

# Interface Electronic

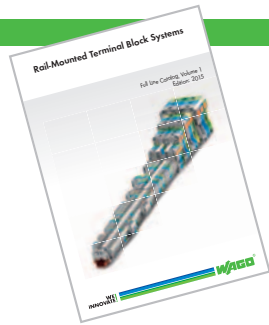
Full Line Catalog, Volume 4  
Edition: 2015



WE  
INNOVATE!



# WAGO Full Line Catalogs



## Volume 1, Rail-Mounted Terminal Block Systems

- Rail-Mounted Terminal Blocks
- Rail-Mounted Terminal Blocks with Pluggable Connector (X-COM®-SYSTEM and X-COM®S-SYSTEM)
- Patchboard Systems
- Terminal Strips
- PUSH WIRE® Connectors for Junction Boxes
- Lighting Connectors
- Shield Connecting System



## Volume 2, PCB Terminal Blocks and Connectors

- PCB Terminal Blocks
- SMD PCB Terminal Blocks
- MULTI CONNECTION SYSTEM (MCS)
- Pluggable PCB Terminal Blocks
- Feedthrough Terminal Blocks
- Specialty Connectors
- Empty Housings



## Volume 3, Automation Technology

- Software
- Operating & Monitoring - PERSPECTO®
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- Modular I/O-SYSTEM, IP20/IP67
- Industrial Switches
- Radio Technology, TO-PASS® Telecontrol Technology
- IP67 Sensor/Actuator Boxes, IP67 Cables and Connectors



## Volume 4, Interface Electronic

- Relay and Optocoupler Modules
- JUMPFLEX® Signal Conditioners and Isolation Amplifiers
- Current and Energy Measurement Technology
- EPSITRON® Power Supply System
- Interface Modules and System Wiring
- Overvoltage Protection
- Interface Modules with Specialty Functions
- Empty Housings



## Volume 5, WINSTA® – The Pluggable Connection System

- WINSTA® MINI – Pluggable Connectors
- WINSTA® MINI special – Pluggable Connectors
- WINSTA® MIDI – Pluggable Connectors
- WINSTA® MIDI special – Pluggable Connectors
- WINSTA® MAXI – Pluggable Connectors
- WINSTA® RD – Cable Assemblies
- WINSTA® KNX – Pluggable Connectors
- WINSTA® IDC – Flat Cable Systems
- WINSTA® – Distribution Boxes

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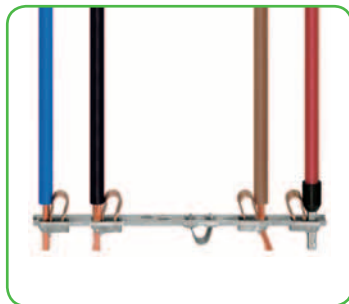
Volume 4

1		Relay Modules
2		Solid State Relay and Optocoupler Modules
3		<i>JUMPFLEX</i> ® Isolation Amplifiers and Signal Conditioners
4		Current and Energy Measurement Technology
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## Operation of WAGO Connection Technologies

Please follow applicable product instructions for product-specific handling.

### CAGE CLAMP® S



**CAGE CLAMP® S**  
terminates the following  
copper conductors:  
solid



stranded



fine-stranded,  
also with tinned  
single strands



fine-stranded,  
tip-bonded



fine-stranded,  
with ferrule  
(gas-tight crimped)



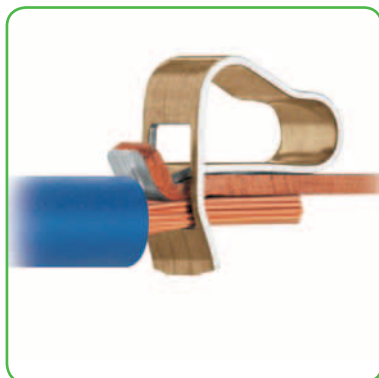
fine-stranded,  
with pin terminal  
(gas-tight crimped)

### The universal connection with "SPECIAL"

Handling:

- Open clamping unit
- Insert the conductor
- Release clamp - done!
- Terminate both solid and ferruled conductors by simply pushing them in - no operating tool needed.

### CAGE CLAMP®



**CAGE CLAMP®**  
terminates the following  
copper conductors:  
solid



stranded



fine-stranded,  
also with tinned  
single strands



fine-stranded,  
tip-bonded



fine-stranded,  
with ferrule  
(gas-tight crimped)



fine-stranded,  
with pin terminal  
(gas-tight crimped)

### The universal connection for solid, stranded and fine-stranded conductors

Handling:

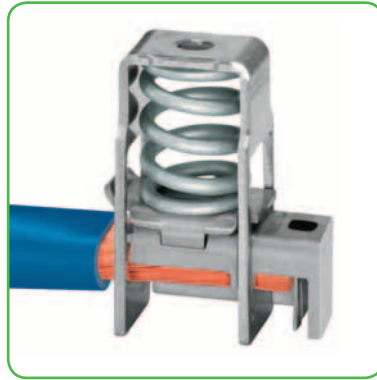
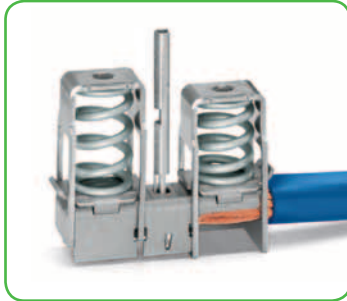
- Open clamping unit
- Insert the conductor
- Release the clamp - done!



## Operation of WAGO Connection Technologies

Please follow applicable product instructions for product-specific handling.

