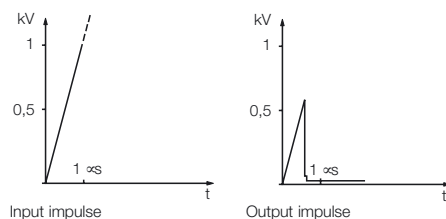
#### Discharge current

Two procedures are presented, DIN VDE 0432 Part 2, IEC 68 and CCITT. CCITT: 10 loads (8/20  $\mu$ s) at intervals of 3 min, or acc. to VDE; 5 loads (8/20  $\mu$ s) at intervals of 30 sec.

Typical values are 10, 20 kA.

DIN IEC 68 lists the mechanical / climatic conditions. In accordance with this standard, mechanical conditions such as vibration, shock and climatic conditions of the gas dischargers are tested, for example, Part 2.3 humid heat over a period of 21 days, 40 °C, 93% relative humidity. Operating temperature range: -40 C...+90 °C.

The capacity of the earth is typically several pF.



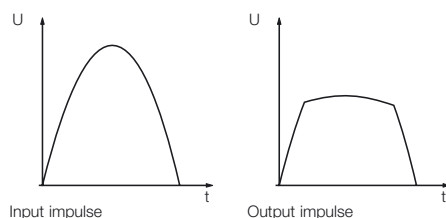
#### • Varistors

These voltage dependent resistors are made of zinc oxide. The varistor is offered in different designs. Varistors in disc design are primarily preferred. A false current of a few  $\mu$ A flows through the varistor if it is subjected to the max. permitted voltage.

Varistors are tested by the manufacturer according to DIN IEC 68 and according to the quality control system CECC 42000 (DIN 45923).

DIN IEC 68 lists the mechanical / climatic conditions. In accordance with this standard, mechanical conditions such as vibration, shock and climatic conditions of the varistor, for example, Part 2.3 humid heat over a period of 21 days, 40 °C, 93% relative humidity. Operating temperature range: -40 °C...+85 °C. Storage temperature up to +125 °C.

CECC 42000 lists, e.g. the dielectric strength (>2.5 kV), impulse current derating (8/20 $\mu$ s), insulation resistance > 1 GOhm and the typical response time of < 25 ns.



Varistors used in standard mains impedances should be of the type S14 and S20. S14 can be fused with max. 10A, the S20 with max. 16A.

Energy uptake (2 ms) of the varistor is between 0.3 J to 200 J, depending on design.

The capacity of the varistor is design-dependent and is between 0.1 and 37 nF at 1kHz.

### Varistor Approvals

- Underwriters Laboratories, Inc. (UL)
  - UL 1414 Across-the-line components: File E77005 (N) Types S05 /S07 / S10/S14/S20, at voltage levels K130 to K 300
  - UL 1449 Transient voltage suppressors: File E77005 (M): All disc types which are built primarily into DKU, EGU, LPU, RSU.
  - Canadian Standards Association (CSA)
  - Class 2221 01 Accessories and Parts for Electronic Products
- All disc types with a voltage of > 115 V; for use as across-the-line transient protectors: File LR 63185
- Schweizerischer Elektrotechnischer Verein SEV
- Protection Class I, IP00, Test conditions CECC 42200; Test report 90.1 02484.01 of 17.7.91 for S05/S07/S10/S14/S20.

#### • Suppression diodes

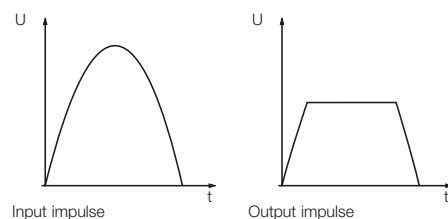
Suppression diodes work on a similar principle to conventional zener diodes, they are though many times faster. The response times are in the range of several ps to 5 ns. The energy absorption (1ms) of the suppressor diodes is, depending on the type, 0.3 J to 1.5 J.

The capacity of the diodes is typically between 9500...360 pF at 1 MHz. The suppressor diodes can convert max. 1500 W for 1 ms to heat, depending on type. If the diode is overloaded, the P-N-interface short circuits. If energy continues to be fed, the P-N interface is destroyed.

These diodes can be used as protective circuits to protect coils, or can also be used in combination with gas arrestors or varistors.

Suppressor diodes are available as unidirectional and bidirectional diodes. Weidmüller often uses unidirectional diodes for 24 VDC overvoltage protection modules.

Here the voltage in the non-conducting direction is typically 29V and 0.7 V in the conducting direction.



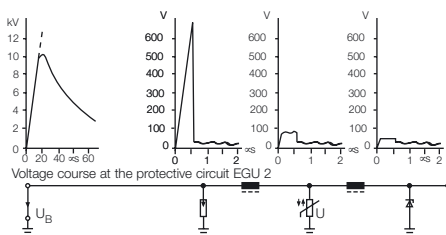


### Areas of application for overvoltage protection in measuring and control circuits

#### Combination circuitry

By employing a combination of the aforementioned components, close overvoltage protection modules can be provided to meet individual requirements. When a voltage pulse strikes the input of this unit, the gas discharge tube ignites and discharges the high current. The residual impulse is dampened by connected inductors, and subsequently absorbed by a varistor or suppression diode and limited. If the gas discharge tube does not ignite (i. e., slower increase in voltage), the impulse will be processed only by the varistor or the suppression diode.

The sequence of the components results in increased sensitivity in the direction of the output. An interference voltage with the standard rise time of  $1 \text{ kV}/\mu\text{s}$  and a peak value of  $10 \text{ kV}$  at the input will be limited to approximately  $600 - 700 \text{ V}$  by the gas discharge tube.



The second stage of the varistor, which is coupled via an inductor to the first, limits this value to about  $90 \text{ V}$ . The voltage impulse is further limited by the suppression diode to about  $35 \text{ V}$  at the output. The subsequently connected electronics need only absorb a voltage impulse of about  $1.5 \times U_B$ .

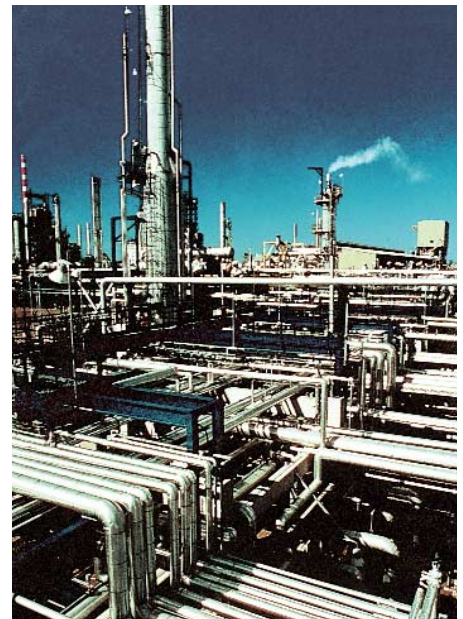
Overvoltage surges on measurement and control signals, data or power supply cables can cause considerable operational disruption. Failures of electronics or of complete systems can cause serious damage to property and even personal injury. Overvoltages arise from, among other things, atmospheric discharges and switching operations and are relevant in the following areas:

- Telemetry Control systems
- Signal systems
- Data processing equipment
- Process control terminals
- Instrumentation and control technology
- Meteorological stations

These systems must be protected against overvoltages.

The necessity of providing overvoltage protection is illustrated in the following examples:

- In measuring and control stations, all sensor and actuator cables from the field and the sensors themselves must be protected against overvoltage.
- Power stations, water tapping systems or sewage treatment plants must be protected not only against direct lightning strikes, but also against the effects of remote strikes. The sheer size of these plants and the extensive electronic systems they incorporate make overvoltage protection a necessity.
- In traffic control systems, such as lock and signal systems overvoltage protection units are essential for safety.
- Frequency converter controlled machines modulate system voltage with high-frequency interference and also affect other electronic units.
- Power supply and data lines of computers and their peripheral equipment must be protected to ensure safe operation.



## Overvoltage Protection

**Introduction:**  
**Overvoltage protection**  
**in terminal format:**  
**Miniconditioner**

**Installation of overvoltage protection units**

### Installation of overvoltage protection Units

To achieve a protection concept for an installation, all wires must be protected by overvoltage protection products.

PU overvoltage protection (PU C and PU B) is used to protect low-voltage consumers



installation and electronic devices against overvoltages resulting from atmospheric discharges (storm) or far more often switching operations (transient) in the mains. Powerful impulses are weakened by the PU module. These weakened impulses can still lead to interferences in process control circuits.

In this case three stage overvoltage protection terminals with gas dischargers, varistor and suppression diodes (TAZ) together with inductance decouplers are used.

Gas dischargers are over voltage protection terminals that work with a spark gap. An arc is ignited between the electrodes when an overvoltage occurs; the spark gap changes abruptly from being in the highly resistive range to being in the low resistive range.

Varistors are used for medium to high power ratings. The metal oxide varistors reduce the resistance when the voltage is too high. The varistor can become low resistant within 25 ns, thereby discharging the overvoltage.

Suppressor diodes function in a similar manner to zener diodes. They have a higher impulse load capacity. The response times are in the ps range.

### Combination circuits

Combining the afore-mentioned components, creates the highly efficient overvoltage protective terminal MCZ OP. High currents can be discharged via the discharge tubes.

The varistors and suppressor diodes absorb the residual voltages. Decoupling is achieved via the integrated inductors.

The energy is discharged via the TS contact. A tension clamp terminal point for the PE connection is available.

### Mounting rail contact

Mounting rail contact is achieved automatically when mounting the modules.

In order to discharge energy up to 10 kA (8/20us) via the MCZ terminal, the mounting rail must be earthed. EMC regulations require that the mounting rail be screwed to an earthed mounting plate. In addition, it is possible to create the PE contact via the tension clamp terminal of the MCZ OVP.

### Application

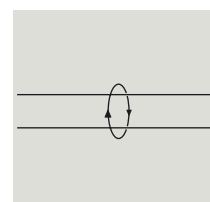
The MCZ OVP overvoltage protection module in terminal format for current loops has a quick switching suppression diode (10-100 ps) in the output. This diode clamps the voltage within the loop when overvoltages occur. This protects sensors and actuators from damage. The MCZ OVP has a tension clamp connections for fast wiring of the MSR terminals.



Energy is discharged via the contact to the mounting rail. The contact is made automatically when the terminal is mounted onto the rail.

The sensitive overvoltage protection modules are to be installed in immediate proximity to the device to be protected. The protective earth of the device to be protected must be connected to the overvoltage protection module.

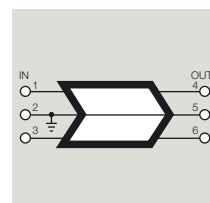
- The earth wire to be installed should have a cross-section between 2.5 to 4.0 mm<sup>2</sup>.
- The connections must be kept as short as possible.
- Avoid connecting several earth wires in series.
- The earthing installations should be designed to comply with VDE 0100, VDE 0185, VDE 0800 and the telecommunications construction regulations FBO 14 of the German Telekom.



### Installation of cables

Signal cables should be routed in the installation via the shortest possible path to the overvoltage protection units,

and further to the electronics. Parallel routing with other cables is to be avoided, as is the assembly with protected and unprotected cables (attention is made to cable routes and cable ducts!). If parallel routing cannot be avoided, a minimum spacing of 0.5 metres should be maintained.



### Module marking

The overvoltage protection modules are marked either with an arrow or the word "IN". The arrow points to the protected side of the module, i. e., an overvoltage is suppressed in the direction the arrow is pointing (see combination circuit).

# Overvoltage Protection

## Installation of overvoltage protection in general

### Installation of overvoltage protection in electrical facilities

An external and internal lightning protection system according to DIN VDE 0185 Part 1, 2 and 3; Part 100, IEC 1024-1: 1990 is recommended. The following describes the external lightning protection system (air terminations, down facility, etc.) and also the internal lightning protection system (potential compensation, planning, etc.). The external lightning protection system is to be planned, installed and tested by lightning-protection construction companies. The internal lightning protection system is concerned with the connection of all electrical metal components. DIN VDE 0100 §18, protection of the overhead power network, is also applicable in this case. A network protection system should be placed in these systems at intervals of a maximum of 1 km. According to the draft version of DIN VDE 0675 Part 6, a voltage limitation of up to 6 kV is permitted. Further protection modules (PUC 3, three/four phase power overvoltage protection) can be installed in the supply (distribution).

Here, according to the draft version of DIN VDE 0675 Part 6, a voltage limitation of up to 4 kV is permitted.

The power overvoltage protection PU can then limit the incoming interference voltages to approx. 1.3 kV. This voltage is then so low that it causes no damage to the installation. This power voltage protection system is grouped in Class C according to DIN VDE 0675 (Draft). The selection and installation of electrical equipment, grounding, protective wire, potential compensation cables is described in DIN VDE 0100 Part 540. This DIN VDE also describes the selection and installation of the main potential compensation cables (DIN VDE 0100 Part 410) and the potential compensation rail according to DIN VDE 0618 Part 1.

The DIN VDE 0100 Part 443 (IEC 64 (CO) 168) refers to lightning areas.

It is subdivided according to AQ3:

Direct lightning effects, up to AQ1: negligible lightning effects.

### Use of Overvoltage Protection

Products that are connected to the power supply must be designed according to DIN VDE 0110 Part 1, Part 2 and DIN VDE 0160. DIN VDE 0110 covers the insulation coordination for electrical equipment in low-voltage installations. This DIN VDE covers the overvoltage classes and the protection facilities as well as the rating of clearance and creepage distances.

VDE 50178 covers the use of electrical equipment in electrical power installations. Here it is stated that the equipment must have a basic resistance towards overvoltages. If this cannot be achieved, then it is specified that overvoltage limitation must be used to reduce overvoltages. The following overvoltage protection devices are for this purpose.

### Electromagnetic compatibility

Devices, systems and facilities must be tested to ensure they fulfil the requirements of the protection objectives of electromagnetic compatibility. One test is the interference strength test according to EN 61000-4-5; (IEC 801-5), ENV 50142. The installation types are categorised in the standard. In order to achieve a "well protected area" according to EN 61000-4-5, an approximate protection must be installed, e.g. gas-filled arresters, varistors, and fine protection from a combination of gas-filled arresters, varistors and suppressor diodes. These can be chosen according to the block diagram in the following chapter.

The VDE 0113 Part 1 requires that interference signals from electrical equipment of machines must be below a specific permissible level. To achieve this, capacitors, chokes, diodes, Zener diodes, varistors or a combination of these can be installed. Overvoltage protection systems are also used in special applications, for example, in the installation of electrical facilities in power stations. This is described in KTA 2206 "Design of nuclear power stations for protection against lightning strikes. In addition to potential compensation, overvoltage protection of electronic systems is required. This also applies to DIN VDE 0800 Part 1, Part 2 and DIN VDE 0845 Part 1. These VDEs are applicable to telecommunications technology and affect the installation of the facility, grounding and the potential compensation in telecommunications technology.

The DIN VDE 0845 Part 1 is valid for the measures and protection of telecommunication installations from the effects of lightning, static charging, and overvoltages from electrical power installations.

### Housings

The individual components to be built in are either in terminal design, component housings or locking socket (RS80) on a PCB. Further information, please refer to page 280, where the clampable wire cross-sections are specified.

### Passive components, coils, LEDs, fuses and resistors

In the main, rod-core coils made from ferrite and current compensating coils with inductors from 15 µH...4 mH for coil currents of 6 A...50 mA are used.

It is important that the current is not exceeded. This prevents that the maximum magnetisation (saturation) of the coil core and the coil power loss are not exceeded. A times 20 switch-on current that flows through the coil is hereby permissible. Afterwards the coil must be allowed to cool down.

The selection of the LED colour is made according to EN 60204.

Green LEDs indicate the presence of a voltage supply, yellow LEDs indicate the switching status of the relays.

As a rule, 5 x 20 mm G miniature fuses are used according to DIN VDE 0820 Part 22 (EN 60127-2).

Classification is made according to small and large breaking capacities as well as between quick-blow and slow-blow breaking capacities. The corresponding rated data such as max. power loss, rated voltage, etc. can be taken from the standard.

The flame retardant, fully-insulated wire resistors used are surge-proof and fulfil the requirements of DIN 44061, 44062, 45921 P. 107 and 45921 P. 1014.

Technical data of the resistors:

- loading capacity 0.6 W
- max. surface temperature 155 °C
- $U_{\max}$  (1 min) 300  $V_{\text{eff}}$
- thermal impedance 140 K/W
- temperature coefficient  $\pm 25 \times 10^{-6}/\text{K}$

### Marking Material Dekafix and WS10

The graphic symbols used for printing of Dekafix systems comply with DIN 40900. The plastic material is made of polyamide. The temperature limit for polyamide is according to DIN VDE 0304 Part 21  $T = 100 \text{ °C}$

The flammability is classified at level V 2, according to UL-94. The material is halogen-free and is wipe resistant according to IEC 947-7-1 Item 5.1.

## Overvoltage Protection

### Criteria for selecting Weidmüller overvoltage protection units in measuring and control circuits

1.

- Determine maximum operating voltage of the equipment to be protected

2.

- Determine maximum operating current of the equipment to be protected

3.

- Select circuit configuration
- Binary signals
- Current loops
- Symmetric loads
- Power supplies
- Serial data transmission
- Limit frequency, baud rate



# Overvoltage Protection

## Standards and regulations

### DIN VDE 0100

Installation of electrical power installations with a rated voltage up to 1000 V.

### DIN VDE 0110 P.1

Insulation coordination for electrical equipment within low-voltage systems; basic specification.

### DIN VDE 0100 P.410

Installation of electrical power installations with a rated voltage up to 1000 V. Protection measures; protection from shock currents.

### DIN VDE 0100 P.443

Installation of electrical power installations with a rated voltage up to 1000 V. Protection from overvoltages caused by atmospheric conditions. Identical to IEC64 (CO) 168.

### DIN VDE 0100 P.540

Installation of electrical power installations with a rated voltage up to 1000 V. The selection and installation of electrical equipment, grounding, protective wire, potential compensation cables.

### VDE 0113 P.1 (DIN EN 60204 P.1)

Machine safety; electrical equipment of machines; part 1: general requirements.

### EN 50178

Electronic equipment to be used in electrical power installations.

### DIN VDE 0185 P.1, P.2

Lightning protection systems, installation of special systems. (IEC 1024-1:1990)  
Lightning protection for buildings.

### DIN VDE 0185 P.1

Lightning protection systems, General installation information.

### DIN VDE 0185 P.2

Lightning protection systems, Installation of special systems.

### DIN VDE 0185 P.100

Lightning protection for buildings, basic principles (prENV 61024-1).

### VDE 0303 P.1

Process for determination of comparative and test value for tracking of insulated materials in moist conditions.

### DIN VDE 0304 P.21

Determination of thermal stability for electro-insulated materials; part 1: general procedure to determine the thermal endurance properties, the temperature index and the thermal endurance profile.

### DIN VDE 0611 P.1

Low-voltage switchgear and controlgear, part 7: auxiliary equipment,

### (EN 60947-7-1)

Main section 1 - terminal blocks for connecting copper wires.

### DIN VDE 0432 P.1

High-voltage testing technology. (IEC 60-1)

### DIN VDE 0675 P.6 (Draft)

Overvoltage arrester for use in alternating supply networks between 100 V and 1000 V.

### DIN VDE 0800 P.1

Telecommunications technology; general terms, requirements and tests for the safety of systems and devices.

### DIN VDE 0800 P.2

Telecommunications technology, grounding and potential compensation.

### DIN VDE 0820 P.22 (EN 60127-2)

Miniature fuses; part 2, G miniature fuses.

### DIN VDE 0845 P.1

#### DIN 17845

Protection of telecommunication systems from the effects of lightning, static charging and overvoltages from electrical power installations.

### DIN VDE 0878 P.240

Electromagnetic compatibility for installations in information processing and telecommunications technology.

### UL-94

Tests of flammability of plastic materials for parts in devices and appliances.

### UL-1414

Across-The-line, Antenna-Coupling and Line-By-Pass Capacitors for Radio and Television-Type Appliances.

### UL-1449

Transient Voltage Surge Suppressors.

### DIN IEC 68

Outline for environmental test procedures.

### DIN 41651 P.1

Two-part connectors for printed boards for connection of flat cables to round wires; indirect plugging, pitch 2.54 mm; joint features, dimensions of types A and B.

### DIN 41651 P.2

Two-part connectors for printed boards for connection of flat cables to round wires; indirect plugging, pitch 2.54 mm; gauges, nominal values and tests.

### DIN 45921 P.107

Harmonised system of quality assessment for electronic components; construction type specifications:

non wire-wound permanent resistors for low loading capacity, metal-coated resistors for increased requirements (CECC 40101-017).

### DIN 45923

Harmonised system of quality assessment for components (varistors) (CECC 4200).

### DIN VDE 0820 P.22

Miniature fuses; part 12, G miniature fuses.

### (EN 60127-2)

EN 61000-4-5; Electromagnetic compatibility (EMC) (IEC 801-5); ENV 50142

testing and measurement procedures; testing for interference immunity from interference voltages.

### DIN EN 60099-1 (VDE 0675 Part 1: 2000-08) overvoltage surge arresters - Part 1: Overvoltage surge arresters with non-linear resistances for alternating current systems (IEC 60099-1: 19991 + A1:1999); German Version EN 60099-1: 1994 + A1:1999

The standard applies to overvoltage arresters, designed for repeated responses, to limit overvoltages in alternating current systems and for interruption of flowing currents.

It applies in particular to overvoltage surge voltage protectors that consist of a single or multiple spark gap connected in series with a single or a number of non-linear resistances.

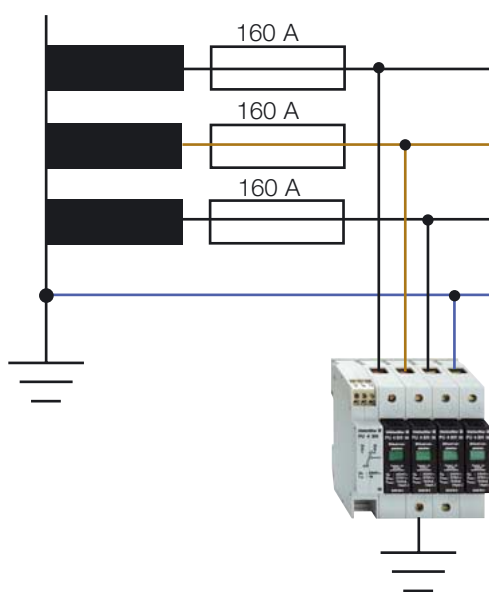
## Requirements for power systems Overvoltage protection for 230 / 400 V circuits

Arresters for 230 / 400 V circuits fall into 4 categories, 3 of which are in the Weidmüller range

### Class B arresters

Arresters installed for the purpose of mastering direct lightning strikes by means of equipotential bonding. These arresters are tested with a simulated lightning test current  $I_{imp}$  of waveform 10/350  $\mu$ s.

#### Circuit diagram



Arresters according to draft  
VDE 0675 T. 6  
**B**  
10 / 350  $\mu$ s

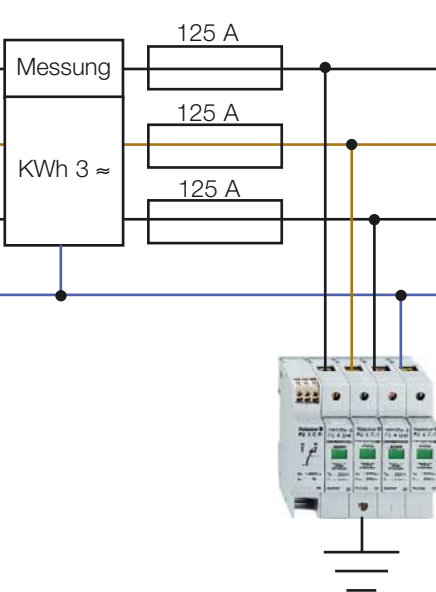
The Insulation coordination to VDE 0110 is **6 kV** for the 230/400 V Net.

The overvoltage category to DIN VDE 0110 has to be not lower than **Class IV**.

The B-Surge arrester is useful for lightning protection and is necessary if lightning rods are installed.

### Class C arresters

Arresters installed for overvoltage protection in permanent installations, i.e., distribution. These arresters are tested with a nominal discharge current  $I_{sn}$  of waveform 8/20  $\mu$ s.



Arresters according to draft  
VDE 0675 T. 6  
**C**  
8 / 20  $\mu$ s

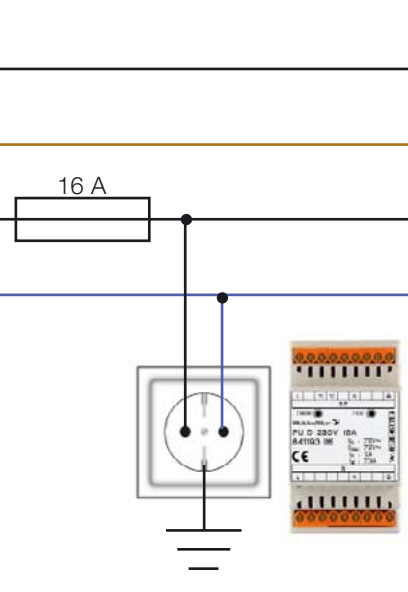
The Insulation coordination to VDE 0110 is **4 kV** for the 230/400 V Net.

The overvoltage category to DIN VDE 0110 has to be not lower than **Class III**.

C-arresters discharge energy coupled in the mains cable to earth. They are installed in switchgear cabinets.

### Class D arresters

Arresters installed for overvoltage protection in permanent or portable installations, in particular for socket outlets or before consumer devices



Arresters according to draft  
VDE 0675 T. 6  
**D**  
1.2 / 50  $\mu$ s

The Insulation coordination to VDE 0110 is **2.5/1.5 kV** for the 230/400 V Net.

The overvoltage category to DIN VDE 0110 has to be not lower than **Class II**.

D-arresters discharge energy coupled in the mains cable to earth. They are installed in switchgear cabinets and sub-distributor boards.

# Overvoltage Protection





## Overvoltage Protection

### Lightning stroke current arresters with spark gap for equipotential bonding in lightning protection

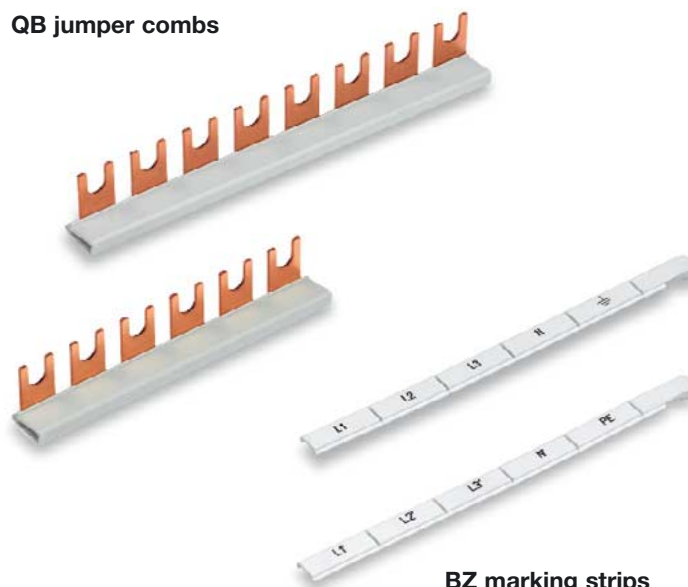
#### Overvoltage protection class I ( B-arrester)

Lightning stroke current arresters are used for equipotential bonding at interface junctions 0 to 1 (according to IEC 1312-1) in lightning protection systems in accordance with the requirements of **class B** (DIN VDE 0675 Part 6 (Draft 11.89)/A1: 3/96) and **class I** according to IEC 61643-1 (2.98).

Several lightning stroke current arresters are combined for overvoltage protection in the system configurations TN, TT and IT.

When lightning strikes, the triggered-type spark gaps create the necessary equipotential bonding between the building's lightning protection system and the earthing system of the power supply. The use of spark gaps fulfils the requirements of the VDEW guidelines (1 edition 1998) concerning the verification of class B overvoltage protection facilities.

QB jumper combs



BZ marking strips

#### Electrical connections for building installations

The class 1 lightning-stroke current arrester PU1TSG 35kA is connected between the outer wires (L1, L2, L3). The PU1TSG 50kA creates the N-PE spark gap. The wires should be kept as short as possible.

The triggered-type and non-blowout PU1TSG can be mounted onto a TS 35 mounting rail in the switchgear cabinet or snapped onto a distribution board.

The maximum permitted operating voltage  $U_c$  is 260 V AC. It is not necessary to decouple the connected class II (C) arresters, because triggered-type spark gaps with low pull-in voltages are used.

Please observe the notes on installation.

#### Electrical connections for industrial installations

The class I lightning-stroke current arrester PU1TSG+ 50kA/330 V or 440 V are connected between the outer wires (L1, L2, L3). The PU1TSG 50kA creates the N-PE spark gap. The wires should be kept as short as possible.

The triggered-type and blowout PU1TSG+ 50kA can be mounted onto a TS 35 mounting rail in the switchgear cabinet or snapped onto a distribution board. A safety clearance of at least 10 cm to potential carrying parts must be maintained, because emissions are created when the spark gaps are operated.

The maximum permitted operating voltage  $U_c$  330 or 440 V AC. It is not necessary to decouple the connected class II (C) arresters for 470 V AC, because triggered-type spark gaps with low pull-in voltages are used

Please observe the notes on installation.

#### Functions check, maintenance and approvals

The PU1TSG and PU1TSG+ overvoltage protection modules can be checked visually. A functions indicator, which lights up at 120 V AC, can indicate the failure of the system voltage as well as the failure of the triggering electronics. Checks should be made more often in periods when thunderstorms are prevalent.

The triggered-type spark gap achieves a very low protection level of under 1.5 kV together with high discharge currents. The PU1TSG arrester must be fused up to a maximum of 125 AgL, depending on the wire cross-section. The PU1TSG+ must be fused up to a maximum of 250 AgL.

The connection is rated for the following cross-sections:

solid core:	10 ... 35 mm <sup>2</sup>
stranded:	10 ... 25 mm <sup>2</sup>

The operating range is -40 °C ... +85 °C.

The PU B lightning stroke currents have UL and KEMA approvals. This guarantees their suitability for use worldwide.

# Overvoltage Protection

## PU 1 TSG

35 kA / 0.9 kV

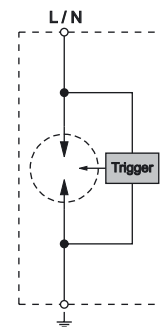
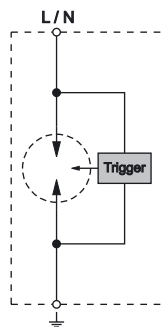


## PU 1 TSG

50 kA / 1.5 kV



### Circuit diagram



### Ordering data

Type PU 1 TSG 35 kA / 0.9 kV Cat. No. **8561260000**

Type PU 1 TSG 50 kA / 1.5 kV Cat. No. **8561230000**

### Rated data

Voltage, $U_n$ per circuit	230 Vac	230 Vac
Voltage, $U_c$ per circuit	260 Vac	260 Vac
Requirement category	I (B-arrester)	I (B-arrester)
Lightning test voltage limp. (10/350 $\mu$ s)	35 kA at load 17.5As	50 kA at load 25 As
Specific energy, per circuit	305 kJ/W	625 kJ/Ohm
Short-circuit current extinguishing when without back-up fuse	3000 A / 50 Hz	500 A / 50 Hz
Short-circuit withstand max. back-up fuse	25 kA <sub>eff</sub>	-
Leakage current $I_{PE}$	$\leq 2.5$ mA	$\leq 0.1$ $\mu$ A
Response time, $t_a$ , type	$\leq 1$ $\mu$ s	$\leq 1$ $\mu$ s
Back-up fuse max.	125 A gL	125 A gL
Protection level $U_p$	<0.9 kV	< 1.5 kV
Optical function display	yes	no
Design	Insta IP20 / 90 x 18 x 66 mm	Insta IP20 / 90 x 18 x 66 mm
Colour	grey	grey
Temperature	-25 °C...+85 °C	-25 °C...+85 °C
Connection according to IEC 947-7-1		
Solid	10...35 mm <sup>2</sup>	10...35 mm <sup>2</sup>
Flexible	10...25 mm <sup>2</sup>	10...25 mm <sup>2</sup>

### Accessories

Cross-connection QB single 18-4	<b>8619440000</b>	<b>8619440000</b>
Cross-connection QB single 18-6	<b>8619450000</b>	<b>8619450000</b>

### Designation

BZ18 L1, L2, L3, N, PE	<b>8619460000</b>	<b>8619460000</b>
BZ18 PE, PE, PE, PE, PE	<b>8619470000</b>	<b>8619470000</b>

Approvals	UL, KEMA	UL, KEMA
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# Overvoltage Protection

## PU 1 TSG+

50 kA / 0.9 kV

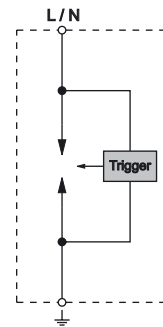
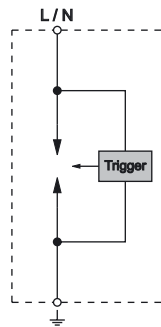


## PU 1 TSG+

50 kA / 1.5 kV



### Circuit diagram



### Ordering data

Type	Cat. No.
PU 1 TSG+ 50 kA / 0.9 kV	<b>8561220000</b>

Type	Cat. No.
PU 1 TSG+ 50 kA / 1.5 kV	<b>8561250000</b>

### Rated data

Voltage, $U_n$ per circuit	330 Vac
Voltage, $U_c$ per circuit	330 Vac
Requirement category	I (B-arrester)
Lightning test voltage limp. (10/350 $\mu$ s)	50 kA at load 25 As
Specific energy, per circuit	625 kJ/Ohm
Short-circuit current extinguishing at ohne back-up fuse	50 kA / 50 Hz
Short-circuit withstand at max. back-up fuse	25 kA <sub>eff</sub>
Leakage current $I_{\Delta E}$	$\leq 2.5$ mA
Response time, $t_a$ , typ	$\leq 100$ ns
Back-up fuse max.	250 A gL
Protection level Up	< 0.9 kV

Type	330 Vac
Cat. No.	8561220000
Type	330 Vac
Cat. No.	8561220000
Type	I (B-arrester)
Cat. No.	8561220000
Type	50 kA at load 25 As
Cat. No.	8561220000
Type	625 kJ/Ohm
Cat. No.	8561220000
Type	50 kA / 50 Hz
Cat. No.	8561220000
Type	25 kA <sub>eff</sub>
Cat. No.	8561220000
Type	$\leq 2.5$ mA
Cat. No.	8561220000
Type	$\leq 100$ ns
Cat. No.	8561220000
Type	250 A gL
Cat. No.	8561220000
Type	< 0.9 kV
Cat. No.	8561220000

Voltage, $U_n$ per circuit	440 Vac
Voltage, $U_c$ per circuit	440 Vac
Requirement category	I (B-arrester)
Lightning test voltage limp. (10/350 $\mu$ s)	50 kA at load 25 As
Specific energy, per circuit	625 kJ/Ohm
Short-circuit current extinguishing at ohne back-up fuse	50 kA / 50 Hz
Short-circuit withstand at max. back-up fuse	25 kA <sub>eff</sub>
Leakage current $I_{\Delta E}$	$\leq 2.5$ mA
Response time, $t_a$ , typ	$\leq 100$ ns
Back-up fuse max.	250 A gL
Protection level Up	< 1.5 kV

Optical function display	yes
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Optical function display	yes
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Design	Insta IP20 / 151 x 36 x 81 mm
Colour	black
Temperature	-25 °C...+85 °C
Connection according to IEC 947-7-1	
Solid	10...35 mm <sup>2</sup>
Flexible	10...25 mm <sup>2</sup>

Type	Insta IP20 / 151 x 36 x 81 mm
Cat. No.	8561220000
Type	black
Cat. No.	8561220000
Type	-25 °C...+85 °C
Cat. No.	8561220000
Type	
Cat. No.	8561220000
Type	10...35 mm <sup>2</sup>
Cat. No.	8561220000
Type	10...25 mm <sup>2</sup>
Cat. No.	8561220000

Design	Insta IP20 / 151 x 36 x 81 mm
Colour	black
Temperature	-25 °C...+85 °C
Connection according to IEC 947-7-1	
Solid	10...35 mm <sup>2</sup>
Flexible	10...25 mm <sup>2</sup>

### Accessories

Cross-connection QB single row 18-4	<b>8619440000</b>
Cross-connection QB single row 18-6	<b>8619450000</b>

Type	8619440000
Cat. No.	8619440000
Type	8619450000
Cat. No.	8619450000

Cross-connection QB single row 18-4	<b>8619440000</b>
Cross-connection QB single row 18-6	<b>8619450000</b>

### Designation

BZ18 L1, L2, L3, N, PE	<b>8619460000</b>
BZ18 PE, PE, PE, PE, PE	<b>8619470000</b>

Type	8619460000
Cat. No.	8619460000
Type	8619470000
Cat. No.	8619470000

Designation	8619460000
Cat. No.	8619460000
Designation	8619470000
Cat. No.	8619470000

Approvals	UL, KEMA
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Type	UL, KEMA
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Approvals	UL, KEMA
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# Overvoltage Protection

VDE 0675, Part 6, Class B  
Overvoltages due to lightning strikes

## Lightning stroke current arresters for equipotential lightning protection

The PU B is designed for equipotential bonding in lightning protection systems, in accordance with DIN VDE 0185, Part 1 (11.82). The PU B is a class B lightning stroke current arrester in accordance with DIN VDE 0675 (Draft 11/89) and DIN EN 60099 Part 1 (8/00), ENV 61024-1 (1/95) and IEC 1312-1 (2/95). The integrated varistors ensure the equipotential bonding between the building's lightning protection system and the the power supply system when lightning strikes.

## The electrical connection

The PU B lightning-stroke current arrester should be installed by an electrical tradesman between the outer wires (L1, L2, L3) and the earth connection of the consumer installation, keeping the cables as short as possible. The PU B can be mounted onto TS 35 mounting rails in the switchgear cabinet or in distribution boards.



## Functional check / Maintenance

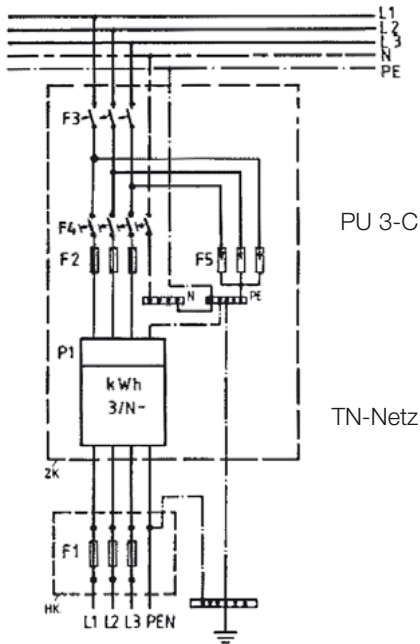
PU B overvoltage protectors should be visibly checked, in particular, during thunderstorms. PU Bs are equipped with pluggable varistor housings. An arrester disconnecter thermally protects the varistor so that the status window will change color from green to red when protection is no longer given. The arrester can be replaced by an electrician without having to disconnect the wiring. The upper part of the varistors are coded according to voltage, which means that only a correct PU B type varistor can be used as a replacement. The varistors ensure a low protective level < 2 kV with high discharge currents. The arrester is to be fused against short-circuits depending on wire cross-sections. The use of varistors ensures that no emissions occur at the place of installation due to overvoltages.



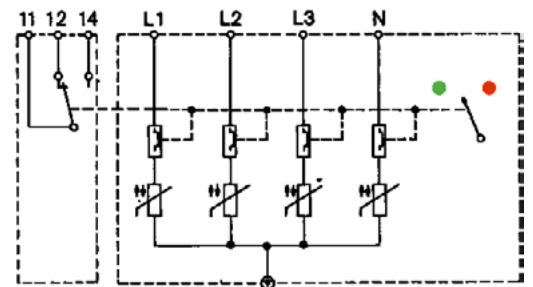
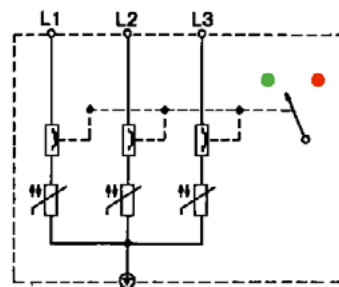
# Overvoltage Protection

**PU 3 B**

**PU 4 B-R**



**Circuit diagram**



**VDE rated data**

Rated voltage*; ac
Max. permissible operation voltage
Test current of the compl. arrester (8/20µs)
Charge Q
Specific energy
<b>Lightning test voltage 10/350µs based on lightning current parameter acc. to ENV 61024-1 (1/95) and IEC 1312-1 (2/95)</b>
Peak current
Charge Q
Specific energy
<b>Residual voltage typ. at</b>
Leakage current 40 kA (8/20µs)
Leakage current 7kA (10/350µs)
Response time of the varistor
Short-circuit withstand 25 kA
Back-up fuse $\leq$
Connection cross-section: according to IEC 947-7-1
Colour of the upper relay of the varistor
Operating temperature range
Approvals

**PU3 B**

230 V
275 V ac
75 kA
7 As
250 KJ/Ohm
20 kA
10 As
100 KJ/Ohm
< 1.5 kV
< 2 kV
< 25 ns
160 A gL
6...10 mm <sup>2</sup> solid
16...25 mm <sup>2</sup> stranded
10...25 mm <sup>2</sup> flexible
black; PA6.6 VO
- 40°C...+60°C
UL

**PU4 B**

230 V
275 V ac
100 kA
10 As
500 KJ/Ohm
25 kA
12.5 As
160 KJ/Ohm
< 1.5 kV
< 2 kV
< 25 ns
160 A gL
black; PA6.6 VO
- 40°C...+60°C
UL

**Ordering data**

PU 3 B, 230 / 400 V
PU 3 BR, 230 / 400 V with remote signalling
PU 4 B, 230 / 400 V
PU 4 BR, 230 / 400 V with remote signalling
PU 0 B, replacement module for PU x B

**Dimensions**

53.4 x 55
71.2 x 55
<b>8381880000</b>

**Cat. No.**

**Dimensions**

71.2 x 55
89 x 55
<b>8147020000</b>
<b>8291640000</b>
<b>8381880000</b>

**Cat. No.**

**Accessories**

Housing, can be sealed
------------------------

GPS 360x254x112
<b>1785490000</b>

GPS 360x254x112
<b>1785490000</b>

\* other nominal voltages on request



# Overvoltage Protection

VDE 0675, part 6, class C

Protection against overvoltages

The PU C overvoltage protector protects low-voltage consumer installations and electronic devices against overvoltages, such as those that result from atmospheric discharges (thunderstorm) or switching operations.

The PU-C fulfils the requirements of DIN VDE 0675, Part 6, Class C 11/89, Draft, and DIN VDE 0675. Part 6, A2, 10/96 and ÖVE SN 60 Part 4 and Parts 1 and 4, and the DIN EN 60099 - 1 (8/00)



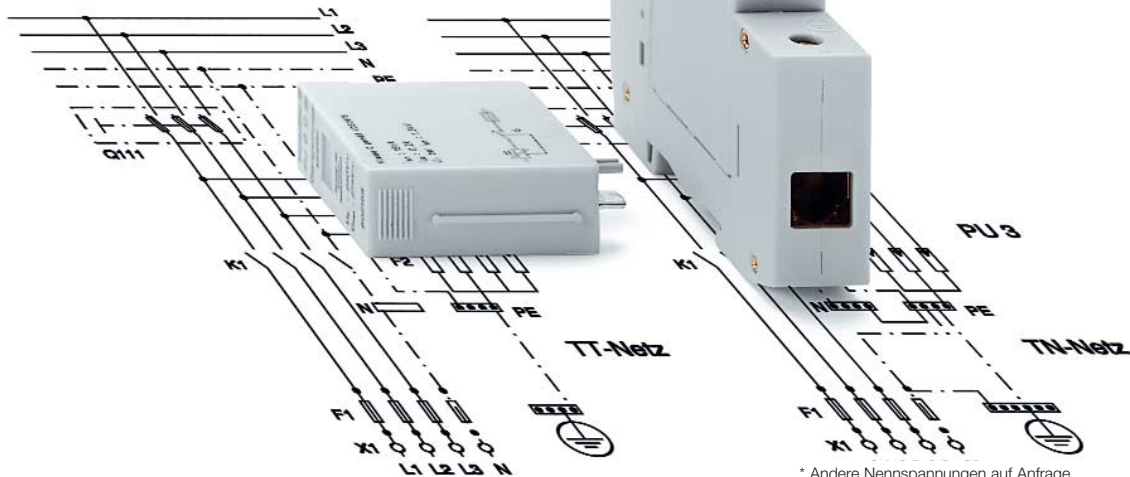
### The electrical connection

The PU overvoltage protection should be installed between the exterior wires (L1, L2, L3) or the neutral wire (N) and the earth wire of the consumer installation, keeping the cables as short as possible. The parallel routing of unprotected cables (for example, the wire to the meter) and protected cables, (for example, power supply cables) must be avoided.



### Functional check / maintenance

The window is green when the unit is in operation. If the window of an arrester is red, the arrester must be replaced by a qualified tradesman. Individual arresters are pluggable and coded according to voltage. The replacement arrester must correspond to the nominal voltage of the installation. The cross-section of the earthing wire must be at least 10 mm<sup>2</sup>. The back-up fuse for the PU modules is to be chosen depending on the cross-section of the wire and the type of routing. Maximum 125 A is permitted.



\* Andere Nennspannungen auf Anfrage



# Overvoltage Protection

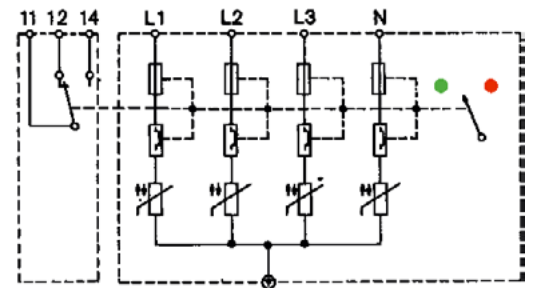
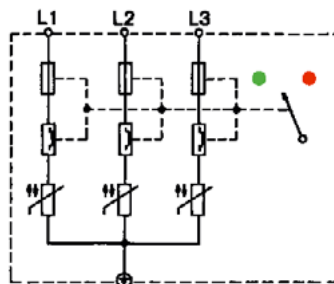
**PU 3 C**



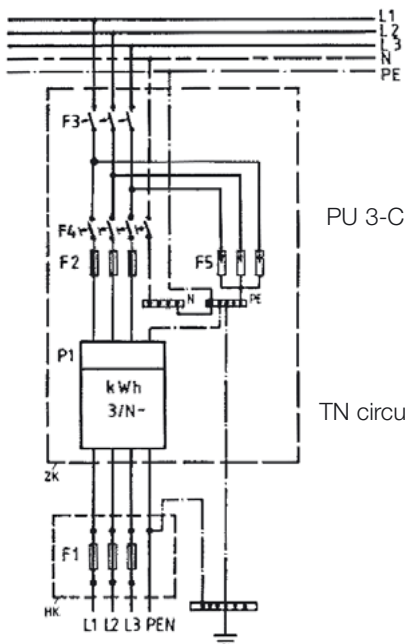
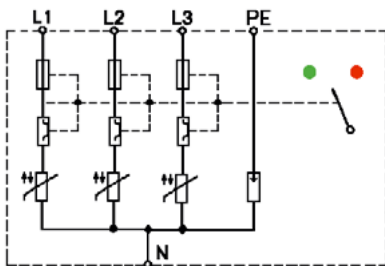
**PU 4 C-R**



**Circuit diagram**



Arrester to DIN VDE 0542 /A1 with spark gap schematic circuit diagram for PU 4C TT



**Installation**

**VDE rated data**

Rated voltage	
Max. permissible operation voltage	
<b>Service requiremental class to VDE 0675, Part 6, draft 11/89</b>	
Nominal leakage current of the upper part	
Limit leakage current of the upper part	
Residual voltage of the upper part $isn = 15 \text{ kV}$	
Limit leakage current for each	1-channel block isg (8/20)
	2-channel block isg (8/20)
	3-channel block isg (8/20)
	4-channel block isg (8/20)
Response time	
Short-circuit withstand 25 kA with max. back-up fuse	
Connection cross-section:	f 6 mm <sup>2</sup> with AEH acc. to IEC 974-7-1

Assembly	
Colour	
Approvals	
Dimensions, typ.	1-channel block compl.
	2-channel block compl.
	3-channel block compl.
	4-channel block compl.

**Ordering data**

PU 1 C	
PU 2 C	
PU 3 C	for TN-C circuits
PU 3 C-R	for TN-C circuits w. remote signalling
PU 4 C	for TT circuits
PU 4 C-R	for TT circuits w. remote signalling
PU 0 C	repl. module for PUC and PUCR
PU 0/S-E	monitoring module PU 1...4
PU 4 C TT	for TT- circuits

**Accessories**

Housing, can be sealed	
------------------------	--

PU xC	PU 4C TT
-------	----------

230 V~	115 V~	470 V~	230 V~
275 V~	130 V~	500 V~	275 V~
<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>
15 kA	15 kA	15 kA	20 kA (Spark gap)
40 kA	40 kA	40 kA	
1.3 kV	0.6 kV	2.2 kV	
40 kA	40 kA	40 kA	
75 kA	75 kA	75 kA	
100 kA	100 kA	100 kA	
100 kA	100 kA	100 kA	
<25 ns	<25 ns	<25 ns	<1 μs
≤125 A gL	≤125 A gL	≤125 A gL	≤125 A gL
6...- 25mm <sup>2</sup>	6...- 25mm <sup>2</sup>	6...- 25mm <sup>2</sup>	
6...10 mm <sup>2</sup> solid			
16...25mm <sup>2</sup> stranded			
10...25mm <sup>2</sup> flexible			

TS 35	TS 35	TS 35	
grey	grey	grey	orange
UL/ÖVE	UL	UL	

<b>Cat. No.</b>			
<b>8102610000</b>	<b>8215820000</b>	<b>8291700000</b>	
<b>8098170000</b>	<b>8291650000</b>	<b>8291710000</b>	
<b>8021490000</b>	<b>8291660000</b>	<b>8451050000</b>	
<b>8021510000</b>	<b>8291680000</b>	<b>8451060000</b>	
<b>8021500000</b>	<b>8291670000</b>	<b>8291720000</b>	
<b>8021520000</b>	<b>8291690000</b>	<b>8451070000</b>	
<b>8339510000</b>	<b>8432430000</b>	<b>8451080000</b>	
<b>8021530000</b>			
			<b>8416370000</b>

GPS 360x254x112	<b>1785490000</b>
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# Overvoltage Protection

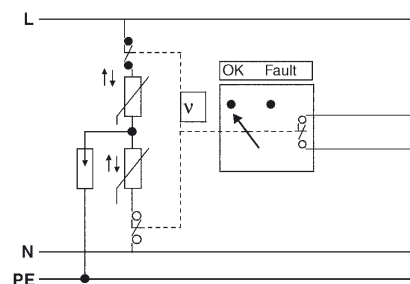
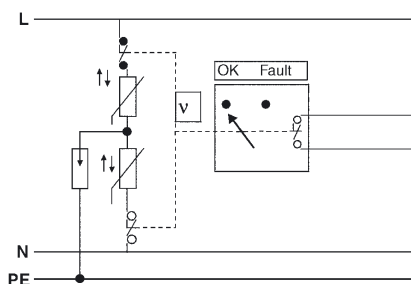
**PU D**  
230 V / 16 A



**PU D**  
115 V / 16 A



## Circuit diagram



## Ordering data

Type PU D 230V 16A Cat. No. **8411930000**

Type PU D 115V 16A Cat. No. **8472100000**

## Rated data

Input	230 V / 16 A	115 V / 16 A
Input voltage	230 Vac ±10%	115 Vac ±10%
Input current	16 A	16 A
Leakage current max.	7 kA	7 kA
Leakage current nenn.	2.5 kA	2.5 kA
Response time symmetric / asymmetric	< 150 ns	< 150 ns

Output	230 V / 16 A	115 V / 16 A
Interference voltage output at 1 kV / μs		
between L - N	< 550 V	< 550 V
between N - PE or L - PE	< 850 V	< 850 V

## Standards

Standards	230 V / 16 A	115 V / 16 A
VDE 0675 Part 6 (11/89)	Class; D	Class ; D
Overvoltage category	II	II
Pollution severity	2	2
Leakage current with Un to PE	< 1 μA	< 1 μA

## Monitoring contact

Monitoring contact	230 V / 16 A	115 V / 16 A
Switching contact (NC) Uac max / I max	250 V / 2 A	250 V / 2 A

## Temperature data

Temperature data	230 V / 16 A	115 V / 16 A
Application class IEC 68		
Operating temperature	-25 °C...+55 °C	-25 °C...+55 °C
- rowed without space	-25 °C...+55 °C	-25 °C...+55 °C
Storage temperature	-40 °C...+60 °C	-40 °C...+60 °C
Max. humidity	95%, without condensation	95%, without condensation

## General data

General data	230 V / 16 A	115 V / 16 A
Housing	DIN 43880	DIN 43880
Dimensions W x H x D	mm 52.5 x 56 x 45	52.5 x 56 x 45
Protection class	IP 20	IP 20
Weight	approx. 250 g	approx. 250 g
Mounts onto	TS 35	TS 35
Connection via screw terminal	System LP	System LP
Terminal range	0.13 ... 4 mm <sup>2</sup>	0.13 ... 4 mm <sup>2</sup>
"e" solid	0.5 ... 4 mm <sup>2</sup>	0.5 ... 4 mm <sup>2</sup>
"f" flexible	0.5 ... 2.5 mm <sup>2</sup>	0.5 ... 2.5 mm <sup>2</sup>
"f" flexible with ferrule	0.5 ... 2.5 mm <sup>2</sup>	0.5 ... 2.5 mm <sup>2</sup>

# Overvoltage Protection

## PU 3 D

230 V / 400 Vac



## PU DS

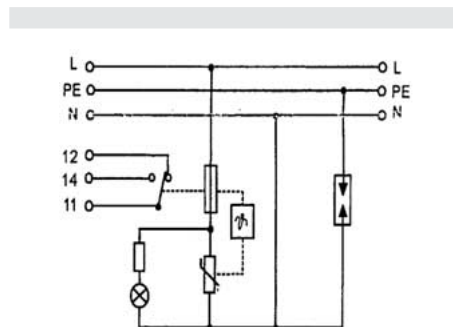
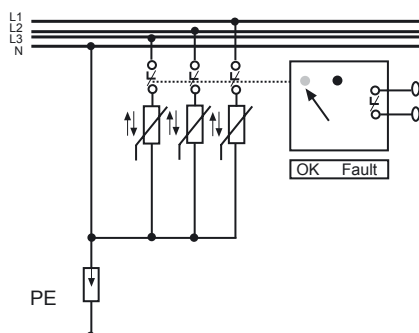
230 V 16 A



### Function

The PU 3 D fulfils the requirements of DIN VDE 0675 (Draft). The varistors are temperature controlled. The ageing of varistors caused by transients allow the current to increase, this in turn results in high temperatures. In this case, the varistors are automatically separated from the supply voltage. This being indicated by a red glow lamp. Three green glow lamps signalize the three phase power. A monitoring contact (NC contact) processes the group error messages.

### Circuit diagram



### Ordering data

### Rated data

#### Input

Input voltage	230V/400Vac ±10%
Input current	16 A
Leakage current max.	18 kA in total
Leakage current nenn.	2.5 kA in total 6.5 kA
Response time symmetric / asymmetric	< 150 ns

#### Output

Interference voltage at 1 kV / μs	
between L - L; L - N	< 550 V
between N - PE or L - PE	< 850 V

### Standards

VDE 0675 Part 6 (11/89)	Class : D
Overvoltage category	III
Pollution severity	2
Leakage current with Un to PE	< 1 μA

### Monitoring contact

Switching contact (NC) Uac max / I max	250 V / 2 A
--	-------------

### Temperature data

Operating temperature	-25 °C...+55 °C
- rowed without space	-25 °C...+55 °C
Storage temperature	-40 °C...+60 °C
Max. humidity	95%, without condensation

### General data

Housing	(Insta housing) DIN 43880
Dimensions W x H x D	mm 52.5 x 56 x 45
Protection class	IP 20
Weight	approx. 150 . 400 g
Mounts onto	TS 35
Connection via screw terminal	System LP
Terminal range	0.13 ... 4 mm <sup>2</sup>
"e" solid	0.5 ... 4 mm <sup>2</sup>
"f" flexible	0.5 ... 2.5 mm <sup>2</sup>
"f" flexible with ferrule	0.5 ... 2.5 mm <sup>2</sup>

### Type

PU 3 D 230 V/400 V 16 A

### Cat. No.

8509130000

### Type

PU DS 230 V 16 A

### Cat. No.

8523740000

### Rated data

Input voltage	230Vac ±10%
Input current	16 A in total
Leakage current max.	5 kA in total 6.5 kA
Leakage current nenn.	2.5 kA
Response time symmetric / asymmetric	< 150 ns

#### Output

Interference voltage at 1 kV / μs	
between L - L; L - N	< 600 V
between N - PE or L - PE	< 1500 V

### Standards

VDE 0675 Part 6 (11/89)	Class: D
Overvoltage category	III
Pollution severity	2
Leakage current with Un to PE	< 1 μA

### Monitoring contact

Switching contact (NC) Uac max / I max	250 V/2 A
--	-----------

### Temperature data

Operating temperature	-25 °C...+55 °C
- rowed without space	-25 °C...+55 °C
Storage temperature	-40 °C...+60 °C
Max. humidity	95%, without condensation

### General data

Housing	(Insta housing) DIN 43880
Dimensions W x H x D	mm 18 x 56 x 45
Protection class	IP 20
Weight	approx. 150 g
Mounts onto	TS 35
Connection via screw terminal	System LP
Terminal range	0.13 ...4 mm <sup>2</sup>
"e" solid	0.5 ...4 mm <sup>2</sup>
"f" flexible	0.5 ... 2.5 mm <sup>2</sup>
"f" flexible with ferrule	0.5 ... 2.5 mm <sup>2</sup>

# Overvoltage Protection

## MCZ OVP

24 Vdc 0.5 A  
24 Vdc 1.25 A  
24 Vac 0.5 A  
24 Vac 1.25 A

Slim overvoltage protection terminals with additional PE contacts to the mounting rail

## MCZ OVP

for current loops  
0(4)...20 mA

## MCZ OVP

for current loops  
0(4)...20 mA

## MCZ OVP

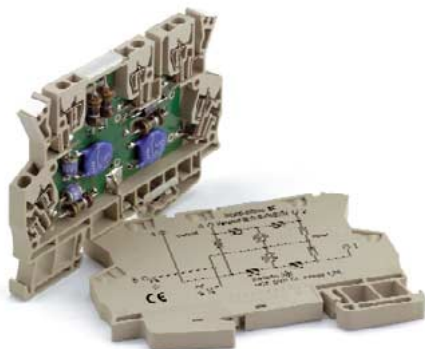
for symmetric loads  
z.B. ±24V

## MCZ OVP

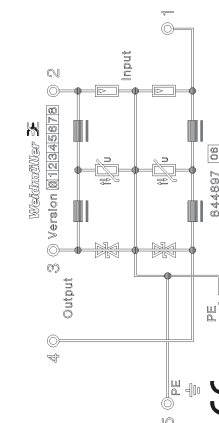
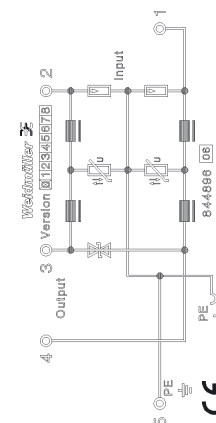
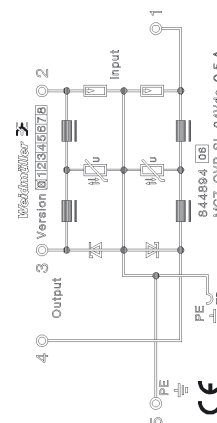
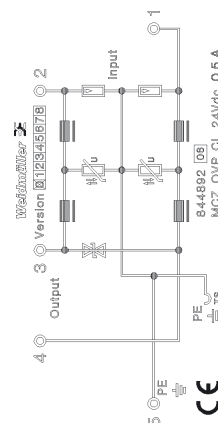
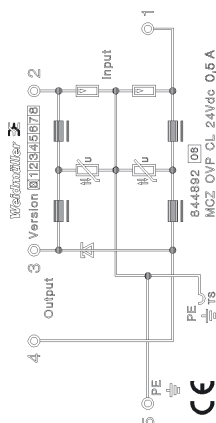
for current loops  
0(4)...20 mA

## MCZ OVP

for symmetric loads  
z.B. ±24V



### Circuit diagrams



### Technical data

Rated voltage	24 Vdc	24 Vac	24 Vdc	24 Vac / 34 Vdc	24 Vac
Max. operating voltage	28 Vdc	37 Vac / 34 Vdc	28 Vdc	28Vac	28Vac
Max. operating current	0.5 A	0.5 A	0.5 A	1.25 A	1.25 A
Through resistance	2.5 Ω	2.5 Ω	2.5 Ω	1.0 Ω	1.0 Ω
Inductance of four-pole network	75 μH	75 μH	75 μH	35 μH	35 μH
Capacitance of four-pole network	1.5 nF	1.5 nF	1.5 nF	1.5 nF	1.5 nF
Limit frequency at 50 Ohm/ -3dB at Ri= 240 Ohm	500 kHz / 240 Ω	500 kHz / 240 Ω	500 kHz / 240 Ω	500 kHz / 240 Ω	500 kHz / 240 Ω
Gas discharger	90 V 10 kA	90 V 10 kA	90 V 10 kA	90V 10 kA	90V 10 kA
Varistor voltage	30 V	30 V	30 V	30 V	30 V
Suppressor diodes	33 V	34 V	33V	33 V	33V
Pull-in voltage of the gas discharger	<600 V	<600 V	<600 V	<600 V	<600 V
Max. leakage current at Un and max. Tu from terminals 1/3 o. 2/3 a. 1/2 terminals 1/5 o. 2/5 a. 1/2	max 10 μA	max 15 μA	max 10 μA	max 10μA	max 10μA
Interference voltage at output 3/4 at 1000V/μs at input, typ:	40 V	45 V	40 V	40 V	40 V
Interference voltage at output 3/4 at 8/20 μs and 2.5 kA at input:	max 65 V	max 70 V	max 65 V	max 65 V	max 65 V
Dimensions LxWxH (mm)	91 x 6 x 63.2	91 x 6 x 63.2	91 x 6 x 63.2	91 x 12 x 63.2	91 x 12 x 63.2
Details see page 278					
<b>Ordering data</b>					
Type	MCZ OVP CL 24 Vdc 0.5 A	MCZ OVP CL 24 Vac 0.5 A	MCZ OVP SL 24 Vdc 0.5 A	MCZ OVP CL 24 Vac 1.25 A	MCZ OVP SL 24Vac 1.25A
Cat. No.	8448920000	8472880000	8448940000	8448960000	8448970000
Qty.	10 pieces	10 pieces	10 pieces	10 pieces	10 pieces

\* A fuse equivalent to the rated current of the MCZ OVP must be installed.