### POWER CAGE CLAMP®



**POWER CAGE CLAMP** terminates the following copper conductors: solid



stranded



fine-stranded, also with tinned single strands



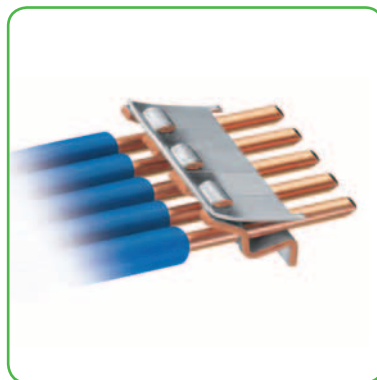
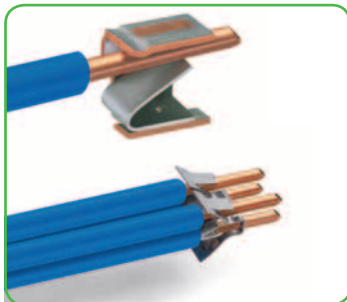
fine-stranded, with pin terminal (gastight crimped)

**The universal connection for conductors larger than 2 AWG (35 mm<sup>2</sup>)**

Handling:

- Open clamp by turning an Allen wrench counter-clockwise.
- Press integrated latch to open clamping unit for hands-free wiring.
- Insert conductor.
- A small counter-clockwise rotation closes the clamp, securing conductor.

### PUSH WIRE®



**PUSH WIRE®** terminates the following copper conductors: solid

**PUSH WIRE® connection for solid and stranded conductors (depending on model used)**

Handling:

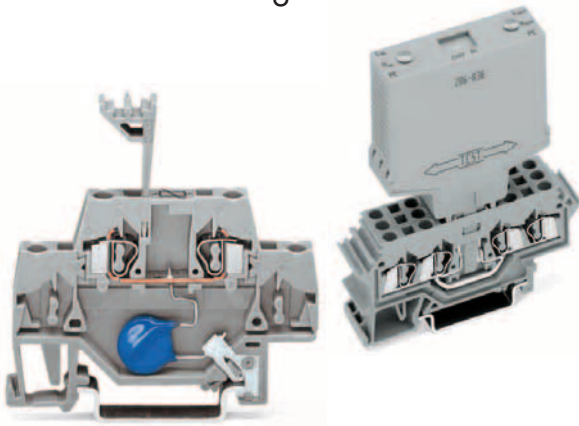
Tool-free, twist-free terminations for solid and rigid stranded conductors – simply push into unit.

# An Interface Solution for

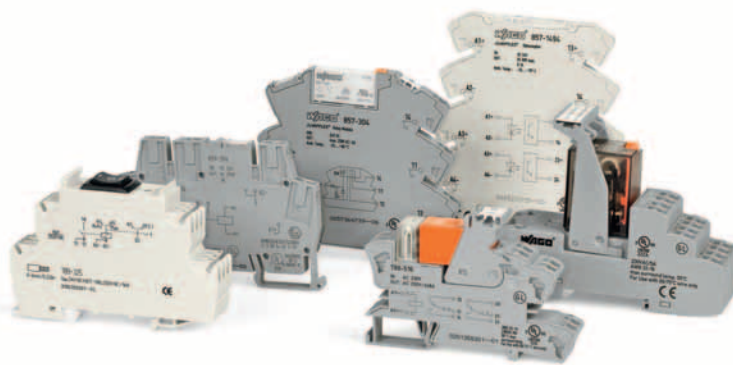
## EPSITRON® Power Supply System



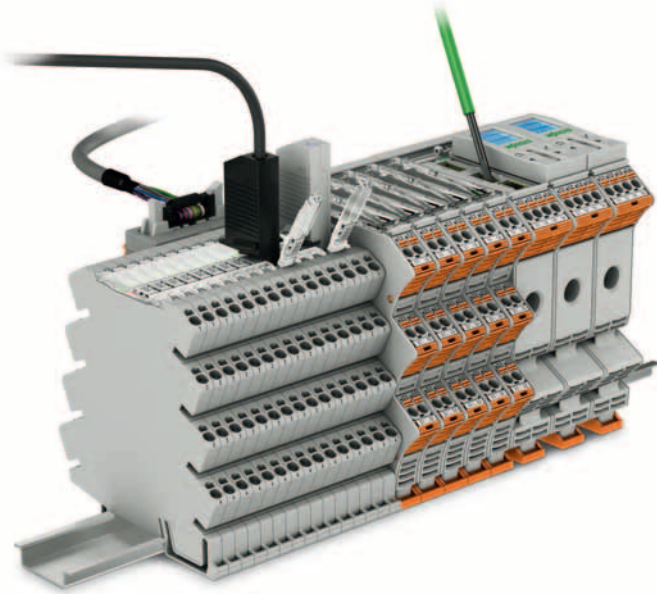
## Overvoltage Protection



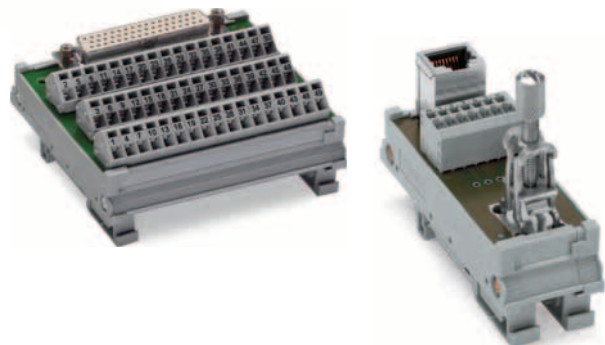
## Relay and Optocoupler Modules



JUMPFLEX® Signal Conditioners



Interface Modules



Current and Energy Measurement Technology



# WAGO Interface Modules

## Housings and Shapes

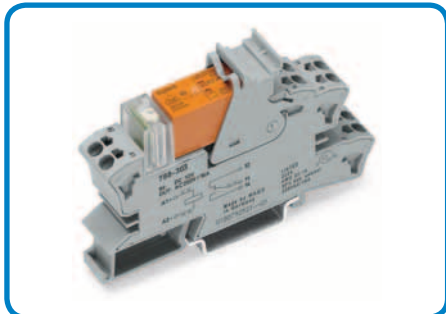
Nowadays when equipment is designed many scenarios need to be considered. Some of which are user and maintenance friendly, limited budgets, safety, availability, space requirements and simplicity in design and usage.

WAGO AUTOMATION offers interface modules in various shapes and sizes to overcome any of the restraints posed by space requirements.

This enables any demands and needs to be fulfilled using these different designs, such as pluggable function and interface modules, relay and optocoupler modules, etc.

### 788 Series Relay Sockets with Pluggable Miniature Switching Relay

The WAGO Series 788 relay socket forms an excellent basis for switching applications using pluggable miniature switching relays (1 or 2 changeover contacts) in industrial and process automation.



Relay socket with pluggable miniature switching relay

In addition to its compact design 15x53x86mm (W x H x D), the relay socket also stands out thanks to a number of user-oriented features, with the associated benefits for the user.

The lever facilitates relay replacement even when the relay sockets are placed close to each other.

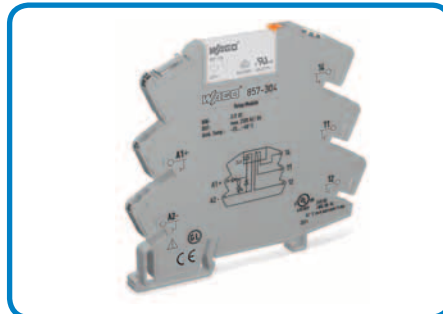
The sockets can be ordered as complete components including relay and status indication or as a single component.

### 857 Series Signal Conditioners and Relay Modules



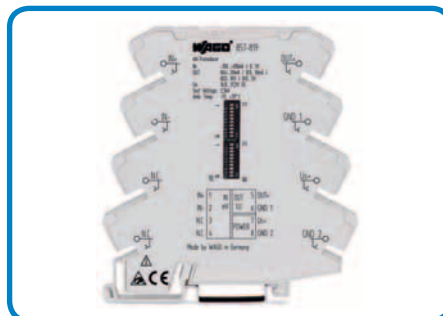
Signal Conditioners / Relay modules and Optocoupler module

The new 6mm-wide WAGO isolation amplifiers and transducers not only share a common profile, but in addition one in line jumper can be used to connect the supply voltages, etc. to all modules, doing away with the need to wire each connection. The smaller relay modules also fit perfectly in this scenario. The pluggable relays can simply be replaced from the top.



Relay module with pluggable miniature switching relay

In order to cover all application areas with one product family, it is intended to offer five different groups for the transducers alone: these include fixed and configurable isolating amplifiers, passive isolators, power supply isolators (also for HART applications), signal duplicators and temperature transducers for Pt100 and thermocouples.



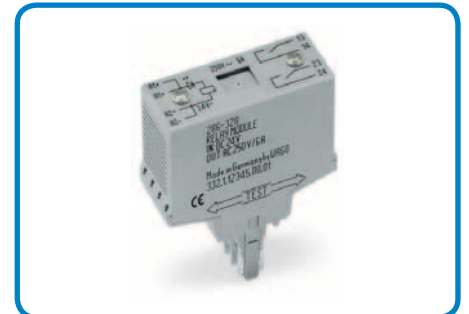
Signal Conditioner

### 286 / 786 Series Pluggable Function Modules



Pluggable function modules

The terminal blocks for pluggable modules offer the greatest degree of flexibility and maintenance-friendly service. The terminal block for pluggable modules is mounted on the carrier rail and wired like a normal terminal block. If service is required, this element can be replaced in one step, without having to deal with the system wiring. This saves space and additional wiring effort.



Pluggable function modules

The optocoupler and relay modules are ideal additions to a comprehensive function module program, allowing any required functions to be implemented in a control cabinet by means of a pluggable module system. Large enclosures of the Series 786 are available for more complex functions, such as transducers.



Pluggable signal conditioning modules



### 859 Series Relay Modules and Optocoupler Modules

The Series 859 is a complete product series that is ideal for the interface level in any industrial application, thanks to the wide range of relays and optocouplers.

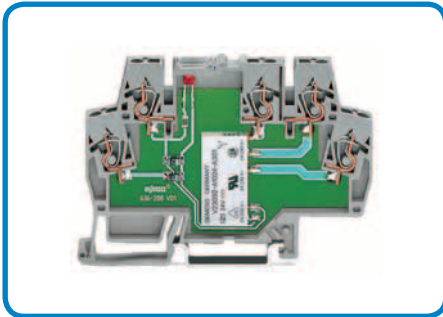
### 287 / 288 Series DIN-Rail-Mountable Modules - Relay Modules and Sockets

The relay and PLC interface modules in the mounting socket that can be fitted on carrier rails ensure quick and easy linking of signals from periphery devices. The fully wired modules, with up to 16 high-performance relay outputs, provide for direct switching of actuators and other coupling elements in the field.

### 789 Series Relay Modules in DIN-Rail-Mountable Enclosure

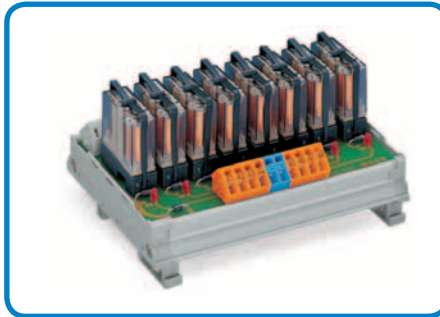
The range of uses for the WAGO latching relays and switching relays of Series 789 spans from simple lighting controls in building services, such as in construction of apartments, hotels, office buildings or parking garages, etc., up to installations in industrial control cabinets.