# Overvoltage Protection

## MCZ OVP

24 V ac/dc 16A

Slim overvoltage protection terminals with additional PE contacts to the mounting rail

## MCZ OVP

with gas discharger

## MCZ OVP

with varistor

## MCZ OVP

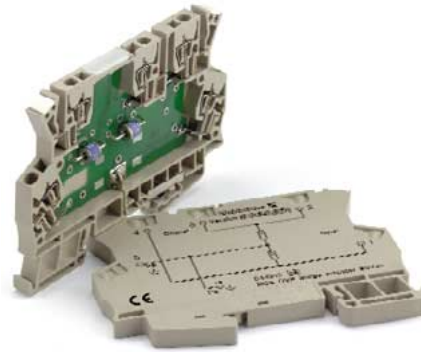
with suppression diode

Unipolar

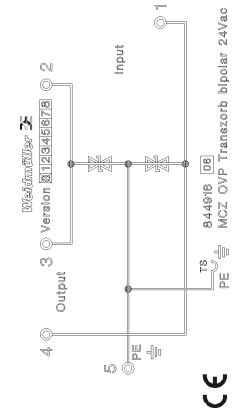
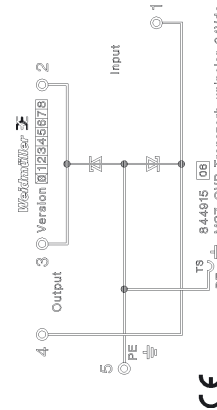
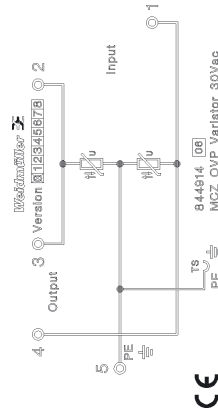
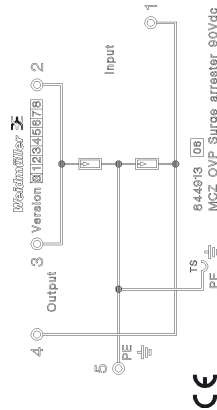
## MCZ OVP

with suppression diode

Bipolar



### Circuit diagrams



### Technical data

#### Rated voltage

Max. operating voltage

Max. operating current

Through resistance 1,3 and 2,4

Inductance of four-pole network 1/2

Capacitance of four-pole network 1/2

Limit frequency at 50 Ohm/ -3dB at Rl= 240 Ohm

Gas discharger

Varistor voltage

Suppressor diodes

Sparkover voltage of surge arrester

Max. leakage current at Un and max. Tu

from terminal 1/5 or 2/5 and 1/2

Interference voltage at output 3/4

with 1000V/μs at input, typ:

Interference voltage at output 3/4

with 8/20 μs and 2,5 kA at input:

Dimensions LxWxH (mm)

Details see page 257

### Ordering data

Type

Cat. No.

Qty.

**24 Vdc**

90 Vdc

**16 A**

0,2 Ω

-

<1,5 pF

-

90 V 10 kA

-

-

< 600 V

max 10 μA

typ 700 V

max 800 V

91 x 12 x 63,2

**24 Vdc**

30 Vac / 38 Vdc

**16 A**

0,2 Ω

-

2700 pF

-

-

30 V

-

-

max 20 μA

45 V

max 55 V

91 x 12 x 63,2

**24 Vdc**

30 Vdc

**16 A**

0,2 Ω

<1 nF

-

-

-

30,8 V

-

-

max 10 μA

55 V

max 65 V

91 x 12 x 63,2

**24 Vac/dc**

30 Vdc / 27 Vac

**16 A**

0,2 Ω

<1 nF

-

-

-

30,8 V

-

-

max 10 μA

55 V

max 65 V

91 x 12 x 63,2

\* A fuse equivalent to the rated current of the MCZ OVP must be installed.

# Overvoltage Protection

## MCZ OVP

48 Vac 0.5 A  
48 Vac 1.25 A

Slim overvoltage protection terminals with additional PE contacts to the mounting rail

## MCZ OVP

for current loops  
0.5 A

## MCZ OVP

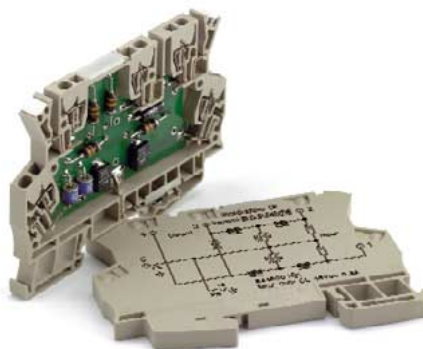
for symmetric loads  
0.5 A

## MCZ OVP

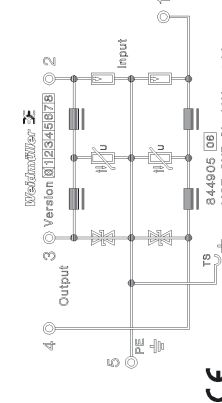
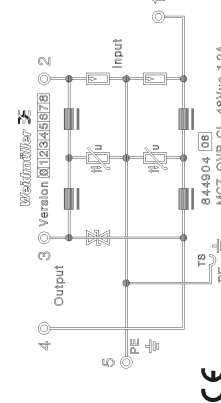
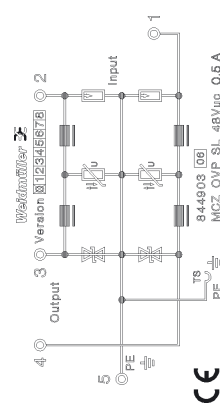
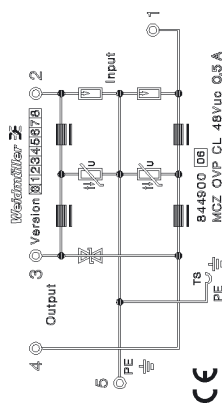
for current loops  
1.25 A

## MCZ OVP

for symmetric loads  
1.25 A



### Circuit diagrams



### Technical data

<b>Rated voltage</b>	<b>48 Vac</b>
Max. operating voltage	53 Vac
<b>Max. operating current</b>	<b>0.5 A</b>
Through resistance	
1.4 and 2.5	2.5 Ω
1.3 and 2.4	
Inductance of four-pole network 1/2	75 μH
Capacitance of four-pole network 1/2	1.5 nF
Limit frequency at	
50 Ohm/ -3dB at Rl= 240 Ohm	500 kHz / 240 Ω
Gas discharger	90 V 10 kA
Varistor voltage	60 Vac
Suppressor diodes	55 Vac
Sparkover voltage of surge arrester	< 600 V
Max. leakage current at Un and max. Tu	
from terminal 1/3 or 2/3 and 1/2	max 10 μA
from terminal 1/5 or 2/3 and 1/2	
Interference voltage at output 3/4	
with 1000V/μs at input, typ:	82 V
Interference voltage at output 3/4	
with 8/20 μs and 2.5 kA at input:	max 150 V
Dimensions LxWxH (mm)	91 x 6 x 63.2
Details see page 257	

<b>Rated voltage</b>	<b>48 Vac</b>
Max. operating voltage	53 Vac
<b>Max. operating current</b>	<b>0.5 A</b>
Through resistance	
1.4 and 2.5	2.5 Ω
1.3 and 2.4	
Inductance of four-pole network 1/2	75 μH
Capacitance of four-pole network 1/2	1.5 nF
Limit frequency at	
50 Ohm/ -3dB at Rl= 240 Ohm	500 kHz / 240 Ω
Gas discharger	90 V 10 kA
Varistor voltage	60 Vac
Suppressor diodes	55 Vac
Sparkover voltage of surge arrester	< 600 V
Max. leakage current at Un and max. Tu	
from terminal 1/3 or 2/3 and 1/2	max 10 μA
from terminal 1/5 or 2/3 and 1/2	
Interference voltage at output 3/4	
with 1000V/μs at input, typ:	82 V
Interference voltage at output 3/4	
with 8/20 μs and 2.5 kA at input:	max 150 V
Dimensions LxWxH (mm)	91 x 6 x 63.2
Details see page 257	

<b>Rated voltage</b>	<b>48 Vac</b>
Max. operating voltage	53 Vac
<b>Max. operating current</b>	<b>1.25 A</b>
Through resistance	
1.4 and 2.5	1 Ω
1.3 and 2.4	
Inductance of four-pole network 1/2	35 μH
Capacitance of four-pole network 1/2	1.5 nF
Limit frequency at	
50 Ohm/ -3dB at Rl= 240 Ohm	500 kHz / 240 Ω
Gas discharger	90V 10 kA
Varistor voltage	60 Vac
Suppressor diodes	55 Vac
Sparkover voltage of surge arrester	< 600 V
Max. leakage current at Un and max. Tu	
from terminal 1/3 or 2/3 and 1/2	max 10μA
from terminal 1/5 or 2/3 and 1/2	
Interference voltage at output 3/4	
with 1000V/μs at input, typ:	82 V
Interference voltage at output 3/4	
with 8/20 μs and 2.5 kA at input:	max 150 V
Dimensions LxWxH (mm)	91 x 12 x 63.2
Details see page 257	

<b>Rated voltage</b>	<b>48 Vac</b>
Max. operating voltage	53 Vac
<b>Max. operating current</b>	<b>1.25 A</b>
Through resistance	
1.4 and 2.5	1 Ω
1.3 and 2.4	
Inductance of four-pole network 1/2	35 μH
Capacitance of four-pole network 1/2	1.5 nF
Limit frequency at	
50 Ohm/ -3dB at Rl= 240 Ohm	500 kHz / 240 Ω
Gas discharger	90V 10 kA
Varistor voltage	60 Vac
Suppressor diodes	55 Vac
Sparkover voltage of surge arrester	< 600 V
Max. leakage current at Un and max. Tu	
from terminal 1/3 or 2/3 and 1/2	max 10μA
from terminal 1/5 or 2/3 and 1/2	
Interference voltage at output 3/4	
with 1000V/μs at input, typ:	82 V
Interference voltage at output 3/4	
with 8/20 μs and 2.5 kA at input:	max 150 V
Dimensions LxWxH (mm)	91 x 12 x 63.2
Details see page 257	

### Ordering data

Type	MCZ OVP CL 48Vac 0.5 A
Cat. No.	<b>8449000000</b>
Qty.	10 pieces

Type	MCZ OVP SL 48Vac 0.5 A
Cat. No.	<b>8449030000</b>
Qty.	10 pieces

Type	<b>MCZ OVP CL 48Vac 1.25A</b>
Cat. No.	<b>8449040000</b>
Qty.	10 pieces

Type	<b>MCZ OVP SL 48Vac 1.25A</b>
Cat. No.	<b>8449050000</b>
Qty.	10 pieces

Type	<b>MCZ OVP SL 48Vac 1.25A</b>
Cat. No.	<b>8449050000</b>
Qty.	10 pieces

\* A fuse equivalent to the rated current of the MCZ OVP must be installed.



## Overvoltage Protection

### MCZ OVP

115 V uc 1.25 A

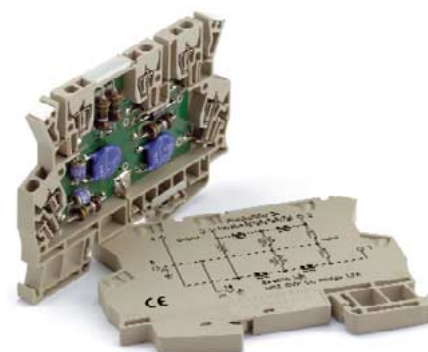
### MCZ OVP

230 V uc 1.25 A

Slim overvoltage protection terminals with additional PE contacts to the mounting rail

### MCZ OVP

for current loops  
115 V



### MCZ OVP

for symmetric loads  
115 V

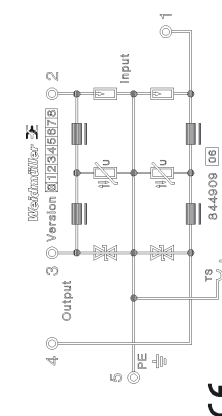
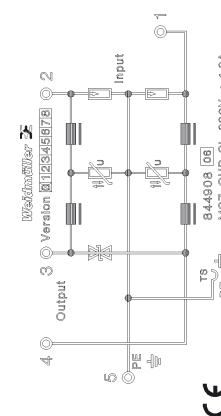
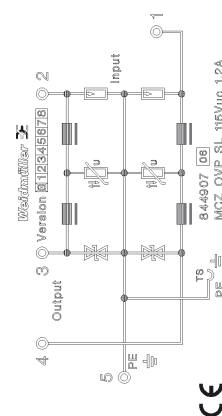
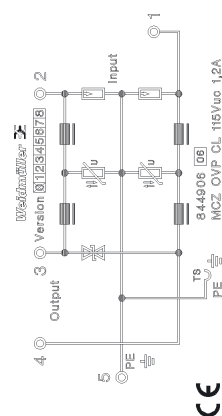
### MCZ OVP

for current loops  
230 V

### MCZ OVP

for symmetric loads  
230 V

#### Circuit diagrams



#### Technical data

##### Rated voltage

Max. operating voltage

**Max. operating current**

Through resistance

1.4 and 2.5

1.3 and 2.4

Inductance of four-pole network 1/2

Capacitance of four-pole network 1/2

Limit frequency at

50 Ohm/ -3dB at  $R_l = 240 \Omega$

Gas discharger

Varistor voltage

Suppressor diodes

Sparkover voltage of surge arrester

Max. leakage current at  $U_n$  and max.  $T_u$

from terminal 1/3 or 2/3 and 1/2

from terminal 1/3 or 2/3 and 1/2

Interference voltage at output 3/4

with 1000V/ $\mu$ s at input, typ:

Interference voltage at output 3/4

with 8/20  $\mu$ s and 2.5 kA at input:

Dimensions LxWxH (mm)

Details see page 257

#### Ordering data

Type

Cat. No.

Qty.

<b>115 Vac</b>
127 Vac
<b>1.25 A</b>
1 $\Omega$
35 $\mu$ H
1.5 nF
500 kHz / 240 $\Omega$
90 V 10 kA
150 Vac
130 Vac
< 600 V
max 10 $\mu$ A
220 V
max 360 V
91 x 6 x 63.2
MCZ OVP CL 115Vuc 1,2A
115 Vuc 1.25 A
<b>8449060000</b>
10 pieces

<b>115 Vac</b>
127 Vac
<b>1.25 A</b>
1 $\Omega$
35 $\mu$ H
1.5 nF
500 kHz / 240 $\Omega$
90 V 10 kA
150 Vac
130 Vac
< 600 V
max 10 $\mu$ A
max 360 V
91 x 6 x 63.2
MCZ OVP SL 115Vuc 1,2A
115 Vuc 1.25 A
<b>8449070000</b>
10 pieces

<b>230 Vac</b>
250 V ac / 320 V dc
<b>1.25 A</b>
1 $\Omega$
35 $\mu$ H
1.5 nF
500 kHz / 240 $\Omega$
90V 10 kA
275 Vac
265 Vac
< 600 V
max 10 $\mu$ A
420 V
max 710 V
91 x 12 x 63.2
MCZ OVP CL 230Vuc 1,2A
230 Vuc 1.25 A
<b>8449080000</b>
10 pieces

<b>230 Vac</b>
250 V ac / 320 V dc
<b>1.25 A</b>
1 $\Omega$
35 $\mu$ H
1.5 nF
500 kHz / 240 $\Omega$
90V 10 kA
275 Vac
265 Vac
< 600 V
max 10 $\mu$ A
420 V
max 710 V
91 x 12 x 63.2
MCZ OVP SL 230Vuc 1,2A
230 Vuc 1.25 A
<b>8449090000</b>
10 pieces

\* A fuse equivalent to the rated current of the MCZ OVP must be installed.

# Overvoltage Protection

## MCZ OVP

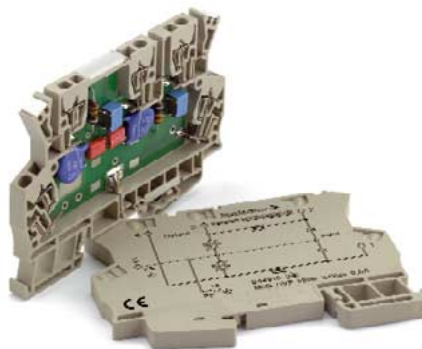
Filter 24 Vuc 0.5 A

Slim overvoltage protection terminals with additional PE contacts to the mounting rail

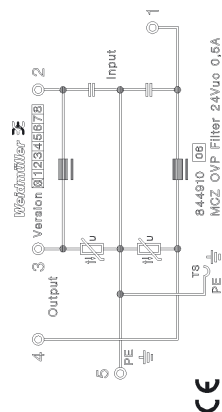
## MCZ OVP

Filter for signal cables

24 V 0.5A



### Circuit diagrams



### Technical data

#### Rated voltage

Max. operating voltage

#### Max. operating current

Capacitance of four-pole network 1/2

Limit frequency at

50 Ohm/ -3dB at  $R_L = 240 \text{ Ohm}$ , typ.

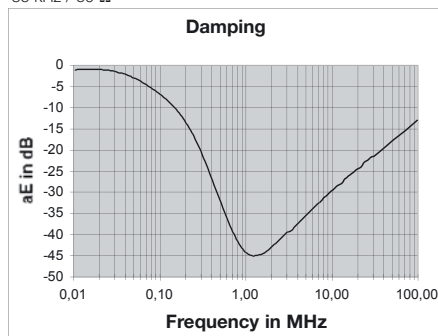
**24 Vac**

26.4 Vac

**0.5 A**

15 nF

35 kHz / 50  $\Omega$



Dimensions LxWxH (mm)

Details see page 257

91 x 12 x 63.2

### Ordering data

Type

Cat. No.

Qty.

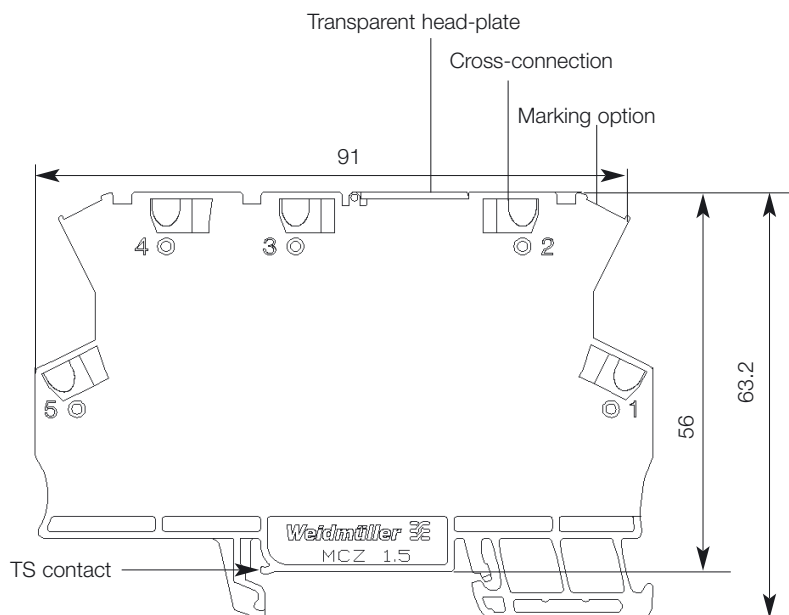
MCZ OVP Filter 0.5 A

**8449100000**

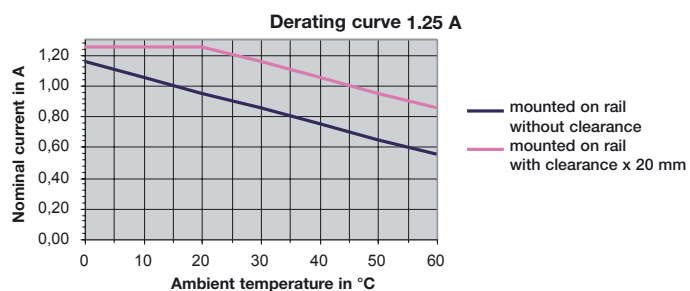
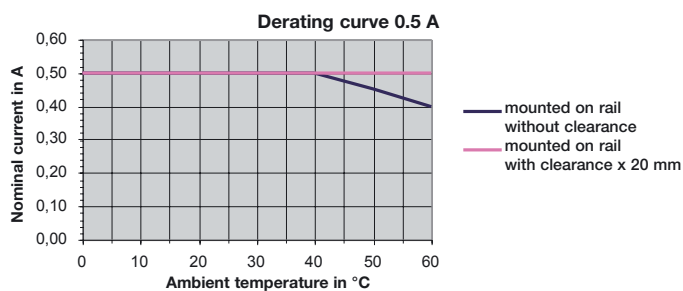
10 pieces

# Overvoltage Protection

## MCZ ovp Dimensions and accessories



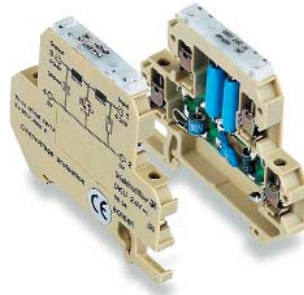
End plate	Type	Cat. No.
	AP MCZ 1.5	8389030000
	Frame	2224240000
Cross-connection		
	ZQV 4 2-pole	1608950000
	ZQV 4 3-pole	1608960000
	ZQV 4 4-pole	1608970000
	ZQV 4 5-pole	1608980000
	ZQV 4 6-pole	1608990000
	ZQV 4 7-pole	1609000000
	ZQV 4 9-pole	1609020000
	ZQV 4 10-pole	1609030000
Protective conductor terminals		
W - series		
	WPE 2.5	1010000000
	WPE 4	1010100000
	WPE 6	1010200000
	WPE 10	1010300000
Z - series		
	ZPE 2.5	1608640000
	ZPE 4	1632080000
	ZPE 6	1608670000



# Fine Overvoltage Protection

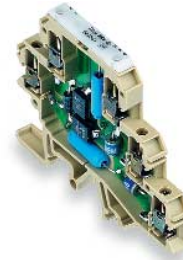
## DKU

with combination circuitry



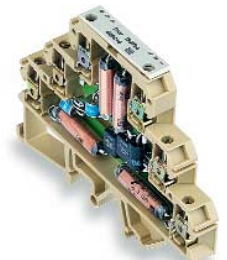
## DK 5 U

for current loops in MSR circuits

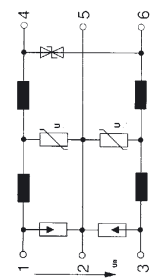
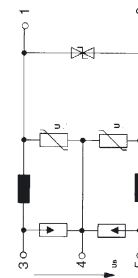
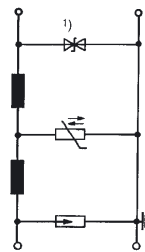


## DK 6 U

for current loops in supply systems



### Circuit diagram



### Ordering data

Type	Cat. No.
DKU, 24 V~/32	<b>8015800000</b>
DKU, 24 V~/35	<b>8015810000</b>

Type	Cat. No.
DKU, 48 V0/32	<b>8019280000</b>
DKU, 48 V0/35	<b>8019290000</b>

Type	Cat. No.
DK 5 U 24Vdc	<b>8238340000</b>
DK 6 U 120 V0	<b>8262480000</b>

### VDE rated data

Rated voltage	24 V~
Max. operating voltage (U <sub>B</sub> )	28 V~
Through resistance, typ.	3 Ω
Max. operating current	0.3 A
Limit frequency (-3 dB/load resistance)*	500 kHz/240 Ω
Leakage current, max. (8/20 μs)	5 kA
DC sparkover voltage of the gas discharger	90 V
Impulse sparkover voltage (1 kV/μs) of the gas discharger, typ.	700 V
Interference voltage output side, at input 1 kV/μs, typ.	35 V
Storage temperature	-25 °C...+85 °C
Operating temperature	-25 °C...+60 °C
Overall width	6 mm

Rated voltage	48 V0
Max. operating voltage (U <sub>B</sub> )	75 V~/54 V~
Through resistance, typ.	3 Ω
Max. operating current	0.3 A
Limit frequency (-3 dB/load resistance)*	1 MHz/480 Ω
Leakage current, max. (8/20 μs)	5 kA
DC sparkover voltage of the gas discharger	230 V
Impulse sparkover voltage (1 kV/μs) of the gas discharger, typ.	700 V
Interference voltage output side, at input 1 kV/μs, typ.	82 V
Storage temperature	-25 °C...+85 °C
Operating temperature	-25 °C...+60 °C
Overall width	6 mm

Rated voltage	24 V~
Max. operating voltage (U <sub>B</sub> )	28 V~
Through resistance, typ.	< 3 Ω (per circuit)
Max. operating current	0.3 A
Limit frequency (-3 dB/load resistance)*	400 kHz/240 Ω
Leakage current, max. (8/20 μs)	5 kA
DC sparkover voltage of the gas discharger	90 V
Impulse sparkover voltage (1 kV/μs) of the gas discharger, typ.	600 V
Interference voltage output side, at input 1 kV/μs, typ.	30 V
Storage temperature	-25 °C...+85 °C
Operating temperature	-25 °C...+60 °C
Overall width	6 mm

### Ordering data

Type	Cat. No.
DKU, 115 V0/32	<b>8019300000</b>
DKU, 115 V0/35	<b>8019310000</b>

Type	Cat. No.
DKU, 230 V0/32	<b>8019320000</b>
DKU, 230 V0/35	<b>8019330000</b>

Type	Cat. No.
DK 5 U 48 V0	<b>8262470000</b>
DK 6 U 230 V0	<b>8263760000</b>

### VDE rated data

Rated voltage	115 V0
Max. operating voltage (U <sub>B</sub> )	170 V~/122 V~
Through resistance, typ.	3 Ω
Max. operating current	0.3 A
Limit frequency (-3 dB/load resistance)*	1 MHz
Leakage current, max. (8/20 μs)	5 kA
DC spark overvoltage of the gas discharger	230 V
Impulse sparkover voltage (1 kV/μs) of the gas discharger, typ.	700 V
Interference voltage output side, at input 1 kV/μs, typ.	180 V
Storage temperature	-25 °C...+85 °C
Operating temperature	-25 °C...+60 °C
Overall width	6 mm
Details see page 278	

Rated voltage	230 V0
Max. operating voltage (U <sub>B</sub> )	320 V~/240 V~
Through resistance, typ.	3 Ω
Max. operating current	0.3 A
Limit frequency (-3 dB/load resistance)*	1 MHz/2.2 kΩ
Leakage current, max. (8/20 μs)	20 kA
DC spark overvoltage of the gas discharger	600 V
Impulse sparkover voltage (1 kV/μs) of the gas discharger, typ.	700 V
Interference voltage output side, at input 1 kV/μs, typ.	400 V
Storage temperature	-25 °C...+85 °C
Operating temperature	-25 °C...+60 °C
Overall width	12 mm

Rated voltage	48 V0
Max. operating voltage (U <sub>B</sub> )	54 V~/75 V~
Through resistance, typ.	< 3 Ω (per circuit)
Max. operating current	0.3 A
Limit frequency (-3 dB/load resistance)*	400 kHz/240 Ω
Leakage current, max. (8/20 μs)	5 kA
DC spark overvoltage of the gas discharger	230 V
Impulse sparkover voltage (1 kV/μs) of the gas discharger, typ.	600 V
Interference voltage output side, at input 1 kV/μs, typ.	82 V
Storage temperature	-25 °C...+85 °C
Operating temperature	-25 °C...+60 °C
Overall width	6 mm

### Accessories

Type	Cat. No.
End plate	<b>0687560000</b>

Type	Cat. No.
AP	<b>0687560000</b>

Type	Cat. No.
AP	<b>8268870000</b>
AP	<b>8324560000</b>

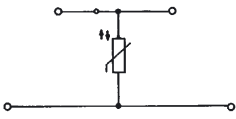
\* Source impedance 50 Ω

A fuse equivalent to the rated current of the DK 5/6 U must be installed, e.g. ASK 1 (Cat.-No. **0474360000**), Fuse 5 x 20 0.1 A (F) (Cat.-No. **0430300000**), 5 x 20 (F) (**0430700000**).



# Overvoltage Protection in Terminal Design

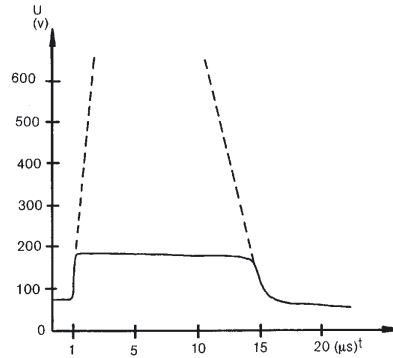
with varistor  
in terminal design



## Varistors

Metal-oxide varistors are used as varistors. These are approved for the maximum sinusoidal operating AC voltage indicated on the component. Any voltage exceeding the indicated voltage is safely discharged. Varistors can be used for medium to large ratings.

### DK 4 U S 20 K 130



### Rated data DK 4U

Max. operating voltage at varistor

Max. energy and impulse current at an impulse on 8/20 μs

Max. energy and impulse current at 10000 impulses after 8/20 μs

Max. varistor voltage at 10 A

Max. varistor voltage at 1 mA

Type	$U_{eff}$ V	$U-$ V	Energy J	Impulse A	Energy J	Impulse A	Leak. current V	V	Capacity pF	Cat. No. TS 32	TS 35	
S 14	11	14	1.6	1000	0.07	75	36	18	18000	on request	9401400000	
	14	18	2.0	1000	0.08	75	42	22	15000	9401010000	on request	
	17	22	2.7	1000	0.11	75	52	27	10000	9401020000	on request	
	20	26	3.3	1000	0.13	75	65	33	7500	9401030000	9401430000	
	25	31	3.7	1000	0.15	75	75	39	6500	9401040000	9401440000	
	Preferred types 24 V	30	38	4.4	1000	0.17	75	90	5500	9401050000	9401450000	
	35	45	5.2	1000	0.23	75	110	56	4500	on request	on request	
	40	56	6.8	1000	0.27	75	125	68	3300	9401070000	9401470000	
	Preferred types 48 V	50	65	27.0	4500	0.6	150	135	82	2900	9401080000	9401480000
	60	85	30.0	4500	0.7	150	155	100	2400	9401090000	9401490000	
Preferred types 115 V	75	100	38.0	4500	0.8	150	185	120	1900	9401100000	9401500000	
95	125	45.0	4500	1.0	150	230	150	1500	on request	on request		
130	170	55.0	4500	1.3	150	315	205	1000	9401120000	9401520000		
140	180	60.0	4500	1.5	150	330	220	1000	on request	on request		
150	200	65.0	4500	1.5	150	350	240	900	on request	9401540000		
175	225	68.0	4500	1.6	150	420	270	750	on request	on request		
230	300	85.0	4500	2.1	150	560	360	550	on request	9401560000		
250	320	92.0	4500	2.4	150	610	390	500	on request	9401570000		
Preferred types 230 V	275	350	100.0	6500	2.5	190	660	430	450	9401180000	9401580000	
300	385	10.0	6500	2.6	190	740	470	400	9401190000	9401590000		
S 20	11	14	3.0	2000	0.12	125	32	18	37000	On request	On request	
	14	18	4.0	2000	0.15	125	38	22	30000	On request	On request	
	17	22	5.6	2000	0.19	125	48	27	22000	On request	9401620000	
	20	26	6.6	2000	0.24	125	60	33	17000	On request	9401630000	
	25	31	7.8	2000	0.28	125	70	39	15000	9401240000	9401640000	
	Preferred types 24 V	30	38	9.0	2000	0.35	125	85	13000	9401250000	9401650000	
	35	45	10.8	2000	0.40	125	100	56	11000	On request	On request	
	40	56	14.0	2000	0.48	125	120	68	7000	9401270000	On request	
	Preferred types 48 V	50	65	36.0	6500	0.5	190	120	5500	On request	9401680000	
	60	85	45.0	6500	0.7	190	150	100	4800	On request	9401690000	
Preferred types 115 V	75	100	55.0	6500	0.8	190	180	3800	On request	On request		
95	125	65.0	6500	1.0	190	220	150	3000	On request	On request		
130	170	80.0	6500	1.4	190	300	205	2000	9401320000	9401720000		
140	180	90.0	6500	1.5	190	320	220	2000	9401330000	9401730000		
150	200	95.0	6500	1.6	190	340	240	1800	On request	9401740000		
175	225	10.0	6500	1.8	190	390	270	1600	On request	On request		
230	300	30.0	6500	2.4	190	550	360	1200	9401360000	9401760000		
250	320	40.0	6500	2.7	190	600	390	1000	9401370000	9401770000		
Preferred types 230 V	275	350	50.0	8000	2.9	300	640	900	9401380000	9401780000		
300	385	60.0	8000	3.0	300	700	470	900	On request	9401790000		

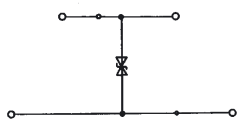
Overall width 12 mm, dimensions see page 278



## Overvoltage Protection

### DK 4 U

with Gas discharger  
or suppression diode



### Gas discharge tube

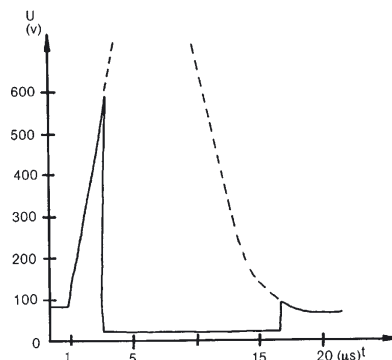
The so-called gas discharge tube consists of two electrodes spaced a defined distance apart, enclosed in a small glass or ceramic tube. Between the electrodes is an inert gas at a defined pressure. A voltage surge which has a rise time of 1 kV/μs and reaches a peak of 10 kV can be limited to 600...700 V. The gas filled space changes from high resistance to low resistance. This process depends on the surge of the overvoltage and the rated DC pull-in voltage.

The rated DC pull-in voltage is printed on the side of the gas discharge tube. Once the gas is ignited a typical arcing voltage of 10 to 30 V is produced across the component. The ionisation of the gas causes the discharger to become low resistive, allowing a high follow current to flow. Suitable measures must be taken to limit the follow current, for example, by fusing.

### Suppression diodes

Suppression diodes work on a similar principle to conventional zener diodes. If the indicated breakdown voltage is exceeded, the diode conducts. Compared to zener diodes, suppression diodes have a higher current carrying capacity and faster response times in the ps range.

### DK 4 U gas discharger 5 kA, 90 V



### Rated data DK 4U

Type	Rated DC sparkover voltage	Tolerance %	Impulse sparkover voltage at 1 kV/μs	Maximum rated voltage	U <sub>eff</sub> V	U- V	Capacity pF	Cat. No. TS 32	TS 35	
2.5 kA (8/20 μs)	Preferred types 24 V	90 -	±25	< 600	35	50	≈1	9400000000	On request	
		150 -	±15	< 600	60	90	≈1	On request	94001100000	
	Preferred types 48 V	230 -	±20	< 650	95	135	≈1	94000200000	94001200000	
		350 -	±20	< 700	145	210	≈1	On request	On request	
	5 kA (8/20 μs)	Preferred types 24 V	90 -	±25	< 600	35	50	≈2	94002000000	94003000000
			150 -	±15	< 600	60	90	≈2		On request
Preferred types 48 V		230 -	±15	< 650	95	135	≈2	94004000000	94005000000	
		150 -	±15	< 600	60	90	≈2	94004100000	94005100000	
20 kA (8/20 μs)		Preferred types 24 V	90 -	±25	< 600	35	50	≈2	94004000000	94005000000
			150 -	±15	< 600	60	90	≈2	94004100000	94005100000
	Preferred types 48 V	230 -	±15	< 650	95	135	≈2	94004200000	On request	
		470 -	±15	<1000	200	280	≈2	94004400000	94005400000	
	Preferred types 115 V	600 -	±15	<1000	255	360	≈2	94004500000	94005500000	
		Preferred types 230 V								
DK 4 U with suppression diode	20 -	±10	< 60	-	28	≈3000		80169500000	80169600000	
	480 -	±10	< 146	53	74	≈1400		80169700000	80169800000	
	1150 -	±10	< 300	135	178	≈700		80169900000	80170000000	
	2300 -	±10	< 700	320	240	≈400		80170100000	80170200000	
WDK 2.5 V with suppression diode	240 -	±10	< 60	33 V	28 V	≈3000			81327600000	
	24 -	±10	< 60		30 V	≈3000			82691200000	

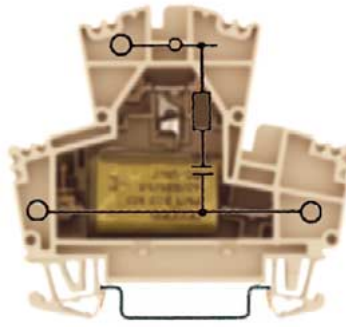
# Terminal Blocks

## with electronic components (other versions on request)



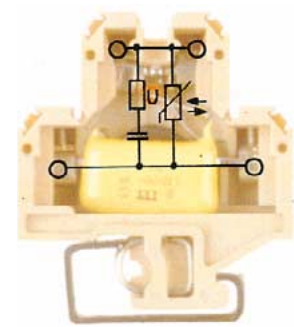
## DK 4 RC

Arc suppression circuit for contactors and solenoid valves (AC)  
Suppressor module for opto-coupler inputs



## DK 4 RC-VRS

Arc suppression circuit  
for contactors and solenoid valves (AC)



Dimensions DK 4/WDK 2.5	
Terminal width (+ fitting tolerance 0.2)	18 mm
Insulation stripping length	9 mm

Connection data	
Screw connection, flexible	DK 4
Screw connection, flexible	WDK 2.5
Wire cross-section	DK 4
Wire cross-section	WDK 2.5

VDE rated data	
Voltage	250 V~/300 V-
Diode current	-
Diode reverse voltage	-
Current of through busbar	10 A

Approvals	
Operating temperature range	-
Diode	-
Resistance	220 Ω
Capacitor	0.22 μF
Varistor (max. operating voltage)	-
Gas discharger (rated DC spark over voltage)	-
max. leakage current (standard wave 8/20 μs)	-

Ordering data	
Type	DK 4 RC
Cat. No.	for TS 32 <b>0692160000</b>
Type	DK 4 RC/35
Cat. No.	for TS 35 <b>0053160000</b>
Type	WDK 2.5 RC
Cat. No.	for TS 35 <b>8065910000</b>

Accessories	
Mounting rail (2 m lengths)	TS 32 <b>0122800000</b> - TS 35 <b>0383400000</b> -
End bracket (thickness mm)	EWK 1 (8.5) <b>0206160000</b> 50 EW 35 (8.5) <b>0383560000</b> 50
End plate (thickness mm)	AP PA (1.5) <b>0359260000</b> 20
Small partition	TSch 4 <b>0363360000</b> 100
Socket for test plug	StB 8.5 <b>0215700000</b> 50
Test plug (pin diameter)	PS (ø 2.3) <b>0180400000</b> 20
Cross-connection (pre-assembled)	Q 4 <b>0336600000</b> 50 Q 10 <b>0368600000</b> 20
Cover plate	BSK M 2.5 x 18 <b>0303300000</b> 100
Fixing screw (plastic)	QB 2 <sup>1)</sup> <b>0482700000</b> 100
Cross-connection bridge	QB 3 <sup>1)</sup> <b>0482800000</b> 50 QB 4 <sup>1)</sup> <b>0482900000</b> 50 QB 75 blank <b>0526400000</b> 10
Insulation profile	IP <b>0526700000</b> -
	StB 8.5 <b>0215700000</b> 50

18 mm
9 mm

0.5...4 mm <sup>2</sup>
AWG 22...12
-

250 V~/300 V-
-
10 A

-
220 Ω
0.22 μF
-
-
-

DK 4 RC
<b>0692160000</b>
DK 4 RC/35
<b>0053160000</b>
WDK 2.5 RC
<b>8065910000</b>

Type	Cat. No.	Qty.
TS 32	<b>0122800000</b>	-
TS 35	<b>0383400000</b>	-
EWK 1 (8.5)	<b>0206160000</b>	50
EW 35 (8.5)	<b>0383560000</b>	50
AP PA (1.5)	<b>0359260000</b>	20
TSch 4	<b>0363360000</b>	100
StB 8.5	<b>0215700000</b>	50
PS (ø 2.3)	<b>0180400000</b>	20
Q 4	<b>0336600000</b>	50
Q 10	<b>0368600000</b>	20
BSK M 2.5 x 18	<b>0303300000</b>	100
QB 2 <sup>1)</sup>	<b>0482700000</b>	100
QB 3 <sup>1)</sup>	<b>0482800000</b>	50
QB 4 <sup>1)</sup>	<b>0482900000</b>	50
QB 75 blank	<b>0526400000</b>	10
IP	<b>0526700000</b>	-
StB 8.5	<b>0215700000</b>	50

18 mm
9 mm

0.5...4 mm <sup>2</sup>
AWG 22...12
-

250 V~/300 V-
-
10 A

-
220 Ω
0.22 μF
-
-
-

DK 4 RC-VRS	DK 4 RC-VRS
<b>9401860000</b>	<b>9401960000</b>
DK 4 RC-VRS/35	DK 4 RC-VRS/35
<b>9402260000</b>	<b>9402360000</b>

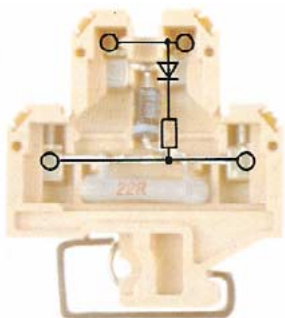
Type	Cat. No.	Qty.
TS 32	<b>0122800000</b>	-
TS 35	<b>0383400000</b>	-
EWK 1 (8.5)	<b>0206160000</b>	50
EW 35 (8.5)	<b>0383560000</b>	50
AP PA (1.5)	<b>0359260000</b>	20
TSch 4	<b>0363360000</b>	100
StB 8.5	<b>0215700000</b>	50
PS (ø 2.3)	<b>0180400000</b>	20
Q 4	<b>0336600000</b>	50
Q 10	<b>0368600000</b>	20
BSK M 2.5 x 18	<b>0303300000</b>	100
QB 2 <sup>1)</sup>	<b>0482700000</b>	100
QB 3 <sup>1)</sup>	<b>0482800000</b>	50
QB 4 <sup>1)</sup>	<b>0482900000</b>	50
QB 75 blank	<b>0526400000</b>	10
IP	<b>0526700000</b>	-

<sup>1)</sup> When using QB: wire connection max. 2.5 mm<sup>2</sup>

## Feed-through Terminals

### DK 4 RD

Arc suppression circuit  
for contactors and solenoid valves (AC)



12 mm
9 mm
0.5...4 mm <sup>2</sup>
AWG 22...12
3 A
1300 V
10 A
BY 255
22 Ohm (4 W)
DK 4 RD
<b>0150260000</b>
DK 4 RD/35
<b>0059160000</b>

Type	Cat. No.	Qty.
TS 32	<b>0122800000</b>	—
TS 35	<b>0383400000</b>	—
EWK 1 (8.5)	<b>0206160000</b>	50
EW 35 (8.5)	<b>0383560000</b>	50
AP PA (1.5)	<b>0359260000</b>	20
TSch 4	<b>0363360000</b>	100
StB 8.5	<b>0215700000</b>	50
PS (ø 2.3)	<b>0180400000</b>	20
Q 3	<b>0336500000</b>	50
Q 4	<b>0336600000</b>	50
Q 10	<b>0368600000</b>	20
AD 4 (4 terminals)	<b>0303400000</b>	50
BSK M 2.5 x 18	<b>0303300000</b>	100
QB 2 <sup>1)</sup>	<b>0482700000</b>	100
QB 3 <sup>1)</sup>	<b>0482800000</b>	50
QB 4 <sup>1)</sup>	<b>0482900000</b>	50
QB 75 blank	<b>0526400000</b>	10
IP	<b>0526700000</b>	—

### for retrofitting electronic components

### WPO 4



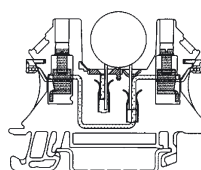
Dimensions		
Width/length/height (mm)	with TS 32 v	—
Width/length/height (mm)	with TS 35x7.5 v	6/60/47
Insulation stripping length/clamping screw		9 mm/M 3
Rated data		
Rated voltage/current/cross-section		250 V/32 A/4 mm <sup>2</sup>
Rated impulse voltage VDE 0110/1.89/pollution severity		4 kV/3
Further technical data		
Tightening torque range	Nm	0.5...1.0
Torque setting with DMS2 electric screwdriver		2
Clampable wires		
„e“ solid HO7V-U mm <sup>2</sup>		0.5...4
„m“ stranded HO7V-R	mm <sup>2</sup>	1.5...4
„f“ flexible HO7V-K	mm <sup>2</sup>	0.5...4
„f“ flexible HO7V-K and AEH DIN 46228/1	mm <sup>2</sup>	0.5...4
„f“ flexible HO7V-K and AEH with plastic collar	mm <sup>2</sup>	0.5...4
Gauge pin to 947-1	Size	A 3
Continuous current rating of terminal for wire size		32 A/4 mm <sup>2</sup>
Wire diameter of electrical components	mm	0.8...1.0 mm
UL/CSA rated data		
Voltage/current/wire size	UL	
	CSA	
Ordering data		
Type		Cat. No. Qty.
Wemid		<b>1036000000</b> 50
Intermediate frame		
Thickness 1.5 mm		Type Cat. No. Qty.
		ZR <b>1071100000</b> 20
Busbar		
		SSch 7.3x1.2 <b>1071200000</b> 1 m
Varistors		
for 24 V		S14k30 <b>4127830000</b>
for 230 V		S14k275 <b>4011070000</b>
Gas discharger		
for 90 V		90 V 20 kA <b>4233030000</b>
for 600 V		600 V 20 kA <b>4140810000</b>



### Busbar

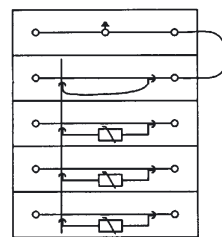
### Varistors

for 24 V	S14k30	<b>4127830000</b>
for 230 V	S14k275	<b>4011070000</b>
for 90 V	90 V 20 kA	<b>4233030000</b>
for 600 V	600 V 20 kA	<b>4140810000</b>



WOP 4 with a plug in varistor  
Weidmüller varistor terminals have been designed to allow the retrofitting of electronics components, e. g., varistors, diodes, gas discharge tubes, etc. These electronic terminals no longer have to be configured prior to installation to subsequently be delivered with soldered components which can no longer be distinguished. The significant advantages of this new design are:

- Cost saving:
- Components can be changed quickly on site
- Service is limited to visual inspection
- Clarity:
- Components are easy to distinguish
- Flexibility:
- Components can immediately be adapted to changed conditions



Overvoltages in a three-phase supply discharged to earth via WPE with the aid of varistors and a gas discharge tube.

Marking tags	Print	
Consecutive horizontal		FW 6 <b>046866....</b>
Consecutive vertical		FS 6 <b>047356....</b>

# Fine Overvoltage Protection

## EGU 1 50 mA

e. g. for binary signals

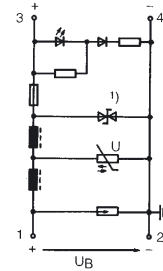
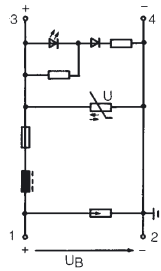


## EGU 2 50 mA

e. g. for binary signals



### Circuit diagram



### Ordering data

Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
EGU 1, 24 V0	0243960000	EGU 1, 48 V0	0244460000	EGU 2, 24 V0	0223060000	EGU 2, 48 V0	0226560000

### Technical data

	EGU 1, 24 V0	EGU 1, 48 V0	EGU 2, 24 V0	EGU 2, 48 V0
Rated voltage	24 V0	48 V0	24 V-	48 V0
Max. operating voltage ( $U_B$ )	38 V-/30 V~	85 V-/60 V~	28 V-	88 V-/55 V~
Through resistance	28 $\Omega$	28 $\Omega$	50 $\Omega$	50 $\Omega$
Max. operating current	50 mA	50 mA	50 mA	50 mA
Fuse	F 63 mA	F 63 mA	F 63 mA	F 63 mA
Limit frequency (-3 dB/load resistance)*	20 kHz/500 $\Omega$	40 kHz/1 k $\Omega$	10 kHz/500 $\Omega$	20 kHz/1 k $\Omega$
Leakage current, max. (8/20 $\mu$ s)	5 kA	5 kA	5 kA	5 kA
DC sparkover voltage of the gas discharger	90 V	230 V	90 V	230 V
Impulse sparkover voltage (1 kV/ $\mu$ s) of the gas discharger, typ.	700 V	700 V	700 V	700 V
Interference voltage output side, with input 1 kV/ $\mu$ s, typ.	55 V	130 V	35 V	82 V
Storage temperature	-25 °C...+85 °C	-25 °C...+85 °C	-25 °C...+85 °C	-25 °C...+85 °C
Operating temperature	-25 °C...+60 °C	-25 °C...+60 °C	-25 °C...+60 °C	-25 °C...+60 °C

### Ordering data

Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
EGU 1, 115 V0	0240560000	EGU 1, 230 V0	0245060000	EGU 2, 115 V0	0226660000	EGU 2, 230 V0	0223260000

### Technical data

	EGU 1, 115 V0	EGU 1, 230 V0	EGU 2, 115 V0	EGU 2, 230 V0
Rated voltage	115 V0	230 V0	115 V0	230 V0
Max. operating voltage ( $U_B$ )	170 V-/130 V~	320 V-/250 V~	170 V-/130 V~	320 V-/250 V~
Through resistance	28 $\Omega$	28 $\Omega$	30 $\Omega$	30 $\Omega$
Max. operating current	50 mA	50 mA	50 mA	50 mA
Fuse	F 63 mA	F 63 mA	F 63 mA	F 63 mA
Limit frequency (-3 dB/load resistance)*	88 kHz/2.2 k $\Omega$	150 kHz/4.5 k $\Omega$	88 kHz/2.2 k $\Omega$	150 kHz/4.5 k $\Omega$
Leakage current, max. (8/20 $\mu$ s)	5 kA	20 kA	5 kA	20 kA
DC sparkover voltage of the gas discharger	230 V	600 V	230 V	600 V
Impulse sparkover voltage (1 kV/ $\mu$ s) of the gas discharger, typ.	700 V	700 V	700 V	700 V
Interference voltage output side, with input 1 kV/ $\mu$ s, typ.	180 V	300 V	200 V	350 V
Storage temperature	-25 °C...+85 °C	-25 °C...+85 °C	-25 °C...+85 °C	-25 °C...+85 °C
Operating temperature	-25 °C...+60 °C	-25 °C...+60 °C	-25 °C...+60 °C	-25 °C...+60 °C

### Accessories

Accessories, dimensions and connection data	Page 279	Page 279	Page 279	Page 279
see	Page 279	Page 279	Page 279	Page 279

\* Source impedance 50  $\Omega$

## Fine Overvoltage Protection

### EGU 2 1.5 A

e. g. for power supply



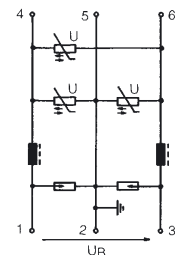
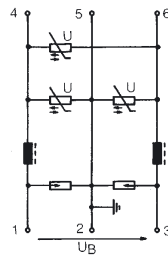
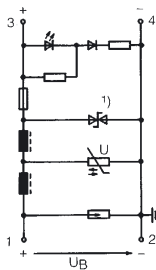
### EGU 3 50 mA

e. g. for current loops



### EGU 3 1.5 A

e. g. for power supply



Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
EGU 2, 24 V0	<b>9310830000</b>	EGU 2, 48 V0	<b>1170160000</b>	EGU 3, 24 V0	<b>0250560000</b>	EGU 3, 48 V0	<b>0250660000</b>	EGU 3, 24 V0	<b>1186760000</b>	EGU 3, 48 V0	<b>1186960000</b>
24 V~		48 V0		24 V0		48 V0		24 V0		48 V0	
31 V~		77 V~/54 V~		38 V~/30 V~		85 V~/60 V~		38 V~/30 V~		82 V~/58 V~	
0.2 Ω		0.2 Ω		18 Ω		18 Ω		0.1 Ω		0.1 Ω	
1.5 A		1.5 A		50 mA		50 mA		1.5 A		1.5 A	
1.6 A		1.6 A		-		-		-		-	
500 kHz/16 Ω		1 MHz/32 Ω		10 kHz/500 Ω		20 kHz/1 kΩ		300 kHz/16 Ω		400 kHz/32 Ω	
5 kA		5 kA		5 kA		5 kA		5 kA		5 kA	
90 V		230 V		90 V		230 V		90 V		230 V	
700 V		700 V		700 V		700 V		700 V		700 V	
33 V		82 V		55 V		130 V		85 V		145 V	
-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C	
-25 °C...+40 °C		-25 °C...+40 °C		-25 °C...+60 °C		-25 °C...+60 °C		-25 °C...+60 °C		-25 °C...+60 °C	
EGU 2, 115 V0	<b>9311520000</b>	EGU 2, 230 V0	<b>9311530000</b>	EGU 3, 115 V0	<b>0250760000</b>	EGU 3, 230 V0	<b>0250860000</b>	EGU 3, 115 V0	<b>1186860000</b>	EGU 3, 230 V0	<b>1187060000</b>
115 V0		230 V0		115 V0		230 V0		115 V0		230 V0	
170 V~/130 V~		320 V~/250 V~		170 V~/130 V~		320 V~/250 V~		170 V~/130 V~		315 V~/240 V~	
0.2 Ω		0.2 Ω		18 Ω		18 Ω		0.1 Ω		0.1 Ω	
1.5 A		1.5 A		50 mA		50 mA		1.5 A		1.5 A	
1.6 A		1.6 A		-		-		-		-	
1.5 MHz/70 Ω		2 MHz/150 Ω		44 kHz/2.2 kΩ		75 kHz/4.5 kΩ		550 kHz/70 Ω		800 kHz/150 Ω	
5 kA		20 kA		5 kA		20 kA		5 kA		20 kA	
230 V		600 V		230 V		600 V		230 V		600 V	
700 V		700 V		700 V		700 V		700 V		700 V	
180 V		400 V		180 V		300 V		320 V		580 V	
-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C	
-25 °C...+60 °C		-25 °C...+60 °C		-25 °C...+60 °C		-25 °C...+60 °C		-25 °C...+60 °C		-25 °C...+60 °C	

1) 24 V DC model with unipolar Transzorp diode

# Fine Overvoltage Protection

## EGU 4 0.1 A

e. g. for current loops

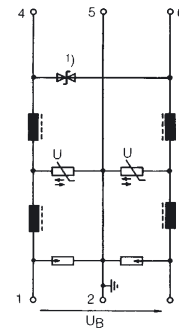
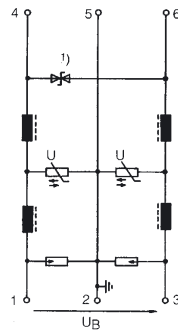


## EGU 4 1.5 A

e. g. for power supply



### Circuit diagram



### Ordering data

Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
EGU 4, 24 V0	<b>0459460000</b>	EGU 4, 48 V0	<b>0461860000</b>	EGU 4, 24 V0	<b>1170960000</b>	EGU 4, 48 V0	<b>1171060000</b>

### Technical data

Rated voltage	24 V-	48 V0	24 V0	48 V0
Max. operating voltage ( $U_B$ )	28 V-	88 V-/55 V-	34 V-/26.5 V-	75 V-/53 V-
Through resistance	22 $\Omega$	22 $\Omega$	0.1 $\Omega$	0.1 $\Omega$
Max. operating current	100 mA	100 mA	1.5 A	1.5 A
Limit frequency (-3 dB/load resistance)*	5 kHz/240 $\Omega$	10 kHz/480 $\Omega$	250 kHz/16 $\Omega$	500 kHz/32 $\Omega$
Leakage current, max. (8/20 $\mu$ s)	5 kA	5 kA	5 kA	5 kA
DC sparkover voltage of the gas discharger	90 V	230 V	90 V	230 V
Impulse sparkover voltage (1 kV/ $\mu$ s) of the gas discharger, typ.	700 V	700 V	700 V	700 V
Interference voltage output side, with input 1 kV/ $\mu$ s, typ.	33 V	82 V	42 V	83 V
Storage temperature	-25 °C...+85 °C	-25 °C...+85 °C	-25 °C...+85 °C	-25 °C...+85 °C
Operating temperature	-25 °C...+60 °C	-25 °C...+60 °C	-25 °C...+50 °C	-25 °C...+50 °C

### Ordering data

Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
EGU 4, 115 V0	<b>0461960000</b>	EGU 4, 230 V0	<b>0462060000</b>	EGU 4, 115 V0	<b>1171160000</b>	EGU 4, 230 V0	<b>1171260000</b>

### Technical data

Rated voltage	115 V0	230 V0	115 V0	230 V0
Max. operating voltage ( $U_B$ )	170 V-/130 V-	320 V-/250 V-	170 V-/122 V-	300 V-/250 V-
Through resistance	22 $\Omega$	22 $\Omega$	0.1 $\Omega$	0.1 $\Omega$
Max. operating current	100 mA	100 mA	1.5 A	1.5 A
Limit frequency (-3 dB/load resistance)*	20 kHz/1.2 k $\Omega$	40 kHz/2.2 k $\Omega$	800 kHz/70 k $\Omega$	1 MHz/150 k $\Omega$
Leakage current, max. (8/20 $\mu$ s)	5 kA	20 kA	5 kA	20 kA
DC sparkover voltage of the gas discharger	230 V	600 V	230 V	600 V
Impulse sparkover voltage (1 kV/ $\mu$ s) of the gas discharger, typ.	700 V	700 V	700 V	700 V
Interference voltage output side, with input 1 kV/ $\mu$ s, typ.	200 V	350 V	190 V	400 V
Storage temperature	-25 °C...+85 °C	-25 °C...+85 °C	-25 °C...+85 °C	-25 °C...+85 °C
Operating temperature	-25 °C...+60 °C	-25 °C...+60 °C	-25 °C...+50 °C	-25 °C...+50 °C

### Accessories

Accessories, dimensions and connection data				
see	Page 279	Page 279	Page 279	Page 279

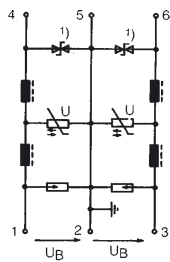
\* Source impedance 50  $\Omega$

1) 24 V DC model with unipolar Transzorp diode

## Fine Overvoltage Protection

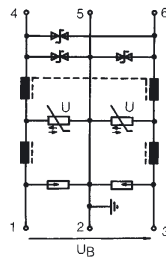
### EGU 4 0.1 A

e. g. for symmetric loads



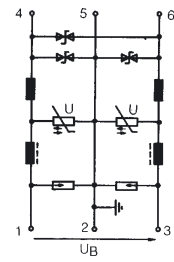
### RS U 6 A

e. g. for power supply



### RS U 10 A

e. g. for power supply



Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
EGU 4, 24 V0	<b>1170560000</b>	EGU 4, 48 V0	<b>1170660000</b>	RS U, 24 V0	<b>1171361001</b>	RS U, 48 V0	<b>1171461001</b>	RS U, 24 V0	<b>8104201001</b>	RS U, 48 V0	<b>8025371001</b>
24 V~		48 V0		24 V0		48 V0		24 V0		48 V0	
31 V~		75 V~/54 V~		34 V~/26.5 V~		77 V~/54 V~		34 V~/26 V~		77 V~/54 V~	
12 Ω		12 Ω		0.08 Ω		0.08 Ω		0.04 Ω		0.04 Ω	
100 mA		100 mA		6 A		6 A		10 A		10 A	
10 kHz/240 Ω		20 kHz/480 Ω		8 kHz/4 Ω		10 kHz/8 Ω		-		-	
5 kA		5 kA		20 kA		20 kA		20 kA		20 kA	
90 V		230 V		90 V		230 V		90 V		90 V	
700 V		700 V		700 V		700 V		700 V		700 V	
33 V		82 V		40 V		80 V		45 V		85 V	
-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C	
-25 °C...+50 °C		-25 °C...+50 °C		-25 °C...+40 °C		-25 °C...+40 °C		-25 °C...+40 °C		-25 °C...+40 °C	
EGU 4, 115 V0	<b>1170760000</b>	EGU 4, 230 V0	<b>1170860000</b>	RS U, 115 V0	<b>1171561001</b>	RS U, 230 V0	<b>1171661001</b>	RS U, 115 V0	<b>8104221001</b>	RS U, 230 V0	<b>8093281001</b>
115 V0		230 V0		115 V0		230 V0		115 V0		230 V0	
170 V~/130 V~		320 V~/250 V~		170 V~/130 V~		320 V~/250 V~		170 V~/130 V~		320 V~/250 V~	
12 Ω		12 Ω		0.08 Ω		0.08 Ω		0.04 Ω		0.04 Ω	
100 mA		100 mA		6 A		6 A		10 A		10 A	
40 kHz/1.2 kΩ		80 kHz/2.2 kΩ		30 kHz/20 Ω		90 kHz/40 Ω		-		-	
5 kA		20 kA		20 kA		20 kA		20 kA		20 kA	
230 V		600 V		230 V		600 V		230 V		600 V	
700 V		700 V		700 V		700 V		700 V		700 V	
230 V		420 V		200 V		420 V		220 V		450 V	
-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+70 °C		-25 °C...+70 °C		-25 °C...+70 °C		-25 °C...+70 °C	
-25 °C...+50 °C		-25 °C...+50 °C		-25 °C...+40 °C		-25 °C...+40 °C		-25 °C...+40 °C		-25 °C...+40 °C	

1) 24 V DC model with unipolar Transzorp diode



# Fine Overvoltage Protection

## pluggable

### LPU 4 0.1 A

e. g. for current loops



SEG/U

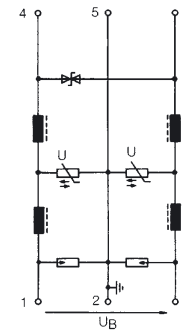
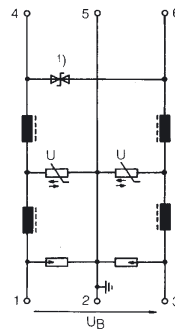
### LPU 1.5 A

e. g. for current loops



SEG/U

#### Circuit diagram



Ordering data	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
	LPU, 24 V0	8008300000	LPU, 48 V0	8008330000	LPU, 24 V0	8008430000	LPU, 48 V0	8008440000
<b>Technical data</b>								
Rated voltage	24 V-		48 V0		24 V0		48 V0	
Max. operating voltage ( $U_B$ )	29 V-		74 V-/53 V-		34 V-/27 V-		74 V-/53 V-	
Through resistance	12.5 $\Omega$		12.5 $\Omega$		0.15 $\Omega$		0.15 $\Omega$	
Max. operating current	0.1 A		0.1 A		1.5 A		1.5 A	
Limit frequency (-3 dB/load resistance)*	7.5 kHz/240 $\Omega$		9 kHz/480 $\Omega$		150 kHz/16 $\Omega$		300 kHz/32 $\Omega$	
Leakage current, max. (8/20 $\mu$ s)	5 kA		5 kA		5 kA		5 kA	
DC sparkover voltage of the gas discharger	90 V		230 V		90 V		230 V	
Impulse sparkover voltage (1 kV/ $\mu$ s) of the gas discharger, typ.	700 V		700 V		700 V		700 V	
Interference voltage output side, with input 1 kV/ $\mu$ s, typ.	34 V		82 V		42 V		82 V	
Storage temperature	-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C	
Operating temperature	-25 °C...+60 °C		-25 °C...+60 °C		-25 °C...+50 °C		-25 °C...+50 °C	
Weight								
<b>Ordering data</b>	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
	LPU, 115 V0	8008350000	LPU, 230 V0	8008380000	LPU, 115 V0	8008450000	LPU, 230 V0	8008460000
<b>Technical data</b>								
Rated voltage	115 V0		230 V0		115 V0		230 V0	
Max. operating voltage ( $U_B$ )	170 V-/125 V-		320 V-/240 V-		170 V-/125 V-		320 V-/240 V-	
Through resistance	12.5 $\Omega$		12.5 $\Omega$		0.15 $\Omega$		0.15 $\Omega$	
Max. operating current	0.1 A		0.1 A		1.5 A		1.5 A	
Limit frequency (-3 dB/load resistance)*	9 kHz/1.1 k $\Omega$		40 kHz/2.2 k $\Omega$		600 kHz/70 k $\Omega$		1 MHz/150 k $\Omega$	
Leakage current, max. (8/20 $\mu$ s)	5 kA		20 kA		5 kA		20 kA	
DC sparkover voltage of the gas discharger	230 V		600 V		230 V		600 V	
Impulse sparkover voltage (1 kV/ $\mu$ s) of the gas discharger, typ.	700 V		700 V		700 V		700 V	
Interference voltage output side, with input 1 kV/ $\mu$ s, typ.	180 V		400 V		180 V		400 V	
Storage temperature	-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C	
Operating temperature	-25 °C...+60 °C		-25 °C...+60 °C		-25 °C...+50 °C		-25 °C...+50 °C	
<b>Accessories</b>	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
Housing	SEG/U	8007871001	SEG/U	8007871001	SEG/U	8007871001	SEG/U	8007871001
Details see page 280								

\* Source impedance 50  $\Omega$

1) 24 V DC model with unipolar Transzorp diode

## Fine Overvoltage Protection

### LPU 0.1 A

e. g. for symmetric loads



### SEG/U

### LPU 0.1 A

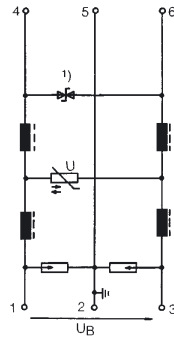
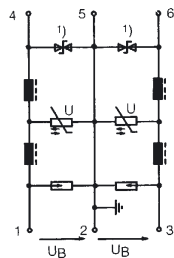
e. g. unearthed signal lines



### SEG/U

### TGU

Test case for LPU overvoltage protection



#### LPU test case:

The built-in protective elements in the LPU, such as gas-filled surge arresters, varistors and diodes, are tested for rated data and permissible tolerance ranges, and the reactors for continuity. The test results can be protocolled via two-coloured LEDs or a built-in printer. The test case runs a self-test when turned on. Electrical testing of the LPU occurs automatically after plugging in the LPU overvoltage protector.

Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
LPU, 24 V0	<b>8008230000</b>	LPU, 48 V0	<b>8008250000</b>	LPU, 24 V0	<b>8008390000</b>	LPU, 48 V0	<b>8008400000</b>	TGU	<b>on request</b>
24 V~		48 V0		24 V~		48 V0		230/115 V~	
29 V~		74 V~/53 V~		29 V~		74 V~/53 V~			
12.5 Ω		12.5 Ω		12.5 Ω		12.5 Ω			
0.1 A		0.1 A		0.1 A		0.1 A			
7.5 kHz/240 Ω		17 kHz/480 Ω		7.5 kHz/240 Ω		9 kHz/480 Ω			
5 kA		5 kA		5 kA		5 kA			
90 V		230 V		90 V		230 V			
700 V		700 V		700 V		700 V			
35 V		83 V		35 V		82 V			
-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C			
-25 °C...+60 °C		-25 °C...+60 °C		-25 °C...+60 °C		-25 °C...+60 °C		0...40 °C	
								10 kg	
Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.		
LPU, 115 V0	<b>8008260000</b>	LPU, 230 V0	<b>8008280000</b>	LPU, 115 V0	<b>8008410000</b>	LPU, 230 V0	<b>8008420000</b>		
115 V0		230 V0		115 V0		230 V0			
170 V~/125 V~		320 V~/240 V~		170 V~/125 V~		320 V~/240 V~			
12.5 Ω		12.5 Ω		12.5 Ω		12.5 Ω			
0.1 A		0.1 A		0.1 A		0.1 A			
40 kHz/1.1 kΩ		80 kHz/2.2 kΩ		20 kHz/1.1 kΩ		40 kHz/2.2 kΩ			
5 kA		20 kA		5 kA		20 kA			
230 V		600 V		230 V		600 V			
700 V		700 V		700 V		700 V			
180 V		400 V		180 V		400 V			
-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C		-25 °C...+85 °C			
-25 °C...+60 °C		-25 °C...+60 °C		-25 °C...+60 °C		-25 °C...+60 °C			
Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.		
SEG/U	<b>8007871001</b>	SEG/U	<b>8007871001</b>	SEG/U	<b>8007871001</b>	SEG/U	<b>8007871001</b>		

1) 24 V DC model with unipolar Transzorp diode

# Overvoltage Protection for Data Lines

## LPU RS 485

for data interfaces  
to RS 485 or RS 422

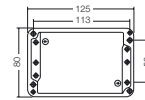


## RS 485

for modulink

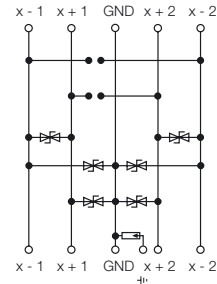
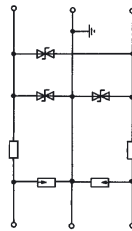


### Circuit diagram/function



approx. 25 mm PG cable  
gland

optional sol-  
derring jumper  
for T branch



### VDE rated data

Rated voltage	± 6 V	±12 V
Through resistance	0.1 Ω	negligably small
Max. operating voltage (U <sub>B</sub> )	± 12 V	±12 V
Max. operating current	1.5 A	-
Max. frequency	-	-
Limit frequency (-3 dB/load resistance)	-	-
Leakage current, max. (8/20 μs)	0.5 kA	10 kA
DC sparkover voltage of the gas discharger	90 V	90 V
Impulse sparkover voltage (1 kV/μs) of the gas discharger	-	-
Interference voltage output side, with input 1 kV/μs	≤ 18 V	≤18 V
Baud rate	≤ 9600 Bd	≤ 6 MB
Response time	≤ 5 ns	≤5 ns
Storage temperature	-25 °C...+85 °C	-25 °C...+85 °C
Operating temperature	-25 °C...+60 °C	-25 °C...+60 °C

### Ordering data

	Type	Cat. No.	Type	Cat. No.
	LPU RS 485	9454930000	RS 485	8008501001
Accessories	SEG-U	8007871001		

## Fine Overvoltage Protection For Data Lines

### EGU 4, RS 232

for RS 232 interfaces



### ZS-RS 232

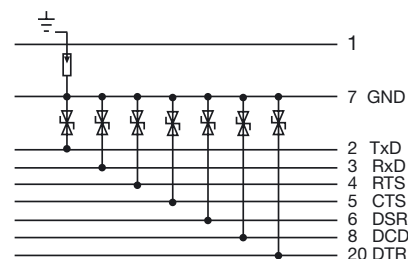
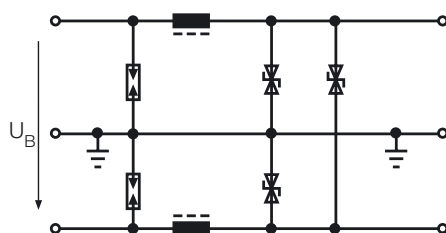
RS 232 interface adapter



#### Circuit diagram/function

Two stage close overvoltage protection, two data lines, R x D, T x D are protected against earth. The fine overvoltage protection modules mount onto TS 35 or TS 32 mounting rails. The module can be fit on any vertical or horizontal surface by replacing the locking foot with a mounting plate.

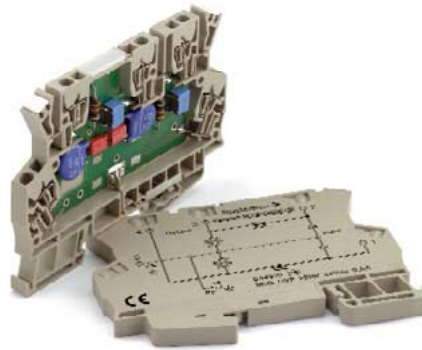
The ZS-RS 232 adapter is used for fine overvoltage protection between RS 232 interfaces and programmable controllers. These highly sensitive systems are particularly susceptible to interference. This protection module can be used with a maximum cable length of 15 metres.



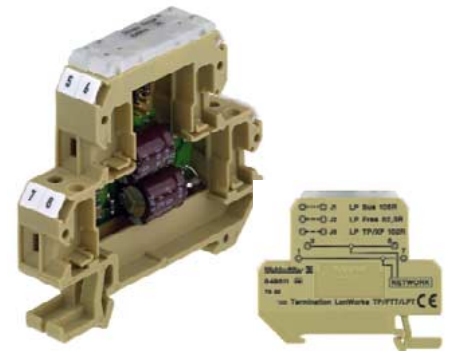
VDE rated data		Ordering data	
Rated voltage	12...14.5 V	Type	Cat. No.
Through resistance	1.3 Ω	EGU 4, RS 232	1170460000
Max. operating voltage ( $U_B$ )	50 V	MPL (mounting plate)	0158560000
Max. operating current	0.05 A	Type	Cat. No.
Max. frequency		ZS-RS 232/B-S*	8570500000
Limit frequency (-3 dB/load resistance)	300 kHz/600 Ω	ZS-RS 232/S-B*	8570510000
Leakage current, max. (8/20 μs)	5 kA	<b>*ZS-RS 232/B-S:</b>	
DC sparkover voltage of the gas discharger	90 V	Cable side 25-pole Sub-D socket → unprotected	
Impulse sparkover voltage (1 kV/μs) of the gas discharger	700 V	<b>*ZS-RS 232/S-B:</b>	
Interference voltage output side, with input 1 kV/μs	20 V	Cable side 25-pole Sub-D plug → unprotected	
Baud rate	9600 Bd		
Response time	≤ 5 ns		
Storage temperature	-25 °C...+85 °C		
Operating temperature	-25 °C...+60 °C		
Dimensions	-		

# Overvoltage Protection for LonWorks®

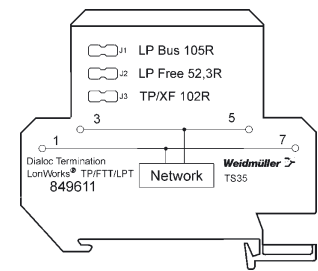
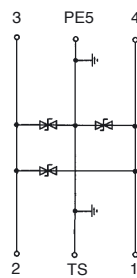
## MCZ ovp LON LPT / FTT / TP 78



## LON Termination LPT / FTT / TP 78



### Circuit diagram



### Ordering data

Type	Cat. No.
MCZ ovp LON	8473470000

Type	Cat. No.
Dialoc Term	8496110000

### Technical data

Rated voltage	± 12V
Through resistance 2/3 and 1/4	< 0.5Ω
Damping, typ.	< 5 db


Rated voltage	± 12V
Through resistance 2/3 and 1/4	< 0.5Ω
Damping, typ.	< 5 db

# Overvoltage Protection

Mains filter  
in the WAVEBOX

**WAVEFILTER**  
250V 1A



**WAVEFILTER**  
250V 3A



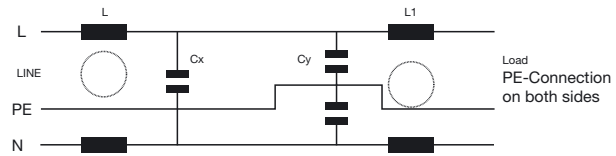
**WAVEFILTER**  
250V 6A



**WAVEFILTER**  
250V 10A



Circuit diagram



**Ordering data**

Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
Wavefilter 250V 1A	<b>8614790000</b>	Wavefilter 250V 3A	<b>8614780000</b>	Wavefilter 250V 6A	<b>8614800000</b>	Wavefilter 250V 10A	<b>8614770000</b>

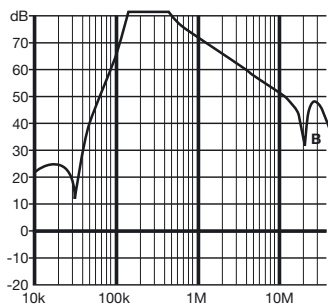
**Technical data**

Mains voltage	250 V 50/60Hz	250 V 50/60Hz	250 V 50/60Hz	250 V 50/60Hz
Rated current	1 A	3 A	6 A	10 A
Capacity	Cx 1*33 nF Cy 2*2.2 nF	Cx 1*33 nF Cy 2*2.2 nF	Cx 1*33 nF Cy 2*2.2 nF	Cx 1*33 nF Cy 2*2.2 nF
Inductor L and L1	10 mH	2 mH	0.8 mH	0.8 mH
Leakage current	190 µA	190 µA	190 µA	190 µA
Test voltage PN-PE	2000 Vac	2000 Vac	2000 Vac	2000 Vac
Test voltage P-N	1700 Vdc	1700 Vdc	1700 Vdc	1700 Vdc
Temperature range	-20 °C...+40 °C	-20 °C...+40 °C	-20 °C...+40 °C	-20 °C...+40 °C
Dimensions in mm	72 x 93 x 22.5	72 x 93 x 22.5	93 x 113 x 22.5	93 x 113 x 22.5

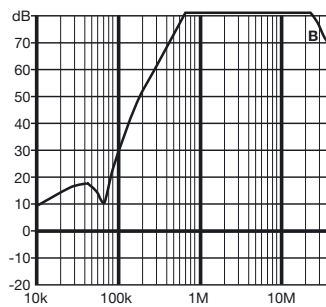
**Insertion loss**

Measurement according to CISPR 17      B = 50Ω/50Ω asymm.

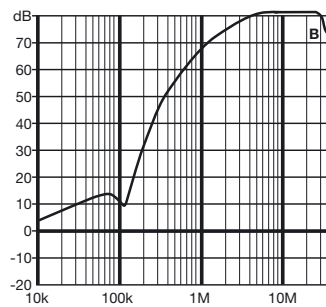
**1 A WAVEFILTER**



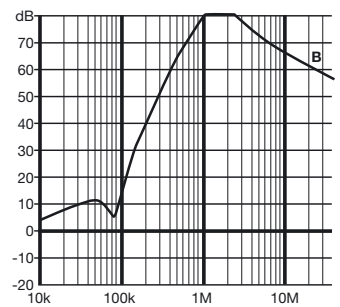
**3 A WAVEFILTER**



**6 A WAVEFILTER**



**10 A WAVEFILTER**



## Technical rules for flammable liquids

### TRbF

#### Extract from TRbF 100

#### Requirements:

1. Buildings containing above-ground installations (subject to special permission) for the storage, filling or transportation of flammable liquids, as well as outdoor tanks above and below ground which are not enclosed on all sides by soil, brickwork or concrete or several of these materials, must be protected by the provision of suitable apparatus against ignition hazards and lightning (for example, in accordance with DIN VDE 0185 Parts 1 and 2).
2. Section 1 also applies to outdoor tanks above ground, which are used for the storage of flammable liquids of the danger classes A I, A II or B in one area.
3. For intrinsically safe circuits, which are used, for example, for operating instrumentation and control systems, whose cables are routed into the tank, applicable are independent of Sections 1 and 2 and over and above.
  - for outdoor tanks below ground\*),
  - for tanks in buildings susceptible to lightning strikes due to the cable routing (also remote lightning strikes\*).

#### the demands resulting thereof:

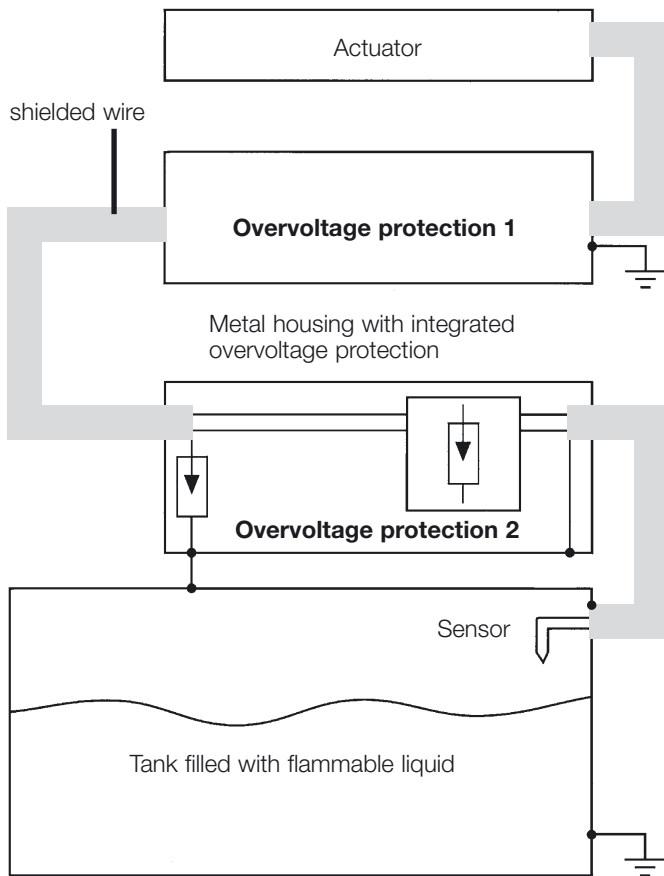
1. An overvoltage apparatus in a metal housing (for example, terminal box, housing for integrated measuring transducer or similar) must be assembled before the wire is inserted into the tank. The metal housing containing the overvoltage protection apparatus is to be fixed, securely and electrically conductive, immediately to the wall or shielding of the tank in such a manner as to ensure equipotential bonding.
2. A suitable cable/suitable wire\*\* is to be used for the supply wire from the instrument board to the metal housing with the overvoltage protection apparatus; a cable/a suitable wire with metal sheath, shielding or a suitable cable/a suitable wire in a metal conduit is to be used from the overvoltage protection apparatus to the storage tank. The metal sheath, shielding or the conduit must be connected to the equipotential bonding (earth). The test voltage  $U_{eff}$  between the wires and the metal sheath, shielding or conduit of the cable/wire from the metal housing with the overvoltage protection apparatus to the storage tank must be at least 1500 V.
3. The cable/wire between the metal housing with the overvoltage protection apparatus and the entry into the storage tank should be laid so as to ensure that a lightning strike is improbable.

\*) These requirements apply, for example, to level meters or similar measuring devices which are installed in outdoor tanks below ground and from which a cable is routed below ground into a building (e.g. petrol station buildings).

\*\*) In accordance with harmonization documents 21 and 22 CENELEC



# Overvoltage Protection for Intrinsically Safe Circuits



The point **Overvoltage protection 1** is securely earthed!

The overvoltage protection units LPU 800843 24 VAC/DC 1.5 A or LPU 800844 48 VAC/DC 1.5 A are used for this purpose.

This is a plug-in protection unit for use in the SEG-U housing. It can also be fitted in the terminal design:

- DKU 801580
- DKU 801581 24 VDC 0.1 or
- DKU 801928
- DKU 801929 48 VAC/DC 0.1 A

The point **Overvoltage protection 2** is earthed floating - via a gas discharge tube!

Earthing takes place via a gas discharge tube with 470 V from cable to earth (type DK4U 940044 and DK4U 940045).

Overvoltage protection can be installed between the cables, for example: LPU 822524 24 VDC 0.1 A or LPU 822525 48 VDC 0.1 A or overvoltage protection in terminal design: DK4U 940040 or DK4U 940050.

According to TRbF, overvoltage protection 2 must be assembled in a metal housing prior to inserting the cable into the tank. The housings STB 1 and NEXT 26/26/16 are used for this purpose.

These housings are approved for hazardous areas use by BASEEFA EEx e II T6. The housings must be conductively connected to the tank.

## Weidmüller offers a complete solution for this application!

- Metal enclosure with BASEEFA approval EEx e II T6
- Overvoltage protection with PTB approval EEx ia IIB/IIC T4/T6
- Metal enclosure complete with glands and overvoltage protection according to your requirements.

**Physikalisch-Technische Bundesanstalt**

**Prüfungsschein**

PTB Nr. Ex-93.Y.4601 X

Diese Bescheinigung gilt für das elektrische Betriebsmittel Überspannungsfenschutzbaustein Typ DK-... und LPU ... der Firma Weidmüller Interface GmbH & Co. D-4939 Detmold

Die Bauart dieses elektrischen Betriebsmittels sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu diesem Prüfungsschein festgelegt.

Die Physikalisch-Technische Bundesanstalt bescheinigt gemäß DIN VDE 0170/0171 Teil 1 A102 (Mai 1988) für dieses elektrische Betriebsmittel eine Sicherheit, die dem Sicherheitsniveau der harmonisierten Europäischen Normen EN 50 014 ff. entspricht.

**Elektrische Betriebsmittel für explosionsgefährdete Bereiche** mindestens gleichwertig ist, nachdem das Betriebsmittel mit Erfolg einer Bauartprüfung unterzogen wurde. Die Ergebnisse dieser Bauartprüfung sind in einem vertraulichen Prüfprotokoll festgelegt.

Das Betriebsmittel ist mit dem folgenden Kennzeichen zu versehen: **Ex ia IIB T4 und Ex ia IIC T6**

Der Hersteller ist dafür verantwortlich, daß jedes derart gekennzeichnete Betriebsmittel in seiner Bauart mit den in der Anlage zu dieser Bescheinigung aufgeführten Prüfungsunterlagen übereinstimmt und daß die vorgeschriebenen Stückprüfungen erfolgreich durchgeführt wurden.

Dieser Prüfungsschein ist eine Bauartprüfbescheinigung gemäß § 8 der "Verordnung über elektrische Anlagen in explosionsgefährdeten Räumen" (ElektV) vom 27. Februar 1980.

In Auftrag:   
Dr.-Ing. Johannmeyer  
Oberregierungsrat

Braunschweig, 18.03.1993

Prüfungsschein ist ein Dokument für die Dokumentation der Konformität mit den Anforderungen der Europäischen Normen EN 50 014 ff. und EN 50 015 ff. Die Prüfungsscheine sind für die Dokumentation der Konformität mit den Anforderungen der Europäischen Normen EN 50 014 ff. und EN 50 015 ff. zu verwenden.

**Physikalisch-Technische Bundesanstalt**

**ANLAGE**  
zum Prüfungsschein PTB Nr. Ex-93.Y.4601 X

Der Überspannungsfenschutzbaustein Typ DK-... und LPU ... wird in den zu schützenden eigensicheren Stromkreis stellvertretend eingebaut.

**Elektrische Daten**

Versorgungs- und Ausgangs-..... in Zandschutzart Eigensicherheit EEx ia nur zum Anschluß an einen bescheinigten eigensicheren Stromkreis mit folgenden Höchstwerten:

Typ	DKU 801580 DKU 801581	DKU 801928 DKU 801929	DK4U 940044 DK4U 940054	DK4U 940040 DK4U 940150
Kategorie	IIB IIC	IIB IIC	IIB IIC	IIB IIC
U	28 V	60 V	60 V	48 V
I	0,1 A 0,1 A	0,1 A 0,1 A	0,5 A 0,5 A	0,5 A 0,5 A
P	2,8 W	6 W 3 W	6 W 3 W	6 W 3 W
Innere Kapazität	2,5 nF	1 nF	-	-
Innere Induktivität	0,2 mH	0,2 mH	-	-

Typ	LPU 800843	LPU 822524	LPU 822525	LPU 800844
Kategorie	IIB IIC	IIB IIC	IIB IIC	IIB IIC
U	34 V	29 V	16 V 12 V	60 V
I	0,5 A 0,5 A	0,1 A 0,062 A	0,1 A 0,062 A	0,5 A 0,5 A
P	6 W 3 W	2,9 W 2,9 W	1,6 W 0,75 W	6 W 3 W
Innere Kapazität	7,5 nF	6 nF	1,8 nF	3,5 nF
Innere Induktivität	< 0,1 mH	9,5 mH	9,5 mH	< 0,1 mH

Durch den Einbau dieser Betriebsmittel der Typen DK4U 940044 u. DK4U 940054 sowie LPU 822524 u. LPU 822525 in eigensichere Stromkreise, gilt der eigensichere Stromkreis als nicht geändert; durch den Einbau der Typen DKU 801580, DKU 801581 und DKU 801929 sowie DK4U 940040, DK4U 940050 und LPU 800843, LPU 800844 gilt der eigensichere Stromkreis als geändert.

Blatt 1/2

**Physikalisch-Technische Bundesanstalt**

Anlage zum Prüfungsschein PTB Nr. Ex-93.Y.4601 X

Die Potentialausgleichsklemme ist an den Potentialausgleich anzuschließen.

**Prüfungsunterlagen**

1. Beschreibung und Zeichnungen (42 Blatt)
2. Prüfprotokoll

Die Beschreibung und Zeichnungen sind unterschrieben.

**Beurteilung**

Die Gleichwertigkeit der Sicherheit begründet sich dadurch, daß die Anforderungen der Europäischen Norm EN 50 020:1977 + A1...A2 (VDE 0170/0171 Teil 7/1.87) Eigensicherheit "I", bis auf das Schaltverhalten der Ableiter, erfüllt sind.

Die Gleichwertigkeit der Sicherheit wurde durch entsprechende Prüfungen nachgewiesen.

In Auftrag:   
Dr.-Ing. Johannmeyer  
Oberregierungsrat

Braunschweig, 18.03.1993

Blatt 2/2

# Overvoltage Protection for Intrinsically Safe Circuits

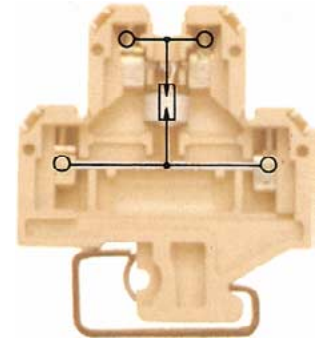
## Overvoltage protection 1

in 6-mm wide terminal design  
terminal design

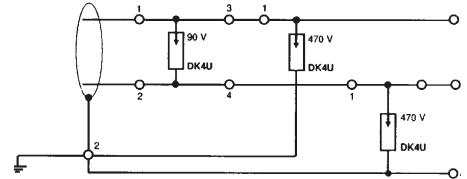
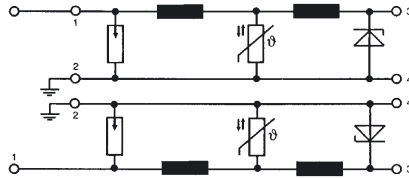


## Overvoltage protection 2

in 12-mm wide terminal design  
with individual components



### Circuit diagram



### Technical data

	24 Vdc	48 Vac/dc	56 Vdc/40 Vac	± 283 Vdc/200 Vac
<b>Rated voltage U1.2</b>	<b>24 Vdc</b>	<b>48 Vac/dc</b>	<b>56 Vdc/40 Vac</b>	<b>± 283 Vdc/200 Vac</b>
<b>Max. permissible voltage U1.2</b>	<b>28 Vdc</b>	<b>75 Vdc/54 Vac</b>	<b>56 Vdc/40 Vac</b>	<b>± 283 Vdc/200 Vac</b>
Through resistance 1,3	3.5 Ω	3.5 Ω	≤ 0.1 Ω	≤ 0.1 Ω
<b>Inductance of four-pole network L1 ≤</b>	<b>170 μH</b>	<b>170 μH</b>	<b>0 mH</b>	<b>0 mH</b>
<b>Capacitance of four-pole network C1 ≤</b>	<b>2.5 nF</b>	<b>1.0 nF</b>	<b>0 μF</b>	<b>0 μF</b>
Source impedance frequency response	(... at R <sub>i</sub> = 240 Ω)	(... at R <sub>i</sub> = 480 Ω)		
at 50 Ω/-3 db at R <sub>i</sub> = ... Ω	500 kHz	1000 kHz		
<b>Max. rated current per path</b>	<b>0.1 A</b>	<b>0.1 A</b>	<b>10 A</b>	<b>10 A</b>
ΔT <sub>U</sub> at 0.1 A and 60 °C ambient temperature	18 K	11 K	typ. 15 K	typ. 15 K
Gas arrester type	90 V 2.5 kA	230 V 2.5 kA	90 V 20 kA	470 V 20 kA
Varistor type	S07 K30	S07 K60		
Suppression diode type	ZP 1033 A 0.6 kW	P 6 KE 82 CP 0.6 kW		
Inductor	2 x 70 μH 0.1 A	2 x 70 μH 0.1 A		
Rated AC discharge current	–	–	25 A	25 A
Terminal material	PA 66	PA 66	PA 66	PA 66
Sparkover voltage of surge arrester				
at 1000 V/μs at input	typ. 700 V	typ. 700 V	typ. 650 V	typ. 1100 V
Interference voltage at output				
at 1000 V/μs at input	typ. 33 V	typ. 82 V		
Interference voltage at output				
at 8/20 μs and 5 kA at input	max. 38 V	max. 100 V		
Max. leakage current at U <sub>N</sub> and max. T <sub>U</sub> from terminal 1 to 2 (PA)	10 μA	10 μA	0 μA	0 μA
Protection class	Safe from finger-touch acc. to DIN VDE 0106 Part 100	Safe from finger-touch acc. to DIN VDE 0106 Part 100	Safe from finger-touch acc. to DIN VDE 0106 Part 100	Safe from finger-touch acc. to DIN VDE 0106 Part 100
Storage temperature	- 25 ... + 85 °C	- 25 ... + 85 °C	- 25 ... + 85 °C	- 25 ... + 85 °C
Operating temperature	- 25 ... + 60 °C	- 25 ... + 50 °C	- 25 ... + 60 °C	- 25 ... + 60 °C
Clamping point	Self-locking screw	Self-locking screw	Self-locking screw	Self-locking screw
Solid	0.5 ... 4 mm <sup>2</sup>	0.5 ... 4 mm <sup>2</sup>	0.5 ... 4 mm <sup>2</sup>	0.5 ... 4 mm <sup>2</sup>
Flexible	0.5 ... 4 mm <sup>2</sup>	0.5 ... 4 mm <sup>2</sup>	0.5 ... 4 mm <sup>2</sup>	0.5 ... 4 mm <sup>2</sup>
<b>Approvals</b>	<b>Ex ia IIC/IIB T6/T4 PTB No. Ex-93.Y.4601 X</b>	<b>Ex ia IIC/IIB T6/T4 PTB No. Ex-93.Y.4601 X</b>	<b>Ex ia IIC/IIB T6/T4 PTB No. Ex-93.Y.4601 X</b>	<b>Ex ia IIC/IIB T6/T4 PTB No. Ex-93.Y.4601 X</b>

### Ordering data

Type	Cat. No.	Type	Cat. No.	Type	Cat. No.	Type	Cat. No.
DKU 24 Vdc	<b>8015800000</b>	DKU 48 Vac/dc	<b>8019280000</b>	DK4U 48 Vdc	<b>9400400000*</b>	DK4U 110 Vdc	<b>9400440000*</b>
<b>0.1 A TS 32</b>		<b>0.1 A TS 32</b>		<b>TS 32</b>		<b>TS 32</b>	
DKU 24 Vdc	<b>8015810000</b>	DKU 48 Vac/dc	<b>8019290000</b>	DK4U 48 Vdc	<b>9400500000*</b>	DK4U 110 Vdc	<b>9400540000*</b>
<b>0.1 A TS 35</b>		<b>0.1 A TS 35</b>		<b>TS 32</b>		<b>TS 35</b>	

### Accessories

STB and NEXT component housing	see housing catalogue	see housing catalogue	see housing catalogue	see housing catalogue
Details see page 278				

# Overvoltage Protection for Intrinsically Safe Circuits

## Overvoltage protection 1

for 20 mm wide  
SEG/U housing

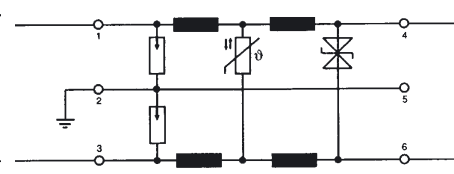
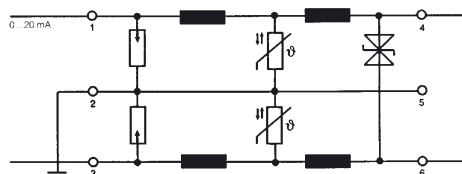


## Overvoltage protection 2

for 20 mm wide  
SEG/U housing



### Circuit diagram



### Technical data

	24 Vac/dc	48 Vac/dc	24 Vac/dc	48 Vac/dc
<b>Rated voltage U1.3</b>	24 Vac/dc	48 Vac/dc	24 Vac/dc	48 Vac/dc
<b>Rated voltage U1.2 and U2.3</b>	34 Vdc/27 Vac	74 Vdc/53 Vac	29 Vdc	74 Vdc/53 Vac
Max. permissible voltage U <sub>1,3</sub>	31 Vdc/25 Vac	81 Vdc/59 Vac	200 Vac/283 Vdc	200 Vac/283 Vdc
Max. permissible voltage U <sub>1,2</sub> and U <sub>2,3</sub>	0.15 Ω	0.15 Ω	13 Ω	13 Ω
Through resistance 1, 4 and 2, 6	<b>75 μH</b>	<b>75 μH</b>	<b>9.5 mH</b>	<b>9.5 mH</b>
<b>Inductance of four-pole network LI ≤</b>	<b>7.5 nF</b>	<b>3.5 nF</b>	<b>6.0 nF</b>	<b>1.8 μF</b>
<b>Capacitance of four-pole network CI ≤</b>	(... at R <sub>I</sub> = 16 Ω)	(... at R <sub>I</sub> = 32 Ω)	(... at R <sub>I</sub> = 240 Ω)	(... at R <sub>I</sub> = 480 Ω)
Source impedance frequency response at 50 Ω/-3 db at R <sub>I</sub> = ... Ω	150 kHz	300 kHz	4.5 kHz	9 kHz
Max. rated current per path	<b>1.5 A</b>	<b>1.5 A</b>	<b>0.1 A</b>	<b>0.1 A</b>
ΔT <sub>ij</sub> at 1.5 A <sub>eff</sub> and 50 °C ambient temperature	32 K	32 K	25 K	25 K
60 °C ambient temperature				
Gas arrester type	2 x 90 V 5 kA	230 V 5 kA	2 x 470 V 5 kA	2 x 470 V 5 kA
Varistor type	2 x S10 K25	2 x S10 K60	S10 K25	S10 K60
Suppression diode type	CP 2039 A 1.5 kW	P 6 KE 82 CA 0.6 kW	ZP 1033 A 0.6 kW	P 6 KE 82 CA 0.6 kW
Inductor	4 x 15 μH 1.5 A	4 x 15 μH 1.5 A	4 x 2 mH 0.1 A	4 x 2 mH 0.1 A
Location cover material	PA 66	PA 66	PA 66	PA 66
Sparkover voltage of surge arrester at 1000 V/μs at input	typ. 700 V	typ. 700 V	typ. 800 V	typ. 800 V
Interference voltage at output 4, 6 at 1000 V/μs at input	typ. 39 V	typ. 82 V	typ. 33 V	typ. 82 V
Interference voltage at output 4, 6 at 8/20 μs and 5 kA at input	max. 65 V	max. 115 V	max. 38 V	max. 90 V
Max. leakage current at U <sub>n</sub> and max. T <sub>u</sub> from terminal 1, 3 to 2 (PA) ...from terminals 1 to 3	10 μA	10 μA	0 μA	0 μA
Protection class	Safe from finger-touch acc. to DIN VDE 0106 Part 100	Safe from finger-touch acc. to DIN VDE 0106 Part 100	Safe from finger-touch acc. to DIN VDE 0106 Part 100	Safe from finger-touch acc. to DIN VDE 0106 Part 100
Storage temperature	- 25 ... + 85 °C	- 25 ... + 85 °C	- 25 ... + 85 °C	- 25 ... + 85 °C
Operating temperature	- 25 ... + 50 °C	- 25 ... + 50 °C	- 25 ... + 60 °C	- 25 ... + 60 °C
Clamping point	Self-locking screw	Self-locking screw	Self-locking screw	Self-locking screw
Solid	0.5 ... 4 mm <sup>2</sup>	0.5 ... 4 mm <sup>2</sup>	0.5 ... 4 mm <sup>2</sup>	0.5 ... 4 mm <sup>2</sup>
Flexible	0.5 ... 4 mm <sup>2</sup>	0.5 ... 4 mm <sup>2</sup>	0.5 ... 4 mm <sup>2</sup>	0.5 ... 4 mm <sup>2</sup>
<b>Approvals</b>	<b>Ex ia IIC/IIB T6/T4 PTB No. Ex-93.Y.4601 X</b>	<b>Ex ia IIC/IIB T6/T4 PTB No. Ex-93.Y.4601 X</b>	<b>Ex ia IIC/IIB T6/T4 PTB No. Ex-93.Y.4601 X</b>	<b>Ex ia IIC/IIB T6/T4 PTB No. Ex-93.Y.4601 X</b>
<b>Ordering data</b>	Type Cat. No. LPU 24 V ac/dc <b>8008430000</b> 1.5 A current loops	Type Cat. No. LPU 48 V ac/dc <b>8008440000</b> 1.5 A current loops	Type Cat. No. LPU 24 V dc <b>8225240000</b> 0.1 A unearthed	Type Cat. No. LPU 48 V ac/dc <b>8225250000</b> 0.1 A unearthed

### Accessories

STB and NEXT component housing	see housing catalogue	see housing catalogue
Housing	<b>SEG/U</b>	<b>8007871001</b>
Screw terminals	LP system	LP system
Solid	0.5 ... 4 mm <sup>2</sup>	0.5 ... 4 mm <sup>2</sup>
Flexible	0.5 ... 2.5 mm <sup>2</sup>	0.5 ... 2.5 mm <sup>2</sup>

Details see page 280

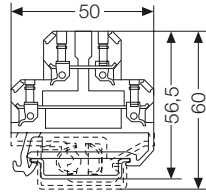
# Fine Overvoltage Protection

## Housing dimensions

**DKU**  
**EGU**  
**RSU**

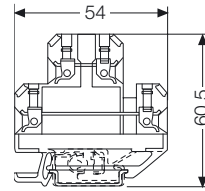
### DK 4 U

Varistor  
Gas discharge tube

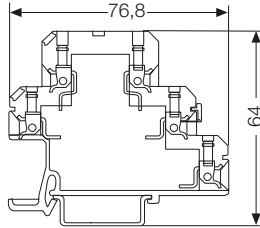


### DK 4 U

with suppression diodes

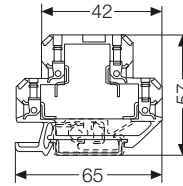


### DK 5 U

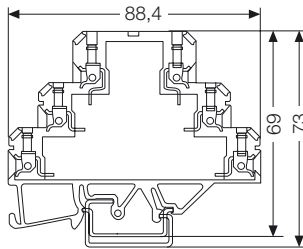


### DKU

with combination unit



### DK 6 U



Technical data	DK 4 U	DK 5 U	DK 6 U	DK 4 U	DKU
Terminal width (+ fitting tolerance 0.2 mm)	24 V/48 V/115 V    230 V				24 V/48 V/115 V    230 V
Insulation stripping length	6 mm                  12 mm	6 mm                  8 mm		6 mm	6 mm                  12 mm
Screw connection, solid	0.5...4 mm <sup>2</sup>				
Screw connection, flexible	0.5...4 mm <sup>2</sup>				
Connection cross-section	AWG 20...12				
Accessories	Type	Cat. No.	Type	Cat. No.	
Mounting rail	TS 32	<b>0122800000</b>	TS 32	<b>0122800000</b>	
	TS 35 x 7.5	<b>0383400000</b>	TS 35 x 7.5	<b>0383400000</b>	
	TS 35 x 15	<b>0498000000</b>	TS 35 x 15	<b>0498000000</b>	
End bracket	EWK 2 (TS 32)	<b>0199360000</b>	EWK 2 (TS 32)	<b>0199360000</b>	
	EWK 35 (TS 35)	<b>0199360000</b>	EWK 35 (TS 35)	<b>0199360000</b>	
	AP (for <b>DK 4 U</b> )	<b>0359260000</b>	AP (for <b>DK 4 U</b> )	<b>0687560000</b>	
End plate	AP (for <b>DK 5 U</b> )	<b>4036780000</b>	AP (for <b>DKU</b> )	<b>0687560000</b>	
	AP (for <b>DK 6 U</b> )	<b>4042030000</b>			
Marking material*	<b>dekafix 5</b>		<b>dekafix 5</b>		

\* Special prospect available on request

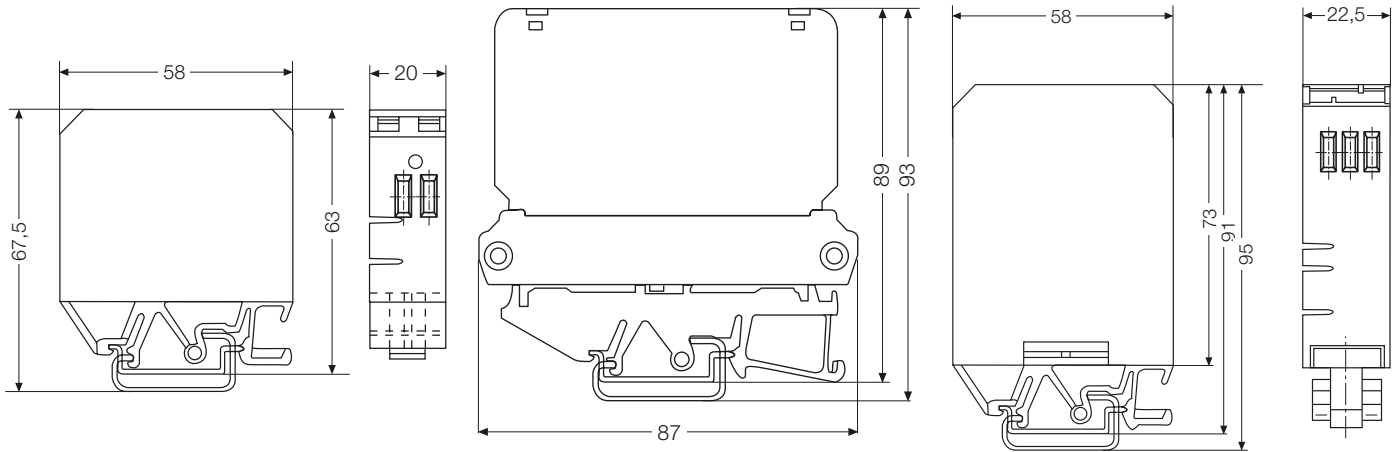
## Fine Overvoltage Protection

EGU 1/EGU 2

RSU, 6 A

10 A

EGU 3, EGU 4



### EGU 1 / EGU 2

20 mm
12 mm
0.5...6 mm <sup>2</sup>
0.5...4 mm <sup>2</sup>
AWG 20...12

Type	Cat. No.
TS 32	0122800000
TS 35 x 7.5	0383400000
TS 35 x 15	0498000000
EWK 2 (TS 32)	0199360000
EWK 35 (TS 35)	0199360000
<b>dekafix 5</b>	

### RSU, 6 A

81 mm
7 mm
0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>
AWG 26...14

Type	Cat. No.
TS 32	0122800000
TS 35 x 7.5	0383400000
TS 35 x 15	0498000000
EWK 2 (TS 32)	0199360000
EWK 35 (TS 35)	0199360000
<b>dekafix 5</b>	

### 10 A

### EGU 3 / EGU 4

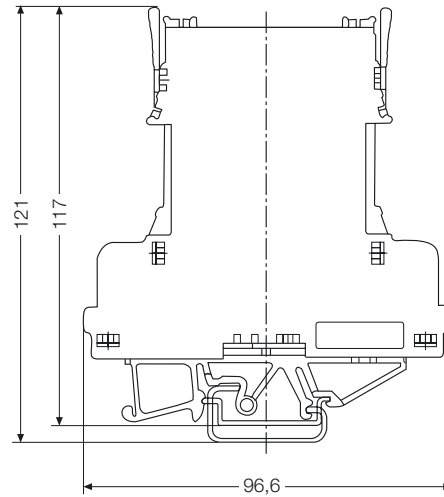
22.5 mm
7 mm
0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>
AWG 22...12

Type	Cat. No.
TS 32	0122800000
TS 35 x 7.5	0383400000
TS 35 x 15	0498000000
EWK 2 (TS 32)	0199360000
EWK 35 (TS 35)	0199360000
<b>dekafix 5</b>	

# Fine Overvoltage Protection

SEG-U/LPU  
EGF

SEG-U/LPU



## Technical data

Terminal width (+ fitting tolerance 0.2 mm)	20 mm
Insulation stripping length	7 mm
Screw connection, solid	0.5...4 mm <sup>2</sup>
Screw connection, flexible	0.5...2.5 mm <sup>2</sup>
Connection cross-section	AWG 26...14

## Accessories

	Type	Cat. No.
Mounting rail	TS 32	<b>0122800000</b>
	TS 35 x 7.5	<b>0383400000</b>
	TS 35 x 15	<b>0498000000</b>
End bracket	EWK 2 (TS 32)	<b>0199360000</b>
	EWK 35 (TS 35)	<b>0199360000</b>
Marking material*	<b>dekafix 5</b>	

\* Special catalogue available on request





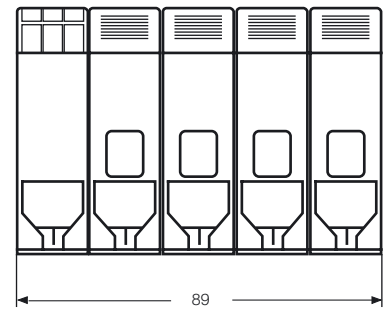
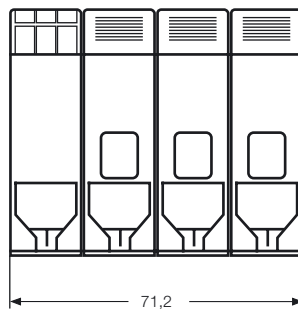
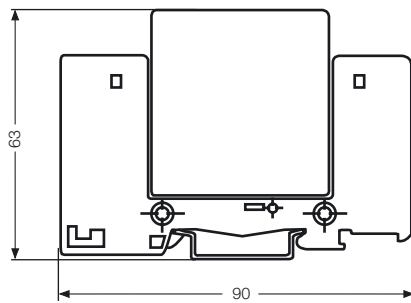
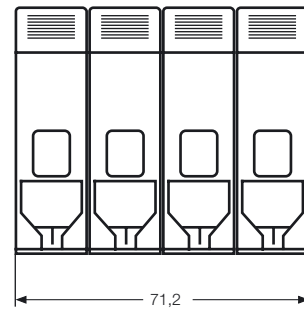
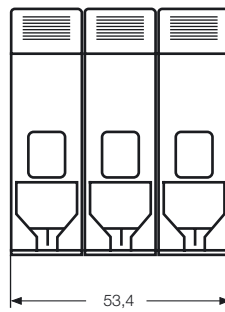
# Overvoltage Protection for PU Power Supply

PU 3 C/B

PU4 C/B

PU 3 C/B-R

PU 4 C/B-R



**Technical data**

Overall width	53.4 mm/71.2 mm	71.2 mm/89.0 mm
Overall depth	55 mm	55 mm
<b>Connection data/power side</b>		
Screw connection, solid	6...25 mm	6...25 mm
Screw connection, flexible	10...25 mm	10...25 mm
<b>Connection data relay/opto-coupler side</b>		
Screw connection, solid	-	0.5...2.5 mm <sup>2</sup>
Screw connection, flexible	-	0.5...1.5 mm <sup>2</sup>

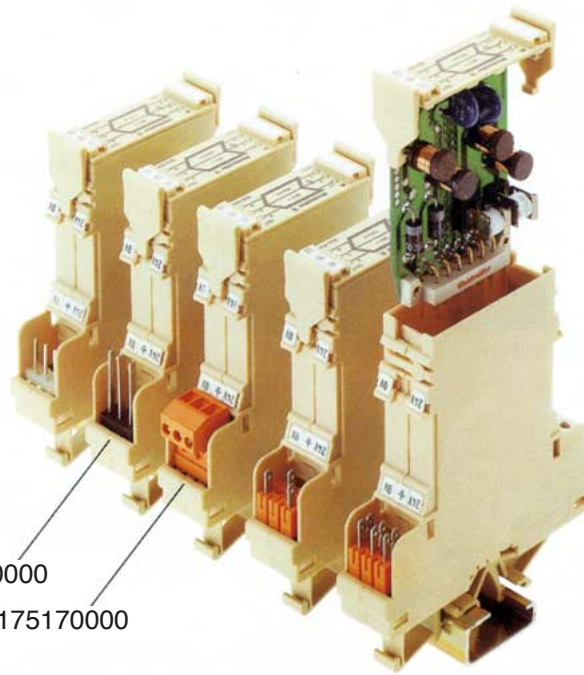
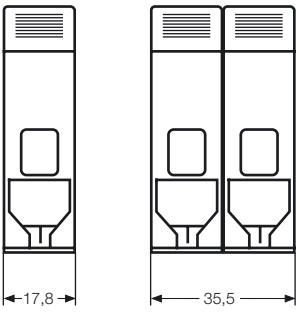
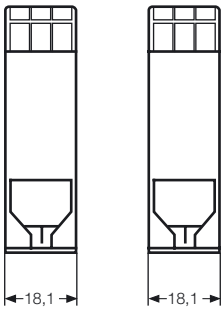
**Accessories**

	Type	Cat. No.	Type	Cat. No.
Mounting rail	TS 35 x 7.5	<b>0383400000</b>	TS 35 x 7.5	<b>0383400000</b>
	TS 35 x 15	<b>0498000000</b>	TS 35 x 15	<b>0498000000</b>
End bracket	EWK 35 (TS 35)	<b>0199360000</b>	EWK 35 (TS 35)	<b>0199360000</b>

## Overvoltage Protection for PU Power Supply

**PU-O/S-E**  
Transmitter

Receiver

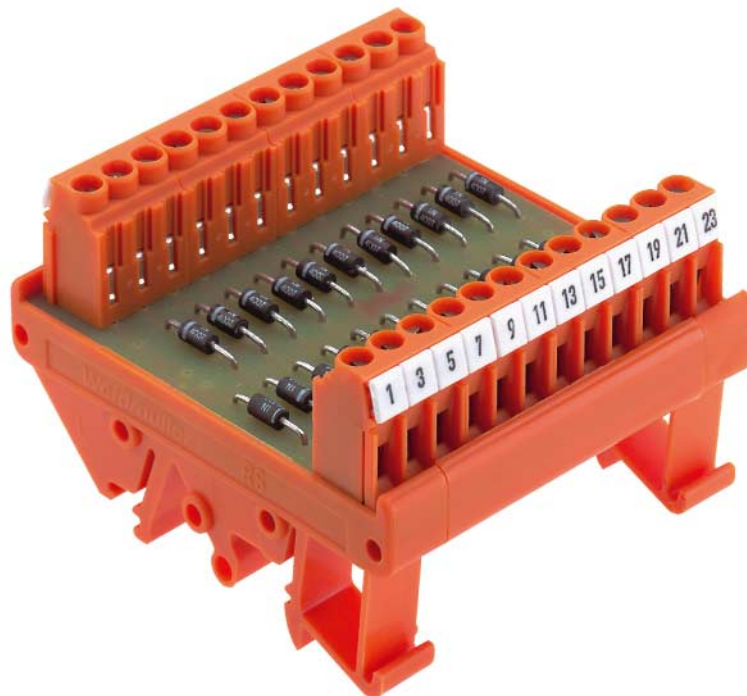


18.1 mm
55 mm
-
-
0.5...2.5 mm <sup>2</sup>
0.5...1.5 mm <sup>2</sup>
-

Type	Cat. No.
TS 35 x 7.5	<b>0383400000</b>
TS 35 x 15	<b>0498000000</b>
EWK 35 (TS 35)	<b>0199360000</b>

We can react quickly to customer-specific requirements.

Talk to us.  
We will turn your wishes into reality.



## Switches and toggles

The outer shape of the switches and toggles match those of the electronic modules in their housings.

Suitability for industrial use is demonstrated by the fact that these modules have a universal foot to fit onto TS 32, TS 35 x 7.5 and TS 35 x 15 in accordance with EN 50035 and EN 50022.

The switches and toggles facilitate start-up, servicing, monitoring and repair of the installation. The contacts are designed for inductive or ohmic loads. When switching inductive loads we recommend using a contact protection circuit.

For this purpose we have the Weidmüller terminals with diodes or RC combinations.

## Diode arrays

The modules take up to 40 diodes on a printed circuit board and lead the connections of the modules to screw terminals or flat-ribbon connectors.

The rail-mounting base with the diode arrays fit TS 32, TS 35 x 7.5 and TS 35 x 15 in accordance with EN 50035 and EN 50022.

The diode arrays are used as pole protection and suppressors or linking modules.

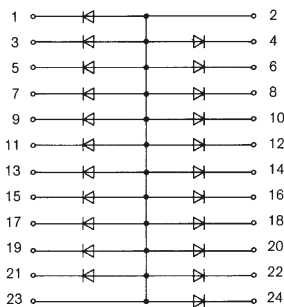
In this way fault detectors can be constructed with up to 40 inputs.

Diode used are 1N4007.

Threshold voltage is 1300 V,

Through-current is 1 A,

whereby a peak current of 10 A is permissible.



## Display modules

The display modules come in the same housings as the switches and toggles.

The display modules are designed for industrial voltages of 24 V, 42 V and 230 V.

The display modules with LED have an additional built-in 6.3 A fuse (5 x 20 mm).

## Modules without components

Axial components such as resistors, diodes, capacitors can be soldered onto these modules.

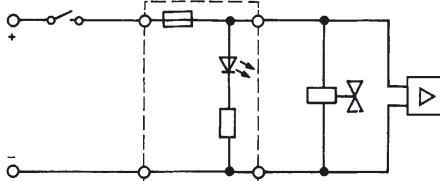
An RSX takes 5 components, the others take 8 components soldered onto tabs.

## Fuse modules

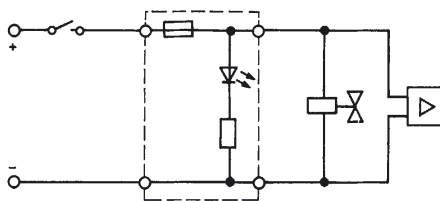
In contrast to the fuse terminals with fault display, an LED shows a functioning fuse here. No resting current passes through this circuit when the fuse is defect.

Typical uses:

Fusing a solenoid



When the fuse is defect no information passes to the electronics.



When the fuse is defect, the electronics receives false information via the current of the LED on the switching state of the solenoid.

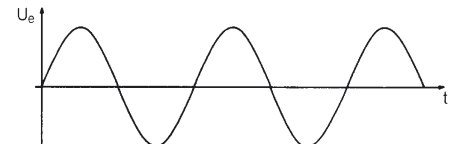
## Rectifier modules

The EGD rectifier modules are in EG2 rail-mountable housings.

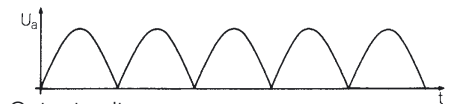
The bridging consists of 4 individual diodes. This permits a wide input voltage range of 5 V ... 240 Vac.

The DC output voltage is 90% of the AC input without using a charge capacitor.

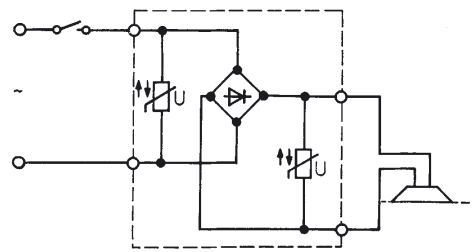
This industrial-quality rectifiers are protected against damaging overvoltage by varistors both on the input and output sides.



Input voltage



Output voltage



## Processing logic

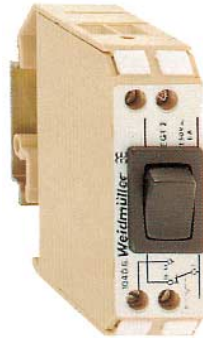
In industry electronics, signals normally have to be connected according to Boolean algebra. For signals from light barriers, initiators and position switches or for monitoring conveyor facilities, the AND function is necessary for linking signals. These are just a few examples from many that can be easily solved using logic minicouplers. These logic modules link five binary input signals with the logic functions AND, NAND, OR, NOR -standard functions that can be pre-processed in the terminal stage. This leads to a dramatic reduction of signal numbers, thus making the need for only one input signal on the controller side possible.

Automation devices are therefore not dependent on logic processing chains and are free to process more demanding tasks.