The 17.5mm-wide design in series bay enclosures is particularly well-suited for installation in distribution boards and meter mounting boards.



Relay module

These units excel in tight spaces, thanks to their narrow 6mm design. Simple commoning at the control and load side enables quick and easy looping through of common input and output potential.

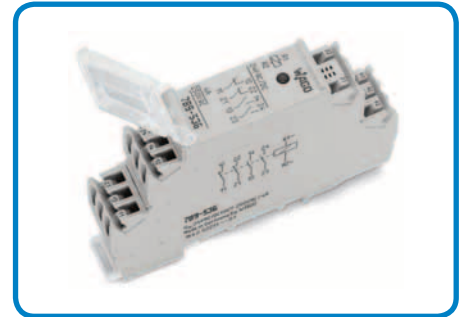


DIN-rail-mountable modules - relay modules

The requisite free-wheeling and reverse voltage protection diodes are also integrated to ensure a long service life of the products.

Other interface modules available as:

Multiple modules with plugged relays that are easy to replace, without affecting existing wiring.



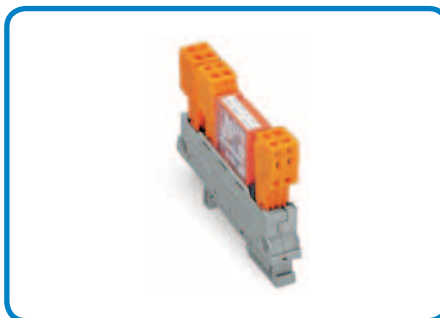
Relay modules in DIN-rail-mountable enclosure

The series bay enclosures are used for installation of other electronics devices having a large scope of functions and higher switching capacities; these come in sizes of 2 module spaces (35mm) and 4 module spaces (70mm).



Optocoupler module

Its robust design and the shock-proof CAGE-CLAMP® connecting technology used ensures continuous and uninterrupted operation of any kind of system.



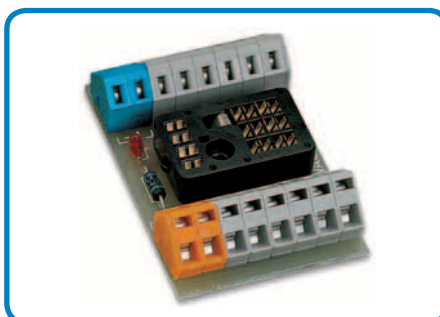
DIN-rail-mountable modules - relay modules



EnOcean radio receiver in DIN-rail-mountable enclosure

PCB terminal blocks and connectors from the extensive WAGO program can be installed in the enclosures to obtain customized development of interface components.

Installation is quick and reliable on the 35mm carrier rail.



Relay socket

# WAGO Signal Conditioners and Relay Modules

JUMPFLEX®, 857 Series



The perfect match of housing and electronics is the key to a highly successful device. This is exactly what has been achieved by WAGO with the transducers and relay modules of the 857 Series.

## Analog systems technology – Basics

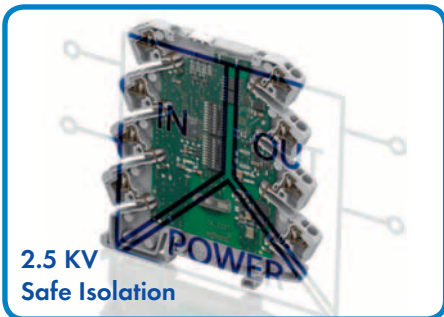
Problems can arise in signal processing in industrial systems of analog standard signals (such as 0-10V or 0-20mA) which can have an adverse effect on overall fault-free signal processing. Problems such as potential differentials arising from interlinked measuring circuits can be efficiently prevented using WAGO transducers, with their associated electrical isolation.

### Decoupling (Isolation) methods

A basic distinction is made between active and passive isolation.

### Active isolation

Depending on the design and model in use, devices are available that incorporate electrical 3-way isolation. 4-way isolation is provided in a signal duplicator. This means that all inputs, outputs and supply circuits are electrically isolated from one another with a 2.5 kV proof voltage.



This ensures that the greatest possible safety and reliability is achieved for the system and any devices connected to the system. For 3-way isolation provides for electrical isolation between the transducers and the control system and between the control system and the control elements.

At the input side the devices require active signals, i.e., the sensor signal is generated by a dedicated supply voltage.

These devices provide a filtered and amplified signal at the output side.

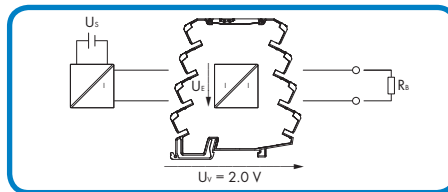
### Passive isolation

A passive isolator draws power for signal transmission from the input circuit. In this case, the sensor must supply a power level adequate for the device and must also drive the working resistance.

As a result, it must be ensured that the current-driving power of the sensor is sufficient to drive the maximum current of 20mA via the passive isolator (with the device-specific voltage drop), as well as the working resistance.

This can be calculated using the following equation:

$$U_S \geq U_E = U_V + 20 \text{ mA} \times R_B$$



Typical equation for a passive isolator (857-451) for a 20mA signal.

$$U_S \geq U_E = 2.0 \text{ V} + 20 \text{ mA} \times 600 \Omega$$

$$U_S \geq U_E = 14 \text{ V}$$

### Temperature measuring techniques

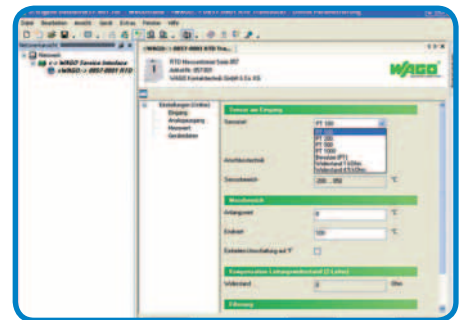
Resistance thermometers, such as Pt100 sensors, alter their resistance level as a function of temperature. For example, a rise in temperature will result in an increase in the resistance level. This resistance level is registered by the JUMPFLEX® devices (for example 857-800) and transformed into an analog output signal and simultaneously electrically isolated using a 2.5kV proof voltage.

The analog standard signal can be a current signal in the 0-20 mA, 4-20 mA 0-10 mA or 2-10 mA range, or a voltage signal in the 0-10 V, 2-10 V, 0-5 V or 1-5 V range.

### Parameterization, commissioning and diagnostics using WAGO-frame

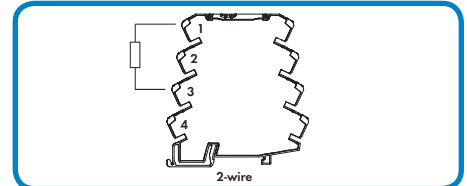
A portion of the JUMPFLEX® transducer can be configured for parameterization, commissioning and diagnostics of field devices using WAGOframe, a software based on the FDT/DTM standard.

The WAGOframe FDT frame application provides a wizard, which simplifies the operation of components, such as WAGO JUMPFLEX® DTMs. This wizard guides the user through the different operating modes of DTM device drivers.

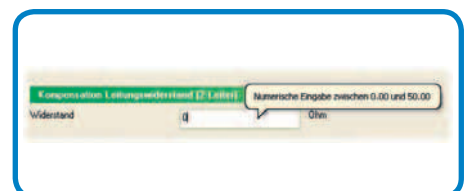


### 3 different connecting techniques are employed for acquisition of resistance thermometers:

#### 2-wire connecting technique



The resistance thermometer is connected to the JUMPFLEX® transducer via a two-wire conductor. As the feed-in resistance can directly affect results, which would invalidate them, it must be ensured that the distance between the measuring point and the device is kept as small as possible. This distance should not exceed 10m in this case. If this distance can not be ensured, the 857-801 unit can be used provide compensation for the incoming resistance using the configuration software.



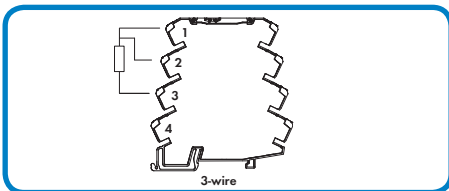


### Compensation for line resistance (2-wire)

A resistance value can be input into this field for compensation of the line resistance for 2-wire sensors within a range of 0-50  $\Omega$ .

Adjusting the values for resistance compensation is only possible by setting the sensor wire connection to 2-wire. Otherwise the field is displayed in gray and no values can be entered. Using 3- and 4-wire sensors, the input cable resistance is compensated via the connection technology and does not enter into the measuring results.

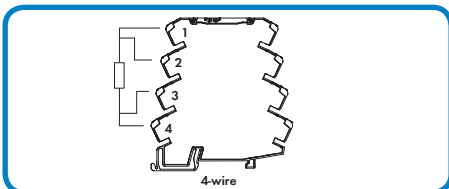
### 3-wire connecting technique



The 3-wire connecting technique minimizes the effect of line resistance. The resistance thermometer is gauged via two measuring circuits implemented in the JUMPFLEX® transducer. One measuring circuit serves as the reference circuit. Line resistance can be compensated for in this manner.

The measuring results can, however, nevertheless be affected by different line lengths or by different ambient temperatures. No further line adjustment is usually necessary, as the same line lengths and the same ambient temperatures exist in most cases.

### 4-wire connecting technique



The most accurate measuring method employs the 4-wire connecting technique. This involves feeding in a low supply current via two fully isolated measuring circuits via two lines and measuring the voltage drop across the resistance thermometer via the other two lines. This method offers the advantage not being influenced by line resistance or temperature-induced fluctuations, as the voltage

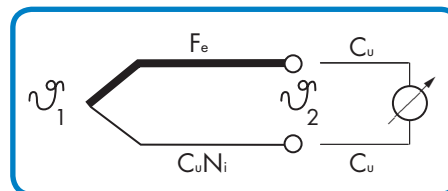
drop for the incoming and outgoing lines can be measured separately and compensation provided for as required. Again, no line adjustment is required here.

### Thermocouples

In contrast to resistance thermometers, thermocouples are active sources that generate output in the microvolts range.

Thermocouples have very low resistance and are therefore noise-free. Preferred applications include tasks in environments with high temperatures, such as in ovens or machines in the plastics industry.

The joining of two different materials at the thermocouple results in different energy of formation of the metal atom electrons, yielding a thermoelectric voltage. The level of this thermoelectric voltage is a function of the material and of temperature.



If the temperature at measuring point  $\vartheta_1$  is the same as the temperature at reference point  $\vartheta_2$ , no current will flow, as the two component voltages cancel one another out.

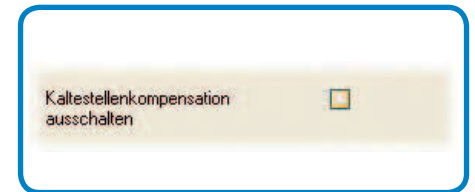
However, if the temperatures at the measuring point and at the reference point are different, differing voltage levels are produced which do not completely cancel one another out, resulting in a flow of current.