# Signaling and Control Modules

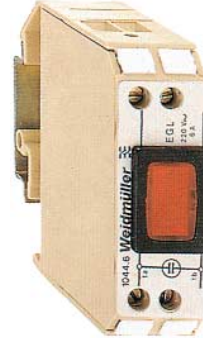
## EGT 1

Switch and toggle module



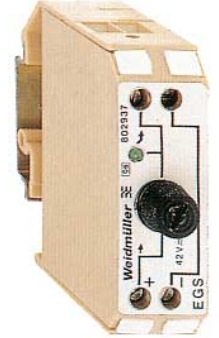
## EGL

Lamp module

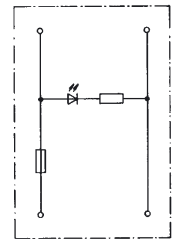
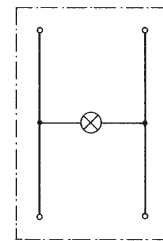


## EGS

Fuse module with indicator



Circuit diagram



### Ordering data

Type	Schaltfunktion	Cat. No.	Qty.
EGT 0	1 NC, 1 NO	8002290000	10
EGT 1	One-wax switch	0126360000	10
EGT 2	Changeover con., switch.	0104060000	10
EGT 3	Changeover contact, off-position in centre, two-sided switching	0104160000	10
EGT 4	Changeover contact, off-position in centre, one-side toggle, one-side switch	0104360000	10
EGT 5	Changeover contact, off-position in centre, two-sided toggle	0104260000	10
EGT 6	Changeover contact, toggle	0114660000	10

### Rated data

#### Input voltage

Rated current

Type	Rated current
EGT 0	max. 250 V-
EGT 1 to EGT 6	max. 250 V-
EGT 0	6 A
EGT 1 to EGT 6	6 A

#### max. 250 V-

Type	Rated current
EGT 0	max. 250 V-
EGT 1 to EGT 6	max. 250 V-
EGT 0	6 A
EGT 1 to EGT 6	6 A

### Ordering data

Type	Cat. No.	Qty.	Type	Cat. No.	Qty.
EGL 230 V~	0104460000	10	EGS 230 V~	1115860000	10
EGL 24 V0	0126860000	10	EGS 24 V~	0193860000	10
			EGS 42 V~	8029370000	10

#### 230 V~ or 24 V0

6 A

#### 230 V~ or 24 V~ or 42 V~

max. 6.3 A

Fuse 5 x 20 mm

Max. downstream changing capacitor

Max. load current

Current surge value

Forward anode voltage

Output voltage

Storage temperature

Ambient temperature

- rowed on TS rail without clearance

- rowed on TS rail with clearance x 20 mm

### Insulation coordination acc. to EN 50 178

Overtoltage category

Pollution severity

### Dimensions/connection data

See page 306

Fig. I

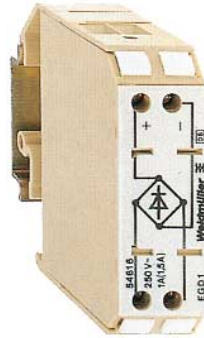
Fig. I

Fig. I

# Rectifier Modules

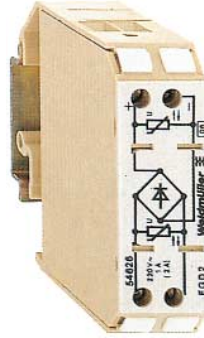
## EGD 1

Rectifier circuit



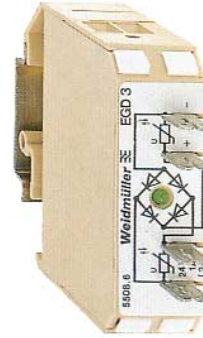
## EGD 2

Rectifier circuit with varistor protection

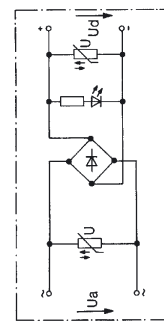
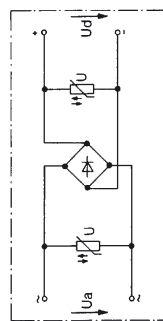
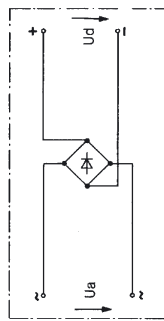


## EGD 3

Rectifier circuit with varistor protection and LED



### Circuit diagram



### Ordering data

Type	Cat. No.	Qty.
EGD 1	0546160000	10

Type	Cat. No.	Qty.
EGD 2	0546260000	10

Type	Cat. No.	Qty.
EGD 3	0550860000	10

### Rated data

#### Input voltage

5 V~...240 V~, 50...60 Hz

5 V~...240 V~, 50...60 Hz

5 V~...42 V~, 50...60 Hz

#### Rated current

1 A

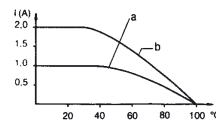
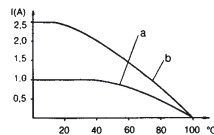
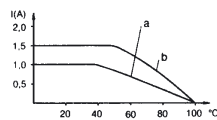
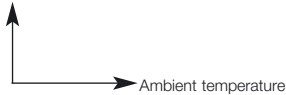
1 A

1 A

#### Derating curve

a = rowed on rail without clearance  
b = rowed on rail with clearance x 20 mm

Continuous current



#### Max. downstream changing capacitor

200 µF

500 µF

2200 µF

#### Max. load current

1.5 A (see derating curve)

2.5 A (see derating curve)

2 A (see derating curve)

#### Max. surge current

40 A (10 ms)

10 A (10 ms)

10 A (10 ms)

#### Forward voltage dro

1.2 V

1.2.2 V

1.2.2 V

#### Output voltage

$U_d = 0.9 \times U_a$

$U_d = 0.9 \times U_a$

$U_d = 0.9 \times U_a$

#### Storage temperature

-45 °C...+100 °C

-45 °C...+100 °C

-45 °C...+100 °C

#### Ambient temperature

- rowed on rail without clearance

-30 °C...+40 °C

-30 °C...+40 °C

-30 °C...+40 °C

- rowed on rail with clearance x 20 mm

-30 °C...+70 °C

-30 °C...+70 °C

-30 °C...+70 °C

### Insulation coordination acc. to EN 50 178

#### Overvoltage category

II

II

II

#### Pollution severity

2

2

2

### Dimensions/connection data

See page 306

Fig. 1

Fig. 1

Fig. 1

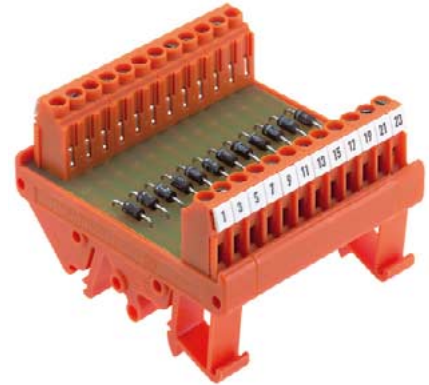
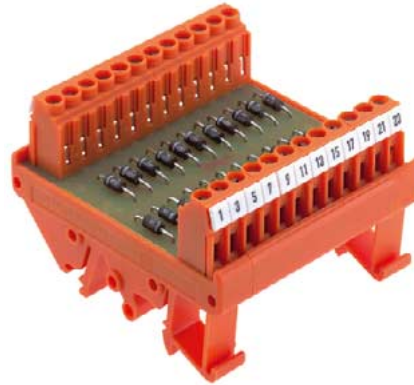
# Diode Array

## Module without components Proximity switch module

### RSD A

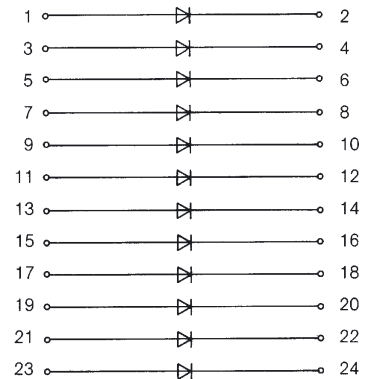
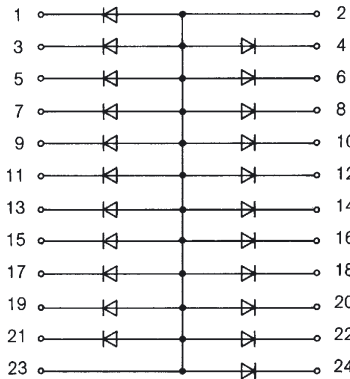
### RSD K

### RSD



#### Circuit diagram

Diode array  
with foot for TS 32, TS 35x7.5 and TS 35x15



#### Ordering data

Type	Cat. No.	Type	Cat. No.
Diode array of common anodes		Diode array of common cathodes	
22 diodes 1N4007		22 diodes 1N4007	

Type	Cat. No.	Type	Cat. No.
Diode array with open diode connections		Diode array with open diode connections	
12 diodes 1N4007			

Screw connection  
Tab connection

Type	Cat. No.	Type	Cat. No.
RSD A	<b>0180961001</b>	RSD K	<b>0181061001</b>
RSD A-F	<b>0181160000</b>	RSD K-F	<b>0181260000</b>
with 10 diodes 1N4007			
with 20 diodes 1N4007			
with 40 diodes 1N4007			

Type	Cat. No.	Type	Cat. No.
RSD	<b>0181461001</b>		
RSD-F	<b>0181360000</b>		
		RSD 10	<b>8022901001</b>
		RSD 20	<b>8022911001</b>
		RSD 40	<b>8022921001</b>

#### Dimensions

Base width	mm	65
Insulation stripping length	mm	7

Connection data	
Screw connection, solid	0.5...4 mm <sup>2</sup>
Screw connection, flexible	0.5...2.5 mm <sup>2</sup>
Conductor cross-section	AWG 26...14
Tab connector	0.8x2.8 or 0.8x6.3 mm

Rated data	
Max. operating voltage	250 V
Diode reverse voltage	1000 V
Diode current	1 A

Insulation coordination acc. to EN 50 178	
Overvoltage category	III
Pollution severity	2

Accessories	
Mounting rail	
End bracket	for TS 32 for TS 35

65	65
7	7

0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>	0.5...2.5 mm <sup>2</sup>
AWG 26...14	AWG 26...14
0.8x2.8 or 0.8x6.3 mm	0.8x2.8 or 0.8x6.3 mm

250 V	250 V
1000 V	1000 V
1 A	1 A

III	III
2	2

Type	Cat. No.
TS 32	<b>0122800000</b>
TS 35x7.5	<b>0383400000</b>
TS 35x15	<b>0498000000</b>
EWK 2	<b>0199360000</b>
EW 35	<b>0383560000</b>

65	10-pole	20-pole	40-pole
7	7	7	7

0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>	0.5...2.5 mm <sup>2</sup>
AWG 26...14	AWG 26...14
0.8x2.8 or 0.8x6.3 mm	-

250 V	250 V
1000 V	1000 V
1 A	1 A

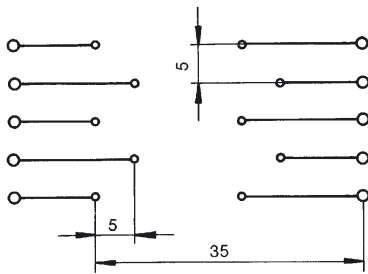
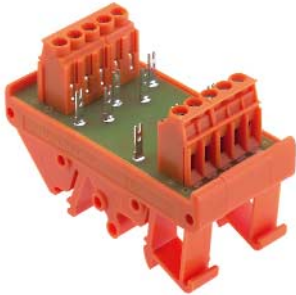
III	III
2	2

Type	Cat. No.
TS 32	<b>0122800000</b>
TS 35x7.5	<b>0383400000</b>
TS 35x15	<b>0498000000</b>
EWK 2	<b>0199360000</b>
EW 35	<b>0383560000</b>



## RSX

Module without components



Type	Cat. No.
RSX	<b>0329761001</b>
RSX-F	<b>0329860000</b>

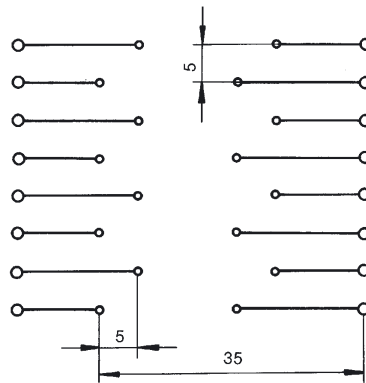
For soldering in 5 components  
Height of solder tabs: 6 mm  
Distance between solder tabs: approx. 20 mm

35
7
0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>
AWG 26...14
0.8x2.8 or 0.8x6.3 mm
250 V/5 A

Type	Cat. No.	Qty.
TS 32	<b>0122800000</b>	
TS 35x7.5	<b>0383400000</b>	
TS 35x15	<b>0498000000</b>	
EWK 2	<b>0199360000</b>	
EW 35	<b>0383560000</b>	

## RSX-ADP

Module without components



Type	Cat. No.
RSX-ADP	<b>8022051001</b>

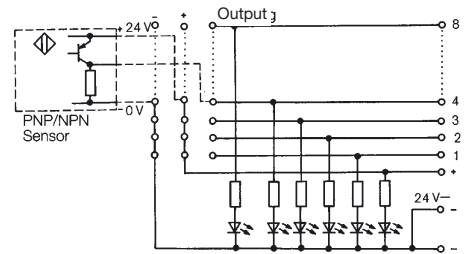
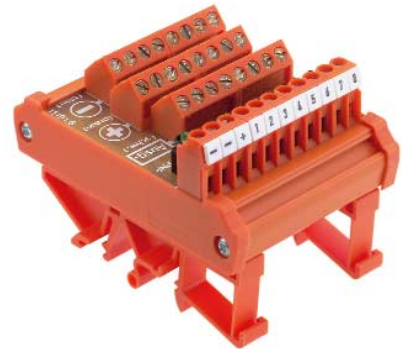
For soldering in 8 components  
Height of solder tabs: 6 mm  
Distance between solder tabs: approx. 18 mm

50
7
0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>
AWG 26...14
0.8x2.8 or 0.8x6.3 mm
250 V/5 A

Type	Cat. No.	Qty.
TS 32	<b>0122800000</b>	
TS 35x7.5	<b>0383400000</b>	
TS 35x15	<b>0498000000</b>	
EWK 2	<b>0199360000</b>	
EW 35	<b>0383560000</b>	

## RSNI 3N/8LD RSNI 3P/8LD

Connection module for 8 proximity switches



Type	Cat. No.
RSNI 3P/8LD PNP-switching	<b>1119161001</b>
RSNI 3N/8LD NPN-switching	<b>1119260000</b>

This module is suitable for the connection of 8, three-wire DC sensors with PNP/NPN-switching outputs. A compact design (width: 60 mm), efficient wiring (operating voltage via only one pair of terminals) and clear terminal markings are the advantages of this module. The 8 red LED function indicators and the green LED operating voltage indicator facilitate commissioning, maintenance and trouble shooting in the control cabinet.

60
7
0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>
AWG 26...14
0.8x2.8 or 0.8x6.3 mm
24 V- ± 10%

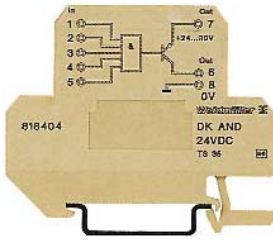
Sensor voltage 24 V-

Type	Cat. No.	Qty.
TS 32	<b>0122800000</b>	
TS 35x7.5	<b>0383400000</b>	
TS 35x15	<b>0498000000</b>	
EWK 2	<b>0199360000</b>	
EW 35	<b>0383560000</b>	



# Digital Signal Processing

## Pre-processing logic



## DK AND

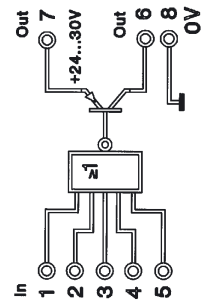
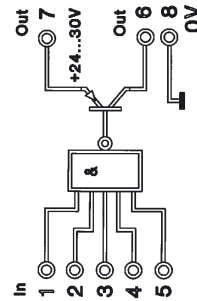
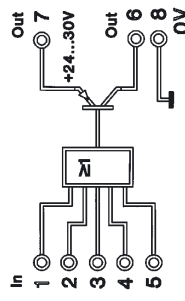
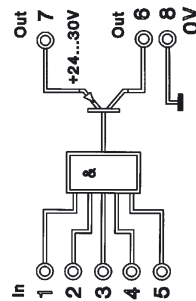
## DK OR

## DK NAND

## DK NOR

- Compact construction
- All logic functions
- Reduces the PLC load
- Fast processing
- Polarization protected

1	2	3	4	5	AND	OR	NAND	NOR
0	0	0	0	0	0	0	1	1
0	0	0	0	1	0	1	1	0
0	0	0	1	0	0	1	1	0
0	0	0	1	1	0	1	1	0
0	0	1	0	0	0	1	1	0
0	0	1	0	1	0	1	1	0
0	0	1	1	0	0	1	1	0
0	0	1	1	1	0	1	1	0
0	1	0	0	0	0	1	1	0
0	1	0	0	1	0	1	1	0
0	1	0	1	0	0	1	1	0
0	1	0	1	1	0	1	1	0
0	1	1	0	0	0	1	1	0
0	1	1	0	1	0	1	1	0
0	1	1	1	0	0	1	1	0
0	1	1	1	1	0	1	1	0
1	0	0	0	0	0	1	1	0
1	0	0	0	1	0	1	1	0
1	0	0	1	0	0	1	1	0
1	0	0	1	1	0	1	1	0
1	0	1	0	0	0	1	1	0
1	0	1	0	1	0	1	1	0
1	0	1	1	0	0	1	1	0
1	0	1	1	1	0	1	1	0
1	1	0	0	0	0	1	1	0
1	1	0	0	1	0	1	1	0
1	1	0	1	0	0	1	1	0
1	1	0	1	1	0	1	1	0
1	1	1	0	0	0	1	1	0
1	1	1	0	1	0	1	1	0
1	1	1	1	0	0	1	1	0
1	1	1	1	1	1	1	0	0



Ordering data	
for TS 32	Y
for TS 35	W

Technical data	
Logic function	AND
Number of inputs	5
Input nominal level	24 Vdc = High, 0 V = Low
Overload limits	30 Vdc
Switching thresholds	High >15 V, Low <9 V
Pulse duration	>50 µs
Input current	appr. 1.5 mA per input (24 V)
Output	PNP
Output level	Ub- 1.8 V
Output current	20 mA max.
Decoupling diode	yes
Status display	no
Short-circuit proof	no
Operating voltage	24...30 Vdc
Current consumption	<5 mA
Polarization protection	yes
Galvanic isolation	no
Voltage proof to TS	4 kVeff
Operating temperature	0 °C...+50 °C
Storage temperature	-40 °C...+60 °C
Total width	12 mm
Conductor cross-section	0.5...4 mm <sup>2</sup>
Wire strip length	7 mm

Note	
All inputs high: Output high	
Type	Cat. No.
AP DKT4	0687560000

Type	Cat. No.
DK AND	8109680000
DK AND	8184040000

Type	Cat. No.
DK OR	8218440000

Type	Cat. No.
DK NAND	8248320000

Type	Cat. No.
DK NOR	8248330000

Logic function	OR
Number of inputs	5
Input nominal level	24 Vdc = High, 0 V = Low
Overload limits	30 Vdc
Switching thresholds	High >15 V, Low <9 V
Pulse duration	>50 µs
Input current	appr. 1.5 mA per input (24 V)
Output	PNP
Output level	Ub- 1.8 V
Output current	20 mA max.
Decoupling diode	yes
Status display	no
Short-circuit proof	no
Operating voltage	24...30 Vdc
Current consumption	<5 mA
Polarization protection	yes
Galvanic isolation	no
Voltage proof to TS	4 kVeff
Operating temperature	0 °C...+50 °C
Storage temperature	-40 °C...+60 °C
Total width	12 mm
Conductor cross-section	0.5...4 mm <sup>2</sup>
Wire strip length	7 mm

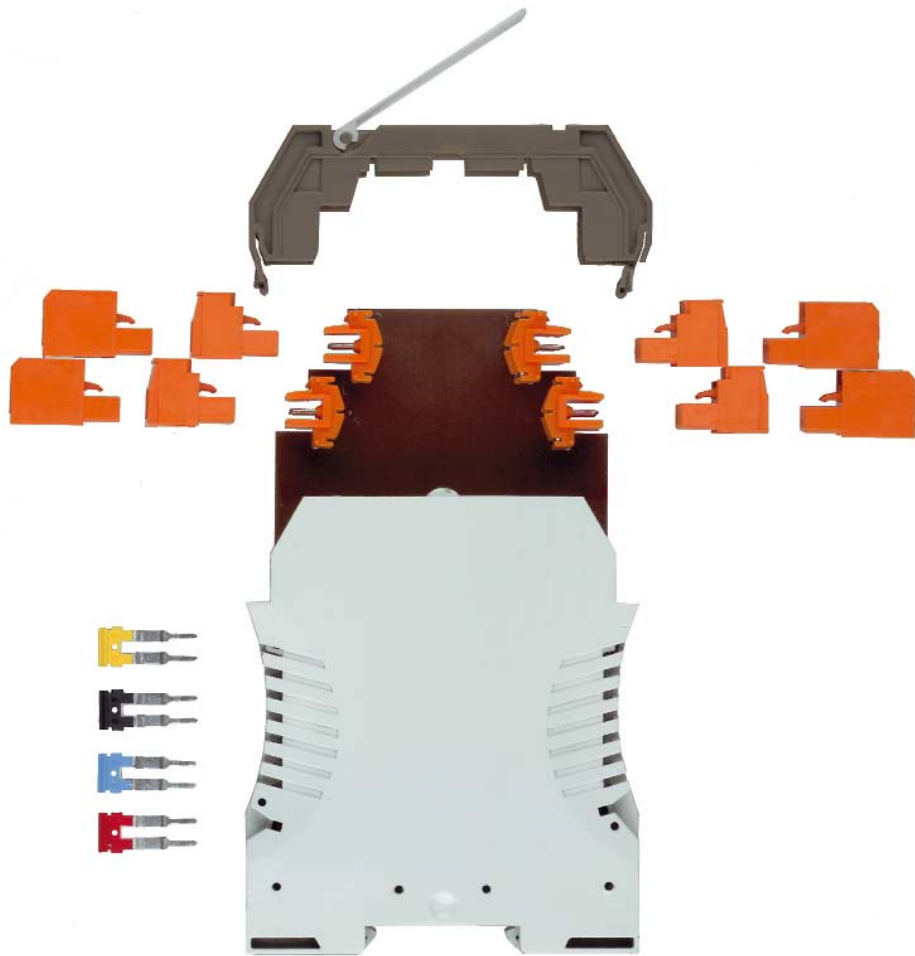
Note	
Min. 1 input high: Output high	
Type	Cat. No.
AP DKT4	0687560000

Logic function	NAND
Number of inputs	5
Input nominal level	24 Vdc = High, 0 V = Low
Overload limits	30 Vdc
Switching thresholds	High >15 V, Low <9 V
Pulse duration	>50 µs
Input current	appr. 1.5 mA per input (24 V)
Output	PNP
Output level	Ub- 1.8 V
Output current	20 mA max.
Decoupling diode	yes
Status display	no
Short-circuit proof	no
Operating voltage	24...30 Vdc
Current consumption	<5 mA
Polarization protection	yes
Galvanic isolation	no
Voltage proof to TS	4 kVeff
Operating temperature	-0 °C...+50 °C
Storage temperature	-40 °C...+60 °C
Total width	12 mm
Conductor cross-section	0.5...4 mm <sup>2</sup>
Wire strip length	7 mm

Note	
All inputs high: Output low	
Type	Cat. No.
AP DKT4	0687560000

Logic function	NOR
Number of inputs	5
Input nominal level	24 Vdc = High, 0 V = Low
Overload limits	30 Vdc
Switching thresholds	High >15 V, Low <9 V
Pulse duration	>50 µs
Input current	appr. 1.5 mA per input (24 V)
Output	PNP
Output level	Ub- 1.8 V
Output current	20 mA max.
Decoupling diode	yes
Status display	no
Short-circuit proof	no
Operating voltage	24...30 Vdc
Current consumption	<5 mA
Polarization protection	yes
Galvanic isolation	no
Voltage proof to TS	4 kVeff
Operating temperature	-0 °C...+50 °C
Storage temperature	-40 °C...+60 °C
Total width	12 mm
Conductor cross-section	0.5...4 mm <sup>2</sup>
Wire strip length	7 mm

Note	
Min. 1 input high: Output low	
Type	Cat. No.
AP DKT4	0687560000



## Component Carriers and Housings

### Weidmüller DK 4 and DKT 4 terminals

are suitable for the installation of electronic components with a maximum diameter or width of 4.5 mm. Four independent clamping yoke screw connections are available. A snap-on frame expands the installation space in the DK4 by 6 mm respectively. Depending on type, these modular terminals are suitable for mounting on TS 32, TS 35 x 7.5 or TS 35 x 15 mounting rails according to European standards EN 50 035 and EN 50 022.

### Weidmüller WDK 2.5 terminals

are suitable for the installation of electrical components with a maximum width of 4 mm. As many as four independent clamping yoke screw connections or 4 6.3 x 0.8 tab connections are available. These terminals are suitable for mounting on TS 35 x 7.5 or TS 35 x 15 mounting rails.

### Weidmüller EG 1 housings

offer 4 screw connections and, as accessories, up to 4 0.8 x 4.8 mm solder/tab connections on a width of 18 mm. The screw clamp busbar ends with a solder ring inside the housing. Two end plates seal the module. Depending on type, the modules are mounted on TS 32, TS 35 x 7.5 or TS 35 x 15 mounting rails.

### Weidmüller EG 2 housings

The external shape of these housings corresponds to Type EG 1. Four screw connections or up to 8 0.8 x 6.6 mm/0.8 x 2.8 mm tab connectors are connected with a printed circuit board in the housing. They can be mounted on TS 32, TS 35 x 7.5 or TS 35 x 15 mounting rails.

### Weidmüller EG 3 housings

provides 6 screw connections or 12 0.8 x 6.3 mm/0.8 x 2.8 mm tab connections on a width of 22.5 mm. As an accessory, Weidmüller offers a shaped printed circuit board with a 2.54 mm hole grid or fully copper-coated. The engagable combination foot allows the terminal to be mounted on TS 32, TS 35 x 7.5 or TS 35 x 15 mounting rails. The MPL mounting plate is used to mount the housing directly (without mounting rail). Due to the sliding foot construction, the EG 3 can be turned through 180° in all types of assembly (e.g. exchanging input and output).

### Weidmüller EG 4 housing

as type EG 3, offers the same width of 22.5 mm. However, the greater installation depth (75 mm) and height (109 mm) allow the installation of more complex circuit configurations. The built-in installation can be connected via 6 screw connections. The snap-on combination foot allows the terminal to be mounted on TS 32, TS 35 x 7.5 or TS 35 x 15 mounting rails. Due to the sliding foot construction, the EG 4 can be slid forwards or backwards on the locking foot, and can be turned through 180° (e.g. exchanging of input and output).

### Weidmüller EG 5 housings

correspond to type EG 4. The EG 5 has 12 screw connections, which can be wired with solder lugs inside the housing. The snap-on combination foot allows the terminal to be mounted on TS 32, TS 35 x 7.5 or TS 35 x 15 mounting rails. Due to the sliding foot construction, the EG 4 can be slid 6 mm forwards or backwards on the engaging foot and can be turned through 180° (e.g. exchanging input and output).

### Weidmüller EG 6 housings

have a bus-suitable contact carrier. The bus connection is created by directly mounting several housings in a row. 32 connections are available on both sides of the housing as crimp connector block contacts. The housing accepts printed circuit boards with dimensions of 100 x 120 mm. The printed circuit board is adapted with a VG 64 DIN strip. The front panel is screwed onto the circuit board similar to the 19" technology. The locking foot allows easy mounting onto the TS 35 mounting rail.

### Weidmüller SEG/U housing

enable the plug-in module assembly of a 70 x 52 x 1 mm printed circuit board. The circuit board is attached to the accessory cover plate via snap-in hooks. The housing contains a 13-pole socket block for installation of the module; 6 screw connections are available for connection. The permissible power loss in the housing during continuous operation of terminals in rows amounts to 1.5W, depending on the surface temperature of the soldered components. The snap-on combination foot allows the housings to be mounted on TS 32, TS 35 x 7.5 or TS 35 x 15 mounting rails.

### Weidmüller housings type WAVEBOX

It is essential to provide fit-for-use housings for modern electronic components. Setting and control functions must be easily carried out and technical requirements with respect to heat dissipation and EMV properties should be supported.

An ideal design saves space and wiring costs in the switchgear cabinet.

In addition, ergonomics and design are becoming increasingly important for high-quality electronic products.

These are the criteria that led to the development of WAVEBOX. Simplified production methods (shaft soldering, SMD) ensure cost-savings for the customer.

The WAVEBOX is characterised by:

- Optimum width for any application (12.5 mm, 17.5 mm, 22.5 mm)
- Large component assembly surface; SMDs can be mounted on the solder side
- UL94 flammability class V2
- No tools required for assembly
- Plug-in printed circuit board
- Plug-in cross-connection via ZQV 2.5 N
- Hinged, transparent cover
- BLZ 5.08 screw/plug and socket connector
- BLFZ 5.08 optional tension clamp/plug and socket connector
- Marking option with WS tags
- Mounts onto TS 35

### Weidmüller individual parts for RS 70 locking socket

latch together to form units from 20 mm in width. Any desired intermediate parts or feet can be connected between two side pieces (locking feet) at intervals of 5 mm. In this way, a carrier module is constructed for PCB, on which various components can be soldered. The assembly snaps onto TS 32, TS 35 x 7.5 or TS 35 x 15 mounting rails.

### The Weidmüller RSX custom circuit module

is a largely prefabricated unit which accepts up to 5 components such as resistors, diodes, varistors or capacitors via soldering terminals. The components are connected via screw clamps or tab connections. This module is also suitable for mounting on TS 32, TS 35 x 7.5 or TS 35 x 15 mounting rails.

### Weidmüller locking socket profiles

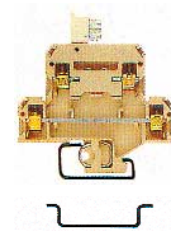
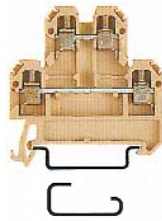
The RS 45, RS 80 and RS 100 profiles are available as 2 m long strips. The extruded profiles can be easily cut to any length with a saw. In this way, a carrier module is constructed for a printed circuit board on which various components can be soldered. Locking feet can be slid into these profiles for mounting on TS 32, TS 35 x 7.5 or TS 35 x 15 mounting rails. The sliding foot construction of the RS 80 also allows the fixing foot be turned through 180°.

# Housings

## Terminals

### DK 4

### DKT 4



Dimensions							
Terminal width (+fitting tolerance 0.2)		6 mm		6 mm			
Insulating stripping length		9 mm		9 mm			
Connection data							
Screw connection, solid		0.5...4 mm <sup>2</sup>		0.5...4 mm <sup>2</sup>			
Screw connection, stranded		0.5...4 mm <sup>2</sup>		0.5...4 mm <sup>2</sup>			
Conductor cross-section		AWG 22...12		AWG 22...17			
Tightening torque range		0.5-1.0 Nm		0.5 - 1.0 Nm			
Torque phase with		1		1			
DMS 2 electric screwdriver							
Rated data acc. to VDE							
Rated cross-section		4 mm <sup>2</sup>		4 mm <sup>2</sup>			
Rated voltage		380 V~		380 V~			
Rated current		10 A		10 A			
Power loss		0.5 W		0.5 W			
Connection diagram							
Ordering data							
Terminal							
for TS 32 $\Upsilon$	Type Cat. No.	DK 4 PA <b>1537960000</b>	DK 4 PA <b>1115460000</b>	DKT 4 PA <b>1686940000</b>	DKT 4 PA <b>1115660000</b>		
for TS 35 w	Type Cat. No.	DK 4/35 PA <b>8203490000</b>	DK 4/35 PA <b>1115560000</b>	DKT 4 /35PA <b>0687460000</b>	DKT 4/35 PA <b>1115760000</b>		
Matching contour frame							
for TS 32 $\Upsilon$	Type Cat. No.	DK 4 RA <b>0690960000</b>	DK 4 RA <b>0690960000</b>				
for TS 35 w	Type Cat. No.	DK 4 RA/35 <b>0691060000</b>	DK 4 RA/35 <b>0691060000</b>				
Accessories							
Mounting rail (2 m lengths)		Type	Cat. No.	Qty.	Type	Cat. No.	Qty.
		TS 32	<b>0122800000</b>	2 m	TS 32	<b>0122800000</b>	2 m
		TS 35 x 7.5	<b>0383400000</b>	2 m	TS 35 x 7.5	<b>0383400000</b>	2 m
		TS 35 x 15	<b>0498000000</b>	2 m	TS 35 x 15	<b>0498000000</b>	2 m
End bracket		EWK 1 (8.5)	<b>0206160000</b>	50	EWK 1 (8.5)	<b>0206160000</b>	50
(thickness mm) for TS 35		EW 35 (8.5)	<b>0383560000</b>	50	EW 35 (8.5)	<b>0383560000</b>	50
End plate (thickness mm)		AP PA (1.5)	<b>0359260000</b>	20	AP PA (1.5)	<b>0687560000</b>	20
Partition		TSch 4	<b>0363360000</b>	100	TSch 4	<b>0363360000</b>	100
Socket for test plug		StB 8.5	<b>0215700000</b>	50			
Test plug (pin diameter)		PS ( $\varnothing$ 2.3)	<b>0180400000</b>	20			
Cross-connection		Q 2	<b>0336400000</b>	50			
(preassembled) 2-pole		Q 3	<b>0336500000</b>	50			
3-pole		Q 4	<b>0336600000</b>	50			
4-pole		Q 10	<b>0368600000</b>	20			
10-pole		VL 2	<b>0446700000</b>	-			
Switchable cross-connection bracket		VH 10	<b>0446600000</b>	100			
Connection sleeve		BS M 2.5 x 14	<b>0266800000</b>	100			
Fixing screw		AD 4	<b>0303400000</b>	50			
Cover plate (4 terminals)		BSK M 2.5 x 18	<b>0303300000</b>	100			
Fixing screw (plastic)		QB 2*	<b>0482700000</b>	100	QB 2*	<b>0482700000</b>	100
Cross connection bridge		QB 3*	<b>0482800000</b>	50	QB 3*	<b>0482800000</b>	50
		QB 4*	<b>0482900000</b>	50	QB 4*	<b>0482900000</b>	50
		QB 75 blank*	<b>0526400000</b>	10	QB 75 blank*	<b>0526400000</b>	10
		Insulation profile	<b>0526700000</b>	-	Insulation profile	<b>0526700000</b>	-

\* Accessories see terminals catalogue

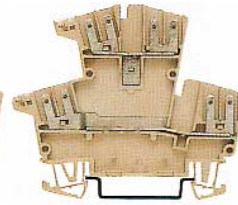
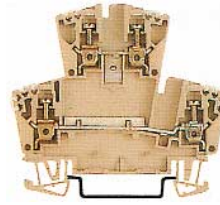
# Housings

## Terminals

### WDK 2.5

### WDK 2.5 F

### WDK 2.5 FF



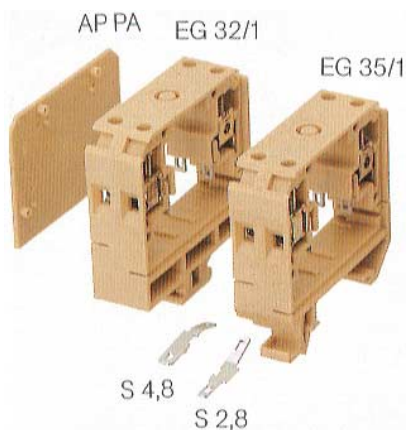
Dimensions	WDK 2.5		WDK 2.5 F	WDK 2.5 FF			
Terminal width (+fitting tolerance 0.2)	5 mm	5 mm	5 mm	5 mm			
Insulating stripping length	10 mm	10 mm	10 mm	-			
Connection data							
Screw connection, solid	0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>	0.5...4 mm <sup>2</sup>				
Screw connection, stranded	0.5...2.5 mm <sup>2</sup>	0.5...2.5 mm <sup>2</sup>	0.5...2.5 mm <sup>2</sup>				
Conductor cross-section	AWG 26...4	AWG 26...4	AWG 26...4				
Tightening torque range	0.4 - 0.7 Nm		0.4 - 0.7 Nm				
Torque phase with DMS 2 electric screwdriver	1		1				
Rated data acc. to VDE							
Rated cross-section	2.5 mm <sup>2</sup>		2.5 mm <sup>2</sup>	1 mm <sup>2</sup>			
Rated voltage	380 V~		380 V~	380 V~			
Rated current	26 A		12 A (2 x 6 A)	12 A (2 x 6 A)			
Power loss	0.5 W		0.5 W	0.5 W			
Connection diagram							
Ordering data							
Terminal for TS 32 y	Type Cat. No.						
for TS 35 w	Type Cat. No.	WDK 2.5 <b>1023200000</b>	WDK 2.5 <b>1023100000</b>	WDK 2.5 F <b>1021600000</b>			
Matching contour frame for TS 32 y	Type Cat. No.						
for TS 35 w	Type Cat. No.	WZR WDK 2.5 <b>1074000000</b>	WZR WDK 2.5 <b>1074000000</b>	WZR WDK 2.5 <b>1074000000</b>			
Accessories	Type	Cat. No.	Qty.	Type	Cat. No.	Qty.	
Mounting rail (2 m lengths)	TS 35 x 7.5	<b>0383400000</b>	2 m	TS 35 x 7.5	<b>0383400000</b>	2 m	
	slotted	<b>0514500000</b>	2 m	slotted	<b>0514500000</b>	2 m	
	TS 35 x 15	<b>0498000000</b>	2 m	TS 35 x 15	<b>0498000000</b>	2 m	
End bracket (thickness mm)	for TS 35	EW 35 (8.5)	<b>0383560000</b>	50	EW 35 (8.5)	<b>0383560000</b>	50
End plate (thickness mm)		WAP	<b>1059100000</b>	100	WAP	<b>1059100000</b>	100
Cross-connection (preassembled)	2-pole	WQV 2.5	<b>1053660000</b>	50	WQV 2.5	<b>1053660000</b>	50
	3-pole	WQV 2.5	<b>1053760000</b>	50	WQV 2.5	<b>1053760000</b>	50
	4-pole	WQV 2.5	<b>1053860000</b>	50	WQV 2.5	<b>1053860000</b>	50
	10-pole	WQV 2.5	<b>1054460000</b>	50	WQV 2.5	<b>1054460000</b>	50



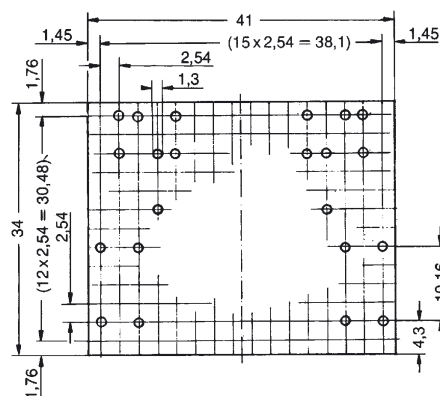
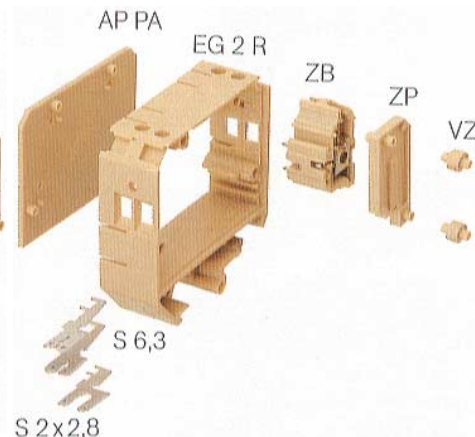
# Housings

## Housings

### EG 1



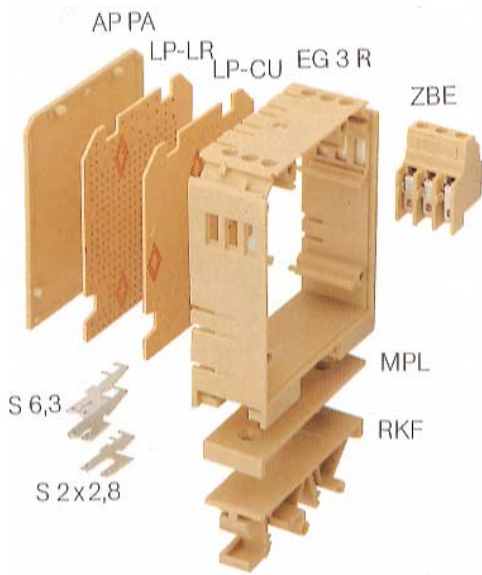
### EG 2



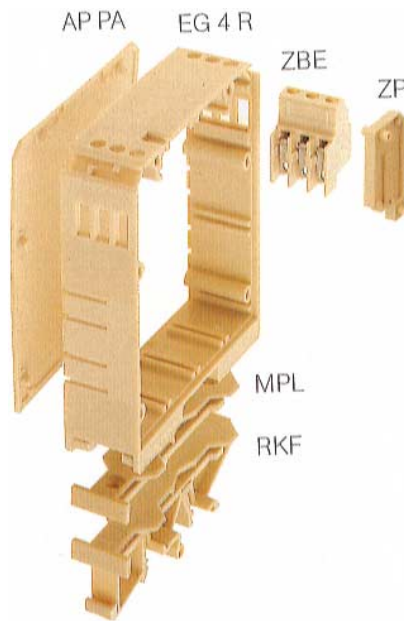
Rated data				Rated data			
Reference voltage acc. to VDE 0110 1/89	300 V			300 V			
Pollution severity	2			2			
Overtoltage category	II			II			
Current	10 A			10 A			
Power loss (when mounted in row)	1 W			1 W			
Protection class	IP 20			IP 20			
Flammability acc. to UL level	V-2			V-2			
Upper temperature limit	100 °C			100 °C			
Connection data				Connection data			
Screw connection solid	0.5...4 mm <sup>2</sup>			0.5...4 mm <sup>2</sup>			
Screw connection stranded	0.5...2.5 mm <sup>2</sup>			0.5...2.5 mm <sup>2</sup>			
Tightening torque range	0.5 - 1.0 Nm			0.5 - 1.0 Nm			
Torque phase with DMS 2 electric screwdriver	2			2			
Ordering data				Ordering data			
Housing frame	Type	Cat. No.	Qty.	Type	Cat. No.	Qty.	
	EG 32/1 for TS 32	<b>0453560000</b>	20	EG 2 R	<b>0508860000</b>	20	
	EG 35/1 for TS 35	<b>0453860000</b>	20				
End plate	AP PA	<b>0453660000</b>	20	AP PA	<b>0453660000</b>	20	
Combi foot, latchable							
Assembly plate							
Clamping yoke unit, right				ZB-R	<b>0495960000</b>	20	
Clamping yoke unit, left				ZB-L	<b>0495860000</b>	20	
Intermediate plate	ZP	<b>0453760000</b>	20	ZP	<b>0453760000</b>	20	
Connection spigot	VZ	<b>0510260000</b>	50	VZ	<b>0510260000</b>	50	
Connection tab 0.8 x 6.3 mm							
Connection tab 2 x 0.8 x 2.8 mm							
Tab / solder lug 0.8 x 2.8 mm	S 2.8	<b>0475800000</b>	20	S 6.3	<b>0496100000</b>	100	
Tab / solder lug 0.8 x 4.8 mm	S 4.8	<b>0475700000</b>	20	S 2 x 2.8	<b>0163500000</b>	50	
Printed circuit board, copper-coated							
Printed circuit board 5.08 pitch							
Dimensions				Dimensions			
see page	306, Fig. I			306, Fig. II			

# Housings

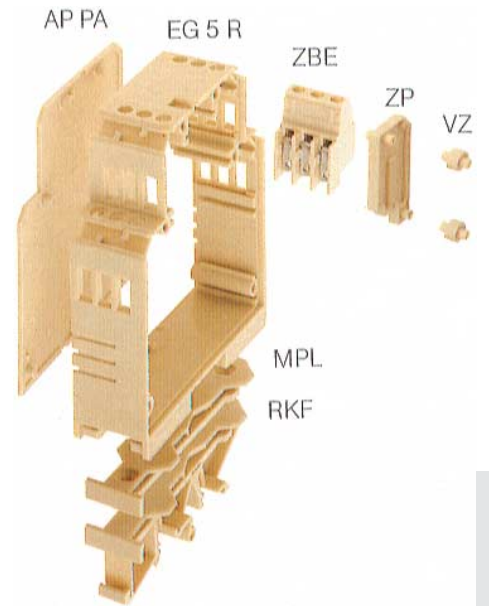
## EG 3



## EG 4



## EG 5



300 V
2
II
10 A
1.5 W
IP 20
V - 2
100 °C
0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>
0.4 - 0.8 Nm
1

Type	Cat. No.	Qty.
EG 3 R	<b>0163960000</b>	15
AP PA	<b>0133760000</b>	20
RKF	<b>0163860000</b>	20
MPL	<b>0158560000</b>	50
ZBE	<b>0138360000</b>	50
ZBE	<b>0138360000</b>	50
VZ	<b>0510260000</b>	50
S 6.3	<b>0496100000</b>	100
S 2 x 2.8	<b>0163500000</b>	50
LP-CU	<b>0167300000</b>	-
LP-LR	<b>0167400000</b>	-

307, Fig. V

300 V
2
III
10 A
1.6 W
IP 20
V - 2
100 °C
0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>
0.4 - 0.8 Nm
1

Type	Cat. No.	Qty.
EG 4 R	<b>1116560000</b>	-
AP PA	<b>1116060000</b>	20
RKF	<b>1116260000</b>	20
MPL	<b>1116360000</b>	50
ZBE	<b>0138360000</b>	50
ZBE	<b>0138360000</b>	50
VZ	<b>0510260000</b>	50
ZP	<b>0453760000</b>	-

307, Fig. VI

300 V
2
III
1 A
1.6 W
IP 20
V - 2
100 °C
0.5...4 mm <sup>2</sup>
0.5...2.5 mm <sup>2</sup>
0.5 - 0.8 Nm
1

Type	Cat. No.	Qty.
EG 5 R	<b>1116860000</b>	-
AP PA	<b>1116160000</b>	20
RKF	<b>1116260000</b>	20
MPL	<b>1116360000</b>	50
ZBE	<b>0138360000</b>	50
ZBE	<b>0138360000</b>	50
VZ	<b>0510260000</b>	50
ZP	<b>0453760000</b>	-

307, Fig. VII

# Housings

## Housings for pluggable printed circuit boards

Housing version	Polyamide PA 6.6
Flammability class	U2 (UL 94)
Colour	grey

### Notes:

BLZ may only be actuated with the supply disconnected. If small power ratings need to be switched for operating reasons, empirical values are available on request.

Description
Housing base completely assembled with locking foot, not cross-connectable
Housing base completely assembled with locking foot, cross-connectable
Top part with transparent cover/top unit
Pin header 5.08/3-pole orange; right
Pin header 5.08/3-pole orange; left
Connector socket 2-pole for BLZ 5.08/2 screw terminal
- orange
- black
Other colours are available on request
Connector socket 3-pole for BLZ 5.08/3 terminal
- orange
- black
Other colours are available on request
Connector socket 2-pole for BLZ 5.08/3 tension clamp terminal
- orange
- black
Connector socket 3-pole for BLZ 5.08/3 tension clamp terminal
- orange
- black

### Accessories

Cross-connection ZQV 2.5N/2 black
Cross-connection ZQV 2.5N/2 red
Cross-connection ZQV 2.5N/2 blue
Cross-connection ZQV 2.5N/2 yellow
Coding elements for BLZ BLZ KO black
Coding elements for BLZ BLZ KO orange

### WS connector marker

WS15/5 Multicard*
WS10/5 Multicard *
WS10/5 Neutral*
Screw cap
Power loss, arranged side by side, type

### Ordering example WAVEBOX S 22.5

Housing base completely assembled with locking foot, not cross-connectable
Top part with transparent cover/top unit
Pin header 5.08/3-pole orange; right
Pin header 5.08/3-pole orange; left
Connector socket 3-pole for BLZ 5.08/3 screw terminal, orange

\* Marker see page 317 + 318

### Attention!

These WAVEBOX-housings are authorized only to be used in a closed control cubicle!

## WAVEBOX S 22.5



Type	Cat. No.	Qty.
WAVEBOX S 22.5	8426440000	10
WAVEBOX S 22.5 QV	8426450000	10
Head	8426460000	10
Pin header	8426620000	10
Pin header	8426630000	10
Connector socket	1526560000	100
Connector socket	1526510000	100
Connector socket	1707470000	100
Connector socket	1707700000	100

## WAVEBOX L 22.5



Type	Cat. No.	Qty.
WAVEBOX L 22.5	8426470000	10
WAVEBOX L 22.5 QV	8426480000	10
Head	8426490000	10
Pin header	8426620000	10
Pin header	8426630000	10
Connector socket	1526560000	100
Connector socket	1526510000	100
Connector socket	1707470000	100
Connector socket	1707700000	100

ZQV 2.5N/2 black	1718080000	60
ZQV 2.5N/2 red	1717900000	60
ZQV 2.5N/2 blue	1717990000	60
ZQV 2.5N/2 yellow	1693800000	60
Coding element	1545710000	100
Coding element	1573010000	100

CAP	8428120000	-
3 W/20 °C	2.2 W/40 °C	-

Type	Cat. No.	Qty.
	8426440000	1x
	8426460000	1x
	8426620000	1x
	8426630000	1x
	1526560000	2x

Dimension drawing, see page 308

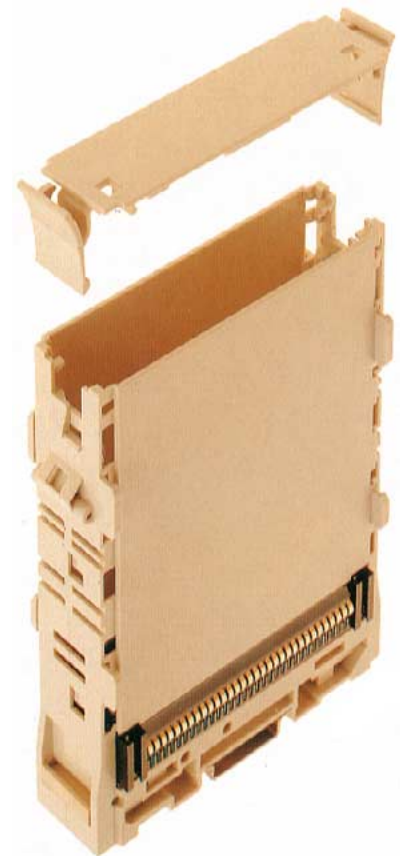
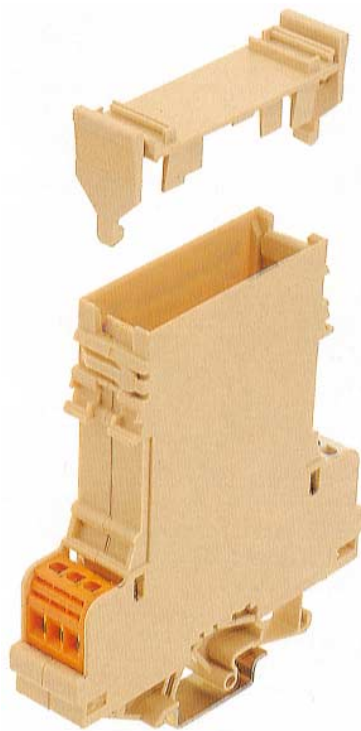


# Housings

## Housings

## SEG-U/LPU

## EG 6



Rated data				
Reference voltage acc. to VDE 0110 1/89	50 V			32 V nach VDE 0110/1.89
Pollution severity	2			2
Overtoltage category	III			III
Current	1 A			
Current-carrying capacity of bus contacts				1 A/δ <sub>U</sub> 50 °C
Volume resistance of bus contacts				12 mΩ
Printed circuit board dimensions				100 x 120 x 1.8 mm
Power loss (when mounted in row)	1.5 W			
Protection class	IP 20			IP 00
Flammability acc. to UL level	V -2			V - 2
Upper temperature limit	100 °C			100 °C
Connection data				
Screw connection solid	0.5...4 mm <sup>2</sup>			
Screw connection stranded	0.5...2.5 mm <sup>2</sup>			
Tightening torque range	0.5 Nm			
Torque phase with electric screwdriver DMS 2	1			
Ordering data	Type	Cat. No.	Qty.	Type
Housing frame	Housing SEG/U	<b>8007870000</b>	-	EG 6 (incl. front plate)
	Cover plate	<b>8066100000</b>	-	<b>8095840000</b>
End plate				
Combi foot, latchable				
Assembly plate				
Clamping yoke unit, right				
Clamping yoke unit, left				
Intermediate plate				
Connection spigot				
Connection tab 0.8 x 6.3 mm				
Connection tab 2 x 0.8 x 2.8 mm				
Tab / solder lug 0.8 x 2.8 mm				
Tab / solder lug 0.8 x 4.8 mm				
Printed circuit board, copper-coated				
Printed circuit board 2.54 pitch				
Dimensions				
See page	307			307



# Housings

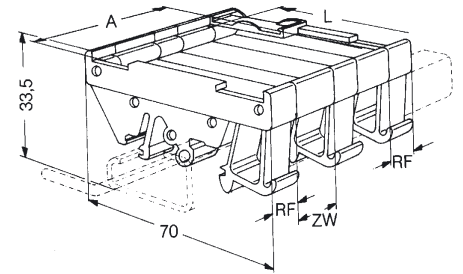
## Locking socket

### RS 45

Strip profile

### RS 70

Locking socket  
Individual parts



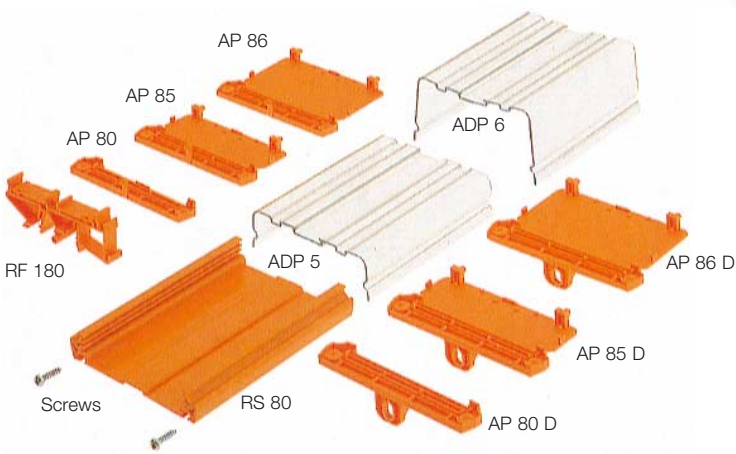
Dimensions							
Fixing foot	Total width:	45 mm		Width: 10 mm	Maß RF		
Spacer	Length:	1000 mm/2000 mm		Width: 5 mm/15 mm/25 mm/30 mm/45 mm	Dim. ZW		
Printed circuit board	For horizontal insertion of a printed circuit board			Width: RS-Br-2 mm (Ex.: RS=45 mm, LP=43 mm)	Dim. A		
	Width:	42 (+0.5) mm		Length: 67.8 (-0.2) mm	Dim. L		
	Thickness:	1.8 (+0.15) mm (DIN 40802 T. 2)		Thickness: 1.6 (±0.2) mm (DIN 40802 Part 2)			
	Length:	optional/60...2000 mm					
	Dim. of RS section: printed circuit board length - 4.5 mm						
	Dim. of ADP section: printed circuit board length - 1 mm						
	Example: circuit board length 160 mm, RS = 155.5 mm, ADP = 159 mm						
Rated data							
Flammability acc. to UL level	V-0 / V-2 strip profile / accessories			V-2			
Upper temperature limit	70 °C			100 °C			
Ordering data		Type	Cat. No.	Qty.	Type	Cat. No.	Qty.
String profile		RS 45 (up to 2000 mm)	<b>4027750000</b>	1			
		RS 45 (up to 1000 mm)	<b>8140880000</b>	1			
Fixing foot right, with marking facility					RFB	<b>0119560000</b>	
Fixing foot right, without marking facility					RFO	<b>0126260000</b>	20
Fixing foot left, without marking facility					RF	<b>0119660000</b>	20
Fixing foot middle (intermediate foot)					RFM	<b>0213760000</b>	20
Fixing foot (RS 80/RS 100) for TS 32/TS 35							
Spacer 5 mm					ZW 5	<b>0119760000</b>	20
Spacer 15 mm					ZW 15	<b>0119860000</b>	20
Spacer 25 mm					ZW 25	<b>0126160000</b>	20
Spacer 30 mm					ZW 30	<b>0119960000</b>	20
Spacer 45 mm					ZW 45	<b>0120060000</b>	20
End plate for mounting on rail without cover	AP 45/LI	AP 45/RE	<b>8143910000</b>	<b>8143900000</b>			
End plate for direct mounting without cover	AP 45/LI Di	AP 45/RE Di	<b>8140870000</b>	<b>8140860000</b>			
End plate for mounting on rail with low cover							
End plate for direct mounting with low cover							
End plate for mounting on rail with high cover							
End plate for direct mounting with high cover							
Cover profile, low							
Cover profile, high							
Screws	30 x 14		<b>4011200000</b>	-			
Accessories							
Insert tag (unprinted)					ESO 7	<b>0515200000</b>	-
Protective strip, transparent					SSt 7	<b>0515300000</b>	100



# Housings

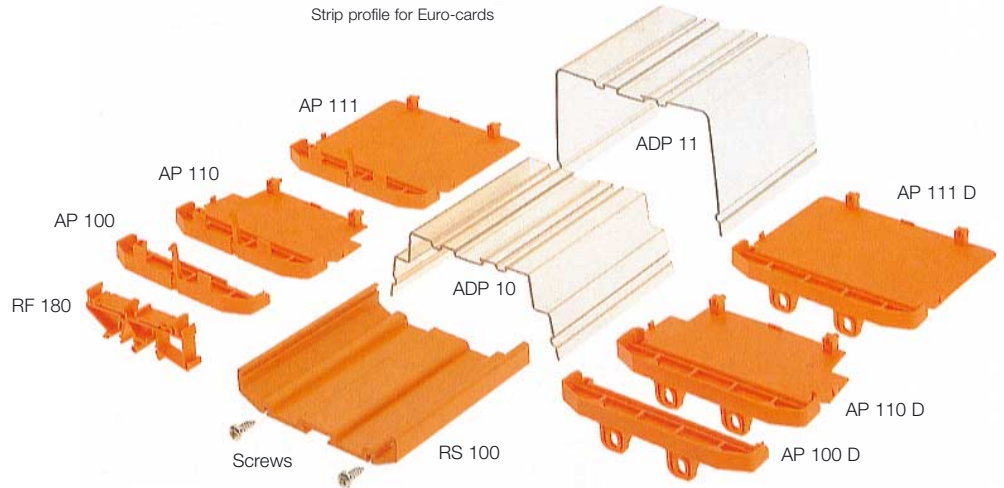
## RS 80

Strip profile



## RS 100

Strip profile for Euro-cards



AP RF80 RE/LT

Total width:	84 mm
Length:	2000 mm

For horizontal insertion of a printed circuit board	
Width:	67.8 (+0.2) mm
Thickness:	1.8 (+0.15) mm (DIN 40802 T. 2)
Dim. RS section printed circuit board length -4.5 mm	
Dim. ADP section printed circuit board length -2 mm	
Example: circuit board length 160 mm, RS = 155.5 mm, ADP = 158 mm	

V-0 / V-2 strip profile / accessories  
70 °C

Type	orange (RAL 2000)	grey (RAL 7032)	Qty.
RS 80 (2000 mm) grey		<b>4183130000</b>	1
RS 80 (2000 mm) orange	<b>4157440000</b>		1
RF 180	<b>1324460000</b>	<b>1773400000</b>	20
AP 80	<b>1324260000</b>	<b>8320300000</b>	20
AP 80 D	<b>1324360000</b>		20
AP RF 80 RE		<b>8156200000</b>	-
AP RF 80 LT		<b>8156210000</b>	-
AP 85	<b>1410860000</b>		20
AP 85 D	<b>1411060000</b>		20
AP 86	<b>1410960000</b>		20
AP 86 D	<b>1411160000</b>		20
ADP 5 (1000 mm)	<b>4167150000</b>		-
ADP 6 (1000 mm)	<b>4167160000</b>		-
30 x 14	<b>4011200000</b>		-

Total width:	104 mm
Length:	2000 mm/160 mm

For horizontal insertion of a printed circuit board	
Width:	100 (+0.5) mm
Thickness:	1.8 (+0.5) mm (DIN 40802 Part 2)
Dim. RS section printed circuit board length -4.5 mm	
Dim. ADP section printed circuit board length -1 mm	
Example: circuit board length 160 mm, RS = 155.5 mm, ADP = 159 mm	

V-0 / V-2 strip profile / accessories  
70 °C

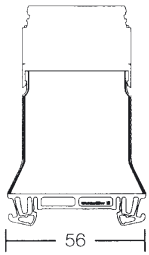
Type	orange (RAL 2000)	grey (RAL 7032)	Qty.
RS 100 (2000 mm) grey		<b>4010870000</b>	1
RS 100 (2000 mm) orange	<b>4144870000</b>		1
RS 100 (155 mm)	<b>4148400000</b>		1
RF 180	<b>1324460000</b>	<b>1773400000</b>	20
AP 100	<b>1185060000</b>	<b>1773410000</b>	20
AP 100 D	<b>1185160000</b>		20
AP 110	<b>1185260000</b>		20
AP 110 D	<b>1185360000</b>		20
AP 111	<b>1185460000</b>		20
AP 111 D	<b>1185560000</b>		20
ADP 10 (2000 mm)	<b>4169320000</b>		(2 m)
ADP 11 (2000 mm)	<b>4169330000</b>		(2 m)
40 x 14	<b>4019420000</b>		-

# Housings

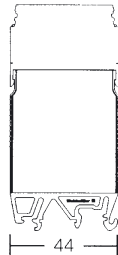
## Housings EG.../RST OST

Dimensions  
 Connection data  
 Accessories

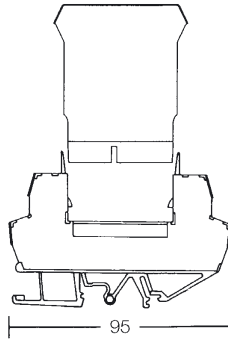
### EGR/EG 7



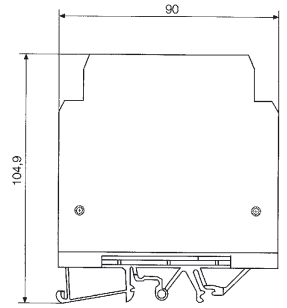
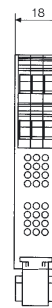
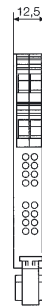
### EGR/EGO



### RST/EG 7

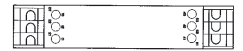


### EG 8 / EG 12



EG 8

EG 12



	EG 7/35 for TS 35	EG 7/combi foot
Width (mm)	10	10
Height (mm)		
with TS 35 x 7.5	92	96
with TS 35 x 15	100	103
with TS 32		100

RST/OST EG 7	
Width (mm)	10
Height assembled (mm)	
823472 for TS 32	
with TS 35 x 7.5	91
with TS 35 x 15	99
819383 with combi foot	
with TS 35 x 7.5	93
with TS 35 x 15	101
with TS 32	97

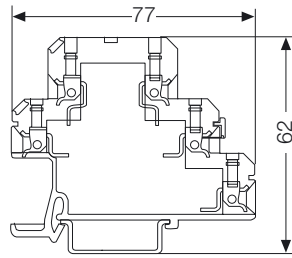
Dimensions	
<b>EG 8</b>	
Width (mm)	12.5
Height (mm)	104.9
<b>EG 12</b>	
Width (mm)	18
Height (mm)	104.9

# Housings

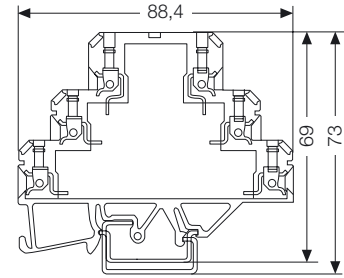
## Housings

Dimensions  
Connection data  
Accessories

### DK 5



### DK 6



Dimensions	
Terminal width (+ fitting tolerance 0.2 mm)	
Insulating stripping length	
Connection data	
Screw connection, solid	
Screw connection, stranded	
Connection cross-section	
Accessories	
Mounting rail (2 m lengths)	y
	w
	v
End bracket	for TS 32
	for TS 35
End plate	
Marking material*	

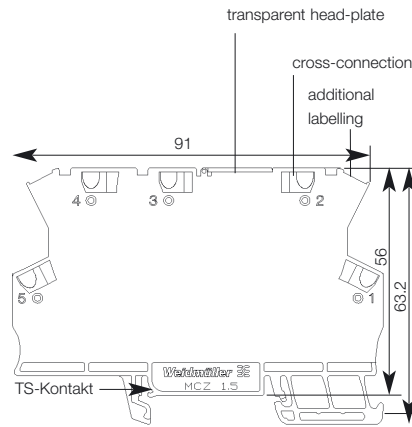
DK 5	
Terminal width	6 mm
Insulating stripping length	9 mm
Connection data	
Screw connection, solid	0.5...4 mm <sup>2</sup>
Screw connection, stranded	0.5...4 mm <sup>2</sup>
Connection cross-section	AWG 20...12
Accessories	
Type	Cat. No.
TS 32	<b>0122800000</b>
TS 35 x 7.5	<b>0383400000</b>
TS 35 x 15	<b>0498000000</b>
EWK 2	<b>0199360000</b>
EW 35	<b>0383560000</b>
AP	<b>8268870000</b>
dekafix 5	

DK 6	
Terminal width	8 mm
Insulating stripping length	9 mm
Connection data	
Screw connection, solid	0.5...4 mm <sup>2</sup>
Screw connection, stranded	0.5...4 mm <sup>2</sup>
Connection cross-section	AWG 20...12
Accessories	
Type	Cat. No.
TS 32	
TS 35 x 7.5	<b>0383400000</b>
TS 35 x 15	<b>0498000000</b>
EWK 2	<b>0199360000</b>
EW 35	<b>0383560000</b>
AP	<b>8324560000</b>
dekafix 5	

\*For more information see sectional catalogue 5/installation products

## Housings miniconditioner MCZ

Dimensions  
Connection data  
Accessories



Dimensions	
Width (mm) + fitting tolerance 0.2	6
Insulating stripping length (mm)	6
Connection data	
Z-spring connection, solid	0.5...1.5 mm <sup>2</sup>
Z-spring connections, stranded	0.5...1.5 mm <sup>2</sup>
Connection cross-section	AWG 26...16
Accessories	
Mounting rail (2 m lengths) w	
Mounting rail (2 m lengths) v	
End plate	
End bracket for TS 35	
Cross-connection (pluggable)	

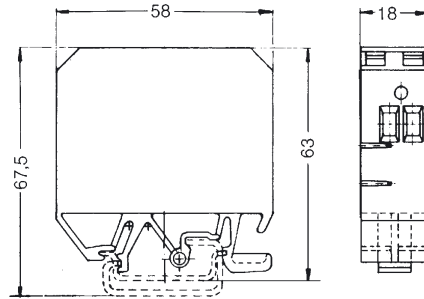
MCZ	
Terminal width	6 mm
Insulating stripping length	6 mm
Connection data	
Screw connection, solid	0.5...1.5 mm <sup>2</sup>
Screw connection, stranded	0.5...1.5 mm <sup>2</sup>
Connection cross-section	AWG 26...16
Accessories	
Type	Cat. No.
TS 35 x 7.5	<b>0383400000</b>
TS 35 x 15	<b>0498000000</b>
APMCZ 1.5	<b>8389030000</b>
EW 35	<b>0383560000</b>
ZQV 4 2-pole	<b>1608950000</b>
ZQV 4 3-pole	<b>1608960000</b>
ZQV 4 4-pole	<b>1608970000</b>
ZQV 4 5-pole	<b>1608980000</b>
ZQV 4 6-pole	<b>1608990000</b>
ZQV 4 7-pole	<b>1609000000</b>
ZQV 4 8-pole	<b>1609010000</b>
ZQV 4 9-pole	<b>1609020000</b>
ZQV 4 10-pole	<b>1609030000</b>

# Housings

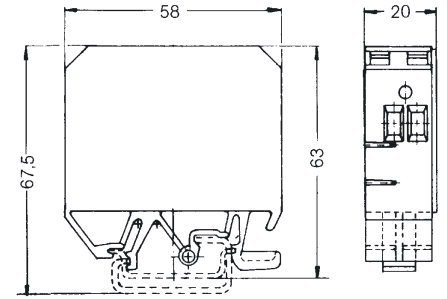
## Housings EG.../EG-U/LPU

Dimensions  
Connection data  
Accessories

EG 1 - Fig. I



EG 2 - Fig. II

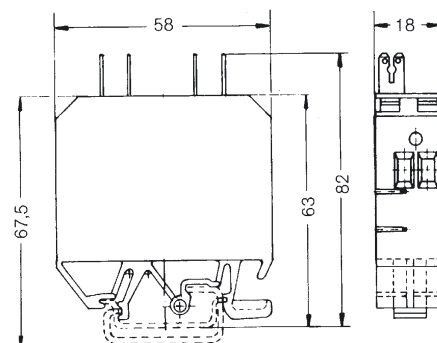


Dimensions	
Terminal width (+fitting tolerance 0.2 mm)	18 mm
Insulating stripping length	12 mm
Connection data	
Screw connection, solid	0.5...6 mm <sup>2</sup>
Screw connection, stranded	0.5...4 mm <sup>2</sup>
Connection cross-section	AWG 20...12
Accessories	
Mounting rail (2 m lengths)	Y
	W
	U
End bracket	for TS 32
	for TS 35
Cross connection wire: 80 mm long, 50-pole/1 mm <sup>2</sup>	
Marking material*	

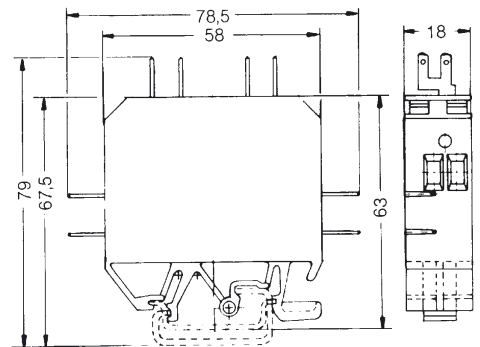
Type	Cat. No.
TS 32	0122800000
TS 35 x 7.5	0383400000
TS 35 x 15	0498000000
EKW 2	0199360000
EW 35	0383560000
QD 50/grey	0238700000
<b>dekafix 5</b>	

Type	Cat. No.
TS 32	0122800000
TS 35 x 7.5	0383400000
TS 35 x 15	0498000000
EKW 2	0199360000
EW 35	0383560000
QD 50/grey	0238700000
<b>dekafix 5</b>	

EG 2 - Fig. III



EG 2 - Fig. IV



Dimensions	
Terminal width (+fitting tolerance 0.2 mm)	18 mm
Insulating stripping length	
Connection data	
Screw connection, solid	
Screw connection, stranded	
Tab connection (DIN 46247)	2x 0.8 x 2.8 mm or 1x 0.8 x 6.3 mm
Connection cross-section	
Accessories	
Mounting rail (2 m lengths)	Y
	W
	U
End bracket	for TS 32
	for TS 35
Cross connection wire: 80 mm long, 50-pole/1 mm <sup>2</sup>	
Marking material*	

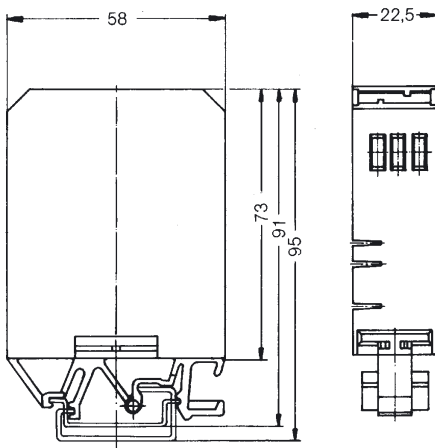
Type	Cat. No.
TS 32	0122800000
TS 35 x 7.5	0383400000
TS 35 x 15	0498000000
EKW 2	0199360000
EW 35	0383560000
QD 50/grey	0238700000
<b>dekafix 5</b>	

Type	Cat. No.
TS 32	0122800000
TS 35 x 7.5	0383400000
TS 35 x 15	0498000000
EKW 2	0199360000
EW 35	0383560000
QD 50/grey	0238700000
<b>dekafix 5</b>	

\* see sectional catalogue 7

# Housings

EG 3 - Fig. V



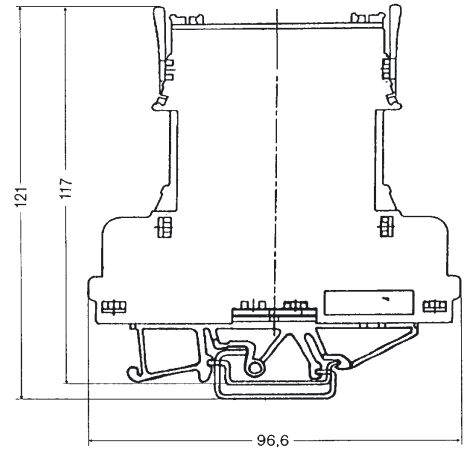
with assembly plate MPL

22.5 mm  
17 mm

0.5...4 mm<sup>2</sup>  
0.5...2.5 mm<sup>2</sup>

Type	Cat. No.
TS 32	0122800000
TS 35 x 7.5	0383400000
TS 35 x 15	0498000000
EKW 2	0199360000
EW 35	0383560000
QD 50/grey	0238700000
<b>dekafix 6.5</b>	

SEG-U/LPU



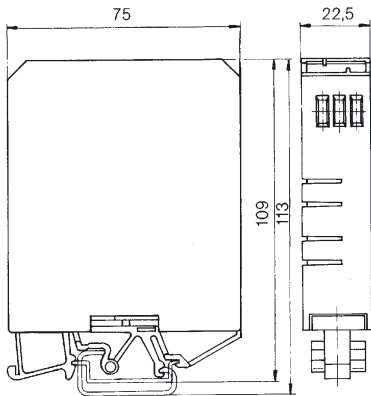
with assembly plate MPL

20 mm  
17 mm

0.5...4 mm<sup>2</sup>  
0.5...2.5 mm<sup>2</sup>  
AWG 26...14

Type	Cat. No.
TS 32	0122800000
TS 35 x 7.5	0383400000
TS 35 x 15	0498000000
EKW 2	0199360000
EW 35	0383560000
QD 50/grey	0238700000
<b>dekafix 5</b>	

EG 4 - Fig. VI

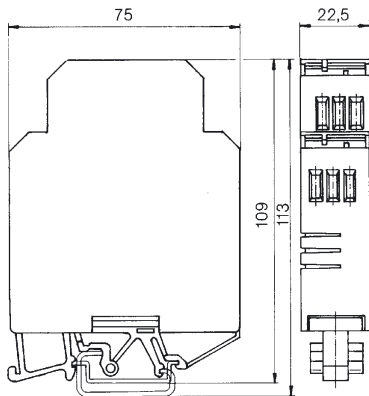


22.5 mm  
17 mm

0.5...4 mm<sup>2</sup>  
0.5...2.5 mm<sup>2</sup>  
AWG 22...12

Type	Cat. No.
TS 32	0122800000
TS 35 x 7.5	0383400000
TS 35 x 15	0498000000
EKW 2	0199360000
EW 35	0383560000
QD 50/grey	0238700000
<b>dekafix 6.5</b>	

EG 5 - Fig. VII

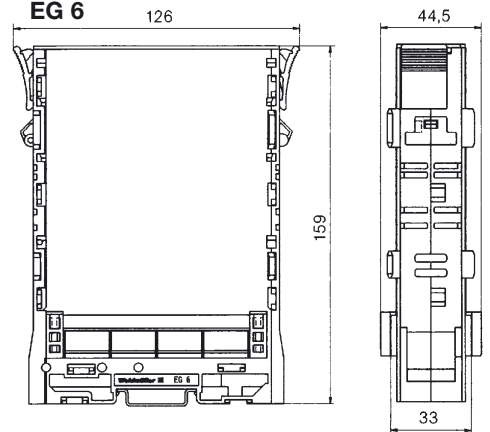


22.5 mm  
17 mm

0.5...4 mm<sup>2</sup>  
0.5...2.5 mm<sup>2</sup>  
AWG 22...12

Type	Cat. No.
TS 32	0122800000
TS 35 x 7.5	0383400000
TS 35 x 15	0498000000
EKW 2	0199360000
EW 35	0383560000
QD 50/grey	0238700000
<b>dekafix 6.5</b>	

EG 6



Anreihmaß

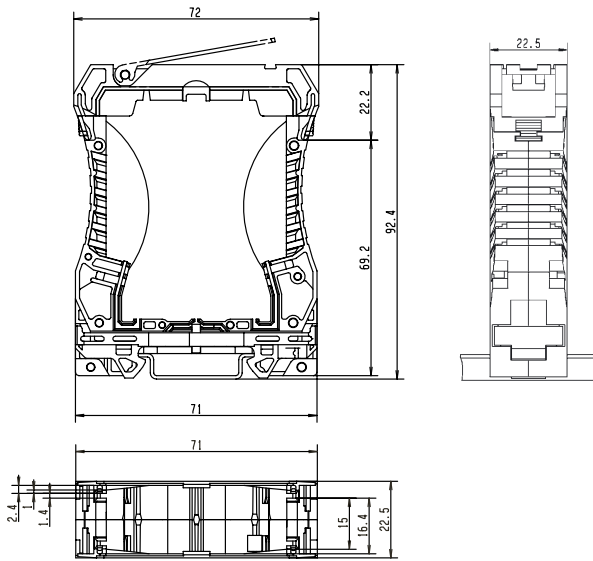
20 mm  
17 mm

0.5...4 mm<sup>2</sup>  
0.5...2.5 mm<sup>2</sup>  
AWG 22...12

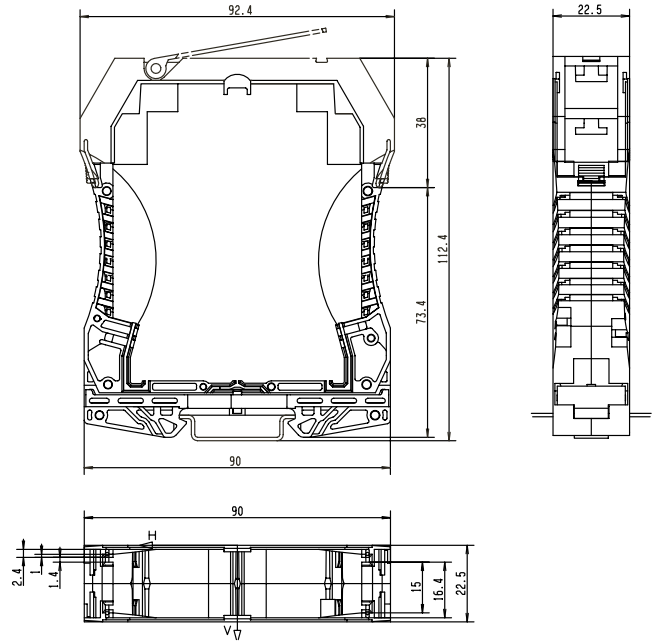
Type	Cat. No.
TS 35 x 7.5	0383400000
TS 35 x 15	0498000000
EW 35	0383560000
<b>dekafix 6.5</b>	

# Housings

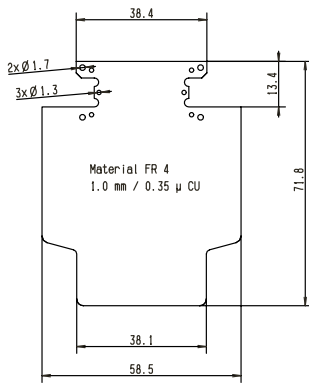
## WAVEBOX S 22.5



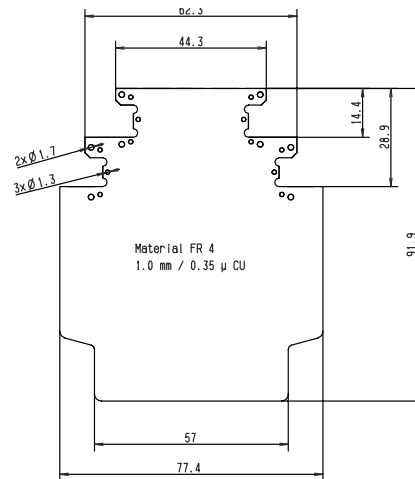
## WAVEBOX L 22.5



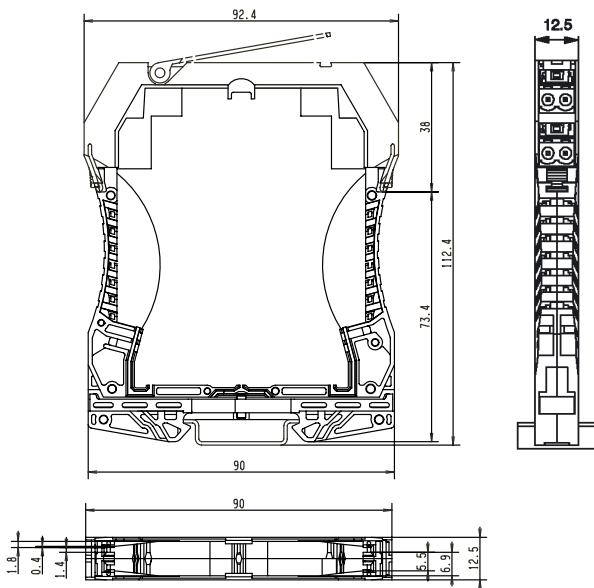
## Printed circuit board S 22.5



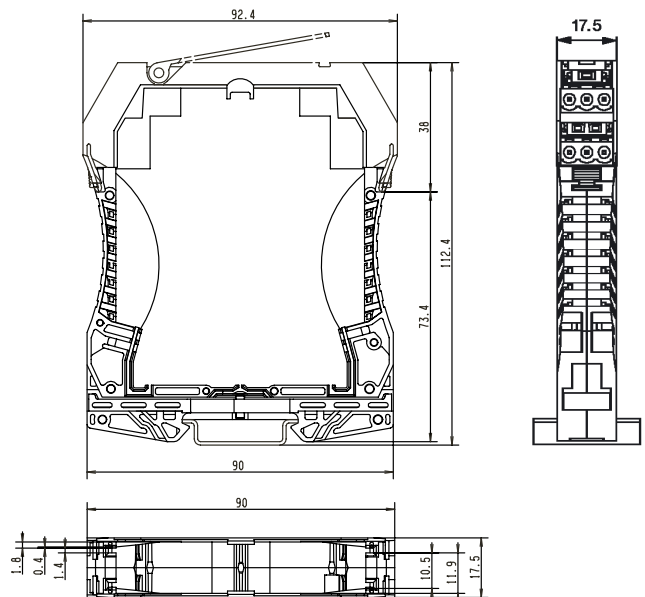
## Printed circuit board L 22.5



## WAVEBOX 12.5



## WAVEBOX 17.5

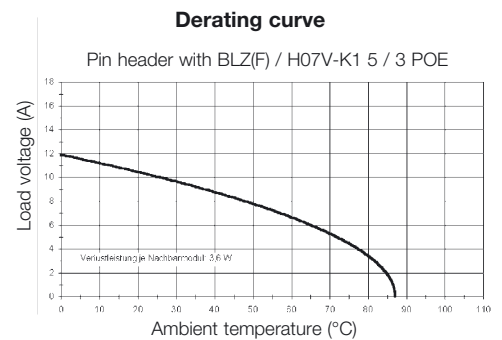
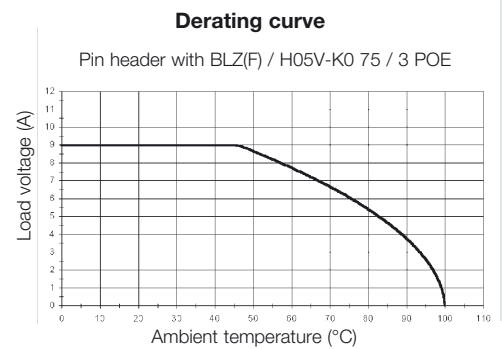
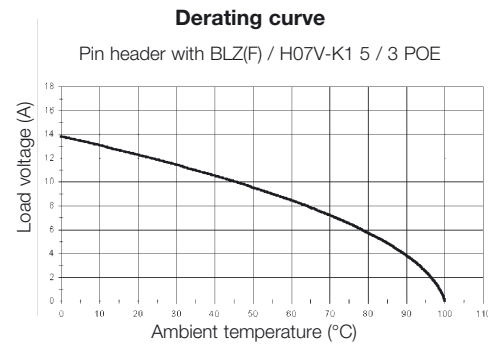


# Housings

## Socket blocks BLZ 5.08 / BLZF 5.08

Materials data	BLZ 5.08/SL 5.08	BLZF 5.08
Insulating material	PBT	PBT
Colour	orange	orange
Temperature range	-20.. +100 °C	-20.. +100 °C
Flammability class	UL 94 (VO)	UL 94 (VO)
Contact base material	CuSn	CuSn
Contact surface	tin plated	tin plated
Characteristic system values		
Pitch	5.08 mm	5.08 mm
Clearance	≥ 2.5 mm	≥ 3 mm
Creepage distance	≥ 4.0 mm	≥ 4.0 mm
Connection technology	Screw/solder connection	Tension clamp connection
Length of soldering pin	3.2/4.5 mm	
Mounting hole	∅ 1.3 + 0.1 mm	
Insulating stripping length	7 mm	7 mm
Terminal screw	M 2.5	
Isolations resistance	≥ 10 MΩ	≥ 10 <sup>5</sup> MΩ
Trough resistance	≤ 5 mΩ	≤ 5 mΩ
Connectable wires		
Terminal range	0.08...2.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>
"e" solid H05(07)V-U	0.5...2.5 mm <sup>2</sup>	0.13...1.5 mm <sup>2</sup>
"f" flexible H05(07)V-K	0.5...2.5 mm <sup>2</sup>	0.13...2.5 mm <sup>2</sup>
"f" with ferrules		
according to DIN 46228/1	0.5...2.5 mm <sup>2</sup>	0.05...2.5 mm <sup>2</sup>
with plastic collar		
according to DIN 46228/4	0.5...1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>
AWG wire	28...14	26...14
Plug gauge acc. to EN 60947-1/10.91	A3	
Rated data according to VDE		<b>VDE 0110 2.79</b>
Rated cross-section	2.5mm <sup>2</sup>	2.5mm <sup>2</sup>
Rated current	12A <sup>1)</sup>	12A <sup>1)</sup>
Current capacity	see derating curves <sup>2)</sup>	see derating curves <sup>2)</sup>
Test voltage	2.0 kV~	2.0 kV~
Nominal torque	0.5 Nm	
Rated data according to		<b>VDE 0110 1.89</b>
Rated cross-section		1.5mm <sup>2</sup>
Rated current (T <sub>u</sub> =20°C)		12A <sup>3)</sup>
Rated voltage		250 V
Rated impulse voltage		4 kV
Pollution severity		3
Rated data according to UL	Rated data according to UL	
AWG wire	22...12	26...14
Rated current	10 A	10 A
Rated voltage, industriell	300 V~	300 V~
Operation tool		
Screwdriver type SD/SDI 5		
Approvals	List on request	Applied for

<sup>1)</sup> Rated cross-section and max. number of poles established from derating curve at 20 °C ambient temperature  
<sup>2)</sup> Further derating curves on demand

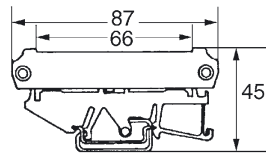




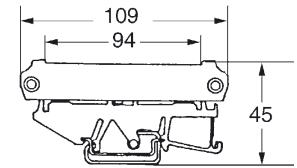
# Housings

## Locking socket profiles RS

**RS 80**



**RS 100**

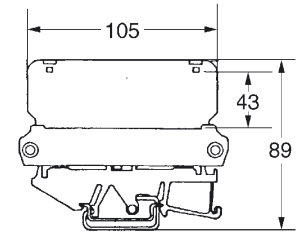
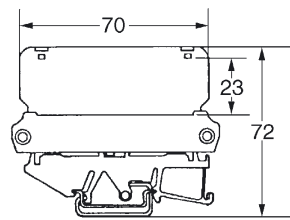


### Rail mounting without cover

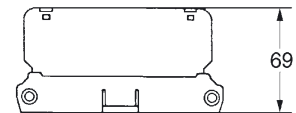
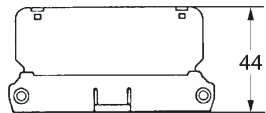
### Direct mounting without cover



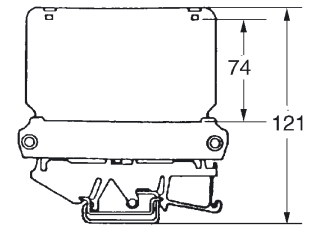
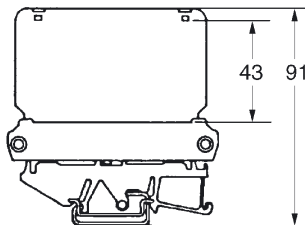
### Rail mounting with low cover



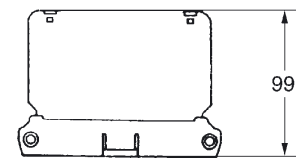
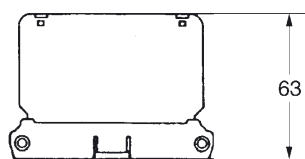
### Direct mounting with low cover



### Rail mounting with high cover

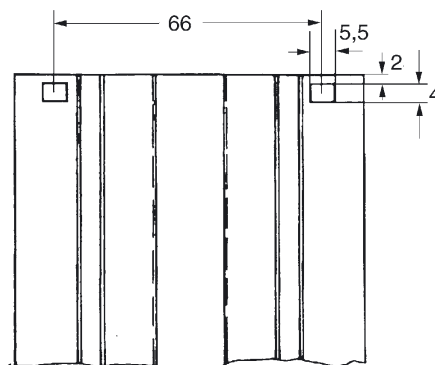


### Direct mounting with high cover

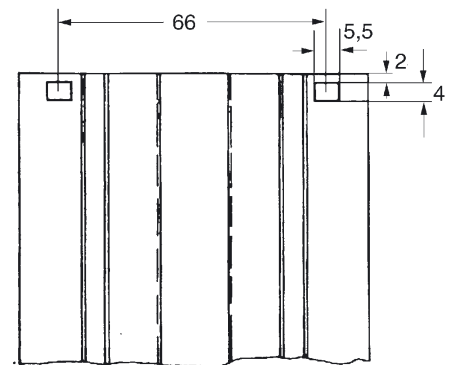


## Fixing holes

**ADP 5 / ADP 6**



**ADP 10 / ADP 11**



# Housings

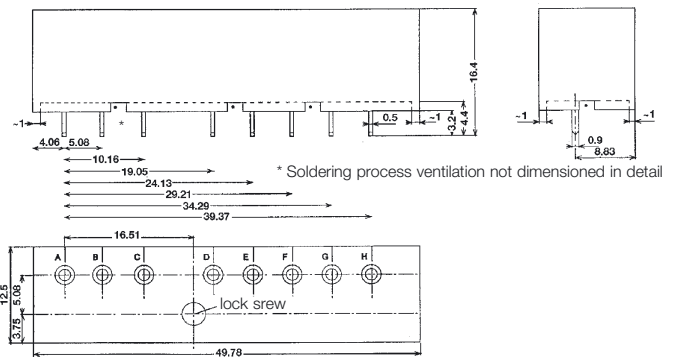
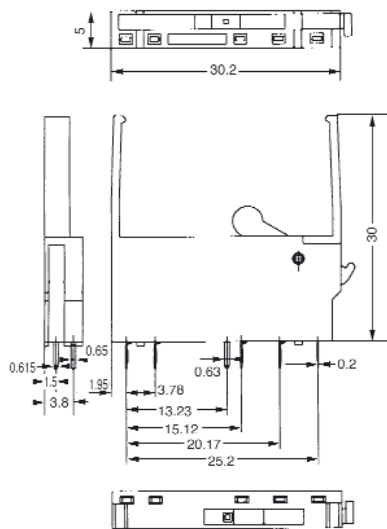
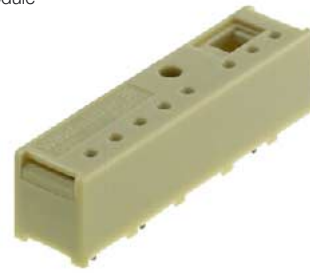
## Pluggable relay socket RSS 5MM

- Suitable for PCB mounting
- For miniature all-or-nothing relays type *Tyco* SNR, *NAIS* APE ...
- Mechanical interlock with eject lever



## Semi-wire relay socket OS 2 and OS 2/5

- Suitable for PCB mounting
- For solid state relays Type *Opto 22*, *Crouzet* ...
- Secured in socket by fixing screws integrated in the module



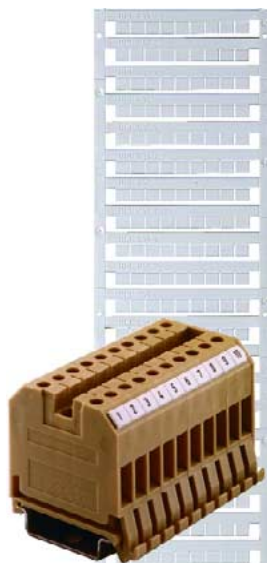
Ordering data	Type	Cat. No.
	RSS 5 MM	4056360000
Technical data		
Input voltage	250 V	
Output voltage	250 V	
Max. switching current	6 A	
Rated current	5 A	
Flammability class acc. to UL 94	V-2	
Insulation coordination acc. to EN 50178		
Rated voltage	250 V	
Rated impulse voltage		
Input circuit	4 kV (1.2/50 µs)	
Output circuit	4 kV (1.2/50 µs)	
Input < output	< 8 kV (1.2/50 µs)	
Overvoltage category	III	
Pollution severity	2	
Ambient conditions		
Ambient temperature	- 25°C ... + 50°C	
Storage temperature	- 40°C ... + 85°C	
Dimensions		
Length / width / height	30,2 / 5 / 30 mm	
Soldering pin	3.5 mm	

Ordering data	Type	Cat. No.
	OS2	9455210000 <sup>1)</sup>
	OS2/5	9457640000 <sup>2)</sup>
Technical data		
Input voltage	250 V	
Output voltage	250 V	
Rated current	5 A	
Flammability class acc. to UL 94	V-2	
Insulation coordination acc. to EN 50178		
Rated voltage	250 V	
Rated impulse voltage		
Input circuit	4 kV (1.2/50 µs)	
Output circuit	4 kV (1.2/50 µs)	
Input < output	< 8 kV (1.2/50 µs)	
Overvoltage category	III	
Pollution severity	2	
Ambient conditions		
Ambient temperature	- 25°C ... + 50°C	
Storage temperature	- 40°C ... + 85°C	
Dimensions		
Length / width / height	49,78 / 12,5 / 13,2 mm	
Soldering pin	3,2 mm	

<sup>1)</sup> equipped with with contact sockets B, C, F, H  
<sup>2)</sup> equipped with with contact sockets A, B, C, F, H

## dekafix

Standard print example



DEK (MultiCard) terminal markers



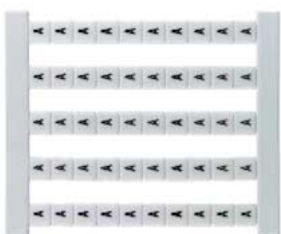
identical character horizontal (GW)



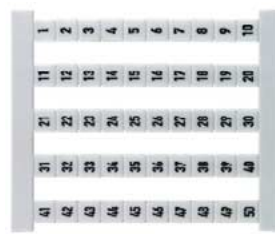
consecutive horizontal (FW)



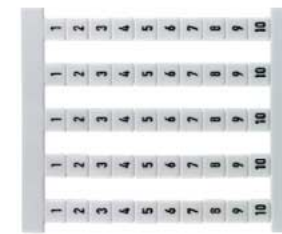
consecutive horizontal in rows (FWZ)



identical character vertical (GS)



consecutive vertical (FS)



consecutive vertical in rows (FSZ)

Terminal width $\geq$ 5 mm			Qty.
Type	Colour	Cat. No.	
<b>dekafix 5 (DEK 5)</b>			
<b>Standard print</b>		<b>see next page</b>	
Print			
DEK 5	white		500
Letters, digits, symbols			

Individual print acc.to requirements			Qty.
DEK 5	white	<b>0490760000</b>	500
orange, red, grey, yellow, brown, green, blue, violet			
		<b>0490790000</b>	500
Please declare colour requirements			
DEK 5/5	<b>MultiCard</b>	<b>1609810000</b>	200

Neutral			Qty.
DEK 5	white	<b>0473361044</b>	500
DEK 5	orange	<b>0473391690</b>	500
DEK 5	red	<b>0473391686</b>	500
DEK 5	grey	<b>0473391691</b>	500
DEK 5	yellow	<b>0473391687</b>	500
DEK 5	brown	<b>0473391692</b>	500
DEK 5	green	<b>0473391688</b>	500
DEK 5	blue	<b>0473391693</b>	500
DEK 5	violet	<b>0473391689</b>	500
DEK 5	black	<b>0473391694</b>	500

DEK 5/5	<b>MultiCard</b>	<b>1609800000</b>	1000
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Terminal width $\geq$ 6 mm			Qty.
Type	Colour	Cat. No.	
<b>dekafix 6 (DEK 6)</b>			
<b>Standard print</b>		<b>see next page</b>	
Print			
DEK 6	white		500
Letters, digits, symbols			

Individual print acc.to requirements			Qty.
DEK 6	white	<b>0490360000</b>	500
orange, red, grey, yellow, brown, green, blue, violet			
		<b>0490390000</b>	500
Please declare colour requirements			
DEK 5/6	<b>MultiCard</b>	<b>1609830000</b>	200

Neutral			Qty.
DEK 6	white	<b>0468561044</b>	500
DEK 6	orange	<b>0468591690</b>	500
DEK 6	red	<b>0468591686</b>	500
DEK 6	grey	<b>0468591691</b>	500
DEK 6	yellow	<b>0468591687</b>	500
DEK 6	brown	<b>0468591692</b>	500
DEK 6	green	<b>0468591688</b>	500
DEK 6	blue	<b>0468591693</b>	500
DEK 6	violet	<b>0468591689</b>	500
DEK 6	black	<b>0468591694</b>	500

DEK 5/6	<b>MultiCard</b>	<b>1609820000</b>	1000
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Terminal width $\geq$ 6.5 mm			Qty.
Type	Colour	Cat. No.	
<b>dekafix 6.5 (DEK 6.5)</b>			
<b>Standard print</b>		<b>see next page</b>	
Print			
DEK 6.5	white		500
Letters, digits, symbols			

Individual print acc.to requirements			Qty.
DEK 6,5	white	<b>0490560000</b>	500
orange, red, grey, yellow, brown, green, blue, violet			
		<b>0490590000</b>	500
Please declare colour requirements			
DEK 5/6,5	<b>MultiCard</b>	<b>1609850000</b>	180

Neutral			Qty.
DEK 6,5	white	<b>0468061044</b>	500
DEK 6,5	orange	<b>0468091690</b>	500
DEK 6,5	red	<b>0468091686</b>	500
DEK 6,5	yellow	<b>0468091687</b>	500
DEK 6,5	green	<b>0468091688</b>	500
DEK 6,5	blue	<b>0468091693</b>	500
DEK 6,5	violet	<b>0468091689</b>	500
DEK 6,5	black	<b>0468091694</b>	500

DEK 5/6,5	<b>MultiCard</b>	<b>1609840000</b>	1000
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Terminal width $\geq$ 8 mm			Qty.
Type	Colour	Cat. No.	
<b>dekafix 8 (DEK 8)</b>			
<b>Standard print</b>		<b>see Appendix</b>	
Print			
DEK 8	white		500
Digits			

Individual print acc.to requirements			Qty.
DEK 8	white	<b>1326660000</b>	500
orange, red, grey, yellow, brown, green, blue, violet			
		<b>1326690000</b>	500
Please declare colour requirements			

DEK 8 = Base not centred

Terminal width $\geq$ 8 mm			Qty.
Type	Colour	Cat. No.	
<b>dekafix 8 (DEK 8)</b>			
<b>Neutral</b>			
DEK 8	white	<b>1277060000</b>	500
DEK 8	orange	<b>1277091690</b>	500
DEK 8	red	<b>1277091686</b>	500
DEK 8	grey	<b>1277091691</b>	500
DEK 8	yellow	<b>1277091687</b>	500
DEK 8	brown	<b>1277091692</b>	500
DEK 8	green	<b>1277091688</b>	500
DEK 8	blue	<b>1277091693</b>	500
DEK 8	violet	<b>1277091689</b>	500
DEK 8	black	<b>1277091694</b>	500

Terminal width $\geq$ 3.5 mm			Qty.
Type	Colour	Cat. No.	
<b>dekafix MC 5/3.5 (DEK 5/3.5)</b>			
<b>Standard print</b>		<b>see Appendix</b>	
Print			
DEK 5/3.5	<b>MultiCard</b>	white	500
Digits			

Individual print acc.to requirements			Qty.
DEK 5/3.5	<b>MultiCard</b>	white	<b>1767730000</b>
Please declare colour requirements			
<b>Neutral</b>			
DEK 5/3.5	<b>MultiCard</b>	white	<b>1755270000</b>

## DEK Variations

Type / Print	Cat. No.	Type / Print	Cat. No.	Type / Print	Cat. No.
DEK 5 FW 10-500	0132660010	DEK 5 FSZ 41-50	0460660041	DEK 5 GW 5	0522660005
DEK 5 FW COLOURED	0132690000	DEK 5 FSZ 51-60	0460660051	DEK 5 GW 6	0522660006
DEK 5 GS A	0132961021	DEK 5 FSZ 61-70	0460660061	DEK 5 GW 7	0522660007
DEK 5 GS B	0132961022	DEK 5 FSZ 71-80	0460660071	DEK 5 GW 8	0522660008
DEK 5 GS C	0132961023	DEK 5 FSZ 81-90	0460660081	DEK 5 GW 9	0522660009
DEK 5 GS D	0132961024	DEK 5 FSZ 91-100	0460660091	DEK 5 GW 10	0522660010
DEK 5 GS E	0132961025	DEK 5 BLANK	0473360000	DEK 5 GW 11	0522660011
DEK 5 GS F	0132961026	DEK 5 RT BLANK	0473391686	DEK 5 GW 12	0522660012
DEK 5 GS G	0132961027	DEK 5 GE BLANK	0473391687	DEK 5 GW 13	0522660013
DEK 5 GS H	0132961028	DEK 5 GN BLANK	0473391688	DEK 5 GW 14	0522660014
DEK 5 GS I	0132961029	DEK 5 VI BLANK	0473391689	DEK 5 GW 15	0522660015
DEK 5 GS J	0132961030	DEK 5 OR BLANK	0473391690	DEK 5 GW 16	0522660016
DEK 5 GS K	0132961031	DEK 5 GR BLANK	0473391691	DEK 5 GW 17	0522660017
DEK 5 GS L	0132961032	DEK 5 BR BLANK	0473391692	DEK 5 GW 18	0522660018
DEK 5 GS M	0132961033	DEK 5 BL BLANK	0473391693	DEK 5 GW 19	0522660019
DEK 5 GS N	0132961034	DEK 5 SW BLANK	0473391694	DEK 5 GW 20	0522660020
DEK 5 GS O	0132961035	DEK 5 FW 1-50	0473460001	DEK 5 GW 21	0522660021
DEK 5 GS P	0132961036	DEK 5 FW 51-100	0473460051	DEK 5 GW 22	0522660022
DEK 5 GS Q	0132961037	DEK 5 FW 101-150	0473460101	DEK 5 GW 23	0522660023
DEK 5 GS R	0132961038	DEK 5 FW 151-200	0473460151	DEK 5 GW 24	0522660024
DEK 5 GS S	0132961039	DEK 5 FW 201-250	0473460201	DEK 5 GW 25	0522660025
DEK 5 GS T	0132961040	DEK 5 FW 251-300	0473460251	DEK 5 GW 26	0522660026
DEK 5 GS U	0132961041	DEK 5 FW 301-350	0473460301	DEK 5 GW 27	0522660027
DEK 5 GS V	0132961042	DEK 5 FW 351-400	0473460351	DEK 5 GW 28	0522660028
DEK 5 GS W	0132961043	DEK 5 FW 401-450	0473460401	DEK 5 GW 29	0522660029
DEK 5 GS X	0132961044	DEK 5 FW 451-500	0473460451	DEK 5 GW 30	0522660030
DEK 5 GS Y	0132961045	DEK 5 FW 501-550	0473460501	DEK 5 GW 31	0522660031
DEK 5 GS Z	0132961046	DEK 5 FW 551-600	0473460551	DEK 5 GW 32	0522660032
DEK 5 FW U1-PE1	0133161114	DEK 5 FW 601-650	0473460601	DEK 5 GW 33	0522660033
DEK 5 FW U2-PE2	0133161115	DEK 5 FW 651-700	0473460651	DEK 5 GW 34	0522660034
DEK 5 FW U3-PE3	0133161116	DEK 5 FW 701-750	0473460701	DEK 5 GW 35	0522660035
DEK 5 FW U4-PE4	0133161117	DEK 5 FW 751-800	0473460751	DEK 5 GW 36	0522660036
DEK 5 FW U5-PE5	0133161118	DEK 5 FW 801-850	0473460801	DEK 5 GW 37	0522660037
DEK 5 FW U6-PE6	0133161119	DEK 5 FW 851-900	0473460851	DEK 5 GW 38	0522660038
DEK 5 FW U7-PE7	0133161120	DEK 5 FW 901-950	0473460901	DEK 5 GW 39	0522660039
DEK 5 FW U8-PE8	0133161121	DEK 5 FW 951-999	0473460951	DEK 5 GW 40	0522660040
DEK 5 FW U9-PE9	0133161122	DEK 5 FS 1-50	0473560001	DEK 5 GW 41	0522660041
DEK 5 FW X1-Z1	0133261150	DEK 5 FS 51-100	0473560051	DEK 5 GW 42	0522660042
DEK 5 FW X2-Z2	0133261151	DEK 5 FS 101-150	0473560101	DEK 5 GW 43	0522660043
DEK 5 FW X3-Z3	0133261152	DEK 5 FS 151-200	0473560151	DEK 5 GW 44	0522660044
DEK 5 FW X4-Z4	0133261153	DEK 5 FS 201-250	0473560201	DEK 5 GW 45	0522660045
DEK 5 FW X5-Z5	0133261154	DEK 5 FS 251-300	0473560251	DEK 5 GW 46	0522660046
DEK 5 FW X6-Z6	0133261155	DEK 5 FS 301-350	0473560301	DEK 5 GW 47	0522660047
DEK 5 FW X7-Z7	0133261156	DEK 5 FS 351-400	0473560351	DEK 5 GW 48	0522660048
DEK 5 FW X8-Z8	0133261157	DEK 5 FS 401-450	0473560401	DEK 5 GW 49	0522660049
DEK 5 FW X9-Z9	0133261158	DEK 5 FS 451-500	0473560451	DEK 5 GW 50	0522660050
DEK 5 FW X10-Z10	0133261159	DEK 5 FS 501-550	0473560501	DEK 5 GW 51	0522660051
DEK 5 GS PE	0157261187	DEK 5 FS 551-600	0473560551	DEK 5 GW 52	0522660052
DEK 5 GS g	0157261202	DEK 5 FS 601-650	0473560601	DEK 5 GW 53	0522660053
DEK 5 GS h	0157261203	DEK 5 FS 651-700	0473560651	DEK 5 GW 54	0522660054
DEK 5 GS MP	0157261235	DEK 5 FS 701-750	0473560701	DEK 5 GW 55	0522660055
DEK 5 FWZ 1-19	0235860000	DEK 5 FS 751-800	0473560751	DEK 5 GW 56	0522660056
DEK 5 FWZ 21-39	0235960000	DEK 5 FS 801-850	0473560801	DEK 5 GW 57	0522660057
DEK 5 FWZ 41-59	0236060000	DEK 5 FS 851-900	0473560851	DEK 5 GW 58	0522660058
DEK 5 FWZ 2-20	0236160000	DEK 5 FS 901-950	0473560901	DEK 5 GW 59	0522660059
DEK 5 FWZ 22-40	0236260000	DEK 5 FS 951-999	0473560951	DEK 5 GW 60	0522660060
DEK 5 FWZ 42-60	0236360000	DEK 5 GW L1	0522361075	DEK 5 GW 61	0522660061
DEK 5 FWZ L1-PE	0354361187	DEK 5 GW L2	0522361076	DEK 5 GW 62	0522660062
DEK 5 FWZ L1-EIK	0354361203	DEK 5 GW L3	0522361077	DEK 5 GW 63	0522660063
DEK 5 FSZ 1-10	0460660001	DEK 5 GW 1	0522660001	DEK 5 GW 64	0522660064
DEK 5 FSZ 11-20	0460660011	DEK 5 GW 2	0522660002	DEK 5 GW 65	0522660065
DEK 5 FSZ 21-30	0460660021	DEK 5 GW 3	0522660003	DEK 5 GW 66	0522660066
DEK 5 FSZ 31-40	0460660031	DEK 5 GW 4	0522660004	DEK 5 GW 67	0522660067

## DEK Variations

Type / Print	Cat. No.	Type / Print	Cat. No.	Type / Print	Cat. No.
DEK 5 GW 68	0522660068	DEK 5 GW 131	0522660131	DEK 5 GW 194	0522660194
DEK 5 GW 69	0522660069	DEK 5 GW 132	0522660132	DEK 5 GW 195	0522660195
DEK 5 GW 70	0522660070	DEK 5 GW 133	0522660133	DEK 5 GW 196	0522660196
DEK 5 GW 71	0522660071	DEK 5 GW 134	0522660134	DEK 5 GW 197	0522660197
DEK 5 GW 72	0522660072	DEK 5 GW 135	0522660135	DEK 5 GW 198	0522660198
DEK 5 GW 73	0522660073	DEK 5 GW 136	0522660136	DEK 5 GW 199	0522660199
DEK 5 GW 74	0522660074	DEK 5 GW 137	0522660137	DEK 5 GW 200	0522660200
DEK 5 GW 75	0522660075	DEK 5 GW 138	0522660138	DEK 5 GW A	0522761021
DEK 5 GW 76	0522660076	DEK 5 GW 139	0522660139	DEK 5 GW B	0522761022
DEK 5 GW 77	0522660077	DEK 5 GW 140	0522660140	DEK 5 GW C	0522761023
DEK 5 GW 78	0522660078	DEK 5 GW 141	0522660141	DEK 5 GW D	0522761024
DEK 5 GW 79	0522660079	DEK 5 GW 142	0522660142	DEK 5 GW E	0522761025
DEK 5 GW 80	0522660080	DEK 5 GW 143	0522660143	DEK 5 GW F	0522761026
DEK 5 GW 81	0522660081	DEK 5 GW 144	0522660144	DEK 5 GW G	0522761027
DEK 5 GW 82	0522660082	DEK 5 GW 145	0522660145	DEK 5 GW H	0522761028
DEK 5 GW 83	0522660083	DEK 5 GW 146	0522660146	DEK 5 GW I	0522761029
DEK 5 GW 84	0522660084	DEK 5 GW 147	0522660147	DEK 5 GW J	0522761030
DEK 5 GW 85	0522660085	DEK 5 GW 148	0522660148	DEK 5 GW K	0522761031
DEK 5 GW 86	0522660086	DEK 5 GW 149	0522660149	DEK 5 GW L	0522761032
DEK 5 GW 87	0522660087	DEK 5 GW 150	0522660150	DEK 5 GW M	0522761033
DEK 5 GW 88	0522660088	DEK 5 GW 151	0522660151	DEK 5 GW N	0522761034
DEK 5 GW 89	0522660089	DEK 5 GW 152	0522660152	DEK 5 GW O	0522761035
DEK 5 GW 90	0522660090	DEK 5 GW 153	0522660153	DEK 5 GW P	0522761036
DEK 5 GW 91	0522660091	DEK 5 GW 154	0522660154	DEK 5 GW Q	0522761037
DEK 5 GW 92	0522660092	DEK 5 GW 155	0522660155	DEK 5 GW R	0522761038
DEK 5 GW 93	0522660093	DEK 5 GW 156	0522660156	DEK 5 GW S	0522761039
DEK 5 GW 94	0522660094	DEK 5 GW 157	0522660157	DEK 5 GW T	0522761040
DEK 5 GW 95	0522660095	DEK 5 GW 158	0522660158	DEK 5 GW U	0522761041
DEK 5 GW 96	0522660096	DEK 5 GW 159	0522660159	DEK 5 GW V	0522761042
DEK 5 GW 97	0522660097	DEK 5 GW 160	0522660160	DEK 5 GW W	0522761043
DEK 5 GW 98	0522660098	DEK 5 GW 161	0522660161	DEK 5 GW X	0522761044
DEK 5 GW 99	0522660099	DEK 5 GW 162	0522660162	DEK 5 GW Y	0522761045
DEK 5 GW 100	0522660100	DEK 5 GW 163	0522660163	DEK 5 GW Z	0522761046
DEK 5 GW 101	0522660101	DEK 5 GW 164	0522660164	DEK 5 GW A SMALL	0522861047
DEK 5 GW 102	0522660102	DEK 5 GW 165	0522660165	DEK 5 GW B SMALL	0522861048
DEK 5 GW 103	0522660103	DEK 5 GW 166	0522660166	DEK 5 GW C SMALL	0522861049
DEK 5 GW 104	0522660104	DEK 5 GW 167	0522660167	DEK 5 GW D SMALL	0522861050
DEK 5 GW 105	0522660105	DEK 5 GW 168	0522660168	DEK 5 GW E SMALL	0522861051
DEK 5 GW 106	0522660106	DEK 5 GW 169	0522660169	DEK 5 GW F SMALL	0522861052
DEK 5 GW 107	0522660107	DEK 5 GW 170	0522660170	DEK 5 GW G SMALL	0522861053
DEK 5 GW 108	0522660108	DEK 5 GW 171	0522660171	DEK 5 GW H SMALL	0522861054
DEK 5 GW 109	0522660109	DEK 5 GW 172	0522660172	DEK 5 GW I SMALL	0522861055
DEK 5 GW 110	0522660110	DEK 5 GW 173	0522660173	DEK 5 GW J SMALL	0522861056
DEK 5 GW 111	0522660111	DEK 5 GW 174	0522660174	DEK 5 GW K SMALL	0522861057
DEK 5 GW 112	0522660112	DEK 5 GW 175	0522660175	DEK 5 GW L SMALL	0522861058
DEK 5 GW 113	0522660113	DEK 5 GW 176	0522660176	DEK 5 GW M SMALL	0522861059
DEK 5 GW 114	0522660114	DEK 5 GW 177	0522660177	DEK 5 GW N SMALL	0522861060
DEK 5 GW 115	0522660115	DEK 5 GW 178	0522660178	DEK 5 GW O SMALL	0522861061
DEK 5 GW 116	0522660116	DEK 5 GW 179	0522660179	DEK 5 GW P SMALL	0522861062
DEK 5 GW 117	0522660117	DEK 5 GW 180	0522660180	DEK 5 GW Q SMALL	0522861063
DEK 5 GW 118	0522660118	DEK 5 GW 181	0522660181	DEK 5 GW R SMALL	0522861064
DEK 5 GW 119	0522660119	DEK 5 GW 182	0522660182	DEK 5 GW S SMALL	0522861065
DEK 5 GW 120	0522660120	DEK 5 GW 183	0522660183	DEK 5 GW T SMALL	0522861066
DEK 5 GW 121	0522660121	DEK 5 GW 184	0522660184	DEK 5 GW U SMALL	0522861067
DEK 5 GW 122	0522660122	DEK 5 GW 185	0522660185	DEK 5 GW V SMALL	0522861068
DEK 5 GW 123	0522660123	DEK 5 GW 186	0522660186	DEK 5 GW W SMALL	0522861069
DEK 5 GW 124	0522660124	DEK 5 GW 187	0522660187	DEK 5 GW X SMALL	0522861070
DEK 5 GW 125	0522660125	DEK 5 GW 188	0522660188	DEK 5 GW Y SMALL	0522861071
DEK 5 GW 126	0522660126	DEK 5 GW 189	0522660189	DEK 5 GW Z SMALL	0522861072
DEK 5 GW 127	0522660127	DEK 5 GW 190	0522660190	DEK 5 FWZ 1-10	0523060001
DEK 5 GW 128	0522660128	DEK 5 GW 191	0522660191	DEK 5 FWZ 11-20	0523060011
DEK 5 GW 129	0522660129	DEK 5 GW 192	0522660192	DEK 5 FWZ 21-30	0523060021
DEK 5 GW 130	0522660130	DEK 5 GW 193	0522660193	DEK 5 FWZ 31-40	0523060031

## DEK Variations

Type / Print	Cat. No.	Type / Print	Cat. No.	Type / Print	Cat. No.
DEK 5 FWZ 41-50	0523060041	DEK 6 FSZ 21-30	0133360021	DEK 6 FWZ 51-60	0518960051
DEK 5 FWZ 51-60	0523060051	DEK 6 FSZ 31-40	0133360031	DEK 6 FWZ 61-70	0518960061
DEK 5 FWZ 61-70	0523060061	DEK 6 FSZ 41-50	0133360041	DEK 6 FWZ 71-80	0518960071
DEK 5 FWZ 71-80	0523060071	DEK 6 FSZ 51-60	0133360051	DEK 6 FWZ 81-90	0518960081
DEK 5 FWZ 81-90	0523060081	DEK 6 FSZ 61-70	0133360061	DEK 6 FWZ 91-100	0518960091
DEK 5 FWZ 91-100	0523060091	DEK 6 FSZ 71-80	0133360071	DEK 6 FWZ 101-110	0518960101
DEK 5 GW PE	0537261187	DEK 6 FSZ 81-90	0133360081	DEK 6 FWZ 111-120	0518960111
DEK 5 GW PEN	0537261188	DEK 6 FSZ 91-100	0133360091	DEK 6 FWZ 121-130	0518960121
DEK 5 GW SL	0537261191	DEK 6 BLANK	0468560000	DEK 6 FWZ 131-140	0518960131
DEK 5 GW MP	0537261235	DEK 6 RT BLANK	0468591686	DEK 6 FWZ 141-150	0518960141
DEK 5 FWZ U,V,W,N,PE	0558360000	DEK 6 GE BLANK	0468591687	DEK 6 FWZ 151-160	0518960151
DEK 5 GW	0576260000	DEK 6 GN BLANK	0468591688	DEK 6 FWZ 161-170	0518960161
DEK 5 GW +	0576261198	DEK 6 VI BLANK	0468591689	DEK 6 FWZ 171-180	0518960171
DEK 5 GW -	0576261199	DEK 6 OR BLANK	0468591690	DEK 6 FWZ 181-190	0518960181
DEK 5 GW g	0576261202	DEK 6 GR BLANK	0468591691	DEK 6 FWZ 191-200	0518960191
DEK 5 GW h	0576261203	DEK 6 BR BLANK	0468591692	DEK 6 FWZ 201-210	0518960201
DEK 5 GW W-CURRENT	0576261215	DEK 6 BL BLANK	0468591693	DEK 6 GW 1	0526960001
DEK 5 GW RT/SW +	0576291737	DEK 6 SW BLANK	0468591694	DEK 6 GW 2	0526960002
DEK 5 GW BL/SW -	0576291741	DEK 6 FW 1-50	0468660001	DEK 6 GW 3	0526960003
DEK 5 FSZ 2,4,6,...16	0582360002	DEK 6 FW 51-100	0468660005	DEK 6 GW 4	0526960004
DEK 5 FSZ 18,20,...32	0582360018	DEK 6 FW 101-150	0468660101	DEK 6 GW 5	0526960005
DEK 5 FW 1,3,5,...99	1358460000	DEK 6 FW 151-200	0468660151	DEK 6 GW 6	0526960006
DEK 5 FW 2,4,...100	1358560000	DEK 6 FW 201-250	0468660201	DEK 6 GW 7	0526960007
DEK 5 FWZ 1-9	1572000000	DEK 6 FW 251-300	0468660251	DEK 6 GW 8	0526960008
DEK 5/3,5 MC BLANK	1755270000	DEK 6 FW 301-350	0468660301	DEK 6 GW 9	0526960009
DEK 5/3,5 MC GW 1	1755280001	DEK 6 FW 351-400	0468660351	DEK 6 GW 10	0526960010
DEK 5/3,5 MC GW 2	1755280002	DEK 6 FW 401-450	0468660401	DEK 6 GW 11	0526960011
DEK 5/3,5 MC GW 3	1755280003	DEK 6 FW 451-500	0468660451	DEK 6 GW 12	0526960012
DEK 5/3,5 MC GW 4	1755280004	DEK 6 FW 501-550	0468660501	DEK 6 GW 13	0526960013
DEK 5/3,5 MC GW 5	1755280005	DEK 6 FW 551-600	0468660551	DEK 6 GW 14	0526960014
DEK 5/3,5 MC GW 6	1755280006	DEK 6 FW 601-650	0468660601	DEK 6 GW 15	0526960015
DEK 5/3,5 MC GW 7	1755280007	DEK 6 FW 651-700	0468660651	DEK 6 GW 16	0526960016
DEK 5/3,5 MC GW 8	1755280008	DEK 6 FW 701-750	0468660701	DEK 6 GW 17	0526960017
DEK 5/3,5 MC GW 9	1755280009	DEK 6 FW 751-800	0468660751	DEK 6 GW 18	0526960018
DEK 5/3,5 MC GW 0	1755281000	DEK 6 FW 801-850	0468660801	DEK 6 GW 19	0526960019
DEK 5/3,5 MC FS 1-10	1762320001	DEK 6 FW 851-900	0468660851	DEK 6 GW 20	0526960020
DEK 5/3,5 MC FS 11-20	1762320011	DEK 6 FW 901-950	0468660901	DEK 6 GW 21	0526960021
DEK 5/3,5 MC FS 21-30	1762320021	DEK 6 FW 951-999	0468660951	DEK 6 GW 22	0526960022
DEK 5/3,5 MC FS 31-40	1762320031	DEK 6 FS 1-50	0468760001	DEK 6 GW 23	0526960023
DEK 5/3,5 MC FS 41-50	1762320041	DEK 6 FS 51-100	0468760051	DEK 6 GW 24	0526960024
DEK 5/3,5 MC FS 51-60	1762320051	DEK 6 FS 101-150	0468760101	DEK 6 GW 25	0526960025
DEK 5/3,5 MC FS 61-70	1762320061	DEK 6 FS 151-200	0468760151	DEK 6 GW 26	0526960026
DEK 5/3,5 MC FS 71-80	1762320071	DEK 6 FS 201-250	0468760201	DEK 6 GW 27	0526960027
DEK 5/3,5 MC FS 81-90	1762320081	DEK 6 FS 251-300	0468760251	DEK 6 GW 28	0526960028
DEK 5/3,5 MC FS 91-100	1762320091	DEK 6 FS 301-350	0468760301	DEK 6 GW 29	0526960029
DEK 5/3,5 MC FS 101-110	1762320101	DEK 6 FS 351-400	0468760351	DEK 6 GW 30	0526960030
DEK 5/3,5 MC FS 111-120	1762320111	DEK 6 FS 401-450	0468760401	DEK 6 GW 31	0526960031
DEK 5/3,5 MC FS 121-130	1762320121	DEK 6 FS 451-500	0468760451	DEK 6 GW 32	0526960032
DEK 5/3,5 MC FS 131-140	1762320131	DEK 6 FS 501-550	0468760501	DEK 6 GW 33	0526960033
DEK 5/3,5 MC FS 141-150	1762320141	DEK 6 FS 551-600	0468760551	DEK 6 GW 34	0526960034
DEK 5/3,5 MC PRINTED	1767730000	DEK 6 FS 601-650	0468760601	DEK 6 GW 35	0526960035
DEK 5/5 MC-10 BLANK VAR	1609800000	DEK 6 FS 651-700	0468760651	DEK 6 GW 36	0526960036
DEK 5/5 MC-10 BLANK WS	1609801044	DEK 6 FS 701-750	0468760701	DEK 6 GW 37	0526960037
DEK 5/5 MC-10 BLANK RT	1609801686	DEK 6 FS 751-800	0468760751	DEK 6 GW 38	0526960038
DEK 5/5 MC-10 BLANK GE	1609801687	DEK 6 FS 801-850	0468760801	DEK 6 GW 39	0526960039
DEK 5/5 MC-10 BLANK GN	1609801688	DEK 6 FS 851-900	0468760851	DEK 6 GW 40	0526960040
DEK 5/5 MC-10 BLANK GR	1609801691	DEK 6 FS 901-950	0468760901	DEK 6 GW 41	0526960041
DEK 5/5 MC-10 BLANK BL	1609801693	DEK 6 FS 951-999	0468760951	DEK 6 GW 42	0526960042
DEK 5/5 MC PRINTED	1609810000	DEK 6 FWZ 1-10	0518960001	DEK 6 GW 43	0526960043
DEK 5/7,5 MC BLANK	1720620000	DEK 6 FWZ 11-20	0518960011	DEK 6 GW 44	0526960044
DEK 5/6,5 MC BLANK	1609840000	DEK 6 FWZ 21-30	0518960021	DEK 6 GW 45	0526960045
DEK 6 FSZ 1-10	0133360001	DEK 6 FWZ 31-40	0518960031	DEK 6 GW 46	0526960046
DEK 6 FSZ 11-20	0133360011	DEK 6 FWZ 41-50	0518960041	DEK 6 GW 47	0526960047



## Terminal Markers

Type / Print	Cat. No.	Type / Print	Cat. No.	Type / Print	Cat. No.
DEK 6 GW 48	0526960048	DEK 6 GW -	1318061199	DEK 6,5 FS 851-900	0468260851
DEK 6 GW 49	0526960049	DEK 6 GW g	1318061202	DEK 6,5 FS 901-950	0468260901
DEK 6 GW 50	0526960050	DEK 6 GW h	1318061203	DEK 6,5 FS 951-999	0468260951
DEK 6 GW 51	0526960051	DEK 6 GW W-STROM	1318061215	DEK 6,5 FWZ 1-10	0519060001
DEK 6 GW 52	0526960052	DEK 6 GW RT/SW +	1318091737	DEK 6,5 FWZ 11-20	0519060011
DEK 6 GW 53	0526960053	DEK 6 GW BL/SW -	1318091741	DEK 6,5 FWZ 21-30	0519060021
DEK 6 GW 54	0526960054	DEK 6 FW L,N,PE	0632560000	DEK 6,5 FWZ 31-40	0519060031
DEK 6 GW 55	0526960055	DEK 6 FW 1-5 (10X)	0688660000	DEK 6,5 FWZ 41-50	0519060041
DEK 6 GW 56	0526960056	DEK 6,5 FSZ 1-10	0407360001	DEK 6,5 FWZ 51-60	0519060051
DEK 6 GW 57	0526960057	DEK 6,5 FSZ 11-20	0407360011	DEK 6,5 FWZ 61-70	0519060061
DEK 6 GW 58	0526960058	DEK 6,5 FSZ 21-30	0407360021	DEK 6,5 FWZ 71-80	0519060071
DEK 6 GW 59	0526960059	DEK 6,5 FSZ 31-40	0407360031	DEK 6,5 FWZ 81-90	0519060081
DEK 6 GW 60	0526960060	DEK 6,5 FSZ 41-50	0407360041	DEK 6,5 FWZ 91-100	0519060091
DEK 6 GW 61	0526960061	DEK 6,5 FSZ 51-60	0407360051	DEK 6,5 FWZ R,S,T,N,ERD	0632060000
DEK 6 GW 62	0526960062	DEK 6,5 FSZ 61-70	0407360061	DEK 6,5 FW L1-PE	0632161187
DEK 6 GW 63	0526960063	DEK 6,5 FSZ 71-80	0407360071	DEK 6,5 FW L1- h	0632161203
DEK 6 GW 64	0526960064	DEK 6,5 FSZ 81-90	0407360081	DEK 8 FW 1-50 TAMPOPR.	1653340001
DEK 6 GW 65	0526960065	DEK 6,5 FSZ 91-100	0407360091	DEK 8 FW 51-100 TAMPOP.	1653340051
DEK 6 GW 66	0526960066	DEK 6,5 BLANK	0468060000	DEK 8 FS 1-50 TAMPOPR.	1653350001
DEK 6 GW 67	0526960067	DEK 6,5 RT BLANK	0468091686	DEK 8 FS 51-100 TAMPOP.	1653350051
DEK 6 GW 68	0526960068	DEK 6,5 GE BLANK	0468091687	DEK 8 FW 1-50 TAMPOPR.	1653340001
DEK 6 GW 69	0526960069	DEK 6,5 GN BLANK	0468091688	DEK 8 FW 51-100 TAMPOP.	1653340051
DEK 6 GW 70	0526960070	DEK 6,5 VI BLANK	0468091689	DEK 8 FS 1-50 TAMPOPR.	1653350001
DEK 6 GW 71	0526960071	DEK 6,5 OR BLANK	0468091690	DEK 8 FS 51-100 TAMPOP.	1653350051
DEK 6 GW 72	0526960072	DEK 6,5 BL BLANK	0468091693	DEK 8 FWZ 1-10	1276960001
DEK 6 GW 73	0526960073	DEK 6,5 SW BLANK	0468091694	DEK 8 FWZ 11-20	1276960011
DEK 6 GW 74	0526960074	DEK 6,5 FW 1-50	0468160001	DEK 8 FWZ 21-30	1276960021
DEK 6 GW 75	0526960075	DEK 6,5 FW 51-100	0468160051	DEK 8 FWZ 31-40	1276960031
DEK 6 GW 76	0526960076	DEK 6,5 FW 101-150	0468160101	DEK 8 FWZ 41-50	1276960041
DEK 6 GW 77	0526960077	DEK 6,5 FW 151-200	0468160151	DEK 8 FWZ 51-60	1276960051
DEK 6 GW 78	0526960078	DEK 6,5 FW 201-250	0468160201	DEK 8 FWZ 61-70	1276960061
DEK 6 GW 79	0526960079	DEK 6,5 FW 251-300	0468160251	DEK 8 FWZ 71-80	1276960071
DEK 6 GW 80	0526960080	DEK 6,5 FW 301-350	0468160301	DEK 8 FWZ 81-90	1276960081
DEK 6 GW 81	0526960081	DEK 6,5 FW 351-400	0468160351	DEK 8 FWZ 91-100	1276960091
DEK 6 GW 82	0526960082	DEK 6,5 FW 401-450	0468160401	DEK 8 FWZ 101-110	1276960101
DEK 6 GW 83	0526960083	DEK 6,5 FW 451-500	0468160451	DEK 8 FWZ 111-120	1276960111
DEK 6 GW 84	0526960084	DEK 6,5 FW 501-550	0468160501	DEK 8 FWZ 121-130	1276960121
DEK 6 GW 85	0526960085	DEK 6,5 FW 551-600	0468160551	DEK 8 FWZ 131-140	1276960131
DEK 6 GW 86	0526960086	DEK 6,5 FW 601-650	0468160601	DEK 8 FWZ 141-150	1276960141
DEK 6 GW 87	0526960087	DEK 6,5 FW 651-700	0468160651	DEK 8 BLANK	1277060000
DEK 6 GW 88	0526960088	DEK 6,5 FW 701-750	0468160701	DEK 8 RT BLANK	1277091686
DEK 6 GW 89	0526960089	DEK 6,5 FW 751-800	0468160751	DEK 8 GE BLANK	1277091687
DEK 6 GW 90	0526960090	DEK 6,5 FW 801-850	0468160801	DEK 8 GN BLANK	1277091688
DEK 6 GW 91	0526960091	DEK 6,5 FW 851-900	0468160851	DEK 8 VI BLANK	1277091689
DEK 6 GW 92	0526960092	DEK 6,5 FW 901-950	0468160901	DEK 8 OR BLANK	1277091690
DEK 6 GW 93	0526960093	DEK 6,5 FW 951-999	0468160951	DEK 8 FSZ 1-10	1289660001
DEK 6 GW 94	0526960094	DEK 6,5 FS 1-50	0468260001	DEK 8 FSZ 11-20	1289660011
DEK 6 GW 95	0526960095	DEK 6,5 FS 51-100	0468260051	DEK 8 FSZ 21-30	1289660021
DEK 6 GW 96	0526960096	DEK 6,5 FS 101-150	0468260101	DEK 8 FSZ 31-40	1289660031
DEK 6 GW 97	0526960097	DEK 6,5 FS 151-200	0468260151	DEK 8 FSZ 41-50	1289660041
DEK 6 GW 98	0526960098	DEK 6,5 FS 201-250	0468260201	DEK 8 FSZ 51-60	1289660051
DEK 6 GW 99	0526960099	DEK 6,5 FS 251-300	0468260251	DEK 8 FSZ 61-70	1289660061
DEK 6 GW 100	0526960100	DEK 6,5 FS 301-350	0468260301	DEK 8 FSZ 71-80	1289660071
DEK 6 GW 200	0526960200	DEK 6,5 FS 351-400	0468260351	DEK 8 FSZ 81-90	1289660081
DEK 5/6 MC BLANK	1609820000	DEK 6,5 FS 401-450	0468260401	DEK 8 FSZ 91-100	1289660091
DEK 5/6 MC PRINTED	1609830000	DEK 6,5 FS 451-500	0468260451	DEK 8 BEDR./COLOURED	1289690000
DEK 6 FW 1,3,5...99	1358660000	DEK 6,5 FS 501-550	0468260501	DEK 8 SPECIAL PRINT WHITE	1326660000
DEK 6 FW 2,4,...100	1358760000	DEK 6,5 FS 551-600	0468260551	DEK 8 SPECIAL PRINT COLOURED	1326690000
DEK 6 FWZ R,S,T,N,g	0631860000	DEK 6,5 FS 601-650	0468260601		
DEK 6 FWZ L1-PE	0631961187	DEK 6,5 FS 651-700	0468260651		
DEK 6 FWZ L1-h	0631961203	DEK 6,5 FS 701-750	0468260701		
DEK 6 GW PE	1318061187	DEK 6,5 FS 751-800	0468260751		
DEK 6 GW +	1318061198	DEK 6,5 FS 801-850	0468260801		







ZS (MultiCard)  
Verbindermarkierer

The **ZS** markers in the MultiCard format have been specially developed for the Z-series. Their hinged mechanism offers an additional, large marking surface for the compact terminals of the Z-series. When necessary, the marking surface can be folded up, to allow you easy access, for example, to cross-connectors. It is not necessary to dismount the markers. A print of 6 - 9 characters ins standard font is possible, depending on the length of the markers.