To summarize then, a thermocouple only measures a difference in temperature. This is yielded from the difference between the thermoelectric voltage levels at the measuring point and at the reference point. The voltage fluctuation produced by the thermoelectric effect is very low and is generally only a few microvolts per Kelvin. Therefore, only the difference between the thermoelectric voltages of the materials used is of significance, for example, thermocouple type J, iron (Fe) and constantan (CuNi).

Also of some significance in the connection point temperature. This temperature must be known in order to derive the ambient temperature from the thermoelectric voltage level. This is why the temperature at the connection point is measured by JUMPFLEX® transducers. This value, also referred to as the reference or cold junction, can then be compensated for. (cold junction compensation)

Cold-junction compensation can be activated and de-activated just by a click using the configuration software (default setting: ON (activated)).

### Table for Thermocouples



Type of sensor	Thermocouple materials	Measuring range
J *)	Fe-CuNi	-210 °C ... +1200 °C
K *)	NiCr-Ni	-200 °C ... +1372 °C
E *)	NiCr-CuNi	-200 °C ... +1000 °C
N *)	NiCrSi-NiSi	-200 °C ... +1300 °C
R *)	Pt13Rh-Pt	+250 °C ... +1768 °C
S *)	Pt10Rh-Pt	-50 °C ... +1664 °C
T *)	Cu-CuNi	-200 °C ... +400 °C
B *)	Pt30Rh-Pt6Rh	+250 °C ... +1820 °C
C		0 °C ... +2320 °C

\*) Thermocouples based on IEC 584 / EN 60584  
Other thermocouples available upon request.

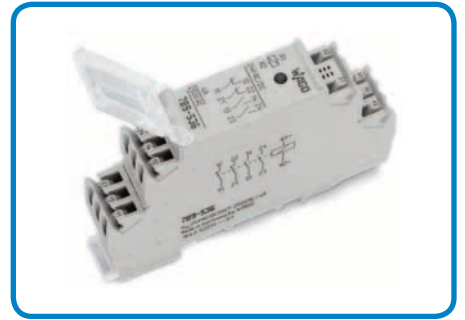
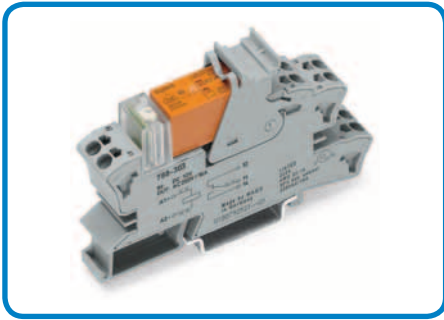
### Relay modules with mounted miniature switching relays

The JUMPFLEX® product family is rounded out by the relay modules that fit perfectly with the transducers.

A logical enclosure concept with options for linking all levels offers a variety of synergy and cost-savings potential. This allows for efficient optimization of installation efforts.

The pluggable relays can be replaced quickly and easily when required.





### WAGO Relay Modules. The professional interface between electronics and peripheral equipment.

Even in modern automation systems, electromechanical relays guarantee a safe connection between process control systems and process and signalling systems. They provide:

- a high isolation level between input and output circuit
- ability to match different signal levels
- signal amplification and/or signal multiplication, especially for different potentials in the input and output circuits.

Modernized relays also offer the following advantages:

- unaffected by electromagnetic fields and surges
- high short-term overload capacity for the input and output sides
- small switching power losses
- a module for switching of AC or DC

WAGO AUTOMATION offers a complete range of relay modules that provide these functions for a wide range of applications.

Depending on the function and operating conditions, the relay modules are available with different contacts, contact materials, housings and shapes.

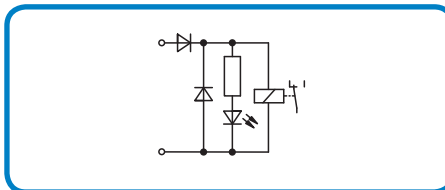
The following relay types are also available: bistable switching relays, time-delay relays, current pulse switching and safety relays with force-guided contacts.

### Definitions of several important technical terms

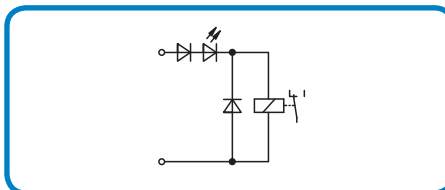
#### Coil-side information

The relays can be used within the stated temperature range with nominal voltage plus tolerance at 100% continuous duty rating.

According to the type and application, the relays are triggered with DC or AC signal. The DC versions (residual ripple  $\leq 6\%$ ) are, unless otherwise stated, equipped with LED function indicators, a recovery diode and a reverse voltage protection diode.



For a nominal voltage of  $\leq 12\text{VDC}$ , the LED is connected in parallel to the coil.



For a nominal voltage  $\geq 24\text{VDC}$ , the LED is connected in series with the coil.

AC versions of select relays equipped with series connected rectifiers (refer to the wiring diagrams) can be triggered with AC and DC at the stated nominal voltage.

The free-wheel function is in this case actuated by the rectifier. In order to guarantee a safe operation it has to be observed that "residual voltages" due to cable capacitance in case of long connecting lines or leakage currents of semi-conductor switches and their protection circuits are lower than the release voltage of the relay.

For DC relays, the release voltage is specified with a value of  $\leq 5\%$  of the nominal voltage;

for AC relays it is 15% of the nominal voltage (acc. to VDE 0435).