- Hinged marking surface.
- Markers in strips latch on individually, to guarantee fast and easy mounting.
- Individual markers easy to break off.
- Markers in the proven MultiCard format.
- Strip-for-strip assigning of project designation surface.

**Technical data**

Material	Polyamide, halogeen-free
Flammability class acc. to UL 94	V2
	Base: HB according to UL 94
Temperature range	-40 °C to +100 °C
Dimensions	Height x Width (grid dimension)
	Example: ZS 10/5
	10 mm hoch, 5 mm wide = 5 mm grid
Colour	O white
Possible marking systems	STI, Plotter, PrintJet, MC-Mobilo

Terminal width ≥ 5 mm		
Type	Cat. No.	Qty.
<b>Neutral</b>		
ZS 10/5	<b>161000000</b>	480
ZS 15/5	<b>164663000</b>	480

Terminal width ≥ 6 mm		
ZS 12/6	<b>161002000</b>	400

**Individual print acc. to requirements**

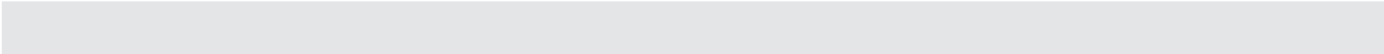
Terminal width ≥ 5 mm		
ZS 10/5	<b>161001000</b>	96
ZS 15/5	<b>164664000</b>	96

Terminal width ≥ 6 mm		
ZS 12/6	<b>161003000</b>	80

Number of characters when using the plotter fonts						
Pin size	0,18	0,25	0,35	0,18	0,25	0,35
Font (dots)	10	10	10	4	5	6
Tag height <b>10</b>	4	4	4	11	9	8
Tag height <b>12</b>	5	5	5	13	11	9
Tag height <b>15</b>	7	7	7	17	14	11
Carrier system	Z-series, W-series, Sak-series					

Anmerkungen zu individuellem Druck

1. Please send the marking data on a disk or per e-mail, parallel to the written order:
  - as an Excel file (all data in a coloumn)
  - as an ASCII file ( all data in a coloumn).
  - Additional information, such as, i.e., contact person or Tel.-No. for questions at short notice, should be included in the file.
  - E-mail Address: [Printdata@Weidmueller.de](mailto:Printdata@Weidmueller.de)
2. Please add the name of the file to your order.
3. Orders per lists incur added costs (Cat. No. manual entry: 157880) and require longer delivery times.
4. User our software **M-Comm 2** to order your individual print. M-Comm 2 is available via the Internet ([www.m-comm.de](http://www.m-comm.de)) or we will send it to you on request.





CERTIFICAZIONE ITALIANA DEI SISTEMI  
QUALITÀ AZIENDALI  
ITALIAN CERTIFICATION OF COMPANIES  
QUALITY SYSTEMS

CERTIFICATO n. 9105-WEID  
CERTIFICATE NO. 9105-WEID

WE CERTIFY THAT THE QUALITY SYSTEM OPERATED BY  
WE HEREBY CERTIFY THAT THE QUALITY SYSTEM OPERATED BY

WEIDMÜLLER S.r.l.

Via Einstein, 4 - 20092 CINISELLO BALSAMO (MI)

UNICA OPERATIVA  
OPERATIVE UNIT

Via Einstein, 4 - 20092 CINISELLO BALSAMO (MI)

E CONFORME ALLA NORMA  
IS IN COMPLIANCE WITH THE STANDARD UN EN 29001 - ISO 9001

CONCERNING THE FOLLOWING TYPES OF PRODUCTS, PROCESSES, SERVICES  
PER I SEGUENTI TIPI DI PRODOTTI, PROCESSI, SERVIZI

Realizzazione di unità elettroniche per trasmissione, controllo  
condizionamento di segnali e dati su apparati per  
applicazioni particolari indicate dalla clientela

Realization of electronic units for transmission, control  
conditioning of signals and data on equipment for  
customer-specified regular applications

1 Giugno 1995  
DATA DI RILASCIO  
ISSUED ON

# CERTIFIKAT

Nr. 12335

Weidmüller AB

Weidmüller AB

Kvalitetssystemet vid

Platser

Verksamhet / Produkt

Stockholm, Malmö, Göteborg, Sundsvall  
och Örebro

Försäljning av passiva/aktiva komponenter  
samt intelligenta moduler för process-,  
industri- och byggnadsautomation med ett  
sortiment som omfattar kopplingsklämmor,  
stickanslutningar, elektronikkomponenter,  
märksystem, lådor och kapslingar, apparater  
samt kundspecifikt montage av ovanstående

är i överensstämmelse  
med och certifierat enligt  
SS-EN ISO 9002 : 1994



THE EUROPEAN NETWORK FOR QUALITY SYSTEM ASSESSMENT AND CERTIFICATION

This is to state that  
WEIDMULLER, S.A.

C/ NARCIS MONTURIOL, 11  
08006 - SANT JUST DESVERN  
(Barcelona)

holds the Quality System Certificate

AENOR Asociación Española de  
Normalización y Certificación

ER-007/1/95

for the standard from the  
ISO 9000 / EN 29000  
series, and the scope as specified therein



CESI



## Certificate of Registration



This is to certify that

Weidmüller Ltd

Power Station Road, Sheerness  
Kent ME12 3AB

hold Certificate No. FM 00673 and operate a quality management system which complies with the  
requirements of BS EN ISO 9001:1994 for the activities detailed in the scope of registration.

Originally registered 29 April 1986.  
This certificate does not expire. To check its validity telephone +44 (0) 1902 221100

Jan Holman  
Director and General Manager  
BSI Quality Assurance



BSI Quality Assurance PO Box 375 Milton Keynes United Kingdom MK14 6LJ



Note: this is not a legal document and cannot be used

**KEMA**  
REGISTERED QUALITY SYSTEM

(1) PRODUCTION OF...  
(2) Components...  
(3) KEMA 97ATEX02519  
(4) This notification is issued for Terminal blocks and printed circuit protection increased safety "e"  
(5) Applicant: Weidmüller Interface GmbH & Co. KG, Postfachstraße 175, 32766 Detmold, Germany  
(6) Manufacturer: as applicant  
(7) KEMA, Notified Body No. 0344, Council Directive 84/96/EEC of 19 December 1984, manufacturer has a production of...  
(8) This notification is based on audit...  
(9) This notification is valid until 14 July 1997 - manufacturer does not satisfy the pr...  
(10) In accordance with Article 8 (3) of...  
Amman, 14 July 1997  
by order of the Board of Directors of...  
C.M. Boshart  
KEMA  
Notified Body No. 0344  
P.O. Box 3005, 6800 ET Arnhem, The Netherlands  
Telephone +31 26 37 26 26, Telex +31 26 37 26 26

**tuv CERT**

# ZERTIFIZIERT

Die TÜV CERT-Zertifizierungsstelle  
Zertifizierungs- und Umweltgutachter  
bescheinigt gemäß  
TÜV CERT-Verfahren, daß das U

**Weidmüller GmbH**  
D - 33102 Paderborn

für den Geltungsbereich

Vertrieb und Marketing von elektromechanischen  
sowie Hardware - Bausteinen einschließlich U  
Schaffung von Lösungen in der Automati

ein Qualitätsmanagementsystem eingeführt  
wurde der Nachweis erbracht, daß die  
**DIN EN ISO 9001 : 1994**  
erfüllt sind.  
Dieses Zertifikat ist gültig bis Okt  
Zertifikat-Registrier-Nr. 08 / 100

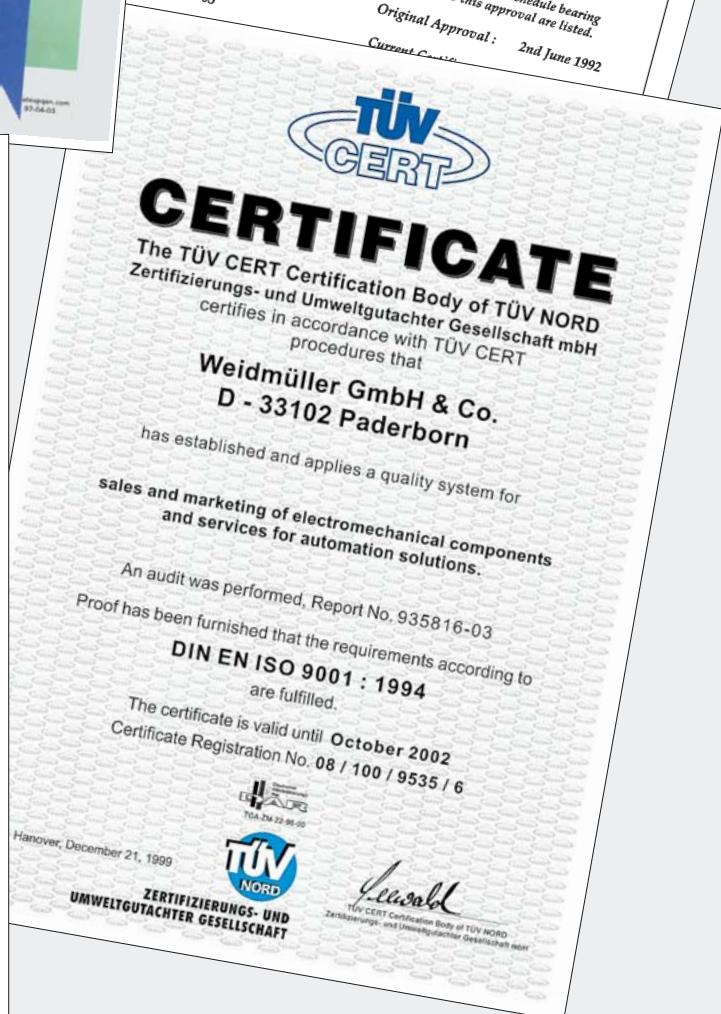
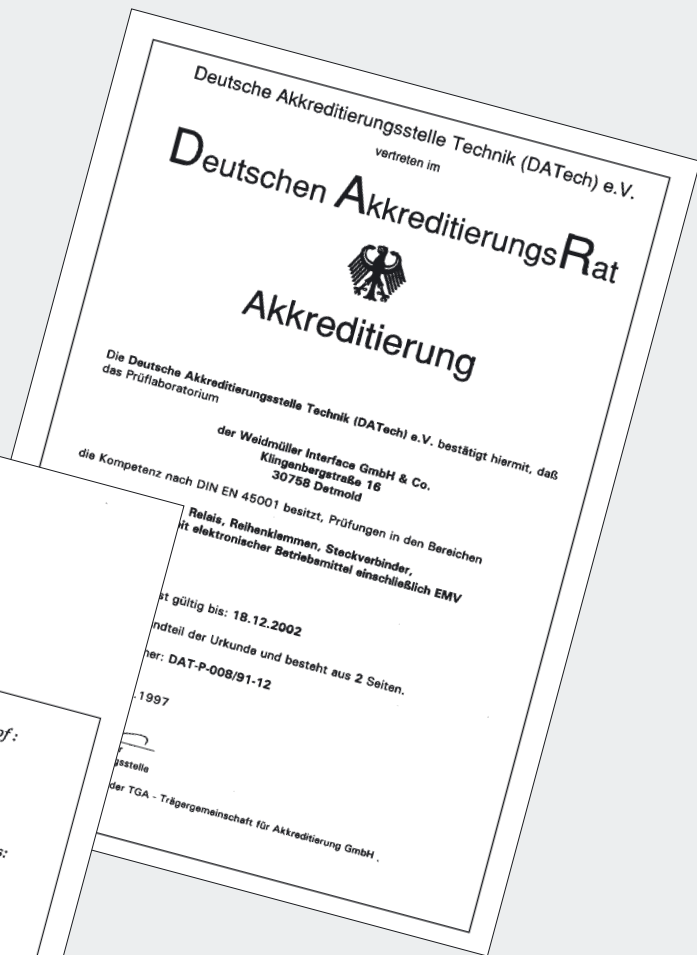
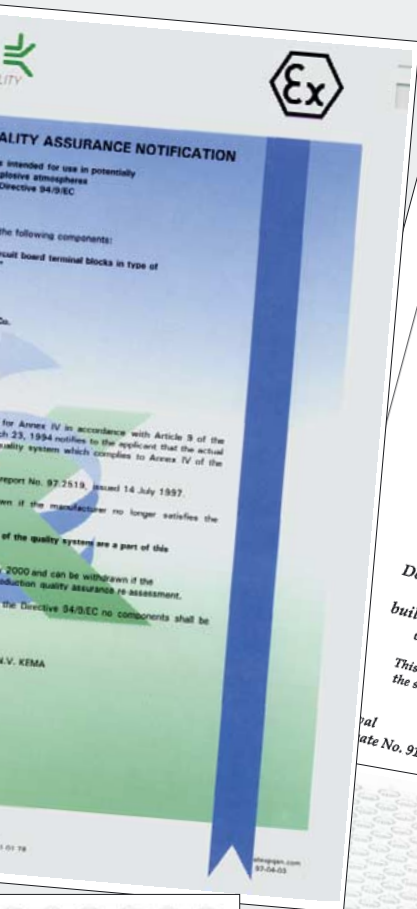
Hannover, den 21. Dezember 1999

**tuv NORD**

ZERTIFIZIERUNGS- UND  
UMWELTGUTACHTER GESELLSCHAFT



# Weidmüller quality and environmental management to the advantage of our customers



## Product approvals give confidence

Approvals are a proof of quality for our products. They are issued by independent institutions based on performance tests, and are a prerequisite for use in certain markets or fields of applications.

## The competence of the accredited testing laboratory is confirmed

The reliability of technical data is of primary importance to the user. The accreditation, given by a government agency, certifies the organisation according to EN 45 001 and the competence for defined product assessment of terminals, plug-in connectors, relays and electrical equipment.

## Certifications confirm that we have quality under control

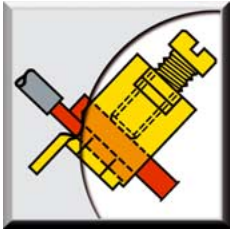
Quality management in the Weidmüller companies is based on ISO 9000 ff. Proof of certification from recognised and accredited agencies helps to make your task of evaluating your suppliers much easier.

## Contracts with the independent institutions for regular monitoring of production facilities, quality management and the laboratory are proof of Weidmüller quality.

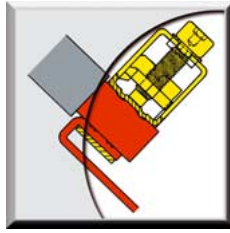
Award-winning Environmental Management demonstrate our comprehensive commitment.

## General Technical Data

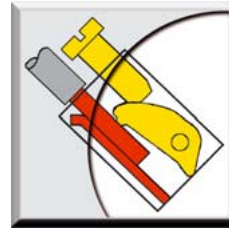
### Types of connection



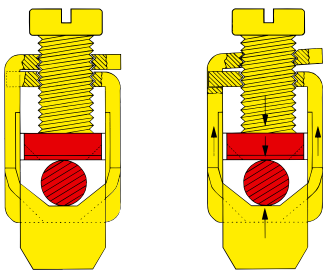
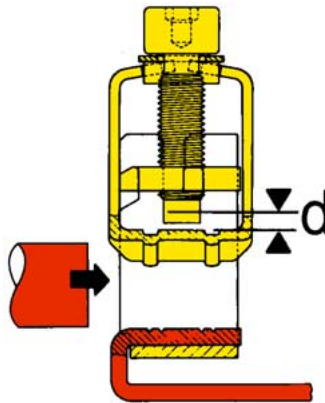
The **Weidmüller clamping yoke system** is an optimum combination of the specific properties of steel and copper. To date, this clamping yoke system has proven itself in billions of Weidmüller products. Both the clamping yoke and the clamping screw are manufactured from hardened steel. The necessary contact force is generated by this clamping yoke unit. The clamping yoke presses the wire to be connected against the current bar made of copper or high-quality brass. The hardened Weidmüller clamping yoke produces a gastight, vibration-proof connection between the wire and the current bar.



With the patented **pressure clamp connection system**, Weidmüller has developed a screw connection system for large wires. The often difficult insertion of large wires into the clamp is facilitated by easy removal of the screw unit from the terminal. The wire is then placed directly on the current bar, the screw unit inserted and the wire clamped tight.

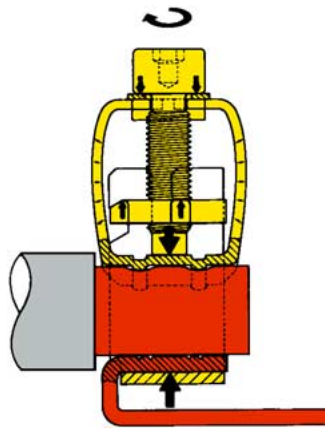


The **TOP connection system** from Weidmüller fulfils the requirement of parallel insertion of the wire and turning operation of the screw. This brings wiring advantages under certain assembly conditions, e.g. with small lateral spacing in component containers. The TOP connection system combines the special properties of steel and copper. The wire is pressed directly against the copper of brass current bar by a hardened steel pressure yoke. The high contact force guarantees a gas-tight connection between wire and current bar.



#### Principle of vibration resistance

When the clamping screw is tightened, the resulting force causes the upper thread overlap to spring open, thus causing a locking action to be exerted on the screw. The Weidmüller clamping yoke system is vibration-resistant. Movement of the connected wire is compensated by the elastic behaviour of the Weidmüller clamping yoke. Retightening of the clamping screw is, therefore, unnecessary.



#### Principle of vibration resistance

On account of the difference in length "d" between the shank of the clamping screw and the resilient pressure clamp, the pressure clamp deforms elastically when the screw is tightened. The high spring force of the pressure clamp produces the vibration resistance and compensates for any movement of the connected wire. Retightening of the clamping screw is, therefore, unnecessary.



#### Principle of vibration resistance

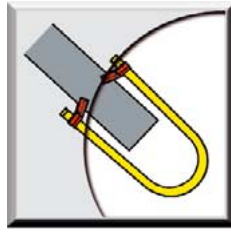
The force exerted by the steel pressure clamp when the screw is tightened pulls the two halves of the TOP connection apart, as is the case with the clamping yoke. This exerts a locking action on the screw and provides excellent vibration resistance.

## General Technical Data



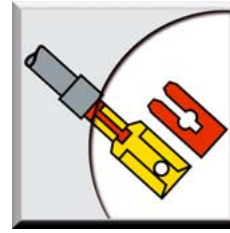
### Tension clamp connection

The **Weidmüller tension clamp system** functions in a similar manner to the proven clamping yoke. Separation between the mechanical and electrical functions has also been maintained with the tension spring version. The tension clamp made of high-quality, non-rusting and acid-resistant steel draws the wire towards the electro-plated copper current bar. Minimal contact resistance and high corrosion resistance is achieved by the tin-lead plated surface. The compensating action of the tension clamp ensures that this is permanently maintained.



### IDC - Technology

IDC technology (Insulation Displacement Connection) is a method of connecting copper wires that requires no preparation of the cable. That means no stripping or crimping. The insulation is pierced, cut or partly removed when connecting the wire. At the same time a conductive contact between wire and current bar is created. As in all Weidmüller connection systems, the mechanical and electrical functions are kept separated. The stainless steel spring guarantees a reliable, low contact resistant, gas-tight and vibration-proof contact of the wire.



### Push-on tab connection

The push-on tab connection is a standardised connection technology. The tab sleeve with the crimped wire is pushed onto the terminal tab. The contact force is generated by the tab sleeve. The advantage of this technology is the relatively short connection time, if crimping of the wire is not taken into consideration. In accordance with the draft DIN 46249, Part 1, the connection frequency is tested for 10 actuations only.



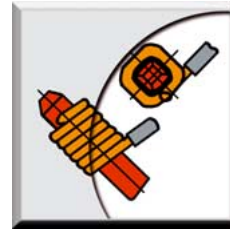
### Solder connection

The solder connection is still important in certain areas of electrical engineering. Wires up to max. 2.5 mm<sup>2</sup> are directly soldered to solder lugs or solder buckets. Soldering guarantees a good electrical connection, the prerequisite being that this work is correctly performed.



### Spring-clip connection / Termipoint®

The spring-clip connection is a solderless electrical connection (DIN 41611, Part 4). The connection is achieved by a pneumatic gun. The spring-clip and the wire are simultaneously shot onto a pin with rectangular or square cross-section. The method is suitable for both solid and stranded wires up to max. 0.5 mm<sup>2</sup> (AWG 20). The tool (gun) and spring-clips are available from AMP Deutschland, in 63225 Langen.



### Wrap connection / Wire-wrap®

The wrap connection is a solderless electrical connection (DIN EN 60352-1). The connection is achieved by wrapping a solid wire around a rectangular or square pin. The wrapping operation is performed with an electrically powered gun. The max. cross-section for this method is 0.5 mm<sup>2</sup> (AWG 20). The necessary tool (gun) is available from The Cooper Group Deutschland GmbH, in 74354 Besigheim or OK Industries Deutschland GmbH, in 65760 Eschborn 1.

### Wrap and spring-clip connections

Pin type Cross-section	Diagonal	Length for 3 connectors mm	Wire data	Wrap connection	Clip connection
				DIN EN 60352-1 Solid wires	DIN 41 611, Part 4 Solid wires or standard wires
0.6 x 0.9	1.03...1.12	12.5	AWG	(30)*	30...28
			mm <sup>2</sup>	0.05	0.05...0.08
			mm Ø	0.25	0.20...0.32
0.6 x 0.6	0.76...0.86	19	AWG	30...26	–
			mm <sup>2</sup>	0.05...0.13	–
			mm Ø	0.25...0.4	–
1 x 1	1.35...1.45	19	AWG	26...20	–
			mm <sup>2</sup>	0.13...0.52	–
			mm Ø	0.4...0.81	–
0.8 x 1.6	1.5...1.80	20.5	AWG	26...20	28...22
			mm <sup>2</sup>	0.13...0.52	0.08...0.33
			mm Ø	0.4...0.81	0.32...0.65
0.8 x 2.4		27.5	AWG	–	24...20
			mm <sup>2</sup>	–	0.21...0.52
			mm Ø	–	0.5...0.81

\* Not to DIN, value obtained from practical applications



# General Technical Data

## Derating curves

The current-carrying capacity of a terminal depends on:

- the temperature rise of the terminal
- the ambient temperature
- the connected wire

Every Weidmüller terminal has a defined upper operating temperature that must not be exceeded when in continued use.

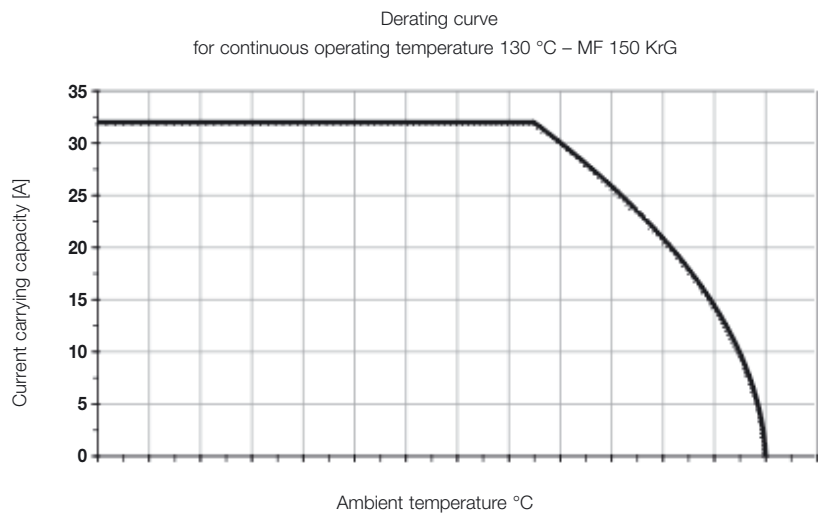
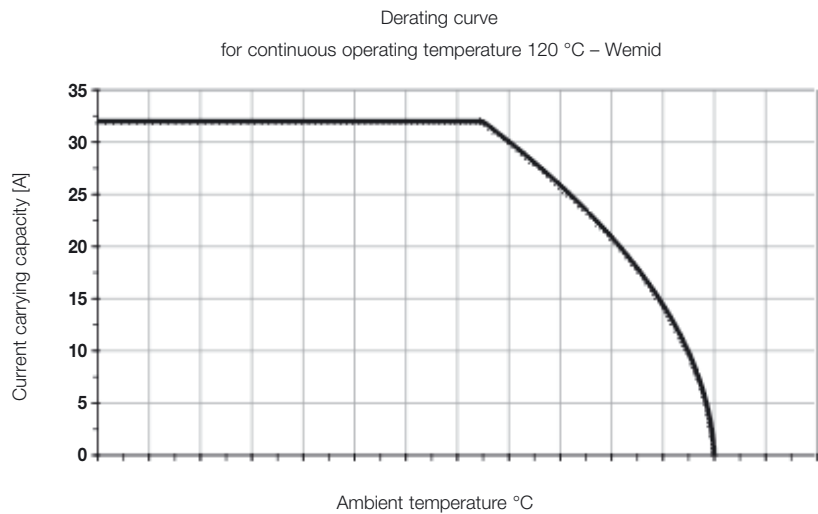
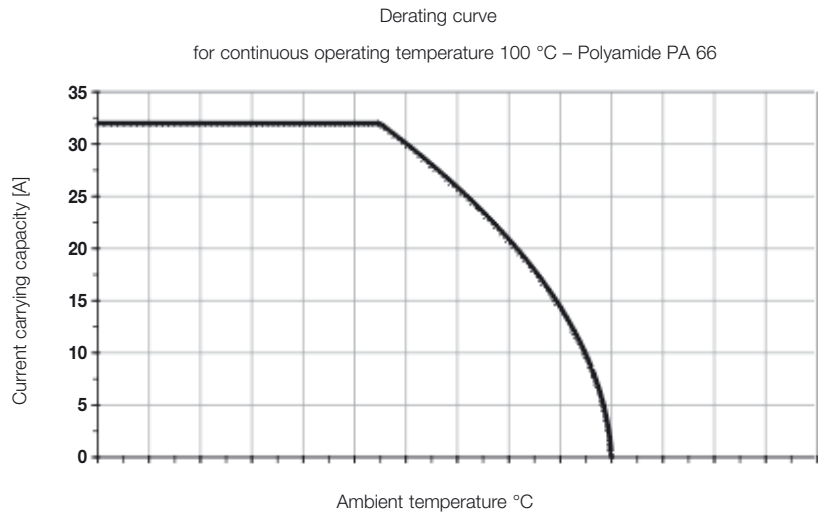
The continuous operating temperature depends on the insulation material of the terminal block. The maximum temperature rise of a terminal according to EN 60 947-7-1 is 45 K. The continuous operating temperature, dependant on the insulating material, reduced by the maximum permissible temperature rise of the terminal according to EN 60 947-7-1, indicates the maximum ambient temperature up to which the terminal may be loaded with its rated current.

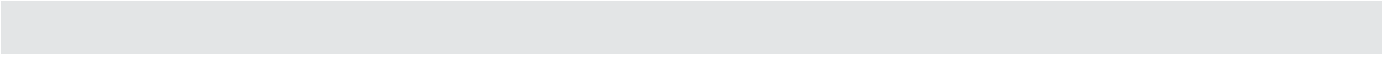
Figures 1 to 3 show examples of derating curves for a rated current of 32 A depending on the insulation materials:

- Thermoplast (Polyamide 66)
- WEMID
- Thermosetting plastic (MF 150 KrG)

Depending on the insulation material the rated current can be carried up to an ambient temperature of 55 °C with PA 66, 75 °C with the Weidmüller insulation material Wemid or 85 °C with the thermosetting plastic (KrG).

The current must be derated according to the derating curve exceeding those temperatures.





## General Technical Data

### Materials

Weidmüller products use insulating materials which have proved highly efficient in the electrical engineering sector. All materials are subject to stringent quality control via a quality system certified according to DIN EN ISO 9001.

Environmental compatibility plays a decisive role in the selection of materials.

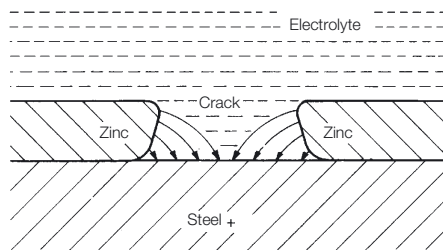
#### Metal

All metals used by Weidmüller are selected, processed and surface treated using the latest technology.

#### Steel

Steel components are zinc-plated provided with an additional passivation by a yellow chromate layer. The surface protection provided meets the highest requirements. The experience acquired from out-door climatic tests at various locations (maritime and tropical climates, industrial and standard atmospheres) has been used to enhance the quality of the surface protection.

This enhanced surface protection considerably increases resistance to corrosion even if the zinc plating is partially damaged by scratches or pores. Zinc reacts negatively to steel under the effects of electrolyte. The metal ions of the zinc migrate to the steel and give the base material lasting protection against corrosive attack.



#### Conductive materials

The current carrying materials copper, brass and bronze are highly conductive and possess excellent mechanical properties. They are usually tin-lead plated for exceptional contact and minimum contact resistance. In addition to its good electrical properties, the tin-lead plating offers excellent protection against corrosion.

Solder connections are also tin-lead plated. In order to ensure good solderability of the tin-lead plating even after long storage periods, brass parts are provided with an additional nickel layer as a diffusion barrier. This nickel layer effectively prevents the discharge of zinc atoms from the brass.

#### Insulating materials

In order to meet the various demands on our products, it is necessary to use different types of insulating materials to suit individual applications. All insulating materials used by Weidmüller are free of asbestos and contain no cadmium-based colour pigments.

#### Thermoplastics

Polyamide (PA) is one of the most frequently used technical plastics. The advantages of this material are its good electrical and mechanical properties, flexibility and insusceptibility to fracture. Because of its chemical structure, this material also offers good fire resistance (so-called inherent flame protection) without the use of flameproofing agents.

Wemid is a modified thermoplastic whose properties are specially adjusted to meet the requirements of our terminals.

The advantages compared to PA are improved fire protection and increased continuous service temperature.

#### Thermoplastic polyester (PBT)

Because of its excellent dimensional stability and high continuous service temperature, this material is used for wires.

Compared to other insulating materials, the tracking resistance is lower.

#### Glas fibre reinforced polyamide (PG GF)

This material offers excellent dimensional stability and good mechanical properties which makes it ideal for use as end stops. Compared to nonreinforced PA, this material falls into the flammability class HB according to UL 94.

#### Thermosetting plastics

Thermosetting plastics possess high dimensional stability, absorb a negligible amount of water, have very high tracking resistance. Compared to thermoplastics, the continuous service temperature is higher. With increased thermal load, the form strength of thermosetting plastics is better than that of the thermoplastics. A disadvantage is that thermosetting plastics are less flexible thermoplastics.

### Insulating materials and their special properties

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#### Wemid

- Modified thermoplastic
- Increased continuous service temper.
- Improved fire resistance
- Halogen and phosphorous-free flameproofing agent no dioxin or furan forming substances
- Qualified for rail road application

---

#### Polyamide (PA)

- Flexible, unsusceptible to fracture
- Good electrical and mechanical properties
- Inherent flame protection

---

#### Thermoplastic polyester (PBT)

- High dimensional stability
- Good electrical and mechanical properties
- Flameproofing agent without dioxin or furan forming substances

---

#### Glass fibre reinforced polyamide (PA GF)

- Excellent dimensional stability
- Very good mechanical properties
- No dioxin and furan forming substances

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#### Gemin (melamine resin moulding compound)

- High continuous service temperature
- High fire resistance
- High tracking resistance
- Inherent flame-protection
- Qualified for rail road application

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#### Stamin (melamine resin moulding compound)








- Higher continuous service temperature than Gemin
- High fire resistance
- High tracking resistance
- Inherent flame-protection
- High fire resistance

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#### Epoxy resin (EP)

- Very good electrical properties
  - Very high continuous service temper.
  - Resistant to high-energy resistance
  - Halogen and phosphorus-free flameproofing gannet
  - No dioxin and furan forming substances
-

## General Technical Data

Standard colour	Material description	Properties	Test specifications	Unit	Measured value
Dark beige 	Thermoplastic Special Weidmüller PA material Wemid	Specific volume resistance Dielectric strength Tracking resistance (A) Continuous service temperature Lower temp. limit, static Flammability to UL 94 Flammability to Préfecture de Police * 960 C glow wire test Grade of smoke formation	VDE 0303 T. 30 DIN EN 60 243-1 VDE 0303 T. 1 VDE 0304 T. 21 --- UL 94 (0.8 mm) EN 60 965-2-1/... DIN 5510-1 Level SR 2	$\Omega$ x cm kV / mm CTI °C °C Level Level	$10^{12}$ 25 600 120 - 50 V0 MO*
Beige 	Thermoplastic Material designation: polyamide Abbreviation: PA	Specific volume resistance Dielectric strength Tracking resistance (A) Continuous service temperature Lower temp. limit, static Flammability to UL 94	VDE 0303 T. 30 DIN EN 60 243-1 VDE 0303 T. 1 VDE 0304 T. 21 --- UL 94	$\Omega$ x cm kV / mm CTI °C °C Level	$10^{12}$ 30 600 100 - 50 V2
Orange 	Thermoplastic Material designation: Polybutylene terephthalate Abbreviation: PBT With or without organ- ic filler, depending on application	Specific volume resistance Dielectric strength Tracking resistance (A) Continuous service temperature Lower temp. limit, static Flammability to UL 94	VDE 0303 T. 30 DIN EN 60 243-1 VDE 0303 T. 1 VDE 0304 T. 21 --- UL 94	$\Omega$ x cm kV / mm CTI °C °C Level	$10^{13}$ 28 200 130 electr. - 50 V0
Dark beige 	Thermoplast Material designation: polyamide Abbreviation: PA GF	Specific volume resistance Dielectric strength Tracking resistance (A) Continuous service temperature Lower temp. limit, static Flammability to UL 94	VDE 0303 T. 30 DIN EN 60 243-1 VDE 0303 T. 1 VDE 0304 T. 21 --- UL 94	$\Omega$ x cm kV / mm CTI °C °C Level	$10^{12}$ 30 225 110 - 50 HB
Beige 	Thermosetting plastic Gemin (KrG) MF Type 150 (DIN 7708-3) organic filler	Specific volume resistance Dielectric strength Tracking resistance (A) Continuous service temperature Lower temp. limit, static Flammability to UL 94 Grade of smoke formation	VDE 0303 T. 30 DIN EN 60 243-1 VDE 0303 T. 1 VDE 0304 T. 21 --- UL 94 DIN 5510-1 Level SR 2	$\Omega$ x cm kV / mm CTI °C °C Level	$10^{11}$ 10 > 600 130 - 60 V0 (5 V-A)
Anthracite 	Thermosetting plastic Stamin (KrS)  MF Type 156 (DIN 7708-3) inorganic filler	Specific volume resistance Dielectric strength Tracking resistance (A) Continuous service temperature Lower temp. limit, static Flammability to UL 94	VDE 0303 T. 30 DIN EN 60 243-1 VDE 0303 T. 1 VDE 0304 T. 21 --- UL 94	$\Omega$ x cm kV / mm CTI °C °C Level	$10^8$ 12.5 > 600 140 - 60 V0 (5 V-A)
Black 	Thermosetting plastic Epoxy resin EP inorganic filler	Specific volume resistance Dielectric strength Tracking resistance (A) Continuous service temperature Lower temp. limit, static Flammability to UL 94	VDE 0303 T. 30 DIN EN 60 243-1 VDE 0303 T. 1 VDE 0304 T. 21 --- UL 94	$\Omega$ x cm kV / cm CTI °C °C Level	$10^{14}$ 160 > 600 165 - 60 V0

## General Technical Data

### Clamping two leads in one clamp

Terminals provide a system of order in panels. The allocation of leads to individual circuits, marking and creating functional units can only be sensibly done if only one lead is attached to a single clamping site. In other words:

- When planning the panel never use more than one lead per clamp, to ensure
- clarity within the panel,
- only the same type of leads are clamped together when changes or extensions are made.

The Weidmüller WDU feed-through terminals are designed to fulfill this role! For the screwless ZDU terminals the same applies: 1 lead per clamp.

#### DIN VDE 0611-1 (IEC 60947-7-1):

stipulates in paragraph 4.3.5: The leads can be solid (single or stranded) or flexible. The manufacturer must specify the type and the largest and smallest cross-section that can be attached – and where relevant – the number of leads that can be attached to a single terminal point at one and the same time. The manufacturer must stipulate the preparation needed.

#### VDE 0660 Part 100

supplements this as follows: “The manufacturer must specify the type of wire (solid, stranded, flexible), the largest and smallest cross-section for which the clamp is suitable and where relevant the number of leads that can be attached to a single terminal point”.

#### Continuous current rating with two wires

The total current of two wires must not exceed the continuous current rating of the terminal block.

The continuous current rating is the maximum current as terminal block can conduct without a temperature rise of 45 K being exceeded.

#### Rated insulation voltage

The rated insulation voltage of the terminal block does not change with the proper connection of two wires.

### AWG wires

#### Protection type

Due to the use of Weidmüller products in the USA, Canada and the Commonwealth, the provision of AWG wire information is becoming increasingly necessary. AWG is the abbreviation for **American Wire Gauge**. This designation is simply a number and does not provide information on the actual wire cross-section. For this reason, we have listed the correlations between AWG and mm<sup>2</sup> in the following table.

#### Conversion from AWG to mm<sup>2</sup>

AWG	28	26	24	22	20	19
mm <sup>2</sup>	0.08	0.13	0.21	0.33	0.52	0.65
AWG	18	17	16	15	14	13
mm <sup>2</sup>	0.82	1.04	1.31	1.65	2.08	2.63
AWG	12	11	10	9	8	7
mm <sup>2</sup>	3.31	4.17	5.26	6.63	8.37	10.55
AWG	6	5	4	3	2	1
mm <sup>2</sup>	13.30	16.77	21.15	26.67	33.63	42.41
AWG	0					
mm <sup>2</sup>	53.48					

### IEC 60529

#### Protection types using enclosures

The IP protection level for the prevention of direct contact refers to the enclosure of electrical equipment, e.g. housings, switching cabinets, etc. For electrical equipment that is designed to be built into these enclosures, e.g. terminal blocks, with reference to protection against direct (unintentional) contact, the VDE specification DIN VDE 0106-100 “Protection against electric shock: Location of operating elements in the vicinity of contact hazardous components applies so far as specified”.

#### Cross-connection

Weidmüller offers two basic cross-connection systems: WQV and ZQV. They are completely insulated, fingersafe and available for the most current number of poles: 2, 3, 4 and 10.

Shortened cross-connections are not fingersafe along the cutted edge. If necessary the cross-connections can be covered with appropriate accessories (e. g. WAD).

### Torques

#### Definition, Limits, Range

#### Torque range for screw terminals

Tightening the clamping screws within this torque range ensures that

- the wires are clampable reliably and gas-tight
- the clamping yoke is not mechanically damaged
- the voltage drop is distinctly below the specified limit value

The tightening torque according to IEC 60 947-1 table 4, or data defined by the manufacturer respectively, is the lower limit of the torque range and passes all laboratory tests successfully.

The upper limit of the torque range defines the maximum permissible torque before damaging the clamping yoke.

The electric screwdriver should be adjusted to the middle of the defined torque range.

The values in the table are for guiding purposes only. The product-specific data have been listed under the respective product.

#### Round-head screw with slot

Thread	Torque range	
	Steel screws	
	min. 8.8	A 2/A 4-80
[M]	[Nm]	[Nm]
M 2.5	0.4...0.8	0.4...0.8
M 3	0.5...1.0	0.5...1.0
M 3.5	0.8...1.6	0.8...1.6
M 4	1.2...2.4	...
M 5	2.0...4.0	...
M 6	2.5...5.0	...

#### Round-head screw with slot

Thread	Torque range	
	Non-ferrous screws	
	Cu 2 (CuZn)	Cu 5 (CuNi 60)
[M]	[Nm]	[Nm]
M 2.5	0.4...0.45	...
M 3	0.5...0.6	0.5...1.0
M 3.5	...	0.8...1.6
M 4	1.2...1.9	1.2...2.4
M 5	2.0...3.0	2.0...4.0
M 6	...	2.5...5.0

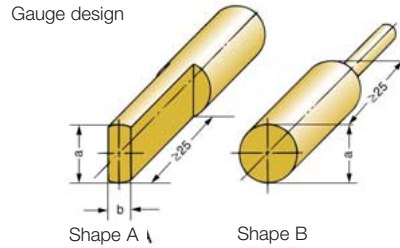
#### Round-head allen screws

Thread	Torque range	
	Steel screws	
[M]	[Nm]	
M 4	1.2...2.4	
M 5	2.0...4.0	
M 6	3.0...6.0	
M 8	6.0...12	
M 10	10.0...20	
M 12	14.0...31	
M 16	25.0...60	

## General Technical Data

### Plug gauge VDE 0660 Part 100 Section 8.2.4.5 (IEC/EN 60947-1) Insertion of unprepared circular wires with the largest defined cross-section

Testing with the specified plug gauge, insertion using own weight



Wire cross-section		Plug gauge					
Flexible conductors mm <sup>2</sup>	Solid conductors (single or stranded) mm <sup>2</sup>	Shape A			Shape B		Tolerance for a and b mm
		Type	Diameter a mm	Width b mm	Type	Diameter a mm	
1.5	1.5	A 1	2.4	1.5	B 1	1.9	0
2.5	2.5	A 2	2.8	2.0	B 2	2.4	-0.05
2.5	4	A 3	2.8	2.4	B 3	2.7	-0.05
4	6	A 4	3.6	3.1	B 4	3.5	0
6	10	A 5	4.3	4.0	B 5	4.4	-0.06
10	16	A 6	5.4	5.1	B 6	5.3	-0.06
16	25	A 7	7.1	6.3	B 7	6.9	0
25	35	A 8	8.3	7.8	B 8	8.2	-0.07
35	50	A 9	10.2	9.2	B 9	10.0	-0.07
50	70	A 10	12.3	11.0	B 10	12.0	0
70	95	A 11	14.2	13.1	B 11	14.0	-0.08
95	120	A 12	16.2	15.1	B 12	16.0	-0.08
120	150	A 13	18.2	17.0	B 13	18.0	-0.08

### DIN VDE 0106-100 Protection against electric shock Installation of operating elements in the vicinity of contact hazardous components

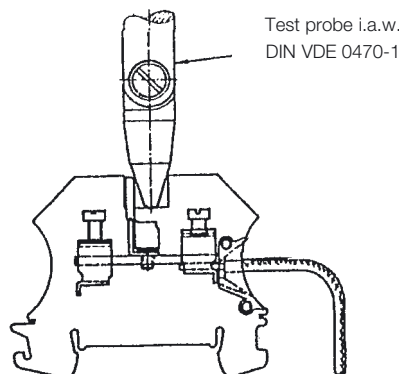
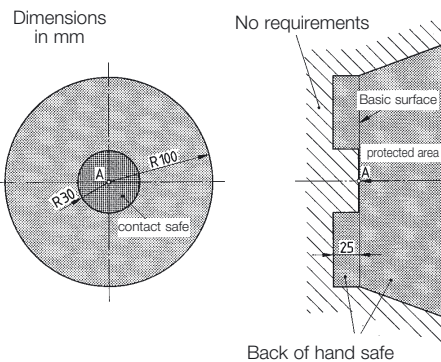
This applies to the design of electrical equipment and the location of electrical installations for the protection against direct contact for operating elements which provide a specific function. Operating elements are control components and interaction components to provide a specific function.

Examples of control components: Circuit protection components, overvoltage trips, motor protection switches, control switches, voltage relays, current relays, FU/FI switches, timer relays, flasher relays, thermostats, pressure monitors, program tools, etc.

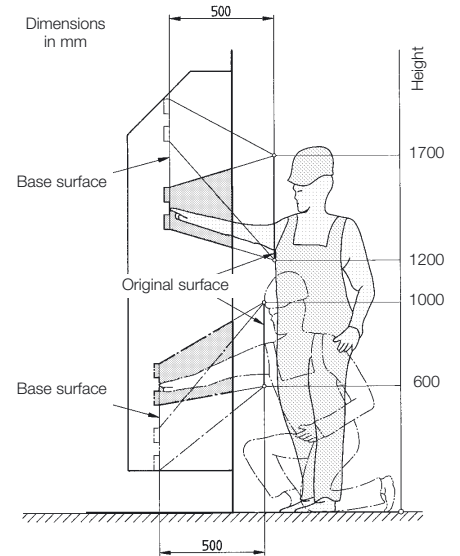
Examples of interaction components: Screw fuses, miniature fuses, indicator lamps, plug elements, etc.

Requirements for switching installations: The permissible area for the location of operating elements is 400 mm in deep and 2100 mm high, a protective zone for the operation must be maintained between the base surface and the original surface.

Requirements of electrical equipment: The base surface around the operating element must be finger safe. Electrical equipment that extend into the protective zone, must be designed to protect the back of the hand.

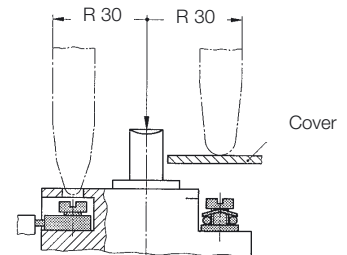


### UVV Accident prevention regulations of the professional association VBG4 Electrical installations and equipment

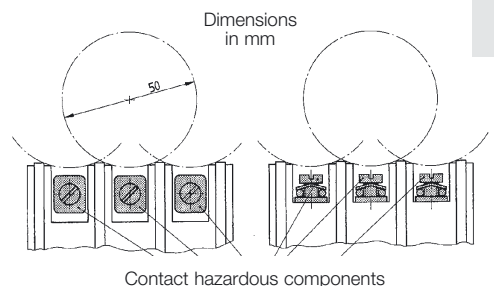


The VBG4 accident prevention regulation applies to all electrical installations and equipment including non-electrical work within the vicinity of these elements. It refers to companies, i.e. the operators of electrical installations and employees (insured). To achieve the protection objectives of the accident prevention regulations, a manufacturer of electrical equipment and installations must comply with DIN VDE 0106 Part 100 Protection from electric shock. Location of operating elements in the vicinity of contact hazardous components.

### Finger safe



### Back of hand safe





### General Information about CE Mark

The CE mark on various products and their packaging is neither a quality feature nor an indication of quality or safety.

The CE mark is a control sign that was created and brought into effect for open trading within the European market.

It does not refer to the address of the end consumer. The CE mark only confirms that a manufacturer has complied with all of the directives of the European Union (EU) that are applicable to this product. Therefore the CE mark is proof of directive conformity and is directed towards the responsible control authorities.

The CE mark can be said to be the passport for products that are to be traded within Europe.

Weidmüller considers all relevant EU directives to the best of its knowledge.

The currently applicable directives are as follows:

#### 73/23/EEC

Electrical equipment for use within specific voltage ranges (Low voltage directive)

#### 89/336/EEC

Electromagnetic compatibility (EMC directive)

#### 89/392/EEC

Safety of machines (Machinery directive)

The standards mentioned in the directives have been an element of Weidmüller's standard development for a considerable time. This provides the guarantee of conformity to the European directives. Our testing laboratory, accredited according to EN 45001, performs the standard conform testing. The testing reports are recognised within Europe within the framework of the accreditation process.

#### 73/23 EEC

##### Low-Voltage Directive (LVG)

Electrical equipment in the sense of this directive are all electrical equipments that are used with a nominal voltage between 50 and 1000 Vac and between 75 and 1500 Vdc.

If an electrical product has the CE mark, it must fulfil the requirements of the EMC directive and if necessary the low-voltage directive (above 50 Vac and above 75 Vdc).

According to the low-voltage directive, a conformity evaluation process must be performed on the product whereby conformity to the directive is assumed where a reference to the harmonised Euro-pean standards or to the other technical specifications, e.g. IEC standards or national standards, is made.

With the decree of the Directive of the council dated 3rd. May 1989 for the alignment of the legal requirements of the member states concerning **electromagnetic compatibility** (89/336/EEC), the European Union (EU) has declared **EMC** as a protection objective.

The protection objectives are defined in article 4 of the EMC directive dated 19th.

November 1992, and state the following:

- the generation of electromagnetic interference must be so reduced so that the intended operation of radio, telecommunications and other devices is possible.
- the devices must have a suitable resistance to electromagnetic interference in order to ensure intended operation.

Devices are defined in the EMC directive as:

- all electrical and electronic equipment, installations and systems that contain electrical and electronic components

This applies to active/passive components and intelligent modules that are produced and stored by Weidmüller.

The adherence to this directive is assumed for the devices that conform with the harmonised European standards that, for example, are released in the gazette from the Federal Minister for Post and Telecommunications.

The devices are utilised in the following areas:

- industrial installations
- medical and scientific equipment and devices
- information technology devices

Weidmüller tests its electronic products according to the relevant standards in order to fulfil the agreed protection objectives.

### Electronic Products from Weidmüller Regarding EMC Guidelines

#### Category 1

- All passive components such as:
- terminals with status displays
- protection terminals with status displays
- passive interface elements with and without status displays
- overvoltage protection

These products cause no interference and they have a suitable immunity to interference. These products are not labelled with the CE mark concerning the EMC directive or the EMC guideline.

#### Category 2

These products are labelled with the CE mark after the conformity evaluation process has been performed which contains the reference to the harmonised European standards.

The following are harmonised standards:

#### EN 50081-1

Generic Emission Standard for residential, commercial and light industrial environments

#### EN 50082-1

Generic Immunity Standard for residential, commercial and light industrial environments companies

#### EN 50081-2

Generic Emission Standard for heavy industrial environments

#### EN 50082-2

Generic Immunity Standard for heavy industrial environments

#### EN 55011

Radio Interference for ISM Devices

#### EN 5022

Radio Interference for Information Technology Facilities

#### EN 61000-3-2

Harmonics

#### EN 61000-3-3

Voltage Fluctuations

#### EN 6100 0-4-x

approx. 10 partial tests for interference immunity; partly not ratified.



### Usage of Tests

Generic standards are always used when device-specific product standards do not exist. The generic standards of EN 50081-2 and EN 50082-2 are used as the basis for Weidmüller products.

Remark:

The relevance of EN 50082-1 for certain products must be checked as well as how far EN 50081-1 or 50082-1 was considered during testing.

The environment phenomenon and test interference levels are specified in the generic immunity standard. Additionally, Weidmüller considers the evaluation criteria A, B and C.

Text extract from the Generic Standard EN 50082-2:

#### Criterion A

The equipment shall continue to operate as intended. No degradation of performance or loss of function is allowed below a minimum performance level as specified by the manufacturer, when the equipment is used as intended.

In certain cases, the nominal performance level can be replaced by an permissible loss of performance.

If the minimal performance level or permissible loss of performance is not specified by the manufacturer, both of these specifications can be extracted from the description of the product, the relevant documentation and from what the operator expects from the equipment during its intended operation.

#### Criterion B

The equipment shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a minimum performance level as specified by the manufacturer, when the equipment is used as intended.

In certain cases, the minimal performance level can be replaced by an permissible loss of performance. During testing degradation of the performance level is permitted however changes to the specified operation mode or data loss are not permitted.

If the minimal performance level or permissible loss of performance is not specified by the manufacturer, both of these specifications can be extracted from the description of the product, the relevant documentation and from what the operator expects from the equipment during its intended operation.

#### Criterion C

A temporary loss of function is permitted, provided the loss of function is self recoverable or can be restored by the operation of the controls.

Criterion B is most frequently specified in the generic standards and is used by Weidmüller.

An example of an analogue coupler EMA:

During testing, the analogue coupler can convert values that are outside the permissible tolerances. After testing however, the values must be within the available tolerances.

### General Installation Instructions

In agreement with the performance level and the criteria A and B, the products are allowed and can be affected externally during the occurrence of a fault.

It should be attempted, as far as possible, to prevent this with an optimal installation.

#### Measures:

- installation of the products in an enclosed metal box (control cabinet, metal housing)
- protect the voltage supply with an overvoltage protection device. (For mains supply of 230/400 Vac with a PU type and for 24 Vdc with an EGU or LPU.)
- only use shielded cables for analogue data signals
- follow ESD measures during installation, maintenance and operation
- distance between electronic modules and interference sources (e.g. invertors) and power lines should be at least 200 mm.
- maintenance of ambient temperature and relative humidity
- long cables are to be protected by over-voltage protection devices.

For safety reasons, the operation of walkie-talkies and mobile telephones should only be performed outside a radius of 2 m.