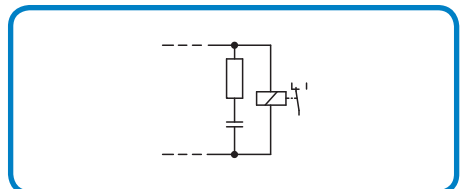
If a high residual voltage exists, it is possible that the relay will not reset.

Addition of a parallel connection of an RC element of:

$$R = 100\text{-}220\Omega$$

$$C = 220\text{-}470\text{nF}$$

could remedy this situation.



Alternatively, the 286-904 relay module is available.

This specially developed module features a defined release point at  $110\text{VAC} \pm 10\%$  at an operating voltage (coil voltage) of  $230\text{VAC}$ .

### Contact material

To ensure a long service life and low contact resistance, various materials may be used for relay contacts (depending on the load type, switching current, voltage and duty cycle).

Possible materials, their properties and advantages are shown in the table.

Contact material	Properties and use	Range of values
Ag Ni 0.15 + 5 μ Au	High corrosion resistance, low and constant contact resistance at small power ratings, for dry circuits	μV ... 30 V μA ... 0.2 A
Ag Ni plated with Au Ag + Au	Same properties as a 5 μ gold contact, however with five times greater resistance to wear, for all circuits from the μW range up to 100 W/1 kVA	100 mV/10 μA
Ag Cd 0 + 1 μ Au	Low tendency to contact weld, high resistance to contact burn-out at higher power rating, also suitable for lower power ratings	≥ 5 V ≥ 10 mA
Ag Cd 0, with gold flash	Low tendency to contact weld, high resistance to contact burn-out at higher power rating, with gold flash for additional protection during storage	≥ 12 V ≥ 100 mA
Ag Ni 0.15 + HV	High mechanical strength, low tendency to contact weld and low contact resistance, universal application at medium loads	≥ 12 V 5 mA - 10 A
Ag Sn O <sub>2</sub>	Small tendency to contact weld, high resistance to contact burn-out at higher power rating, small migration of material, for circuits with high input and output ratings, DC circuits	≥ 5 V/100 mA ≥ 10 V/10 mA ≥ 24 V/1 mA
Ag alloy, with gold flash	High mechanical strength, small tendency to contact weld, wide scope of application for low to medium ratings	10 <sup>-3</sup> W

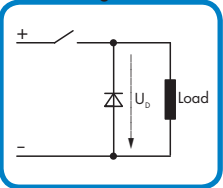
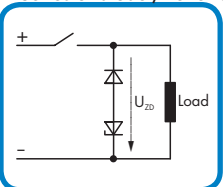
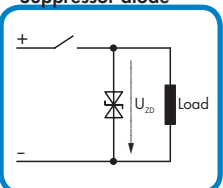
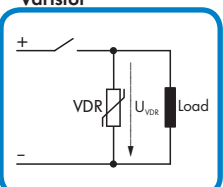
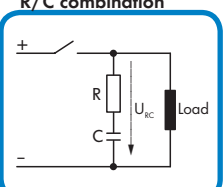
### Contact switching protection

When switching inductive loads (e.g., for contractors or solenoid valves) transients with peak voltages up to thousands of volts will arise.

Suppression is necessary as these transients frequently exceed admissible EMC limits.

Moreover, they cause electric arcs at the switching contact that destroy the contact and significantly reduce the relay's service life and functional safety.

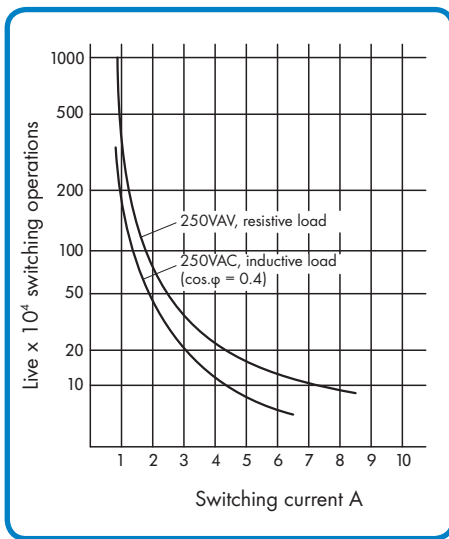
In practical use the following switching protections, which are connected directly at the source in parallel to the load, have proved to be efficient:

Switching of load	Additional off-delay	Defined limitation of inductive voltage	Attenuation when used with bipolar circuits	Advantages / disadvantages
<b>Circulating diode</b> 	large	yes (V <sub>0</sub> )	no	<b>Advantages:</b> <ul style="list-style-type: none"> <li>• simple device</li> <li>• cost-effective, reliable</li> <li>• sizing not critical</li> <li>• small inductive voltages</li> </ul> <b>Disadvantages:</b> <ul style="list-style-type: none"> <li>• limit only via load resistance</li> <li>• longer turn-off time</li> </ul>
<b>Series of diode / Zener diode</b> 	medium to small	yes (V <sub>ZD</sub> )	no	<b>Advantages:</b> <ul style="list-style-type: none"> <li>• sizing not critical</li> </ul> <b>Disadvantages:</b> <ul style="list-style-type: none"> <li>• limits only above V<sub>ZD</sub></li> </ul>
<b>Suppressor diode</b> 	medium to small	yes (V <sub>ZD</sub> )	yes	<b>Advantages:</b> <ul style="list-style-type: none"> <li>• cost-effective</li> <li>• sizing not critical</li> <li>• limitation of positive peaks</li> <li>• suitable for alternating voltages</li> </ul> <b>Disadvantages:</b> <ul style="list-style-type: none"> <li>• attenuation only above V<sub>ZD</sub></li> </ul>
<b>Varistor</b> 	medium to small	yes (V <sub>VDR</sub> )	yes	<b>Advantages:</b> <ul style="list-style-type: none"> <li>• high energy absorption</li> <li>• sizing not critical</li> <li>• suitable for AC voltages</li> </ul> <b>Disadvantages:</b> <ul style="list-style-type: none"> <li>• attenuation only above V<sub>VDR</sub></li> </ul>
<b>R/C combination</b> 	medium to small	no	yes	<b>Advantages:</b> <ul style="list-style-type: none"> <li>• limiting by energy storage</li> <li>• suitable for alternating voltages</li> <li>• limiting independent of level</li> </ul> <b>Disadvantages:</b> <ul style="list-style-type: none"> <li>• exact component values</li> <li>• high turn-on current pulse</li> </ul>