Type	Cat. No.	EAN No.	Page	Type	Cat. No.	EAN No.	Page
<b>A</b>				CP-SNT 24 W 15 Vdc / 1.5 A	9928890015	4032248217540	222
AD 4 (4 term.)	0303400000	4008190068158	7	CP-SNT 24 W 24 Vdc / 1 A	9928890024	4032248217557	222
ADP 10 (2000 mm) orange	4169320000	4008190243517	303	CP-SNT 24 W 28 Vdc / 1 A	9928890028	4032248217564	222
ADP 11 (2000 mm) orange	4169330000	4008190229030	303	CP-SNT 24 W 5 Vdc / 2 A	9928890005	4032248217526	222
ADP 5 (1000 mm) orange	4167150000	4008190446925	303	CP-SNT 300W	9916250024	4032248217762	225
ADP 6 (1000 mm) orange	4167160000		303	CP-SNT 55 W 24 Vdc / 2.3 A	9917790324	4032248217717	223
AKZ 4 LD	0639360000	4008190065454	10	CP-SNT 55 W 12 Vdc - 15 Vdc / 3 A	9927480012	4032248217588	223
AKZ 4 LD green	8022520000	4032248065455	10	CP-SNT 55 W 24 Vdc-28 Vdc / 2.3 A	9927480024	4032248217595	223
AKZ 4 LD red	0639460000	4008190022389	10	CP-SNT 55 W 48 Vdc / 1.04 A	9927480048	4032248217601	223
AKZ 4 LD yellow	0639560000	4008190097226	10	CP-SNT 55 W 5 Vdc / 3 A	9927480005	4032248217571	223
AP	0687560000	4008190009465	17	Cross-connection QB single row 18-4	8619440000	4032248281923	244
AP	8268870000	4008190403676	305	Cross-connection QB single row 18-6	8619450000	4032248281947	244
AP	8324560000	4008190888206	305				
AP (for DK 5 U)	4036780000	4008190096205	278				
AP (for DK 6 U)	4042030000		278				
AP 100 D orange	1185160000	4008190058388	303	<b>D</b>			
AP 100 grey	1773410000	4032248141111	303	DEK 5 neutral green	0473391688	4008190057473	312
AP 100 orange	1185060000	4008190003586	303	DEK 5 individual print acc. to requirements	0490790000	4008190018504	312
AP 110 D orange	1185360000	4008190105150	303	DEK 5 individual print acc. to requirements white	0490760000	4008190450250	312
AP 110 orange	1185260000	4008190005115	303	DEK 5 neutral black	0473391694	4008190085407	312
AP 111 D orange	1185560000	4008190050207	303	DEK 5 neutral blue	0473391693	4008190187415	312
AP 111 orange	1185460000	4008190132064	303	DEK 5 neutral brown	0473391692	4008190100056	312
AP 45/LI AP 45/RE	8143900000	4008190139926	302	DEK 5 neutral grey	0473391691	4008190165079	312
AP 45/LI AP 45/RE	8143910000	4008190003111	302	DEK 5 neutral orange	0473391690	4008190159375	312
AP 45/LI Di AP 45/RE Di	8140860000	4008190169305	302	DEK 5 neutral red	0473391686	4008190014025	312
AP 45/LI Di AP 45/RE Di	8140870000	4008190034887	302	DEK 5 neutral violet	0473391689	4008190102494	312
AP 80 D orange	1324360000	4008190094898	303	DEK 5 neutral white	0473361044		
AP 80 grey	8320300000	4008190881153	303	DEK 5 neutral yellow	0473391687	4008190131586	312
AP 80 orange	1324260000	4008190181932	303	DEK 5/5 MultiCard	1609800000	4008190203450	312
AP 85 D orange	1411060000	4008190052041	303	DEK 5/5 MultiCard	1609810000	4008190456659	312
AP 85 orange	1410860000	4008190052799	303	DEK 5/6 MultiCard	1609820000	4008190203436	312
AP 86 D orange	1411160000	4008190148249	303	DEK 5/6 MultiCard	1609830000	4008190456603	312
AP 86 orange	1410960000	4008190122096	303	DEK 5/6.5 MultiCard	1609840000	4008190203429	312
AP KrG (3)	0146720000	4008190027995	15	DEK 5/6.5 MultiCard	1609850000	4008190456610	312
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AP PA	0359260000	4008190012991	4	DEK 6 neutral brown	0468591692	4008190015930	312
AP PA	0453660000	4008190146498	296	DEK 6 neutral green	0468591688	4008190163709	312
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AP PA	1116160000	4008190066499	297	DEK 6 neutral orange	0468591690	4008190111113	312
AP PA	1313260000	4008190055028	6	DEK 6 neutral red	0468591686	4008190120849	312
AP PA (1.5)	0117960000	4008190081485	11	DEK 6 neutral violet	0468591689	4008190049584	312
AP RF 80 LT grey	8156210000	4008190978198	303	DEK 6 neutral white	0468561044		
AP RF 80 RE grey	8156200000	4008190175740	303	DEK 6 neutral yellow	0468591687	4008190083083	312
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Assembly bracket for wall mounting	7920560000	4032248241637	223	DEK 6.5 neutral black	0468091694	4008190005726	312
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				DEK 6.5 neutral violet	0468091689	4008190058203	312
				DEK 6.5 neutral white	0468061044		
				DEK 6.5 neutral yellow	0468091687	4008190087890	312
<b>B</b>				DEK 6.5 white individ. print acc. to requirements	0490560000	4008190450267	312
BS 25	0334700000	4008190118839	15	DEK 8 individ. print acc. to requirements	1326690000	4008190004217	312
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BS M 3x15	0377200000	4008190006389	15	DEK 8 neutral blue	1277091693	4008190944599	312
BS M 3x20	0377100000	4008190060350	15	DEK 8 neutral brown	1277091692	4008190944582	312
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DKV 24 Vdc	8015780000	4008190024161	290	EGR EG7	8092400000	4008190123864	81
DKV 24 Vdc	8015790000	4008190114046	290	EGR EG7	8092410000	4008190164461	81
DKV 5 Vdc	8018590000	4008190153182	290	EGR EG7	8092420000	4008190168803	81
DKV 5 Vdc	8018600000	4008190077099	290	EGR EG7	8092430000	4008190065010	81
DKZ 24 Vac/dc 32	8008130000	4008190099169	151	EGR EG7	8092440000	4008190114640	81
DKZ 24 Vac/dc 35	8008190000	4008190130268	151	EGR EG7	8092450000	4008190091033	81
DKZ DK5	8019650000	4008190209070	152	EGR EG7	8092460000	4008190149499	81
DKZ DK5	8228680000	4008190193911	152	EGR EG7	8092470000	4008190170158	81
DKZ DK5	8243780000	4008190263607	152	EGR EG7	8092480000	4008190119409	81
DKZA 24 Vdc 32	8008120000	4008190170059	151	EGR EG7	8147120000	4008190123499	80
DKZA 24 Vdc 32	8020990000	4008190064082	151	EGR EG7	8147140000	4008190049270	80
DKZA 24 Vdc 35	8008180000	4008190066918	151	EGR EG7	8160030000	4008190085254	80
DKZA 24 Vdc 35	8022110000	4008190082369	151	EGR EG7	8178200000	4008190091200	81
DKZA DK5	8019630000	4008190209087	153	EGR EG7	8216520000	4008190190439	80
DKZA DK5	8243770000	4008190263591	153	EGR EG7	8218200000	4008190262815	80
DKZADK5	8228690000	4008190193928	153	EGS 230 V-	1115860000	4008190123871	286
DLI 2.5 LD/35 NPN	1578550000	4008190073626	6	EGS 24 V-	0193860000	4008190166083	286
DLI 2.5 LD/35 NPN	1578560000	4008190129521	6	EGS 42 V-	8029370000	4008190876333	286
DLI 2.5 LD/35 PNP	1578510000	4008190146795	6	EGT 0 1 NC, 1 NO	8002290000	4008190046965	286
DLI 2.5 LD/35 PNP	1578520000	4008190076399	6	EGT 1 off-switch	0126360000	4008190097141	286
DLI 2.5 LD/35 PNP	1578530000	4008190160296	6	EGT 2 changeover contact switched	0104060000	4008190119713	286
DLI 2.5 LD/35 PNP block of 10	1578540000	4008190170868	6	EGT 3 changeover contact	0104160000	4008190068554	286
DLS 2 with diode	0547760000	4008190177249	13	EGT 4 changeover	0104360000	4008190094553	286
DLS 2 with diode	0630160000	4008190091194	13	EGT 5 changeover	0104260000	4008190100247	286
DLS 2 with wire bridge	0547660000	4008190140007	13	EGT 6 changeover contact toggle	0114660000	4008190180355	286
DLS 2 without components	0321060000	4008190007386	13	EGU 1, 115 V0	0240560000	4008190157906	264
DQS 2 (ø 2)	0300260000	4008190121976	15	EGU 1, 230 V0	0245060000	4008190093280	264
DQS 2 with diode	0471460000	4008190035891	14	EGU 1, 24 V0	0243960000	4008190031596	264
DQS 2 with wire bridge	0471560000	4008190002909	14	EGU 1, 48 V0	0244460000	4008190010164	264
DQS 2 without components	0471660000	4008190051327	14	EGU 2, 115 V0	0226660000	4008190061777	264
				EGU 2, 115 V0	9311520000	4008190103057	265
				EGU 2, 230 V0	0223260000	4008190107086	264
				EGU 2, 230 V0	9311530000	4008190136758	265
EG 2 R	0508860000	4008190095246	296	EGU 2, 24 V0	0223060000	4008190086718	264
EG 3 R	0163960000	4008190092146	297	EGU 2, 24 V0	9310830000	4008190027353	265
EG 32/1 for TS 32	0453560000	4008190148058	296	EGU 2, 48 V0	0226560000	4008190159399	264
EG 35/1 for TS 35	0453860000	4008190078850	296	EGU 2, 48 V0	1170160000	4008190029302	265
EG 4 R	1116560000	4008190187835	297	EGU 3, 115 V0	0250760000	4008190172268	265
EG 5 R	1116860000	4008190009779	297	EGU 3, 115 V0	1186860000	4008190008857	265
EG 6 (incl. front plate)	8095840000	4008190287320	300	EGU 3, 230 V0	0250860000	4008190142704	265
EG-T/AC	1179860000	4008190061753	220	EGU 3, 230 V0	1187060000	4008190017088	265
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EG-T/AC	1180060000	4008190011864	220	EGU 3, 24 V0	1186760000	4008190066727	265
EG-T/AC	8014360000	4008190038649	232	EGU 3, 48 V0	0250660000	4008190165475	265
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EGL 230 V-	0104460000	4008190170240	286	EGU 4, 115 V0	1171160000	4008190037222	266
EGL 24 V0	0126860000	4008190067748	286	EGU 4, 230 V0	0462060000	4008190078942	266
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EGO 1, 24 V	0558160000	4008190181727	122	EGU 4, 24 V0	0459460000	4008190084479	266
EGO 1, 24 V	0609860000	4008190142063	123	EGU 4, 24 V0	1170560000	4008190041021	267
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FBK 10/1800 RK 18.00 m	8614760000	4032248277018	55				
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FBK 10/300 RK 3.00 m	8235400000	4008190264628	55	MCZ CCC 0...20 mA/0...20 mA	8411190000	4008190992736	164
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FBK 40/350 RK 3.50 m	8216400000	4008190264703	55	MCZ ovp LON	8473470000	4032248125746	272
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NAIS APE 30124V	4061590000	4032248252282	89	PRZ 24Vdc LD 2CO SGR 282	8595970000	4032248254910	82
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				PS (ø 4)	0299600000	4008190074043	15
				PT 28800	8572170000	4032248220557	100
				PT 570006	8074650000	4008190103118	100
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OS 12 VO	1121200000		139	PT 570048	8074670000	4008190047467	100
OS 12 V-	1124800000	4008190033484	139	PT 570060	8074680000	4008190119836	100
OS 24 Vdc	1124900000	4008190150310	56	PT 570110	8074700000	4008190158323	100
OS 24 Vdc	1153200000	4008190377847	56	PT 570506	8074710000	4008190183080	100
OS 24 Vdc replacement coupler	8224330000	4008190208172	56	PT 570512	8074730000	4008190170905	100
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OS 24 VO	1121300000	4008190176945	139	PT 570548	1180900000	4008190172978	100
OS 5 V-	1121100000	4008190010560	139	PT 570560	8074760000	4008190100711	100
OS2	9455210000	4008190392154	311	PT 570615	1180800000	4008190113100	100
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OST EG7	8234600000	4008190264833	133	PU 0 C 470 V-	8451080000	4032248235575	249
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				Q 2	0336400000	4008190037680	4
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				Q 3	0367000000	4008190024604	6
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				QB 10	0343800000	4008190168032	15
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RF 180 grey	1773400000	4032248140602	303	RS 30 48 V- LED green	1100410000	4008190114473	91
RF 180 orange	1324460000	4008190159870	303	RS 30 48 V- LED red	1100420000	4008190073244	91
RFB	0119560000	4008190087111	301	RS 30 60 V-	1100660000	4008190096953	91
RFM	0213760000	4008190148850	301	RS 30 60 V- LED green	1100610000	4008190179690	91
RFO	0126260000	4008190178772	301	RS 30 60 V- LED red	1100620000	4008190170790	91
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RS 1 HR	1166961001	4032248125319	140	RS 31, 230 V-	1128411001	4032248046850	93
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RS 100 (2000 mm) grey	4010870000	4008190214562	303	RS 31, 24 V-	1128311001	4032248046829	92
RS 100 (2000 mm) orange	4144870000	4008190377410	303	RS 31, 24 V-	1128331001	4032248046812	92
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RS 14 LED red	1127661001	4032248056583	101	RS 32	1122761001	4032248046232	95
RS 14 LED red	1157561001	4032248066087	101	RS 32	9406021001	4032248046157	94
RS 17 DC voltage relay	0125861001	4032248266258	102	RS 32	9406121001	4008190027193	94
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RS 30 115 Vac	1100760000	4008190117832	91	RS 40 GSE 48 VO LED green	1161061001	4032248056064	137
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RS 30 115 Vac LED green	1101411001	4008190108694	91	RS 45 (up to 2000 mm)	8027750000	4008190209926	302
RS 30 115 Vac LED green	1102111001	4032248045976	91	RS 485	8008501001	4032248188413	270
RS 30 115 Vac LED red	1101421001	4032248044900	91	RS 6 AC voltage relay	0115361001	4032248131181	102
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RSSD 50 S	8019970000	4008190039554	23	SAKL 4/500 k EN	1109960000	4008190155513	11
RSSD 50 S	8155670000	4008190085049	22	SAKL 4/500 k PA	0649560000	4008190077266	11
RSSD 9 B	8003911001	4032248047277	22	SAKL 4/500 PA	0643860000	4008190054380	11
RSSD 9 B	8019880000	4008190089030	23	SAKR-D, TS 32	0412960000	4008190082727	13
RSSD 9 B	8216480000	40081900299064	22	SAKR-D, TS 32 w. test socket & DLS w/o comp.	0413160000	4008190077921	13
RSSD 9 S	8003901001	4032248047291	22	SAKR-D, TS 32 with DLS 2	0263660000	4008190058982	13
RSSD 9 S	8019930000	4008190104962	23	SAKR-D, TS 32 with DLS 2 without components	0413060000	4008190142216	13
RSSD 9 S	8259010000	40081900444136	22	SAKR-D, TS 32 with test socket	0546460000	4008190050573	13
RSSD 9B 95U	8245130000	4008190420345	48	SAKR-D, TS 32 with test socket & 2 antip. diodes	0606560000	4008190128302	13
RSSD15B 95U	8245120000	4008190420352	48	SAKR-D, TS 32 with test sockets	0546460000	4008190050573	13
RST EG7	8216550000	4008190190460	80	SAKR-D, TS 35	0299560000	4008190053352	13
RST EG7	8216560000	4008190190477	80	SAKR-D, TS 35	0299960000	4008190182403	13
RST EG7	8216570000	4008190190484	80	SAKR-D, TS 35 w. test sock. & DLS 2 w/o comp.	1175360000	4008190140588	13
RST EG7	8216580000	4008190190491	80	SAKR-D, TS 35 w. test socket & 2 antip. diodes	1175460000	4008190167271	13
RST EG7	8216590000	4008190190507	81	SAKR-D, TS 35 with DLS 2	0185760000	4008190140595	13
RST EG7	8216600000	4008190190514	81	SAKT 1 GL	0333520000	4008190158293	15
RST EG7	8216610000	4008190190521	81	SAKT 1 GL	0333620000	4008190153267	15
RST EG7	8216620000	4008190190538	81	SAKT 4 LD	0254920000	4008190057053	15
RST EG7	8216630000	4008190190545	81	SAKT E KrG	0606820000	4008190124755	16
RSX	0329761001	4032248043729	289	SAKT E KrG	0698920000	4008190072520	16
RSX-ADP	8022051001	4032248064182	289	SAKT E KrG	0699020000	4008190090012	16
RSX-F	0329860000	4008190179373	289	SAKT E KrG	0699220000	4008190149864	16
RT 314012	4058470000	4032248189267	84	SAKT E KrG	1158720000	4008190073008	16
RT 314024	4058480000	4032248189281	56	SAKT E/35 KrG	0197920000	4008190139278	16
RT 314024 with yoke	8630780000	4032248292110	96	SAKT E/35 KrG	0198020000	4008190000165	16
RT 314048	4058740000		84	SAKT E/35 KrG	0198120000	4008190002916	16
RT 314048 with yoke	8630790000	4032248292127	96	SAKT E/35 KrG	0198220000	4008190088019	16
RT 314110	4058500000	4032248189304	56	SAKT E/35 KrG	1166820000	4008190048082	16
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RT 315024	4058490000		84	Screws for RS 100 40 x 14	4019420000	4008190243029	303
RT 315524	4058510000	4032248189328	84	SD 0.6 x 3.5 x 100	9008330000	4032248056286	88
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RT 315730	4058550000		84	SGR 282 24 Vdc T	8550520000	4032248188246	85
RT 424012	4058560000	4032248189274	84	SGR 662 24 Vdc T	8550510000	4032248188239	85
RT 424024	4058570000	4032248189298	84	SIM 115U FB10 4 x 8	8224660000	4008190208288	37
RT 424048	4058750000		84	SIM 115U FB10 4 x 8 KONV2.0	8298510000	4008190482206	37
RT 424060	4058760000		84	SIM 115U FB10 4 x 8 KONV2.5	8298520000	4008190482213	37
RT 424110	4058590000	4032248189311	84	SIM 115U FB10 4 x 8 KONV3.0	8298530000	4008190482220	37
RT 424524	4058600000	4032248189335	84	SIM 115U FB40 1 x 32	8224650000	4008190208271	37
RT 424615	4058610000	4032248191178	84	SIM 115U FB40 1 x 32 KONV2.0	8298270000	4008190481797	37
RT 424730	4058630000	4032248252510	84	SIM 115U FB40 1 x 32 KONV2.5	8298280000	4008190481803	37
RT 425024	4058580000	4032248269129	84	SIM 115U FB40 1 x 32 KONV3.0	8298290000	4008190481810	37
RT 425615	4058620000		84	SIM 135U FB10 4 x 8 KONV3.0	8298560000	4008190482251	38
RT 425730	4058640000	4032248189403	84	SIM 135U FB10 4 x 8	8224680000	4008190208608	38
				SIM 135U FB10 4 x 8 KONV2.0	8298540000	4008190482237	38
				SIM 135U FB10 4 x 8 KONV2.5	8298550000	4008190482244	38
				SIM 135U FB40 1 x 32	8224670000	4008190208295	38
				SIM 135U FB40 1 x 32 KONV2.0	8298300000	4008190481827	38
				SIM 135U FB40 1 x 32 2 KONV2.5	8298310000	4008190481834	38
				SIM 135U FB40 1 x 32 KONV3.0	8298320000	4008190481841	38
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S 4.8	0475700000	4008190176839	296	SIM S7/300 FB4 x 10 KON 3 m	8433310300	4008190064204	41
S 6.3	0496100000	4008190084998	296	SIM S7/300 FB4 x 10 KON 5 m	8433310500	4008190069032	41
S14k275	4011070000	4008190205751	263	SIM S7/300 FB40 KONV 2 m	8433290200	4008190094195	41
S14k30	4127830000	4008190274085	263	SIM S7/300 FB40 KONV 2.5 m	8433290250	4008190097424	41
SAKA 10 115 V~	1128820000	4008190040819	16	SIM S7/300 FB40 KONV 3 m	8433290300	4008190113001	41
SAKA 10 230 V~	8109130000	40081900440572	16	SIM S7/300 FB40 KONV 5 m	8433290500	4008190120252	41
SAKA 10 24 V~	1174920000	4008190114152	16	SIM S7/400 FB4 x 10 KONV 2 m	8335910200	4008190072773	41
SAKA 10 24 V~	8150150000	4008190440541	16	SIM S7/400 FB4 x 10 KONV 2.5 m	8335910250	4008190073213	41
SAKA 10 only 230 V~	1175020000	4008190172503	16	SIM S7/400 FB4 x 10 KONV 3 m	8335910300	4008190073497	41
SAKL 4 EN	1305160000	4008190165819	11	SIM S7/400 FB4 x 10 KONV 5 m	8335910500	4008190915704	41
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SAKL 4/1 k EN T	1166560000	4008190075743	12	SIM S7/400 FB40 KONV 2.5 m	8335900250	4008190072094	41
SAKL 4/1 k PA	0648960000	4008190121518	11	SIM S7/400 FB40 KONV 3 m	8335900300	4032248016426	41
SAKL 4/10 EN	1108360000	4008190063894	11	SIM S7/400 FB40 KONV 5 m	8335900500	4008190915735	41
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SAKL 4/10 k EN T	1166660000	4008190045791	12	SKH-RS	4163020000	4008190218355	301
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SAKL 4/100 EN	1108660000	4008190145385	11	SKH2B 64	8174810000	4008190041571	28
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WOS 2 15-60 Vuc	8275440000	4032248025527	127	WS 12/5 neutral	1609860000	4008190203481	317
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WTZ4 PT100/3 0...10 V	8432139999	4032248111060	187				
WTZ4 PT100/3 0...20 mA	8432160001	4032248111091	187				
WTZ4 PT100/3 0...20 mA	8432169999	4032248118045	187				
WTZ4 PT100/3 4...20 mA	8432160011	4032248111145	187				
WTZ4 PT100/3 C	8432160000	4032248110179	187				
WTZ4 PT100/3 V	8432130000	4032248110131	187				
WTZ4 PT100/4 0...10 V	8432250001	4032248117826	188				
WTZ4 PT100/4 0...10 V	8432259999	4032248117857	188				
WTZ4 PT100/4 0...20 mA	8432280001	4032248117871	188				
WTZ4 PT100/4 0...20 mA	8432289999	4032248118014	188				
WTZ4 PT100/4 4...20 mA	8432280011	4032248117895	188				
WTZ4 PT100/4 C	8432280000	4032248110513	188				
WTZ4 PT100/4 V	8432250000	4032248110407	188				
WTZ4 Thermo Select	8432310000	4032248110360	190				
WZR WDK 2.5	1074000000	4008190890384	295				

## Z

ZB-L	0495860000	4008190135218	296				
ZB-R	0495960000	4008190181178	296				
ZBE	0138360000	4008190101503	297				
ZG	0128000000	4008190016807	29				
ZG	0128060000	4008190123666	29				
ZG 28800	0116000000	4008190015329	101				
ZLT input relay KHU/BV 1680	4156970000	4008190225186	96				
ZP	0453760000	4008190071486	296				
ZPE 2.5	1608640000	4008190076733	257				
ZPE 4	1632080000	4008190263218	257				
ZPE 6	1608670000	4008190259242	257				
ZQV 2.5N/2 black	1718080000	4008190349301	298				
ZQV 2.5N/2 blue	1717990000	4008190349295	298				
ZQV 2.5N/2 red	1717900000	4008190349288	298				
ZQV 2.5N/2 yellow	1693800000	4008190883621	298				
ZQV 2.5N/4-2 BL	1784290000	4032248216383	82				
ZQV 2.5N/4-2 RT	1784280000	4032248214686	82				
ZQV 2.5N/4-2 SW	1784270000	4032248214679	82				
ZQV 4 10-pole	1609030000	4008190263300	305				
ZQV 4 2-pole	1608950000	4008190263225	305				
ZQV 4 3-pole	1608960000	4008190263232	305				
ZQV 4 4-pole	1608970000	4008190263249	305				
ZQV 4 5-pole	1608980000	4008190263256	305				
ZQV 4 6-pole	1608990000	4008190263263	305				
ZQV 4 7-pole	1609000000	4008190263270	305				
ZQV 4 8-pole	1609010000	4008190263287	305				
ZQV 4 9-pole	1609020000	4008190263294	305				
ZQV 4N / 10 BL	1794050000	4032248234011	88				
ZQV 4N / 10 GE	1758260000	4032248169764	88				
ZQV 4N / 10 RT	1794040000	4032248234004	88				
ZQV 4N / 10 SW	1794060000	4032248234059	88				
ZQV 4N / 2 BL	1793960000	4032248233755	88				
ZQV 4N / 2 GE	1758250000	4032248169795	88				
ZQV 4N / 2 RT	1793950000	4032248233748	88				
ZQV 4N / 2 SW	1793970000	4032248233762	88				
ZQV 4N / 3 BL	1793990000	4032248233786	88				
ZQV 4N / 3 GE	1762630000	4032248169788	88				
ZQV 4N / 3 RT	1793980000	4032248233779	88				
ZQV 4N / 3 SW	1794000000	4032248233793	88				
ZQV 4N / 4 BL	1794020000	4032248233816	88				
ZQV 4N / 4 GE	1762620000	4032248169771	88				
ZQV 4N / 4 RT	1794010000	4032248233809	88				
ZQV 4N / 4 SW	1794030000	4032248233915	88				
ZQV 4N / 41 BL	1794080000	4032248234158	88				
ZQV 4N / 41 GE	1758270000	4032248169801	88				
ZQV 4N / 41 RT	1794070000	4032248234141	88				
ZQV 4N / 41 SW	1794090000	4032248234165	88				
ZR	1071100000	4008190278106	263				
ZS 10/5 individual print acc. to requirements	1610010000	4008190263423	318				
ZS 10/5 neutrale	1610000000	4008190263171	318				





## 005000000

0053160000	4008190860943	DK 4 RC/35	17
0059160000	4008190917425	DK 4 RD/35	263

## 010000000

0104060000	4008190119713	EGT 2 changeover contact switched	286
0104160000	4008190068554	EGT 3 changeover contact	286
0104260000	4008190100247	EGT 5 changeover	286
0104360000	4008190094553	EGT 4 changeover	286
0104460000	4008190170240	EGL 230 V~	286
0107661001	4032248046317	SKHD 32	30

## 011000000

0114260000	4008190059880	EGO 1, 12 V	122
0114660000	4008190180355	EGT 6 changeover contact toggle	286
0115011001	4032248110155	RS 3 LED green	101
0115061001	4032248109081	RS 3 DC voltage relay	101
0115161001	4032248150212	RS 3 AC voltage relay	101
0115261001	4032248131174	RS 6 DC voltage relay	102
0115361001	4032248131181	RS 6 AC voltage relay	102
0115461001	4032248101252	RS 7 DC voltage relay	102
0116000000	4008190015329	ZG 28800	101
0116121001	4032248171798	RS 4 LED red	101
0116161001	4032248107612	RS 4 DC voltage relay	101
0116261001	4032248111046	RS 4 AC voltage relay	101
0116361001	4032248131136	RS 8 DC voltage relay	102
0117500000	4008190150662	TS15	10
0117960000	4008190081485	AP PA (1.5)	11
0119560000	4008190087111	RFB	301
0119660000	4008190096106	RF	301
0119760000	4008190186098	ZW 5	301
0119860000	4008190049898	ZW 15	301
0119960000	4008190031008	ZW 30	301

## 012000000

0120060000	4008190114404	ZW 45	301
0122800000	4008190066307	TS 32	7
0123060000	4008190048655	EGR 2 RT (24 V0)	73
0123260000	4008190042875	EGR 2 RT (48 V0)	73
0125561001	4032248064373	RS 14 AC voltage relay	101
0125661001	4032248063383	RS 14 DC voltage relay	101
0125861001	4032248266258	RS 17 DC voltage relay	102
0126011001	4008190042301	RS 18 LED green	102
0126061001	4032248049745	RS 18 DC voltage relay	102
0126160000	4008190153809	ZW 25	301
0126260000	4008190178772	RFO	301
0126360000	4008190097141	EGT 1 off-switch	286
0126860000	4008190067748	EGL 24 V0	286
0128000000	4008190016807	ZG	29
0128060000	4008190123666	ZG	29

## 013000000

0130160000	4008190096335	TW PA (1.5)	11
0131860000	4008190086923	EGO 2 115 V0	123
0133560000	4008190147945	EGR EG 2 24 V DC voltage NC	72
0133660000	4008190178819	EGR EG 2 24 V DC voltage NO	72
0133760000	4008190103019	AP PA	297
0137100000	4008190056063	HP	29
0138360000	4008190101503	ZBE	297

## 014000000

0141360000	4008190005153	EGR 2 RT (115 V0)	73
0142460000	4008190036355	EGR 2 RT (230 V0)	73
0146720000	4008190027995	AP KrG (3)	15

## 015000000

0150260000	4008190035860	DK 4 RD	263
0158560000	4008190049775	MPL	297
0159160000	4008190146405	DK 4 D/32	9

## 016000000

0160160000	4008190009762	EGR 2 RT (12 V~)	73
0160260000	4008190140830	EGR 2 RT (24 V~)	73
0160360000	4008190043346	EGR 2 RT (48 V~)	73
0160460000	4008190028602	EGR 2 RT (115 V~)	73
0163500000	4008190064730	S 2 x 2.8	296
0163860000	4008190042219	RKF	297
0163960000	4008190092146	EG 3 R	297
0167161001	4008190050160	RS 21 DC voltage relay	103
0167300000	4008190095833	LP-CU	297
0167400000	4008190132293	LP-LR	297
0169900000	4008190076665	StB 14	15

## 017000000

0178960000	4008190179045	SKHC 64	29
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## 018000000

0180400000	4008190060121	PS	4
0180961001	4032248047413	RSD A	288
0181061001	4032248044306	RSD K	288
0181160000	4008190119171	RSD A-F	288
0181260000	4008190001872	RSD K-F	288
0181360000	4008190038434	RSD-F	288
0181461001	4032248047406	RSD	288
0181560000	4008190047986	DK 4 D/35	9
0185760000	4008190140595	SAKR-D, TS 35 with DLS 2	13
0188661001	4032248048830	RS 23 DC voltage relay	103
0188961001	4008190031336	RS 9 DC voltage relay	102

## 019000000

0193860000	4008190166083	EGS 24 V~	286
0194300000	4008190182854	QL 2	15
0194400000	4008190063351	QL 3	15
0194500000	4008190025601	QL 4	15
0197920000	4008190139278	SAKT E/35 KrG	16
0198020000	4008190000165	SAKT E/35 KrG	16
0198120000	4008190002916	SAKT E/35 KrG	16
0198220000	4008190088019	SAKT E/35 KrG	16
0199360000	4008190023546	EKW 2	306

## 020000000

0205700000	4008190073725	QB 2	15
0205800000	4008190173364	QB 3	15
0205900000	4008190046200	QB 4	15
0206160000	4008190080020	EWK 1	4
0209760000	4008190018627	DK 4 LD/32	5
0209860000	4008190122249	DK 4 LD/35	5
0209960000	4008190152727	DK 4 LD/32	5

## 021000000

0210060000	4008190157920	DK 4 LD/35	5
0210160000	4008190020736	DK 4 LD/32	5
0210260000	4008190156312	DK 4 LD/35	5
0210360000	4008190063634	DK 4 LD/32	5
0210460000	4008190089405	DK 4 LD/35	5
0213760000	4008190148850	RFM	301
0215700000	4008190184872	StB 8.5	4

## 022000000

0223060000	4008190086718	EGU 2, 24 V0	264
0223260000	4008190107086	EGU 2, 230 V0	264
0224261001	4032248047161	RSF 20	21
0224361001	4032248047062	RSF 34	21
0224461001	4032248047048	RSF 40	21
0224561001	4032248047031	RSF 50	21
0224661001	4032248047123	RSF 60	21
0224761001	4032248047147	RSF 64	21
0224861001	4032248047086	RSF 26	21
0224961001	4032248047109	RSF 10	21
0225061001	4032248047116	RSF 14	21
0225161001	4032248047079	RSF 16	21
0226560000	4008190159399	EGU 2, 48 V0	264
0226660000	4008190061777	EGU 2, 115 V0	264

## 023000000

0238700000	4008190149574	QD 50/grey	306
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## 024000000

0240560000	4008190157906	EGU 1, 115 V0	264
0242920000	4008190069933	TW KrG (3)	15
0242960000	4008190104092	TW PA (1.5)	15
0243960000	4008190031596	EGU 1, 24 V0	264
0244460000	4008190010164	EGU 1, 48 V0	264
0244600000	4008190103828	StB 8.5 (ø 2)	15
0245060000	4008190093280	EGU 1, 230 V0	264
0249000000	4008190129507	VH 12	15

## 025000000

0250560000	4008190050498	EGU 3, 24 V0	265
0250660000	4008190165475	EGU 3, 48 V0	265
0250760000	4008190172268	EGU 3, 115 V0	265
0250860000	4008190142704	EGU 3, 230 V0	265
0254920000	4008190057053	SAKT 4 LD	15

## 0260000000

0263660000	4008190058982	SAKR-D, TS 32 with DLS 2	13
0266160000	4008190047771	EGO 1, 5 V	122
0266700000	4008190152031	VH 8	15
0266800000	4008190084899	BS M 2.5x14	4

## 0270000000

0270960000	4008190077006	QS 2	15
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## 0290000000

0293800000	4008190042356	PS (ø 2)	15
0294460000	4008190466268	AP PA	10
0297200000	4008190057176	QL 2	6
0299560000	4008190053352	SAKR-D, TS 35	13
0299600000	4008190074043	PS (ø 4)	15
0299960000	4008190182403	SAKR-D, TS 35	13

## 0300000000

0300260000	4008190121976	DQS 2 (ø 2)	15
0303300000	4008190040673	BSK M 2.5x18	7
0303400000	4008190068158	AD 4 (4 term.)	7
0307300000	4008190036140	QVS 2	15
0307400000	4008190091941	QVS 4	15

## 0310000000

0318000000	4008190059460	VH 19	15
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## 0320000000

0321060000	4008190007386	DLS 2 without components	13
0329300000	4008190084714	QVS 3	15
0329761001	4032248043729	RSX	289
0329860000	4008190179373	RSX-F	289

## 0330000000

0333520000	4008190158293	SAKT 1 GL	15
0333620000	4008190153267	SAKT 1 GL	15
0334700000	4008190118839	BS 25	15
0334900000	4008190057602	MB (M 4+M 6)	29
0336400000	4008190037680	Q 2	4
0336500000	4008190121730	Q 3	4
0336600000	4008190096856	Q 4	4
0338300000	4008190176679	QL 10	15

## 0340000000

0343800000	4008190168032	QB 10	15
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## 0350000000

0353660000	4008190128432	TSch 2	15
0359260000	4008190012991	AP PA	4

## 0360000000

0363360000	4008190136680	TSch4	4
0368600000	4008190056766	Q 10	4

## 0370000000

0377100000	4008190060350	BS M 3x20	15
0377200000	4008190006389	BS M 3x15	15

## 0380000000

0382860000	4008190187804	EW 15	10
0383400000	4008190088026	TS 35	7
0383560000	4008190181314	EW 35	4

## 0390000000

0395360000	4008190053437	DK 4 LD/35	4
0395460000	4008190070311	DK 4 LD/35	4
0395560000	4008190168872	DK 4 LD/35	4
0395660000		DK 4 LD/35	4
0395760000	4008190029470	DK 4 LD/35	4
0395860000	4008190100636	DK 4 LD/35	4
0395960000	4008190134372	DK 4 LD/35	5
0396060000	4008190163693	DK 4 LD/35	5
0396160000	4008190188207	DK 4 LD/35	5
0396260000	4008190176266	DK 4 GL/35	5
0396360000	4008190092023	DK 4 D/35	7
0396660000	4008190126551	DK 4 D/35	8
0396760000	4008190095482	DK 4 D/35	8
0396860000	4008190027100	DK 4 D/35	8
0396960000	4008190040888	DK 4 D/35	9

## 0410000000

0412960000	4008190082727	SAKR-D, TS 32	13
0413060000	4008190142216	SAKR-D, TS 32 with DLS 2 without components	13
0413160000	4008190077921	SAKR-D, TS 32 w. test socket & DLS w/o comp.	13

## 0440000000

0446600000	4008190176211	VH 10	4
0446700000	4008190055486	VL 2	4

## 0450000000

0453560000	4008190148058	EG 32/1 for TS 32	296
0453660000	4008190146498	AP PA	296
0453760000	4008190071486	ZP	296
0453860000	4008190078850	EG 35/1 for TS 35	296
0459460000	4008190084479	EGU 4, 24 V0	266

## 0460000000

0461860000	4008190090685	EGU 4, 48 V0	266
0461960000	4008190182502	EGU 4, 115 V0	266
0462060000	4008190078942	EGU 4, 230 V0	266
0467960000	4008190110321	DK 4 D/32	7
0467980000	4008190140861	DK 4 D/32	7
0468061044		DEK 6.5 neutral white	312
0468091686	4008190160579	DEK 6.5 neutral red	312
0468091687	4008190087890	DEK 6.5 neutral yellow	312
0468091688	4008190168148	DEK 6.5 neutral green	312
0468091689	4008190058203	DEK 6.5 neutral violet	312
0468091690	4008190115708	DEK 6.5 neutral orange	312
0468091693	4008190144746	DEK 6.5 neutral blue	312
0468091694	4008190005726	DEK 6.5 neutral black	312
0468561044		DEK 6 neutral white	312
0468591686	4008190120849	DEK 6 neutral red	312
0468591687	4008190083083	DEK 6 neutral yellow	312
0468591688	4008190163709	DEK 6 neutral green	312
0468591689	4008190049584	DEK 6 neutral violet	312
0468591690	4008190111113	DEK 6 neutral orange	312
0468591691	4008190081454	DEK 6 neutral grey	312
0468591692	4008190015930	DEK 6 neutral brown	312
0468591693	4008190140243	DEK 6 neutral blue	312
0468591694	4008190001087	DEK 6 neutral black	312
046866....		FW 6	263

## 0470000000

0471460000	4008190035891	DQS 2 with diode	14
0471560000	4008190002909	DQS 2 with wire bridge	14
0471660000	4008190051327	DQS 2 without components	14
0473361044		DEK 5 neutral white	312
0473391686	4008190014025	DEK 5 neutral red	312
0473391687	4008190131586	DEK 5 neutral yellow	312
0473391688	4008190057473	DEK 5 neutral green	312
0473391689	4008190102494	DEK 5 neutral violet	312
0473391690	4008190159375	DEK 5 neutral orange	312
0473391691	4008190165079	DEK 5 neutral grey	312
0473391692	4008190100056	DEK 5 neutral brown	312
0473391693	4008190187415	DEK 5 neutral blue	312
0473391694	4008190085407	DEK 5 neutral black	312
047356....		FS 6	263
0474460000	4008190042158	DK 4 LD/32	4
0474700000	4008190078508	TW HP (0.5)	15
0475700000	4008190176839	S 4.8	296
0475800000	4008190084660	S 2.8	296

## 0480000000

0482700000	4008190166021	QB 2	4
0482800000	4008190145217	QB 3	4
0482900000	4008190086169	QB 4	4
0484060000	4008190006891	DK 4 D/32	7
0484080000	4008190058975	DK 4 D/32	7

## 0490000000

0490360000	4008190136079	DEK 6 white individ. print acc. to requirements	312
0490390000	4008190116996	DEK 6 individual print acc. to requirements	312
0490560000	4008190450267	DEK 6.5 white individ. print acc. to requirements	312
0490590000	4008190004828	DEK 6.5 individual print acc. to requirements	312
0490760000	4008190450250	DEK 5 individual print acc. to requirements white	312
0490790000	4008190018504	DEK 5 individual print acc. to requirements	312
0495360000	4008190022648	DK 4 LD/32	4
0495460000	4008190052065	DK 4 LD/32	5
0495860000	4008190135218	ZB-L	296
0495960000	4008190181178	ZB-R	296
0496100000	4008190084998	S 6.3	296
0498000000	4008190042493	TS 35 x 15	21

## 0500000000

0503500000	4008190182083	MB (M 3+M 5)	29
0508860000	4008190095246	EG 2 R	296
0509560000	4008190120580	DK 4 GL/32	5

## 0510000000

0510260000	4008190035259	VZ	296
0514500000	4008190046019	TS 35 x 7.5 punched	295
0515200000	4008190061029	ESO 7	21
0515300000	4008190182175	STR 7	21

## 0520000000

0523760000	4008190030551	DK 4 D/32	8
0524060000	4008190096113	SAKL 4/30 PA	11
0526260000	4008190131982	SAKL 4/30 R PA	11
0526400000	4008190099923	QB 75 bare	4
0526700000	4008190093723	Insulating profile	4

## 0530000000

0531760000	4008190130787	SSP 3	15
0536260000	4008190076269	EGR EG 2 24 V AC/DC NO	72
0538860000	4008190087708	DK 4 D/35	7
0538880000	4008190125684	DK 4 D/35	7
0538960000	4008190032128	DK 4 D/35	7
0538980000	4008190101985	DK 4 D/35	7
0539060000	4008190059521	DK 4 LD/35	4
0539160000	4008190031169	DK 4 LD/35	4

## 0540000000

0542660000	4008190177522	EGR EG 2 24 V AC/DC NC	72
0543660000	4008190140205	EGR EG 2 230 V AC voltage NC	72
0543860000	4008190171551	EGR EG 2 230 V AC voltage NO	72
0544660000	4008190182724	DK 4 D/32	7
0546160000	4008190098162	EGD 1	287
0546260000	4008190103705	EGD 2	287
0546360000	4008190035747	EGO 2 230 V0	123
0546460000	4008190050573	SAKR-D, TS 32 with test socket	13
0546460000	4008190050573	SAKR-D, TS 32 with test sockets	13
0547660000	4008190140007	DLS 2 with wire bridge	13
0547760000	4008190177249	DLS 2 with diode	13

## 0550000000

0550860000	4008190066512	EGD 3	287
0553300000	4008190095604	ASK 1	17
0555060000	4008190036324	SMSU 24 DC	205
0555160000	4008190062637	SMSU 230 AC/DC	205
0558160000	4008190181727	EGO 1, 24 V	122

## 0560000000

0569560000	4008190164034	DK 4GL/32	5
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## 0570000000

0572860000	4008190156053	SAKL 4/30 L PA	11
0577360000	4008190002800	SKHB 64	29

## 0580000000

0582860000	4008190180621	DK 4 LD/32	4
0582960000	4008190039622	DK 4 LD/32	4
0586560000	4008190149680	DK 4 LD/32	5
0586661001	4032248046287	SKH 31	29
0586761001	4032248046270	SKHD 32	29
0586860000	4008190125813	SKHF 32 according to DIN 41612 z and b	30
0586861001	4032248046263	SKHF 32 (z/b)	30
0586960000	4008190046866	SKHF 32 according to DIN 41612 z and d	30
0586961001	4032248046256	SKHF 32 (z/d)	30
0587060000	4008190126803	SKHF 48	31

## 0600000000

0606560000	4008190128302	SAKR-D, TS 32 with test socket & 2 antip. diodes	13
0606820000	4008190124755	SAKT E KrG	16
0607000000	4008190002732	TWHP (2)	17
0609860000	4008190142063	EGO 1, 24 V	123

## 0630000000

0630160000	4008190091194	DLS 2 with diode	13
0632260000	4008190117313	SAKL 4/10 k PA	11
0632860000	4008190146719	DK 4 LD/32	5
0639360000	4008190065454	AKZ 4 LD	10
0639460000	4008190022389	AKZ 4 LD red	10
0639560000	4008190097226	AKZ 4 LD yellow	10
0639660000	4008190062705	DK 4 LD/32	4

## 0640000000

0642760000	4008190043209	DK 4 D/32	8
0643160000	4008190176983	SAKL 4/100 R PA	11
0643260000	4008190148997	SAKL 4/100 PA	11
0643360000	4008190011581	DK 4 LD/32	4
0643760000	4008190174354	SAKL 4/32	11
0643860000	4008190054380	SAKL 4/500 PA	11
0645760000	4008190183332	SKHE 48 x 2	31
0646560000	4008190144043	DK 4 LD/32	4
0646660000	4008190061524	SKHC 64	29
0647860000	4008190070762	SAKL 4/50 k PA	11
0648661001	4032248046249	SKH 31 250 V	29
0648860000	4008190009212	SAKL 4/5 k PA	11
0648960000	4008190121518	SAKL 4/1 k PA	11
0649060000	4008190182045	SAKL 4/50 PA	11
0649160000	4008190095819	SAKL 4/10 PA	11
0649260000	4008190161330	SAKL 4/100 PA	11
0649560000	4008190077266	SAKL 4/500 k PA	11

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0662460000	4008190145729	EGR EG 2 48 V NC	72
0662660000	4008190127664	EGR EG 2 48 V NO	72
0663160000	4008190022365	DK 4 GL/35	5
0663960000	4008190147853	DK 4 D/32	8

## 0680000000

0685260000	4008190175986	DK 4 D/32	9
0686360000	4008190028992	DK 4 LD/32	4
0687460000	4008190148690	DKT 4 /35PA	294
0687560000	4008190009465	AP	17
0687900000	4008190086459	FM 4	29

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0690660000	4008190087630	SKHE 48	30
0690960000	4008190061746	DK 4 RA	294
0691060000	4008190132644	DK 4 RA/35	294
0692160000	4008190151805	DK 4 RC/32	17
0698920000	4008190072520	SAKT E KrG	16
0699020000	4008190090012	SAKT E KrG	16
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1010300000	4008190031251	WPE 10	257
1013200000	4008190077914	WTR 2.5 D	13
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1013400000	4008190019105	WTR 2.5 D	13
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1013600000	4008190049188	WTR 2.5 D	13
1013700000	4008190163471	WTR 2.5 D	13
1014600000	4008190114299	WTR 2.5 D with test sockets and diode	13
1014700000	4008190053574	WTR 2.5 D with test sockets and diode	13
1014800000	4008190075200	WTR 2.5 D with test sockets & 2 antip. diodes	13

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1021700000	4008190109547	WDK 2.5 FF	295	1101621001	4032248022298	RS 30 24 V- LED red	91
1022600000	4008190098469	WDK 2.5 D	8	1101661001	4032248045884	RS 30 24 V-	91
1023100000	4008190173784	WDK 2.5	295	1101711001	4032248043507	RS 30 LED 24 Vuc green	91
1023200000	4008190009380	WDK 2.5	295	1101721001	4032248032020	RS 30 24 Vuc LED red	91
1023300000	4008190187200	WDK 2.5 D	7	1101761001	4008190055127	RS 30 24 Vuc	91
1023400000	4008190103538	WDK 2.5 D	7	1101811001	4032248045891	RS 30 48 V- LED green	91
1023500000	4008190100865	WDK 2.5 D	8	1101821001	4032248045907	RS 30 48 V- LED red	91
1023600000	4008190060855	WDK 2.5 LD	4	1101861001	4032248045914	RS 30 48 V-	91
1027000000	4008190081263	WDUL 4/10	12	1101911001	4032248043491	RS 30 48 Vuc LED green	91
1027100000	4008190051921	WDUL 4/30	12	1101921001	4032248045921	RS 30 48 Vuc LED red	91
1027200000	4008190176020	WDUL 4/50	12	1101961001	4032248045938	RS 30 48 Vuc	91
1027300000	4008190001735	WDUL 4/100	12	1102011001	4032248045945	RS 30 60 V- LED green	91
1027400000	4008190170585	WDUL 4/500	12	1102021001	4032248045952	RS 30 60 V- LED red	91
1027500000	4008190041007	WDUL 4/1K	12	1102061001	4032248045969	RS 30 60 V-	91
1027600000	4008190064488	WDUL 4/5K	12	1102111001	4032248045976	RS 30 115 Vac LED green	91
1027700000	4008190015381	WDUL 4/10K	12	1102121001	4032248045983	RS 30 115 Vac LED red	91
1027800000	4008190047634	WDUL 4/50K	12	1102161001	4032248045990	RS 30 115 Vac	91
1027900000	4008190043407	WDUL 4/100K	12	1102211001	4032248046003	RS 30 230 Vac LED green	91
1028000000	4008190121433	WDUL 4/500K	12	1102221001	4032248046010	RS 30 230 Vac LED red	91
1028100000	4008190143831	WDUL 4/2M	12	1102261001	4032248046027	RS 30 230 Vac	91
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				1108660000	4008190145385	SAKL 4/100 EN	11
				1108860000	4008190141042	SAKL 4/500 EN	11
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				1112060000	4008190146450	SMSI 5 AC	201
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				1113161001	4032248047734	RSM 16 RS 24 Vdc 145 mm	97
				1113261001	4032248047758	RSM 16 RS 24 Vdc 285 mm	97
				1113361001	4032248036288	RSM 16 RS 24 Vdc 75 mm	97
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				1113661001	4032248125371	RSM 16 RS 24 Vdc 145 mm	97
				1113761001	4032248047574	RSM 16 RS 24 Vdc 285 mm	97
				1113861001	4032248047581	RSM 16 RS 24 Vdc 285 mm	97
				1113961001	4032248047673	RSM 16 RS 48 VDC 75 mm	97
				1114061001	4032248047680	RSM 16 RS 48 VDC 75 mm	97
				1114161001	4032248047635	RSM 16 RS 48 VDC 145 mm	97
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				1114361001	4032248047598	RSM 16 RS 48 VDC 285 mm	97
				1114461001	4032248047604	RSM 16 RS 48 VDC 285 mm	97
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				1114761001	4032248047864	RSM 16 RS 115 VO 285 mm	97
				1114861001	4032248047833	RSM 16 RS 230 Vac 75 mm	97
				1114961001	4032248047857	RSM 16 RS 230 Vac 145 mm	97
				1115061001	4032248047871	RSM 16 RS 230 Vac 285 mm	97
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				1115560000	4008190004354	DK 4/35 PA	294
				1115660000	4008190105327	DKT 4 PA	294
				1115760000	4008190167851	DKT 4/35 PA	294
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				1118761001	4032248110186	RS 40 GSE 12 VO LED green	137
				1118861001	4032248131129	RS 40 GSE 5 V LED yellow	137
				1119161001	4032248125364	RSNI 3P/8LD PNP switched	289
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1120260000	4008190147778	DK 4 Q GL/35	
1120360000	4008190005603	EGV-Namur	5
1120661001	4032248047468	RS-T/AC 230	232
1120761001	4032248047451	RS-T/AC 115	232
1120860000	4008190038021	EMA/DC 12	229
1120960000	4008190185374	EMA/DC 24	229
1121100000	4008190010560	OS 5 V-	139
1121200000		OS 12 VO	139
1121300000	4008190176945	OS 24 VO	139
1122361001	4032248150717	RS/U-D 8	210
1122460000	4008190088446	EGV-Inverter	207
1122661001	4032248046225	RS 32	95
1122761001	4032248046232	RS 32	95
1123361001	4032248103911	RS/D 8-U	211
1123461001	4032248147113	RSM 16 RS 230 VO 75 mm	97
1123661001	4032248047536	RSM 16 OS 5 V- 75 mm	139
1123761001	4032248125296	RSM 16 OS 24 V- 75 mm	139
1123861001	4032248047529	RSM 16 OS 24 V- 75 mm	139
1124061001	4032248047512	RSM 16 OS 5 V- 145 mm	139
1124261001	4032248047505	RSM 16 OS 24 V- 145 mm	139
1124461001	4032248047499	RSM 16 OS 5 V- 285 mm	139
1124661001	4032248047482	RSM 16 OS 24 V- 285 mm	139
1124800000	4008190033484	OS 12 V-	139
1124900000	4008190150310	OS 24 Vdc	56
1125161001	4032248151318	RSM 16 OS 24 VO 75 mm	139
1125261001	4032248131372	RSM 16 OS 24 VO 145 mm	139
1127461001	4032248124220	RSDIN C 64 B	27
1127661001	4032248056583	RS 14 LED red	101
1128311001	4032248046829	RS 31, 24 V-	92
1128331001	4032248046812	RS 31, 24 V-	92
1128361001	4032248056705	RS 31, 24 V-	92
1128411001	4032248046850	RS 31, 230 V-	93
1128431001	4032248046867	RS 31, 230 V-	93
1128461001	4032248046843	RS 31, 230 V-	93
1128511001	4008190073862	RS 30 240 Vac LED green	91
1128521001	4032248046034	RS 30 240 Vac LED red	91
1128561001	4008190082352	RS 30 240 Vac	91
1128611001	4032248046041	RS 30 240 Vac LED green	91
1128621001	4032248046058	RS 30 240 Vac LED red	91
1128661001	4032248135578	RS 30 240 Vac	91
1128820000	4008190040819	SAKA 10 115 V-	16
1129421001	4032248046065	RS 30 12 V- LED red	91
1129521001	4032248046072	RS 30 12 V- LED red	91
1129660000	4008190167745	RS 30 12 V-	91

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1149361001	4032248047390	RSELCO, left	25
1149461001	4032248037117	RSELCO, right	25

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1150361001	4032248137541	RS 31, 115 V-	92
1150461001	4032248046836	RS 31, 115 V-	92
1150761001	4008190165550	RS 31, 48 V-	92
1153200000	4008190377847	OS 24 Vdc	56
1155000000	4008190089580	SUB-D 4/40	22
1155111001	4032248046089	RS 30 115 V- LED green	91
1155121001	4032248046096	RS 30 115 V- LED red	91
1155161001	4032248037612	RS 30 115 V-	91
1155211001		RS 30 115 V- LED green	91
1155221001	4032248046102	RS 30 115 V- LED red	91
1155261001		RS 30 115 V-	91
1156360000	4008190017651	SMSI 0.25 DC O	200
1156460000	4008190169213	SMSI 0.25 AC O	201
1156560000	4008190022754	SMSU 3x220 R, 2 NO	205
1156660000	4008190029081	SMSI 0.25 DC R	202
1156760000	4008190117894	SMSU 24 R	204
1156860000	4008190168322	EMA/DC 24	229
1156960000	4008190147624	SMSI 2.5 AC R	203
1157160000	4008190023041	SMSI 0.05 DC O	200
1157360000	4008190005559	SMSI 2.5 AC O	201
1157561001	4032248066087	RS 14 LED red	101
1157660000	4008190028954	SMSU 48 R	204
1157760000	4008190168344	SMSU 110 R	205
1157860000	4008190045296	SMSU 220 R	205
1158720000	4008190073008	SAKT E KrG	16
1159060000	4008190061470	DK 4 D/35	8
1159960000	4008190142346	SMSI 0.25 AC R	202

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1160160000	4008190153090	SMSU 260 R	205
1160361001	4032248103836	RS/U-D 8	210
1160561001	4032248160594	RS/I-D 8	210
1160761001	4032248101245	RS/D 8-U	211
1160861001	4032248131143	RS/D 12-U	213
1160961001	4032248023554	RS 40 GSE 24 V- LED yellow	137

1161061001	4032248056064	RS 40 GSE 48 VO LED green	137
1161161001	4032248055272	RS 40 GSE 115 VO LED green	137
1161260000	4008190172244	DK 4 D/32	8
1161461001	4032248038701	RS 40 GSE 230 V- LED green	137
1161560000	4008190020705	RS 40 5 V BL/SL	137
1161660000	4008190102371	RS 40 BL/SL 12 VO LED green	137
1161760000	4008190110956	RS 40 BL/SL 24 V- LED yellow	137
1161860000	4008190011086	RS 40 BL/SL 48 VO LED green	137
1161960000	4008190064433	RS 40 BL/SL 115 VO LED green	137
1162060000	4008190055851	RS 40 BL/SL 230 V- LED green	137
1164760000	4008190161934	DK 4 LDI/32	10
1164860000	4008190145705	DK 4 LDI/35	10
1165861001	4032248272372	RS/D 8-I	211
1165961001	4032248125326	RS/D 12-I	213
1166061001	4032248125807	RS/D 12-I	213
1166161001	4032248128334	RS/D 12-U	213
1166261001	4032248067442	RSM 8 HR-100	140
1166360000	4008190144067	SAKL 4/10 EN T	12
1166460000	4008190068745	SAKL 4/100 EN T	12
1166560000	4008190075743	SAKL 4/1 k EN T	12
1166660000	4008190045791	SAKL 4/10 k EN T	12
1166760000	4008190133917	SAKL 4/100 EN T	12
1166820000	4008190048082	SAKT E/35 KrG	16
1166961001	4032248125319	RS 1 HR	140
1167061001	4032248068920	RSM 4 HR	140
1167161001	4032248068944	RSM 8 HR	140
1167261001	4032248145690	RSM 16 HR-100	140
1167660000	4008190097608	RS 30 5 V-, TTL	91
1167760000	4008190164690	RS 30 5 V-, TTL	91
1168261001	4032248131204	RS/U-D 12	212
1168361001	4032248131198	RS/U-D 12	212
1168461001	4032248131334	RS/I-D 12	212
1168561001	4032248103843	RS/I-D 8	210
1169161001	4032248131327	RS/I-D 12	212
1169261001	4032248103928	RS/D 8-I	211
1169461001	4032248127016	RS-T/AC	231
1169560000	4008190119201	RS-T/AC	231
1169660000	4008190136444	RS-T/AC	231
1169761001	4032248147144	RS-T/AC	231

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1170160000	4008190029302	EGU 2, 48 VO	265
1170200000	4008190008086	OS 24 Vdc/2 A	56
1170460000	4008190129644	EGU 4, RS 232	271
1170560000	4008190041021	EGU 4, 24 VO	267
1170660000	4008190070304	EGU 4, 48 VO	267
1170760000	4008190181055	EGU 4, 115 VO	267
1170860000	4008190065232	EGU 4, 230 VO	267
1170960000	4008190030865	EGU 4, 24 VO	266
1171060000	4008190044961	EGU 4, 48 VO	266
1171160000	4008190037222	EGU 4, 115 VO	266
1171260000	4008190182625	EGU 4, 230 VO	266
1171361001	4032248109357	RS U, 24 VO	267
1171461001	4032248197262	RS U, 48 VO	267
1171561001	4032248196746	RS U, 115 VO	267
1171661001	4032248106325	RS U, 230 VO	267
1172660000	4008190017460	EMA/SW	208
1173461001	4032248047802	RSM 16 RS 24 VO 75 mm	97
1173561001	4032248047819	RSM 16 RS 24 VO 145 mm	97
1173661001	4032248139484	RSM 16 RS 24 VO 285 mm	97
1173761001	4032248110551	RSM 16 RS 48 VO 75 mm	97
1174100000	4008190168391	HRA 230	141
1174300000	4008190066611	HRA 60	141
1174400000	4008190173722	HRE 24	141
1174500000	4008190054045	HRE 115	141
1174600000	4008190016401	HRE 230	141
1174920000	4008190114152	SAKA 10 24 V-	16
1175020000	4008190172503	SAKA 10 only 230 V-	16
1175360000	4008190140588	SAKR-D, TS 35 w. test sock. & DLS 2 w/o comp.	13
1175460000	4008190167271	SAKR-D, TS 35 w. test socket & 2 antip. diodes	13
1175661001	4032248048144	RS-T/AC	232
1175761001	4032248048151	RS-T/AC	232
1177860000	4008190082925	RS 40 BL/SL 24 V-	137
1177960000	4008190004316	RSDIN F 48 B	27
1178061001	4032248275526	RSDIN B 64 S	27
1178161001	4032248050284	RSDIN C 64 S	27
1178260000	4008190170066	RSDIN F 48 S	27
1178360000	4008190163167	RSDIN F 48 S	27
1178760000	4008190098858	SMSU 3x220 R, 1 NC/1 NO	205
1179860000	4008190061753	EG-T/AC	220
1179960000	4008190169565	EG-T/AC	220

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1180060000	4008190011864	EG-T/AC	220
1180700000	4008190015282	PT 570024	100
1180800000	4008190113100	PT 570615	100
1180900000	4008190172978	PT 570548	100
1181100000	4008190130909	PT 570730	100

1181511001	4032248046126	RS 30 24 V- LED green	91						
1181521001	4032248046119	RS 30 24 V- LED red	91						
1181800000	4008190121068	PT 570524	100	1573010000	4008190048396	Coding element			298
1185060000	4008190003586	AP 100 orange	303	1578510000	4008190146795	DLI 2.5 LD/35 PNP			6
1185160000	4008190058388	AP 100 D orange	303	1578520000	4008190076399	DLI 2.5 LD/35 PNP			6
1185260000	4008190005115	AP 110 orange	303	1578530000	4008190160296	DLI 2.5 LD/35 PNP			6
1185360000	4008190105150	AP 110 D orange	303	1578540000	4008190170868	DLI 2.5 LD/35 PNP block of 10			6
1185460000	4008190132064	AP 111 orange	303	1578550000	4008190073626	DLI 2.5 LD/35 NPN			6
1185560000	4008190050207	AP 111 D orange	303	1578560000	4008190129521	DLI 2.5 LD/35 NPN			6
1186760000	4008190066727	EGU 3, 24 V0	265						
1186860000	4008190008857	EGU 3, 115 V0	265						
1186960000	4008190032708	EGU 3, 48 V0	265						
1187060000	4008190017088	EGU 3, 230 V0	265						
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1277060000	4008190088705	DEK 8 neutral white	312						
1277091686	4032248048045	DEK 8 neutral red	312						
1277091687	4008190944537	DEK 8 neutral yellow	312						
1277091688	4008190944544	DEK 8 neutral green	312						
1277091689	4008190944551	DEK 8 neutral violet	312						
1277091690	4008190944568	DEK 8 neutral orange	312						
1277091691	4032248048052	DEK 8 neutral grey	312						
1277091692	4008190944582	DEK 8 neutral brown	312						
1277091693	4008190944599	DEK 8 neutral blue	312						
1277091694	4032248048069	DEK 8 neutral black	312						
<b>1300000000</b>									
1305160000	4008190165819	SAKL 4 EN	11						
<b>1310000000</b>									
1312500000	4008190039837	Q 2	6						
1312600000	4008190024604	Q 3	6						
1312700000	4008190162122	Q 4	6						
1313100000	4008190167622	Q 10	6						
1313260000	4008190055028	AP PA	6						
<b>1320000000</b>									
1324260000	4008190181932	AP 80 orange	303						
1324360000	4008190094898	AP 80 D orange	303						
1324460000	4008190159870	RF 180 orange	303						
1326660000	4008190085773	DEK 8 white individual print acc. to requirements	312						
1326690000	4008190004217	DEK 8 individ. print acc. to requirements	312						
<b>1340000000</b>									
1345800000	4008190070403	VH 3.8	6						
<b>1350000000</b>									
1359360000	4008190069278	SchT 7/2	21						
<b>1410000000</b>									
1410860000	4008190052799	AP 85 orange	303						
1410960000	4008190122096	AP 86 orange	303						
1411060000	4008190052041	AP 85 D orange	303						
1411160000	4008190148249	AP 86 D orange	303						
<b>1440000000</b>									
1447260000	4008190144661	WS 10/6 plotter marking, indiv. print acc. to req.	317						
<b>1520000000</b>									
1526410000	4008190025038	Socket block 2-pole tension BLZ 5.08/2 black	299						
1526460000	4008190155834	Socket block 2-pole tension BLZ 5.08/2 orange	299						
1526510000	4008190151553	Socket block for Wavebox	298						
1526560000	4008190170004	Socket block for Wavebox	298						
<b>1530000000</b>									
1537960000	4008190084301	DK 4 PA	294						
<b>1540000000</b>									
1545710000	4008190087142	Coding element	298						
<b>1560000000</b>									
1568910000	4008190100292	WS 10/6.5 plotter marking, ind. print acc. to req.	317						
1568920000	4008190116545	WS 12/5 neutral	317						
<b>1570000000</b>									
1573010000	4008190048396	Coding element	298						
1578510000	4008190146795	DLI 2.5 LD/35 PNP	6						
1578520000	4008190076399	DLI 2.5 LD/35 PNP	6						
1578530000	4008190160296	DLI 2.5 LD/35 PNP	6						
1578540000	4008190170868	DLI 2.5 LD/35 PNP block of 10	6						
1578550000	4008190073626	DLI 2.5 LD/35 NPN	6						
1578560000	4008190129521	DLI 2.5 LD/35 NPN	6						
<b>1600000000</b>									
1608640000	4008190076733	ZPE 2.5	257						
1608670000	4008190259242	ZPE 6	257						
1608950000	4008190263225	ZQV 4 2-pole	305						
1608960000	4008190263232	ZQV 4 3-pole	305						
1608970000	4008190263249	ZQV 4 4-pole	305						
1608980000	4008190263256	ZQV 4 5-pole	305						
1608990000	4008190263263	ZQV 4 6-pole	305						
1609000000	4008190263270	ZQV 4 7-pole	305						
1609010000	4008190263287	ZQV 4 8-pole	305						
1609020000	4008190263294	ZQV 4 9-pole	305						
1609030000	4008190263300	ZQV 4 10-pole	305						
1609800000	4008190203450	DEK 5/5 MultiCard	312						
1609810000	4008190456597	DEK 5/5 MultiCard	312						
1609820000	4008190203436	DEK 5/6 MultiCard	312						
1609830000	4008190456603	DEK 5/6 MultiCard	312						
1609840000	4008190203429	DEK 5/6.5 MultiCard	312						
1609850000	4008190456610	DEK 5/6.5 MultiCard	312						
1609860000	4008190203481	WS 12/5 neutral	317						
1609870000	4008190456641	WS 12/5 MC individ.print acc. to requirements	317						
1609880000	4008190203504	WS 15/5 neutral	317						
1609890000	4008190456672	WS 15/5 individ. print acc. to requirements	317						
1609900000	4008190203467	WS 12/6 neutral	317						
1609910000	4008190456658	WS 12/6 MC individ. print acc. to requirements	317						
1609920000	4008190203511	WS 12/6.5 neutral	317						
1609930000	4008190456665	WS 12/6.5 MC ind. print acc. to requirements	317						
<b>1610000000</b>									
1610000000	4008190263171	ZS 10/5 neutrale	318						
1610010000	4008190263423	ZS 10/5 individual print acc. to requirements	318						
1610030000	4008190456689	ZS 12/6 individual print acc. to requirements	318						
<b>1630000000</b>									
1632080000	4008190263218	ZPE 4	257						
1635000000	4008190261948	WS 10/5 MC neutral	317						
1635010000	4008190456634	WS 10/5 MC individ. print acc. to requirements	317						
<b>1640000000</b>									
1640740000	4008190279103	WS 8/5 MC neutral	317						
1640750000	4008190456627	WS 8/5 individual print acc. to requirements	317						
1646630000	4008190401214	ZS 15/5 neutrale	318						
1646640000	4008190456696	ZS 15/5 individual print acc. to requirements	318						
<b>1650000000</b>									
1650330000	4008190297381	QB 16/10.16	80						
<b>1670000000</b>									
1670290000	4008190430368	WS 10/3.5 neutral	317						
1678530000	4008190853730	Coding elements for BLZ BLZ KO black	299						
<b>1680000000</b>									
1686940000	4008190498511	DKT 4 PA	294						
<b>1690000000</b>									
1693800000	4008190883621	ZQV 2.5N/2 yellow	298						
<b>1700000000</b>									
1707460000	4008190389628	Socket block 2-pole tension cl. BLZ 5.08/3 orange	299						
1707470000	4008190395841	Socket block 3-pole tension cl. BLZ 5.08/3 orange	299						
1707690000	4008190316693	Socket block 2-pole tension cl. BLZ 5.08/3 black	299						
1707700000	4008190316709	Socket block 3-pole tension cl. BLZ 5.08/3 black	299						
<b>1710000000</b>									
1717900000	4008190349288	ZQV 2.5N/2 red	298						
1717990000	4008190349295	ZQV 2.5N/2 blue	298						
1718080000	4008190349301	ZQV 2.5N/2 black	298						



## 1750000000

1755270000	4032248017348	DEK5/3.5 MultiCard neutral white	312
1758250000	4032248169795	ZQV 4N / 2 GE	88
1758260000	4032248169764	ZQV 4N / 10 GE	88
1758270000	4032248169801	ZQV 4N / 41 GE	88

## 1760000000

1762620000	4032248169771	ZQV 4N / 4 GE	88
1762630000	4032248169788	ZQV 4N / 3 GE	88
1767730000	4032248102532	DEK5/3.5 MultiCard white Indi. print acc. to req.	312
1768090000	4032248106271	WS 14/5 neutral	317

## 1770000000

1773330001	4032248140855	WS 12/5 FWZ 1 - 10 standard print	317
1773330011	4032248140879	WS 12/5 FWZ 11 - 20 standard print	317
1773330021	4032248140886	WS 12/5 FWZ 21 - 30 standard print	317
1773330031	4032248140893	WS 12/5 FWZ 31 - 40 standard print	317
1773330041	4032248140909	WS 12/5 FWZ 41 - 50 standard print	317
1773360000	4032248140961	WS 8/5 card individ. print acc. to requirements	317
1773370000	4032248140978	WS 10/5 card individ. print acc. to requirements	317
1773380000	4032248140985	WS 12/5 card individ. print acc. to requirements	317
1773400000	4032248140602	RF 180 grey	303
1773410000	4032248141111	AP 100 grey	303
1773430001	4032248141326	WS 12/5 FSZ 1 - 10 standard print	317
1773430011	4032248141333	WS 12/5 FSZ 11 - 20 standard print	317
1773430021	4032248141340	WS 12/5 FSZ 21 - 30 standard print	317
1773430031	4032248141357	WS 12/5 FSZ 31 - 40	317
1773430041	4032248141364	WS 12/5 FSZ 41 - 50 standard print	317
1778270000	4032248161041	WS 12/3.5 neutral	317
1778280000	4032248161058	WS 12/3.5 MC individ. print acc. to requirements	317

## 1780000000

1784270000	4032248214679	ZQV 2.5N/4-2 SW	82
1784280000	4032248214686	ZQV 2.5N/4-2 RT	82
1784290000	4032248216383	ZQV 2.5N/4-2 BL	82
1785490000	4032248199624	GPS 360x254x112	247

## 1790000000

1792000000	4032248223862	WS 10/5 MC Middle neutral	317
1792010000	4032248223879	WS 10/5 MC Middle individ. print acc. to req.	317
1793950000	4032248233748	ZQV 4N / 2 RT	88
1793960000	4032248233755	ZQV 4N / 2 BL	88
1793970000	4032248233762	ZQV 4N / 2 SW	88
1793980000	4032248233779	ZQV 4N / 3 RT	88
1793990000	4032248233786	ZQV 4N / 3 BL	88
1794000000	4032248233793	ZQV 4N / 3 SW	88
1794010000	4032248233809	ZQV 4N / 4 RT	88
1794020000	4032248233816	ZQV 4N / 4 BL	88
1794030000	4032248233915	ZQV 4N / 4 SW	88
1794040000	4032248234004	ZQV 4N / 10 RT	88
1794050000	4032248234011	ZQV 4N / 10 BL	88
1794060000	4032248234059	ZQV 4N / 10 SW	88
1794070000	4032248234141	ZQV 4N / 41 RT	88
1794080000	4032248234158	ZQV 4N / 41 BL	88
1794090000	4032248234165	ZQV 4N / 41 SW	88

## 2020000000

2026140000	4008190221874	LÖFA SAKL 2.5 L	11
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## 2050000000

2054280000	4008190242756	MP	29
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## 2220000000

2224240000	4032248126262	AP MCZ 1.5 frame	257
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## 4010000000

4010870000	4008190214562	RS 100 (2000 mm) grey	303
4011070000	4008190205751	S14k275	263
4011200000		Screws for locking socket 30 x 14	302
4019420000	4008190243029	Screws for RS 100 40 x 14	303

## 4020000000

4027750000	4008190209926	RS 45 (up to 2000 mm)	302
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## 4030000000

4036560000	4008190442866	KHU 1645	56
4036780000	4008190096205	AP (for DK 5 U)	278

## 4040000000

4042030000		AP (for DK 6 U)	278
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## 4050000000

4052510000		NYP-24 WK	56
4056360000	4032248240326	RSS5 MM	311
4058470000	4032248189267	RT 314012	84
4058480000	4032248189281	RT 314024	56
4058490000		RT 315024	84
4058500000	4032248189304	RT 314110	56
4058510000	4032248189328	RT 315524	84
4058520000	4032248189342	RT 314615	84
4058530000		RT 315625	84
4058540000	4032248189397	RT 314730	84
4058550000		RT 315730	84
4058560000	4032248189274	RT 424012	84
4058570000	4032248189298	RT 424024	84
4058580000	4032248269129	RT 425024	84
4058590000	4032248189311	RT 424110	84
4058600000	4032248189335	RT 424524	84
4058610000	4032248191178	RT 424615	84
4058620000		RT 425615	84
4058630000	4032248252510	RT 424730	84
4058640000	4032248189403	RT 425730	84
4058740000		RT 314048	84
4058750000		RT 424048	84
4058760000		RT 424060	84

## 4060000000

4060120000	4032248252251	NAIS APE 30024V	89
4061580000	4032248252237	NAIS APE 30005V	89
4061590000	4032248252282	NAIS APE 30124V	89
4061600000	4032248252299	NAIS APE 30160V	89
4061610000	4032248252244	NAIS APE 30012V	89
4061620000	4032248252268	NAIS APE 30048V	89
4061630000	4032248252275	NAIS APE 30060V	89

## 4120000000

4127830000	4008190274085	S14k30	263
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## 4140000000

4140810000	4008190274108	Gas discharge tube 600 V 20 kA	263
4144870000	4008190377410	RS 100 (2000 mm) orange	303
4148400000	4008190217471	RS 100 (155 mm) orange	303

## 4150000000

4156970000	4008190225186	ZLT input relay KHU/BV 1680	96
4157440000	4008190225537	RS 80 (2000 mm) orange	303

## 4160000000

4163020000	4008190218355	SKH-RS	301
4167150000	4008190446925	ADP 5 (1000 mm) orange	303
4167160000		ADP 6 (1000 mm) orange	303
4169320000	4008190243517	ADP 10 (2000 mm) orange	303
4169330000	4008190229030	ADP 11 (2000 mm) orange	303

## 4180000000

4183130000	4008190235178	RS 80 (2000 mm) grey	303
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## 4210000000

4217030000		Gas discharge tube 90 V 20 kA	263
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## 7920000000

7920560000	4032248241637	Assembly bracket for wall mounting	223
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## 8000000000

8002290000	4008190046965	EGT 0 1 NC, 1 NO	286
8003671001	4032248047628	RSM 16 RS 24 Vdc 145 mm	97
8003881001	4032248047253	RSSD 37 S	22
8003891001	4032248047239	RSSD 37 B	22
8003901001	4032248047291	RSSD 9 S	22
8003911001	4032248047277	RSSD 9 B	22
8005161001	4032248047383	RSSD 50 S	22
8005171001	4032248047369	RSSD 50 B	22
8005181001	4032248047338	RSSD 25 S	22
8005191001	4032248047314	RSSD 25 B	22
8005201001	4032248047215	RSSD 15 S	22
8005211001	4032248047192	RSSD 15 B	22
8006320000	4008190103330	WDK 2.5 LD	5



8092410000	4008190164461	EGR EG7	81					
8092420000	4008190168803	EGR EG7	81					
8092430000	4008190065010	EGR EG7	81	8193830000	4008190133979	RS EG7		81
8092440000	4008190114640	EGR EG7	81	8199510000	4008190854041	RS LPK3/144 VERT		24
8092450000	4008190091033	EGR EG7	81					
8092460000	4008190149499	EGR EG7	81					
8092470000	4008190170158	EGR EG7	81					
8092480000	4008190119409	EGR EG7	81	8203490000	4008190459789	DK 4/35 PA		294
8092490000	4008190149796	EGO EG7	132	8207720000	4008190207212	SIM 95U/100U FB10 4 x 8		36
8092510000	4008190133849	EGO EG7	132	8209340000	4008190191450	SKH2/35		28
8092530000	4008190065423	EGO EG7	132	8209730000	4008190296087	RSSD 15 B		22
8092550000	4008190087418	EGO EG7	132					
8092570000	4008190043551	EGO EG7	133					
8092590000	4008190053987	EGO EG7	133					
8093281001	4032248118281	RS U, 230 V0	267	8213470000	4008190444112	RSF 26		21
8095840000	4008190287320	EG 6 (incl. front plate)	300	8215600000	4008190297602	DKO 24 Vdc		118
8098170000	4008190294199	PU 2 C 230 V-	249	8215620000	4008190457310	DKR 24 Vdc		71

## 8100000000

8100180000	4008190456740	DKO DK4 S0						
8102610000	4008190287191	PU 1 C 230 V-						
8104201001	4032248201433	RS U, 24 V0						
8104221001	4032248201440	RS U, 115 V0						
8109130000	4008190440572	SAKA 10 230 V-						
8109680000	4008190444679	DK AND						

## 8130000000

8131660000	4008190480646	DKO 35 125 Vdc	120					
8132760000	4008190882471	WDK 2.5/35 V 24 VO with supressor diode	261					

## 8140000000

8140860000	4008190169305	AP 45/LI Di AP 45/RE Di						
8140870000	4008190034887	AP 45/LI Di AP 45/RE Di						
8140880000	4008190054007	RS 45 (up to 1000 mm)						
8143900000	4008190139926	AP 45/LI AP 45/RE						
8143910000	4008190003111	AP 45/LI AP 45/RE						
8147020000	4008190392178	PU 4 B, 230 / 400 V						
8147120000	4008190123499	EGR EG7	80					
8147140000	4008190049270	EGR EG7	80					

## 8150000000

8150150000	4008190440541	SAKA 10 24 V-	16					
8151230000	4008190476984	DKO 35 48 Vdc	120					
8155550000	4008190100285	RSF 64	21					
8155570000	4008190078188	RSF 50	21					
8155580000	4008190071530	RSF 40	21					
8155590000	4008190147112	RSF 34	21					
8155600000	4008190151058	RSF 20	21					
8155610000	4008190098100	RSF 10	21					
8155620000	4008190127343	RSSD 25 B	22					
8155630000	4008190119294	RSSD 37 B	22					
8155640000	4008190037826	RSSD 50 B	22					
8155650000	4008190039127	RSSD 25 S	22					
8155660000	4008190003203	RSSD 37 S	22					
8155670000	4008190085049	RSSD 50 S	22					
8156200000	4008190175740	AP RF 80 RE grey	303					
8156210000	4008190978198	AP RF 80 LT grey	303					

## 8160000000

8160030000	4008190085254	EGR EG7	80					
8161430000	4008190340636	WDK 2.5 LD	5					
8161820000	4008190348250	WDUL 4	12					
8164250000	4008190855000	DKO	121					

## 8170000000

8171100000	4008190298654	DKR 12 Vdc	70					
8174800000	4008190000325	SKH2 31	28					
8174810000	4008190041571	SKH2B 64	28					
8174820000	4008190164706	SKH2C 64 (a/c)	28					
8174830000	4008190060800	SKH2D 32	28					
8174840000	4008190074234	SKH2E 48	28					
8174850000	4008190169343	SKH2F 32 (z/b)	28					
8174860000	4008190037178	SKH2F 32 (z/d)	28					
8174880000	4008190090777	SKH2F 48	28					
8178200000	4008190091200	EGR EG7	81					

## 8180000000

8181970000	4008190457174	DKR 24 Vac/dc	71					
8181980000	4008190457181	DKR 24 Vdc	71					
8181990000	4008190277017	DKO 24 Vdc	118					
8182690000	4008190296223	RS 40 BL/SL 230 V- LED red	137					
8184030000	4008190457198	DKO 12 Vdc	116					
8184040000	4008190121938	DK AND	291					

## 8190000000

81								
81								
81	8193830000	4008190133979	RS EG7					81
81	8199510000	4008190854041	RS LPK3/144 VERT					24

## 8200000000

81	8203490000	4008190459789	DK 4/35 PA					294
132	8207720000	4008190207212	SIM 95U/100U FB10 4 x 8					36
132	8209340000	4008190191450	SKH2/35					28
132	8209730000	4008190296087	RSSD 15 B					22

## 8210000000

267	8213470000	4008190444112	RSF 26					21
300	8215600000	4008190297602	DKO 24 Vdc					118
249	8215620000	4008190457310	DKR 24 Vdc					71
	8215630000	4008190472412	DKO 24 Vdc					118
	8215640000	4008190458263	DKO 24 Vdc					117
	8215820000	4032248011155	PU 1 C 115 V-					249
121	8216350000	4008190190392	FBK 40/050 RK 1.00 m					55
249	8216360000	4008190264673	FBK 40/150 RK 1.50 m					55
267	8216370000	4008190263584	FBK 40/200 RK 2.00 m					55
267	8216380000	4008190264680	FBK 40/250 RK 2.50 m					55
16	8216390000	4008190264697	FBK 40/300 RK 3.00 m					55
291	8216400000	4008190264703	FBK 40/350 RK 3.50 m					55
	8216410000	4008190264710	FBK 40/400 RK 4.00 m					55
	8216480000	4008190299064	RSSD 9 B					22
	8216520000	4008190190439	EGR EG7					80
	8216550000	4008190190460	RST EG7					80
	8216560000	4008190190477	RST EG7					80
	8216570000	4008190190484	RST EG7					80
	8216580000	4008190190491	RST EG7					80
	8216590000	4008190190507	RST EG7					81
302	8216600000	4008190190514	RST EG7					81
302	8216610000	4008190190521	RST EG7					81
302	8216620000	4008190190538	RST EG7					81
302	8216630000	4008190190545	RST EG7					81
302	8218200000	4008190262815	EGR EG7					80
247	8218440000	4008190191252	DK OR					291

## 8220000000

	8220870000	4008190403416	EGO 5 PKR					130
	8224180000	4008190208042	RS F40 16 RS OUT					50
	8224190000	4008190208059	RS F40 16 RS OUT ERW					50
	8224201001	4032248162529	RS F40 16 OS OUT 5...48 VDC					53
	8224211001	4032248266388	RS F40 16 OS OUT ERW					53
	8224221001	4032248159901	RS F40 16 RS IN 24 VDC					49
	8224231001	4032248125333	RS F40 16 RS IN ERW					49
	8224260000	4008190208127	RS F10 LD LPK2 I/O8					44
	8224290000	4008190208134	RS F10 LPK2 I/O8					44
	8224311001	4032248047437	RS F10 8 OS OUT 5...48 VDC					53
	8224321001	4032248047444	RS F10 8 OS OUT 24 VDC/2 A					53
	8224330000	4008190208172	OS 24 Vdc replacement coupler					56
	8224350000	4008190208189	RS F10 8 RS IN 24 VAC/DC					49
	8224360000	4008190208196	RS F10 8 RS IN 230 VAC					49
	8224510000	4008190208226	RS F40 LPK2 I32					45
	8224520000	4008190208233	RS F40 LD LPK2 I32					45
	8224530000	4008190417680	RS F40 LPK2 O32					45
	8224540000	4008190417765	RS F40 LD LPK2 O32					45
	8224580000	4008190208240	RS F40 LPK3 INIT 32					46
	8224590000	4008190208257	RS F40 LD LPK3 INIT 32					46
	8224640000	4008190208264	RS F10 LD LPK3 INIT 8					46
	8224650000	4008190208271	SIM 115U FB40 1 x 32					37
	8224660000	4008190208288	SIM 115U FB10 4 x 8					37
	8224670000	4008190208295	SIM 135U FB40 1 x 32					38
	8224680000	4008190208608	SIM 135U FB10 4 x 8					38
	8224690000	4008190208301	MOD A120					35
	8224700000	4008190208318	MOD A500					36
	8225240000	4008190463977	LPU 24 V dc					277
	8225250000		LPU 48 V ac/dc					277
	8227350000	4008190193799	MCZ SC 24 V/0...20 mA					173
	8228630000	4008190193881	DKO 24 Vac/dc					118
	8228640000	4008190193898	DKO 24 Vdc					119
	8228650000	4008190193904	DKO DK5 5 VTTL					116
	8228680000	4008190193911	DKZ DK5					152
	8228690000	4008190193928	DKZADK5					153

## 8230000000

	8233350000	4008190437305	RSSD 15 S					22
	8234560000	4008190264789	OST EG7					132
	8234570000	4008190264802						

8235340000	4008190264727	FBK 40/450 RK 4.50 m	55				
8235350000	4008190267759	FBK 40/500 RK 5.00 m	55				
8235360000	4008190264581	FBK 10/100 RK 1.00 m	55				
8235370000	4008190264598	FBK 10/150 RK 1.50 m	55				
8235380000	4008190264604	FBK 10/200 RK 2.00 m	55				
8235390000	4008190264611	FBK 10/250 RK 2.50 m	55				
8235400000	4008190264628	FBK 10/300 RK 3.00 m	55				
8235410000	4008190264635	FBK 10/350 RK 3.50 m	55				
8235420000	4008190264642	FBK 10/400 RK 4.00 m	55				
8235430000	4008190264659	FBK 10/450 RK 4.50 m	55				
8235440000	4008190264666	FBK 10/500 RK 5.00 m	55				
8237710000	4008190286187	MCZ R 230 Vac	69				
8237720000	4032248017744	WOS 2 24 Vuc	128				
8237730000	4032248025596	WOS 1 15-60 Vdc	124				
8238340000	4008190425456	DK 5 U 24 Vdc	258				

## 8240000000

8242040000	4008190401979	DKA U/f	167				
8243770000	4008190263591	DKZA DK5	153				
8243780000	4008190263607	DKZ DK5	152				
8245120000	4008190420352	RSSD15B 95U	48				
8245130000	4008190420345	RSSD 9B 95U	48				
8248040000	4008190417772	RS F40 LPK3 INIT 32	46				
8248050000	4008190268596	RS F10 LPK2 I/O8	43				
8248060000	4008190268626	RS F40 LPK2 I/O32	43				
8248070000	4008190269746	RS F10 LPK3 INIT 8	46				
8248320000	4008190406707	DK NAND	291				
8248330000	4008190406714	DK NOR	291				
824834 0001		DKPL	171				
8248340000	4008190406721	DK PL	170				
8248340003	4008190482169	DKPL frequency divider	171				
8248340004	4008190482176	DKPL	171				
8248340005	4008190494582	DKPL	171				
8248340006	4008190857455	DKPL	171				
8248340007	4008190918521	DKPL	171				
8248340008	4008190332051	DKPL	171				
8248340010	4008190350550	DKPL	171				
8248340501	4008190379988	DKPL	171				
8248790000	4008190458225	DKO 24 Vdc	117				

## 8250000000

8252010000	4008190474799	RS VERT 8 LPK2	24				
8252490000	4008190441128	SUBDK 9/150SS	48				
8252500000	4008190437398	SUBDK 15/150SS	48				
8256960000	4008190417642	RS F10 LD LPK2 O8	45				
8256970000	4008190417659	RS F10 LD LPK2 O8	45				
8258680000	4008190457204	DK LW	169				
8258870000	4008190406578	DKA I/f	167				
8258980000	4008190444105	RSF 14	21				
8259000000	4008190444129	RSF 60	21				
8259010000	4008190444136	RSSD 9 S	22				
8259950000	4032248025633	WOS 2 115 Vuc	127				

## 8260000000

8260280000	4008190985417	MCZ SC 24 V/0...10V	173				
8262470000	4008190422370	DK 5 U 48 V0	258				
8262480000	4008190440459	DK 6 U 120 V0	258				
8263760000	4008190425333	DK 6 U 230 V0	258				
8263940000	4008190294458	FBK 10/600 RK 6.00 m	55				
8263960050	4008190472573	FBK 40/050 RK 0.50 m	55				
8265540000	4008190431518	RSF 16	21				
8268870000	4008190403676	AP	305				
8269050000	4008190432676	OST EGT 2 A	131				
8269060000	4008190431440	RS F40 LD LPK2H I/O32	44				
8269120000	4008190445546	WDK 2.5/35 V 24- with supressor diode	261				

## 8270000000

8275190000	4032248025589	WOS 2 24 Vuc	126				
8275210000	4032248025572	WOS 1 5 VTTL 50 kHz	129				
8275220000	4032248025565	WOS 2 230 Vuc	126				
8275320000	4032248025817	WRS 1 2.4-24 Vdc	74				
8275340000	4032248025619	WOS 2 230 Vuc	128				
8275350000	4032248025824	WRS 1 24 Vdc	74				
8275360000	4032248025602	WOS 2 115 Vuc	128				
8275380000	4032248025558	WOS 1 230 Vuc	125				
8275390000	4032248025541	WOS 1 3.5 -15 Vdc	124				
8275400000	4032248025626	WOS 2 230 VUC	127				
8275430000	4032248025534	WOS 1 5 Vdc	124				
8275440000	4032248025527	WOS 2 15-60 Vuc	127				
8275450000	4032248016921	WOS 1 12-28 Vdc/100 kHz	129				
8275500000	4032248025510	WOS 1 12 Vuc	124				

## 8280000000

8281720000	4008190890704	OST EGT 4 A	131				
8283810001	4008190371074	DKA f/U	168				
8286280000	4032248025831	WRS 1 24/48 Vuc	74				
8286410000	4008190985462	MCZ TO 24 Vdc turn-off delay 150 ms	154				
8287730000	4008190985400	MCZ O 24 Vac/dc	114				
8287770000	4008190980139	ITMF	149				
8288640000	4008190464035	FBK 10/550 RK 5.50 m	55				

## 8290000000

8290850000	4008190466749	FBK 40/550 RK 5.50 m	55				
8291640000	4008190392185	PU 4 BR, 230 / 400 V with remote signalling	247				
8291650000	4008190392147	PU 2 C 115 V-	249				
8291660000	4008190392390	PU 3 C 115 V-	249				
8291670000	4008190392123	PU 4 C 115 V-	249				
8291680000	4008190392116	PU 3 C-R 115 V-	249				
8291690000	4008190392215	PU 4 C-R 115 V-	249				
8291700000	4008190999742	PU 1 C 470 V-	249				
8291710000	4008190999728	PU 2 C 470 V-	249				
8291720000	4008190999735	PU 4 C 470 V-	249				
8296250000	4032248025503	WOS 2 115 Vuc	126				
8298270000	4008190481797	SIM 115U FB40 1 x 32 KONV2.0	37				
8298280000	4008190481803	SIM 115U FB40 1 x 32 KONV2.5	37				
8298290000	4008190481810	SIM 115U FB40 1 x 32 KONV3.0	37				
8298300000	4008190481827	SIM 135U FB40 1 x 32 KONV2.0	38				
8298310000	4008190481834	SIM 135U FB40 1 x 32 2 KONV2.5	38				
8298320000	4008190481841	SIM 135U FB40 1 x 32 KONV3.0	38				
8298510000	4008190482206	SIM 115U FB10 4 x 8 KONV2.0	37				
8298520000	4008190482213	SIM 115U FB10 4 x 8 KONV2.5	37				
8298530000	4008190482220	SIM 115U FB10 4 x 8 KONV3.0	37				
8298540000	4008190482237	SIM 135U FB10 4 x 8 KONV2.0	38				
8298550000	4008190482244	SIM 135U FB10 4 x 8 KONV2.5	38				
8298560000	4008190482251	SIM 135U FB10 4 x 8 KONV3.0	38				

## 8300000000

8306460000	4008190855697	FBK 10/700 RK 7.00 m	55				
8306810000	4008190855703	FBK 10/650 RK 6.50 m	55				
8309470000	4008190861025	FBK 40/600 RK 6.00 m	55				
8309480000	4008190861032	FBK 40/650 RK 6.50 m	55				

## 8310000000

8311870001	4008190372521	DKA f/I	168				
8315590000	4008190884017	OST EGT	133				

## 8320000000

8320300000	4008190881153	AP 80 grey	303				
8324050000	4008190980146	ITTT	149				
8324560000	4008190888206	AP	305				
8324590000	4008190985455	MCZ TO 24 Vdc turn-off delay 50 ms	154				
8324610000	4008190985431	MCZ O 24 Vdc	115				
8329800000	4008190337216	RS F10 8R OUT/45	51				

## 8330000000

8335900200	4008190915759	SIM S7/400 FB40 KONV 2 m	41				
8335900250	4008190072094	SIM S7/400 FB40 KONV 2.5 m	41				
8335900300	4032248016426	SIM S7/400 FB40 KONV 3 m	41				
8335900500	4008190915735	SIM S7/400 FB40 KONV 5 m	41				
8335910200	4008190072773	SIM S7/400 FB4 x 10 KONV 2 m	41				
8335910250	4008190073213	SIM S7/400 FB4 x 10 KONV 2.5 m	41				
8335910300	4008190073497	SIM S7/400 FB4 x 10 KONV 3 m	41				
8335910500	4008190915704	SIM S7/400 FB4 x 10 KONV 5 m	41				
8339510000	4008190343514	PU 0 C 230 V-	249				

## 8360000000

8362550000	4008190366155	ITM	146				
8362570000	4008190366179	ITR	150				
8362580000	4008190366186	ITWo	148				
8362590000	4008190366773	ITWw	148				
8362600000	4008190366766	ITTo	147				
8362610000	4008190366759	ITTw	147				
8365940000	4008190387846	MCZ O 24 Vac/dc	114				
8365980000	4008190387839	MCZ R 24 Vdc	68				

## 8380000000

8381880000	4008190392222	PU 0 B, replacement module for PU x B	247				
8381880000	4008190392222	PU 0 B, replacement module for PU x B	247				
8381890000	4008190392161	PU 3 B, 230 / 400 V	247				
8381900000	4008190392192	PU 3 BR, 230 / 400 V with remote signalling	247				
8387580000	4008190385330	EGO EGT	133				
8389030000	4008190386849	APMCZ 1.5	305				



## 8390000000

8390590000	4008190213060	MCZ R 24 Vac/dc	
8394990000	4032248049448	Ost EG7	
8397420000	4008190397425	EGO EG7	
8398940000	4008190985448	MCZ O 24 Vdc	

## 8410000000

8411190000	4008190992736	MCZ CCC 0...20 mA/0...20 mA	164
8411930000	4008190985127	PU D 230V 16A	250
8416370000	4008190987671	PU 4 C TT 230 V~	249
8418210000	4032248025848	WRS 1 24/60 Vuc	74
8418220000	4032248025855	WRS 1 24/115 Vuc	75
8418230000	4032248016914	WRS 1 24 Vuc/230 Vac	75
8418240000	4008190033385	WRS 2 12/24 Vdc	76
8418250000	4032248025862	WRS 2 24/48 Vuc	76
8418260000	4032248016907	WRS 2 115 Vuc/230 Vac	76
8418270000	4032248025879	WRS 2 12/24 Vdc	77
8418280000	4032248025886	WRS 2 24/48 Vuc	77
8418290000	4032248025893	WRS 2 115 Vuc/230 Vac	77
8418300000	4032248025909	WRS 2 12/24 Vdc	78
8418310000	4032248025916	WRS 2 24/48 Vuc	78
8418320000	4032248025923	WRS 2 24 VUC/230 Vac	78
8418330000	4032248025930	WRS 2 24 Vuc	79
8418340000	4032248025947	WRS 2 230 Vac	79

## 8420000000

8420880000	4008190227036	MCZ R 120 Vac	69
8421060000	4032248006045	MCZ O 120 Vac/dc	114
8421380000	4032248006052	MCZ O 230 Vac	114
8425720000	4032248012664	MCZ PT100/3 CLP 0...100 °C	165
8426440000	4032248006410	WAVEBOX S 22.5	298
8426450000	4032248006434	WAVEBOX S 22.5 QV	298
8426460000	4032248006441	Head for WAVEBOX S	298
8426470000	4032248006427	WAVEBOX L 22.5	298
8426480000	4032248006656	WAVEBOX L 22.5 QV	298
8426490000	4032248006663	Head for WAVEBOX L	298
8426530000	4032248037674	WAVEBOX 12.5 mm	299
8426540000	4032248043125	WAVEBOX 12.5 mm	299
8426550000	4032248037698	WAVEBOX 12.5 mm	299
8426560000	4032248037667	WAVEBOX 17.5 mm	299
8426570000	4032248043132	WAVEBOX 17.5 mm	299
8426580000	4032248037681	WAVEBOX 17.5 mm	299
8426620000	4032248006458	Pin block for Wavebox	298
8426630000	4032248006465	Pin block for Wavebox	298
8427390000	4032248037636	WAVEBOX 12.5 mm orange	299
8427400000	4032248037650	WAVEBOX 12.5 mm orange	299
8428120000	4032248026845	CAP	299
8428130000	4032248058617	Screw cap	299
8428870000	4008190030582	RS F10 LMZF I/08	42
8428880000	4008190032210	RS F40 LMZF I/032	42
8428890000	4008190032005	RS F10 LMZF INIT 8 LD	47
8428900000	4008190030384	RS F40 LMZF INIT 32 LD	47
8429980000	4032248025640	WOZ 2	126
8429990000	4032248025657	WOZ 1	124

## 8430000000

8430000000	4032248025664	WOZ 2	129
8430010000	4032248025671	WOZ 2	127
8430030000	4032248025688	WOZ 1	124
8430040000	4032248025695	WOZ 1	124
8430050000	4032248025701	WOZ 1	125
8430060000	4032248025718	WOZ 2	126
8430070000	4032248025725	WOZ 2	129
8430080000	4032248025732	WOZ 2	126
8430090000	4032248025749	WOZ 1	124
8430100000	4032248025756	WOZ 1	125
8430110000	4032248025763	WOZ 2	128
8430130000	4032248025770	WOZ 2	128
8430140000	4032248025787	WOZ 2	128
8430150000	4032248025794	WOZ 2	127
8430160000	4032248025800	WOZ 2	127
8430170000	4032248025954	WRZ 1	74
8430180000	4032248025961	WRZ 1	74
8430190000	4032248025978	WRZ 1	74
8430200000	4032248025985	WRZ 1	74
8430210000	4032248025992	WRZ 1	75
8430220000	4032248026005	WRZ 1	75
8430230000	4032248026012	WRZ 2	76
8430240000	4032248026029	WRZ 2	76
8430250000	4032248026036	WRZ 2	76
8430260000	4032248026043	WRZ 2	77
8430270000	4032248026050	WRZ 2	77
8430280000	4032248026067	WRZ 2	77
8430290000	4032248026074	WRZ 2	78
8430300000	4032248026081	WRZ 2	78
8430310000	4032248026098	WRZ 2	78

8430320000	4032248026104	WRZ 2	79
8430330000	4032248026111	WRZ 2	79
8430970000	4008190029234	RS F10 LMZF INIT 8	47
8430980000	4008190036188	RS F40 LMZF INIT 32	47
8430990000	4008190027551	RS F10 LMZF 8RS OUT	52
8431000000	4008190032753	RS F40 LMZF 32RS OUT	52
8432090000	4032248056873	WTS4 PT100/3 V	187
8432090001	4032248110841	WTS4 PT100/3 0...10 V	187
8432099999	4032248111053	WTS4 PT100/3 0...10 V	187
8432130000	4032248110131	WTZ4 PT100/3 V	187
8432130001	4032248110858	WTZ4 PT100/3 0...10 V	187
8432139999	4032248111060	WTZ4 PT100/3 0...10 V	187
8432150000	4032248056880	WTS4 PT100/3 C	187
8432150001	4032248111121	WTS4 PT100/3 0...20 mA	187
8432150011	4032248111138	WTS4 PT100/3 4...20 mA	187
8432159999	4032248118038	WTS4 PT100/3 0...20 mA	187
8432160000	4032248110179	WTZ4 PT100/3 C	187
8432160001	4032248111091	WTZ4 PT100/3 0...20 mA	187
8432160011	4032248111145	WTZ4 PT100/3 4...20 mA	187
8432169999	4032248118045	WTZ4 PT100/3 0...20 mA	187
8432180000	4032248056859	WTS4 PT100/2 V	186
8432180001	4032248110865	WTS4 PT100/2 0...10 V	186
8432189999	4032248111077	WTS4 PT100/2 0...10 V	186
8432190000	4032248110377	WTZ4 PT100/2 V	186
8432190001	4032248110872	WTZ4 PT100/2 0...10 V	186
8432199999	4032248111084	WTZ4 PT100/2 0...10 V	186
8432210000	4032248056866	WTS4 PT100/2 C	186
8432210001	4032248111107	WTS4 PT100/2 0...20 mA	186
8432210011	4032248111152	WTS4 PT100/2 4...20 mA	186
8432219999	4032248118052	WTS4 PT100/2 0...20 mA	186
8432220000	4032248110391	WTZ4 PT100/2 C	186
8432220001	4032248111114	WTZ4 PT100/2 0...20 mA	186
8432220011	4032248111169	WTZ4 PT100/2 4...20 mA	186
8432229999	4032248118069	WTZ4 PT100/2 0...20 mA	186
8432240000	4032248056897	WTS4 PT100/4 V	188
8432240001	4032248117840	WTS4 PT100/4 0...10 V	188
8432249999	4032248117833	WTS4 PT100/4 0...10 V	188
8432250000	4032248110407	WTZ4 PT100/4 V	188
8432250001	4032248117826	WTZ4 PT100/4 0...10 V	188
8432259999	4032248117857	WTZ4 PT100/4 0...10 V	188
8432270000	4032248056903	WTS4 PT100/4 C	188
8432270001	4032248117864	WTS4 PT100/4 0...20 mA	188
8432270011	4032248117888	WTS4 PT100/4 4...20 mA	188
8432279999	4032248117901	WTS4 PT100/4 0...20 mA	188
8432280000	4032248110513	WTZ4 PT100/4 C	188
8432280001	4032248117871	WTZ4 PT100/4 0...20 mA	188
8432280011	4032248117895	WTZ4 PT100/4 4...20 mA	188
8432289999	4032248118014	WTZ4 PT100/4 0...20 mA	188
8432300000	4032248056910	WTS4 Thermo Select	190
8432310000	4032248110360	WTZ4 Thermo Select	190
8432430000	4008190117658	PU 0 C 115 V~	249
8433290200	4008190094195	SIM S7/300 FB40 KONV 2 m	41
8433290250	4008190097424	SIM S7/300 FB40 KONV 2.5 m	41
8433290300	4008190113001	SIM S7/300 FB40 KONV 3 m	41
8433290500	4008190120252	SIM S7/300 FB40 KONV 5 m	41
8433310200	4008190058494	SIM S7/300 FB4 x 10 KON 2 m	41
8433310250	4008190059941	SIM S7/300 FB4 x 10 KON 2.5 m	41
8433310300	4008190064204	SIM S7/300 FB4 x 10 KON 3 m	41
8433310500	4008190069032	SIM S7/300 FB4 x 10 KON 5 m	41

## 8440000000

8442960000	4032248003891	MCZ R 24 Vdc/Au	68
8444950000	4032248102099	WAS5 CCC LP	174
8444960000	4032248102105	WAZ5 CCC LP	174
8444980000	4032248056835	WAS4 CCC DC	175
8444990000	4032248108039	WAZ4 CCC DC	175
8445010000	4032248056842	WAS4 CCC DC	175
8445020000	4032248108046	WAZ4 CCC DC	175
8445040000	4032248056989	WAS4 CVC DC	175
8445050000	4032248108053	WAZ4 CVC DC	175
8445070000	4032248056774	WAS4 CCC DC	176
8445080000	4032248107704	WAZ4 CCC DC	176
8446970000	4032248056781	WAS4 CCC DC	176
8446990000	4032248108060	WAZ4 CCC DC	176
8447020000	4032248056798	WAS4 CVC DC	176
8447030000	4032248108077	WAZ4 CVC DC	176
8447050000	4032248056804	WAS4 VCC DC	177
8447080000	4032248108015	WAZ4 VCC DC	177
8447100000	4032248056811	WAS4 VCC DC	177
8447110000	4032248108107	WAZ4 VCC DC	177
8447130000	4032248056828	WAS4 VVC DC	177
8447140000	4032248108084	WAZ4 VVC DC	177
8447160000	4032248100620	WAS5 CCC HF	181
8447170000	4032248109746	WAZ5 CCC HF	181
8447190000	4032248100651	WAS5 CCC HF	181
8447200000	4032248109753	WAZ5 CCC HF	181
8447220000	4032248049127	WAS5 CVC HF	181
8447230000	4032248145096	WAZ5 CVC HF	181
8447250000	4032248100675	WAS5 CCC HF	182

8447260000	4032248110520	WAZ5 CCC HF	182
8447280000	4032248100637	WAS5 CVC HF	182
8447290000	4032248110537	WAZ5 CVC HF	182
8447310000	4032248049202	WAS5 VCC HF	183
8447320000	4032248110568	WAZ5 VCC HF	183
8447340000	4032248100682	WAS5 VCC HF	183
8447350000	4032248110643	WAZ5 VCC HF	183
8447370000	4032248100668	WAS5 VVC HF	184
8447380000	4032248110667	WAZ5 VVC HF	184
8448920000	4008190147396	MCZ OVP CL 24 Vdc 0.5 A	252
8448940000	4032248022816	MCZ OVP SL 24 Vdc 0.5 A	252
8448960000	4032248068104	MCZ OVPC24 Vac 1.25 A	252
8448970000	4032248052998	MCZ OVP SL 24Vac 1.25A	252
8449000000	4008190156114	MCZ OVP CL 48Vuc 0.5 A	254
8449030000	4008190151621	MCZ OVP SL 48Vuc 0.5 A	254
8449040000	4032248045648	MCZ OVP CL 48Vuc 1.25A	254
8449050000	4008190139407	MCZ OVP SL 48Vuc 1.25A	254
8449060000	4008190145071	MCZ OVP CL 115 Vuc 1.25 A	255
8449070000	4008190129552	MCZ OVP SL 115 Vuc 1.25 A	255
8449080000	4032248111671	MCZ OVP CL 230 Vuc 1.25 A	255
8449090000	4008190129866	MCZ OVP SL 230 Vuc 1.25A	255
8449100000	4008190120481	MCZ OVP filter 0.5 A	256
8449130000	4008190126476	MCZ OVP gas discharge tube 90V	253
8449140000	4008190124830	MCZ OVP Varistor 30 V	253
8449150000	4008190128227	MCZ OVP TAZ unipolar 24V	253
8449160000	4008190128548	MCZ OVP TAZ bipolar 24V	253
8449220000	4032248037629	WAVEBOX 17.5 mm beige	299
8449230000	4032248037643	WAVEBOX 17.5 mm beige	299

## 8450000000

8451050000	4032248161881	PU 3 C 470 V~	249
8451060000	4032248182541	PU 3 C-R 470 V~	249
8451070000	4032248046959	PU 4 C-R 470 V~	249
8451080000	4032248235575	PU 0 C 470 V~	249

## 8460000000

8461470000	4032248037773	MCZVFC	166
8461480000	4032248037780	MCZCFC	166
8461490000	4032248037797	MCZGFC	166
8463580000	4032248049455	WAS5 CCC LP	174
8463590000	4032248105380	WAZ5 CCC LP	174
8467030000	4032248028009	DKO DK4 S0	121
8467470000	4032248029532	MCZ R 110 Vdc	69

## 8470000000

8470380000	4032248046775	MCZ R 60 Vdc	68
8472100000	4032248124787	PU D 115V 16A	250
8472880000	4032248049639	MCZ OVP CL 24 Vac 0.5 A	252
8473000000	4032248058273	MCZ PT100/3 CLP -50...+150 °C	165
8473010000	4032248058280	MCZ PT100/3 CLP 0...200 °C	165
8473020000	4032248058297	MCZ PT100/3 CLP 0...300 °C	165
8473470000	4032248125746	MCZ ovp LON	272

## 8480000000

8483680000	4032248157853	MCZ PT100/3 CLP 0...120 °C	165
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## 8490000000

8496110000	4032248114238	Dialog Term	272
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## 8500000000

8509130000	4032248124374	PU 3 D 230 V/400 V 16 A	251
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## 8510000000

8513330000	4032248151516	WAS2 CMA 40/50/60A uc	199
8513340000	4032248151707	WAS2 CMR 20/40/60A ac	196
8516560000	4032248153572	WAS2 CMR 1/5/10A ac	196
8516570000	4032248177585	WAZ2 CMR 1/5/10A ac	196

## 8520000000

8523400000	4032248151691	WAS1 CMA 1/5/10A ac	197
8523410000	4032248173341	WAZ1 CMA 1/5/10A ac	197
8523740000	4032248150113	PU DS 230 V 16 A	251
8526590000	4032248154319	WAZ2 CMA 40/50/60A uc	199
8526600000	4032248154326	WAZ2 CMR 20/40/60A ac	196
8526610000	4032248154333	WAS2 CMA 5/10A uc	198
8526620000	4032248154340	WAZ2 CMA 5/10A uc	198
8528650000	4032248160426	WAS1 LP CMA 1/5/10A ac	197
8528660000	4032248160433	WAZ1 LP CMA 1/5/10A ac	197

## 8530000000

182	8530621001	4032248216260	PRS 24Vdc LD 1CO	82
182	8530631001	4032248216277	PRS 24Vdc LD 2CO	82
183	8530641001	4032248216369	PRS 120Vac LD 1CO	82
183	8530661001	4032248216314	PRS 120Vac LD 2CO	82
183	8530671001	4032248216321	PRS 230Vac LD 1CO	82
184	8530681001	4032248216338	PRS 230Vac LD 2CO	82
184	8530691001	4032248216031	PRZ 24Vdc LD 1CO	82
252	8530701001	4032248216048	PRZ 24Vdc LD 2CO	82
252	8530710000	40322482163304	PRZ 120Vac LD 1CO	82
252	8530720000	40322482163311	PRZ 120Vac LD 2CO	82
252	8530731001	4032248216093	PRZ 230Vac LD 1CO	82
254	8530741001	4032248216109	PRZ 230Vac LD 2CO	82
254	8533640000	4032248169740	MRS 24 Vdc 1CO	87
254	8533660000	4032248169757	MRZ 24 Vdc 1CO	87
254	8533771001	4032248216215	PXS35	83
255	8536471001	4032248216246	PRS 12Vdc LD 1CO	82
255	8536501001	4032248216253	PRS 12Vdc LD 2CO	82
255	8536510000	4032248171651	PRS 115Vdc LD 1CO	82
255	8536520000	4032248171668	PRS 115Vdc LD 2CO	82
256	8536530000	4032248171675	PRS 24Vac LD 1CO	82
253	8536560000	4032248171682	PRS 24Vac LD 2CO	82
253	8536571001	4032248216055	PRZ 12Vdc LD 1CO	82
253	8536591001	4032248216062	PRZ 12Vdc LD 2CO	82
253	8536610000	4032248171910	PRZ 115Vdc LD 1CO	82
299	8536630000	4032248171927	PRZ 115Vdc LD 2CO	82
299	8536651001	4032248216079	PRZ 24Vac LD 1CO	82
	8536681001	4032248216086	PRZ 24Vac LD 2CO	82
	8536691001	4032248216024	PXZ35	83
	8536700000	4032248171965	PRC	83
	8536710000	4032248171972	PLED 24 Vdc	83
	8536720000	4032248171989	PLED 48 Vdc	83
	8536730000	4032248171996	PLED 115 Vdc	83
	8536750000	4032248172023	PLED 24 Vac	83
	8536760000	4032248172030	PLED 120 Vac	83
	8536780000	4032248172047	PLED 230 Vac	83
	8537110000	4032248172771	RSF 20 Z	21
	8537130000	4032248172788	RSF 34 Z	21
	8537140000	4032248172795	RSF 40 Z	21
	8537150000	4032248172801	RSF 50 Z	21
	8537160000	4032248172917	RSF 60 Z	21
	8537170000	4032248172924	RSF 64 Z	21
	8537180000	4032248172931	RSF 26 Z	21
	8537190000	4032248172948	RSF 10 Z	21
	8537200000	4032248172955	RSF 14 Z	21
	8537210000	4032248172962	RSF 16 Z	21
	8537240000	4032248172993	RS SD 37 S	22
	8537250000	4032248173006	RS SD 37 B	22
	8537260000	4032248173013	RS SD 9 S	22
	8537320000	4032248173020	RS SD 9 B	22
	8537350000	4032248173037	RS SD 50 S	22
	8537360000	4032248173044	RS SD 50 B	22
	8537370000	4032248173051	RS SD 25 S	22
	8537380000	4032248173068	RS SD 25 B	22
	8537390000	4032248173075	RS SD 15 S	22
	8537400000	4032248173082	RS SD 15 B	22

## 8540000000

8540180000	4032248180585	WAS5 CCC	178
8540190000	4032248180592	WAZ5 CVC	178
8540200000	4032248180608	WAS5 CCC	179
8540210000	4032248180615	WAZ5 CVC	179
8540230000	4032248180622	WAS5 CVC	179
8540240000	4032248180639	WAZ5 CVC	179
8540250000	4032248180646	WAS5 CCC	178
8540260000	4032248180653	WAZ5 CCC	178
8540270000	4032248180660	WAS5 CVC	178
8540280000	4032248180677	WAZ5 CVC	178
8540290000	4032248180462	WAS5 VCC	180
8540300000	4032248180684	WAZ5 VCC	180
8540310000	4032248180691	WAS5 VCC	180
8540320000	4032248180707	WAZ5 VCC	180
8540330000	4032248180714	WAS5 VVC	180
8540340000	4032248180721	WAZ5 VVC	180
8545830000	4032248182725	WAS2 CMA 20/25/30A uc	198
8545840000	4032248182732	WAZ2 CMA 20/25/30A uc	198



## 855000000

8550510000	4032248188239	SGR 662 24 Vdc T	85
8550520000	4032248188246	SGR 282 24 Vdc T	85
8552440000	4032248189939	PRZ 24Vdc LD 2CO AU	82
8556020000	4032248195145	MRS 230 Vac1CO	87
8556030000	4032248195152	MRS 120 Vuc 1CO	87
8556040000	4032248195169	MRS 48 Vuc1CO	87
8556050000	4032248195176	MRS 24 Vuc 1CO	87
8556060000	4032248195183	MRS 60 Vdc1CO	87
8556070000	4032248195190	MRS 12 Vdc 1CO	86
8556080000	4032248195206	MRS 5 Vdc 1CO	86
8556090000	4032248195312	MRZ 230Vac1CO	87
8556100000	4032248195329	MRZ 120 Vuc 1CO	87
8556110000	4032248195336	MRZ 48 Vuc1CO	87
8556120000	4032248195343	MRZ 24 Vuc 1CO	87
8556130000	4032248195350	MRZ 60 Vdc1CO	87
8556140000	4032248195367	MRZ 12 Vdc 1CO	86
8556150000	4032248195374	MRZ 5 Vdc 1CO	86

## 856000000

8560700000	4032248207312	WAS5 PRO RTD	189
8560710000	4032248207329	WAZ5 PRO RTD	189
8560740000	4032248207350	WAS4 PRO DC/DC	185
8560750000	4032248207367	WAZ4 PRO DC/DC	185
8561220000	4032248208272	PU 1 TSG+ 50 kA / 0,9 kV	245
8561230000	4032248208289	PU 1 TSG 50 kA / 1,5 kV	244
8561250000	4032248208418	PU 1 TSG+ 50 kA / 1,5 kV	245
8561260000	4032248208425	PU 1 TSG 35 kA / 0,9 kV	244
8561610000	4032248251643	WAS5 VVC HF	184
8561760000	4032248209415	PRS 24Vdc LD 2CO AU	82
8566530000	4032248240111	PLRC 200 nF/200Ω	83

## 857000000

8570500000	4032248219131	ZS-RS 232/B-S	271
8570510000	4032248219148	ZS-RS 232/S-B	271
8572170000	4032248220557	PT 28800	100
8575260000	4032248225378	CP NT 36	218
8575270000	4032248225385	CP NT 72	218
8575280000	4032248225392	CP NT 144	218
8575300000	4032248225408	CP NT 192	219
8575310000	4032248226412	CP NT 264	219
8575320000	4032248226429	CP NT 432	219
8575940000	4032248226719	PRZ 120Vac LD 2CO AU	82
8575950000	4032248226726	PRZ 230Vac LD 2CO AU	82
8576340000	4032248230518	SSR 24 VUC/24VDC 2.5A	135
8576350000	4032248230525	SSR 24 VUC/24VDC 5A	134
8576360000	4032248230532	SSR 24 VUC/230VAC 4A	134
8576370000	4032248230549	SSR 24 VUC/230VAC 2A	135
8576380000	4032248230556	SSR 24 VUC/24VUC 1A	135

## 858000000

8587000000	4032248244669	WAZ5 VVC HF	184
8588510000	4032248245567	RP3SL 24 Vdc 1NO	85
8588900000	4032248246212	CP RP 36 W	218
8588910000	4032248246229	CP RP 72 W	218
8588920000	4032248246236	CP RP 144 W	218

## 859000000

8595960000	4032248254903	PRS 120Vac LD 2CO AU	82
8595970000	4032248254910	PRZ 24Vdc LD 2CO SGR 282	82
8595990000	4032248254927	PRZ 230Vac LD 2CO AU	82
8596000000	4032248254934	PRS 24Vdc LD 2CO SGR 282	82

## 860000000

8604420000	4032248264568	MCZ PT100/3 CLP 0...150 °C	165
8604430000	4032248264575	MCZ PT100/3 CLP -40...100 °C	165

## 861000000

8610840000	4032248271467	POS 24Vdc/24Vdc 2.5A	134
8610860000	4032248271474	POS 24Vdc/230Vac 2A	134
8610890000	4032248271481	POS 24Vdc/24Vuc 1A	134
8610900000	4032248271504	POS 24Vdc/24Vdc 5A	134
8610910000	4032248271719	POS 24Vdc/230Vac 4A	134
8610920000	4032248271726	POZ 24Vdc/24Vdc 2.5A	134
8610930000	4032248271733	POZ 24Vdc/230Vac 2A	134
8610960000	4032248271740	POZ 24Vdc/24Vuc 1A	134
8610970000	4032248271757	POZ 24Vdc/24Vdc 5A	134
8610980000	4032248271764	POZ 24Vdc/230Vac 4A	134
8611000000	4032248271856	PLED 230 Vac red	83
8611010000	4032248271900	PLED 24 Vdc red	83
8614760000	4032248277018	FBK 10/1800 RK 18.00 m	55
8614770000	4032248277032	Wavefilter 250V 10A	273
8614780000	4032248277070	Wavefilter 250V 3A	273

8614790000	4032248277087	Wavefilter 250V 1A	273
8614800000	4032248277094	Wavefilter 250V 6A	273
8615590000	4032248277575	POS 24Vac/230Vac 4A	134
8615600000	4032248277582	POS 24Vac/24Vdc 2.5A	134
8615620000	4032248277599	POS 24Vac/24Vdc 5A	134
8615630000	4032248277605	POZ 24Vac/230Vac 4A	134
8615640000	4032248277612	POZ 24Vac/24Vdc 2.5A	134
8615650000	4032248277629	POZ 24Vac/24Vdc 5A	134
8619440000	4032248281923	Cross-connection QB single row 18-4	244
8619450000	4032248281947	Cross-connection QB single row 18-6	244
8619460000	4032248281954	BZ18 L1, L2, L3, N, PE	244
8619470000	4032248281961	BZ18 PE, PE, PE, PE, PE	244

## 862000000

8621190000	4032248284443	OST EG7	133
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## 863000000

8630770000	4032248291908	RT 314110 with yoke	96
8630780000	4032248292110	RT 314024 with yoke	96
8630790000	4032248292127	RT 314048 with yoke	96

## 900000000

9008330000	4032248056286	SD 0.6 x 3.5 x 100	88
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## 931000000

9310830000	4008190027353	EGU 2, 24 V0	265
9311520000	4008190103057	EGU 2, 115 V0	265
9311530000	4008190136758	EGU 2, 230 V0	265

## 940000000

9400000000	4008190296445	DK 4/32 U 90 V 2.5 kA	261
9400020000	4008190299118	DK 4/32 U 150 V 2.5 kA	261
9400110000	4008190439736	DK 4/35 U 150 V 2.5 kA	261
9400120000	4008190439743	DK 4/35 U 230 V 2.5 kA	261
9400200000	4008190299132	DK 4/32 U 90 V 5 kA	261
9400300000	4008190439774	DK 4/35 U 90 V 5 kA	261
9400400000	4008190017392	DK 4/32 U 90 V 20 kA	261
9400410000	4008190439804	DK 4/32 U 150 V 20 kA	261
9400420000	4008190439811	DK 4/32 U 230 V 20 kA	261
9400440000	4008190017996	DK 4/32 U 470 V 20 kA	261
9400450000	4008190104054	DK 4/32 U 600 V 20 kA	261
9400500000	4008190092931	DK 4/35 U 90 V 20 kA	261
9400510000	4008190439828	DK 4/35 U 150 V 20 kA	261
9400540000	4008190156480	DK 4/35 U 115 V 20 kA	261
9400550000	4008190103606	DK 4/35 U 230 V 20 kA	261
9401010000	4008190439866	DK 4/32 US 14 K 14	260
9401020000	4008190299156	DK 4/32 US 14 K 17	260
9401030000	4008190439873	DK 4/32 US 14 K 20	260
9401040000		DK 4/32 US 14 K 25	260
9401050000	4008190160746	DK 4/32 US 14 K 30	260
9401070000	4008190439897	DK 4/32 US 14 K 40	260
9401080000	4008190401924	DK 4/32 US 14 K 50	260
9401090000	4008190021160	DK 4/32 US 14 K 60	260
9401100000	4008190002220	DK 4/32 US 14 K 75	260
9401120000	4008190170646	DK 4/32 US 14 K 130	260
9401180000	4008190072490	DK 4/32 US 14 K 275	260
9401190000	4008190439910	DK 4/32 US 14 K 300	260
9401240000	4008190439965	DK 4/32 US 20 K 25	260
9401250000	4008190388379	DK 4/32 US 20 K 30	260
9401270000	4008190439989	DK 4/32 US 20 K 40	260
9401320000	4008190440039	DK 4/32 US 20 K 130	260
9401330000	4008190440046	DK 4/32 US 20 K 140	260
9401360000	4008190440077	DK 4/32 US 20 K 230	260
9401370000	4008190440084	DK 4/32 US 20 K 250	260
9401380000	4008190401894	DK 4/32 US 20 K 275	260
9401400000	4008190440107	DK 4/35 US 14 K 11	260
9401430000	4008190440114	DK 4/35 US 14 K 20	260
9401440000	4008190400965	DK 4/35 US 14 K 25	260
9401450000	4008190117061	DK 4/35 US 14 K 30	260
9401470000	4008190440138	DK 4/35 US 14 K 40	260
9401480000	4008190440145	DK 4/35 US 14 K 50	260
9401490000	4008190039264	DK 4/35 US 14 K 60	260
9401500000	4008190112929	DK 4/35 US 14 K 75	260
9401520000	4008190027018	DK 4/35 US 14 K 130	260
9401540000	4008190465759	DK 4/35 US 14 K 150	260
9401560000	4008190296322	DK 4/35 US 14 K 230	260
9401570000	4008190440169	DK 4/35 US 14 K 250	260
9401580000	4008190117917	DK 4/35 US 14 K 275	260
9401590000	4008190440176	DK 4/35 US 14 K 300	260
9401620000	4008190440190	DK 4/35 US 20 K 17	260
9401630000	4008190440206	DK 4/35 US 20 K 20	260
9401640000	4008190440213	DK 4/35 US 20 K 25	260
9401650000	4008190294786	DK 4/35 US 20 K 30	260
9401680000	4008190298791	DK 4/35 US 20 K 50	260
9401690000	4008190440244	DK 4/35 US 20 K 60	260

9401720000	4008190440275	DK 4/35 US 20 K 130	260
9401730000	4008190440282	DK 4/35 US 20 K 140	260
9401740000	4008190440299	DK 4/35 US 20 K 150	260
9401760000	4008190440312	DK 4/35 US 20 K 230	260
9401770000	4008190440329	DK 4/35 US 20 K 250	260
9401780000	4008190294878	DK 4/35 US 14 K 275	260
9401790000	4008190440336	DK 4/35 US 20 K 300	260
9401860000	4008190495794	DK 4 RC-VRS	262
9401960000	4008190296346	DK 4 RC-VRS	262
9402260000	4008190299163	DK 4 RC-VRS/35	262
9402360000	4008190401931	DK 4 RC-VRS/35	262
9406021001	4032248046157	RS 32	94
9406121001	4008190027193	RS 32	94
9406221001	4032248046164	RS 32	94
9406321001	4032248046171	RS 32	94
9406421001	4032248046188	RS 32	95
9406521001	4032248046195	RS 32	95
9406621001	4032248046201	RS 32	95
9406721001	4032248046218	RS 32	95

## 9450000000

9454910000	4032248181827	DK5R-1U	71
9454930000	4008190992958	LPU RS 485	270
9455210000	4008190392154	OS2	311
9457640000		OS2/5	311

## 9910000000

9916250024	4032248217762	CP-SNT 300W	225
9917790324	4032248217717	CP-SNT 55 W 24 Vdc / 2.3 A	223
9918840024	4032248217519	CP-SNT 12 W 24 Vdc / 0.5 A	222
9919371205	4032248217786	CP-DCDC 50 W 5 Vdc at 8 A	228
9919371212	4032248217793	CP-DCDC 50 W 12 Vdc at 3 A	228
9919371215	4032248217809	CP-DCDC 50 W 15 Vdc at 3 A	228
9919371224	4032248217816	CP-DCDC 50 W 22 - 24 Vdc at 2A	228
9919372405	4032248217823	CP-DCDC 50W 5 Vdc at 8 A	228
9919372412	4032248217830	CP-DCDC 50W 12 Vdc at 3 A	228
9919372415	4032248217847	CP-DCDC 50W 15 Vdc at 3 A	228
9919372424	4032248217854	CP-DCDC 50W 22-24 Vdc at 2 A	228

## 9920000000

9925340005	4032248217724	CP-SNT 160 W 5 Vdc / 8 A	224
9925340012	4032248217731	CP-SNT 160 W 12 Vdc-15 Vdc / 8 A	224
9925340024	4032248217748	CP-SNT 160 W 24 Vdc-28 Vdc / 6.5 A	224
9925340048	4032248217755	CP-SNT 160 W 48 Vdc / 3.5 A	224
9927480005	4032248217571	CP-SNT 55 W 5 Vdc / 3 A	223
9927480012	4032248217588	CP-SNT 55 W 12 Vdc - 15 Vdc / 3 A	223
9927480024	4032248217595	CP-SNT 55 W 24 Vdc-28 Vdc / 2.3 A	223
9927480048	4032248217601	CP-SNT 55 W 48 Vdc / 1.04 A	223
9928890005	4032248217526	CP-SNT 24 W 5 Vdc / 2 A	222
9928890012	4032248217533	CP-SNT 24 W 12 Vdc / 1.5 A	222
9928890015	4032248217540	CP-SNT 24 W 15 Vdc / 1.5 A	222
9928890024	4032248217557	CP-SNT 24 W 24 Vdc / 1 A	222
9928890028	4032248217564	CP-SNT 24 W 28 Vdc / 1 A	222

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