**Service life**

The difference between mechanical life and electrical life must be distinguished. Mechanical life consists the amount of switching operations without contact load; electrical life at maximum load refers to the amount of switching operations with maximum switching capacity and resistive load.

Smaller switching capacities increase the operation at maximum load. The following illustration shows the typical course between switching current and relay's operational life.

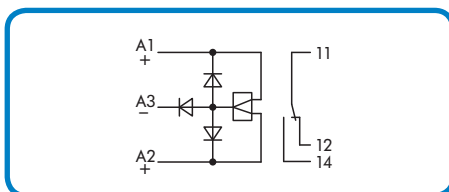


More details upon request.

**Description of select relays**

**Bistable switching relays**

Bistable switching relays have 3 coil contacts. According to the wiring scheme, the relay is switched into "working condition" (contacts 11 - 14 closed) by the common connection A 3 and the connection A 1 and into "rest position" (contacts 11 - 14 opened) by the connection A 2.



After removing the control signal, the relay returns to its respective position and can only be switched over by a control signal circuit. The bistable switching relays are only available for direct voltage with positive or negative triggering.

**Current pulse switching relay**

One current pulse is needed to change the relay from the rest position to the working position and vice versa.

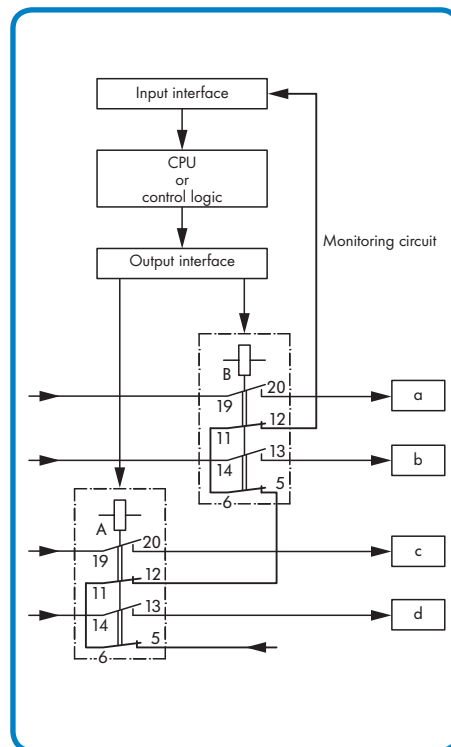
During the triggering process, one of two status indicators displays the actual contact position. The current pulse switching relay is available for direct and alternating voltage.

**Safety relay**

Force-guided safety relays, have become increasingly recommended and specified for self-regulated systems as they provide protection for personnel, machines and installations. Relays with force-guided contacts are an essentially safety component for these circuits, particularly when defects occur. WAGO offers these functions in special relay modules with force-guided contacts as based on to ZH1/457

(Specification of the employer's liability insurance association).

Example of circuit configuration:



Control of different peripheral equipment (a, b, c, d) with monitoring

As shown in the fig. "Example of Circuit Configuration," two SF relays are controlled by one output interface. The NO contacts 13-14/19-20 of relay A and B switch over the peripheral equipment. After switching off equipment a ... d the control circuit

(NC contacts 5-6/11-12) verifies that all main circuits are interrupted.

When the control circuit is closed, the next operation cycle will be executed by the CPU or by the control logic.

Depending on the safety requirements, an open control circuit prevents operation of either the entire machine or specified components.

If a partial or complete standstill is required in the event of a failure (for ex. in medical technology or chemical processes) each control contact can be polled and evaluated.

Independent of a single or complete control for the NO contact, the SF relay operates in such a way that the other equipment is switched off even if a NO contact is welded. The failure is recognized by the control contact while the other contacts are still able to open to interrupt circuits.

**Time delay relays**

WAGO time delay relay modules are electromechanical time relays with an integrated time response, e.g., acc. to VDE 0435, part 201/5.83.

The time ranges can be adjusted via potentiometer for either continuously variable or linear operation. A status LED indicates the switching condition of the relay.

# WAGO Optocouplers

## WAGO optocouplers: the modern and efficient alternative

As the connecting element between process interface and electronic control and signalling systems, the optocoupler modules offer the following advantages compared with mechanical relays:

- long service life, because there is no mechanical wear
- high switching frequency because of fast switching times
- unaffected by vibration
- no contacts
- "noiseless" switching
- low driving capacity.

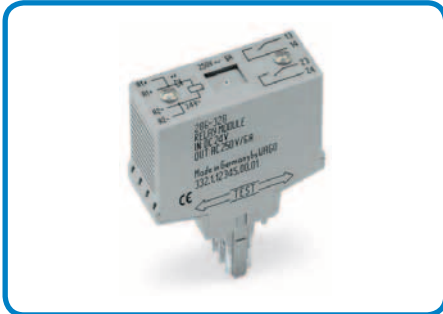
For all interfaces between control and load circuits that rely on these advantages, WAGO AUTOMATION offers a complete optocoupler range for the following functions:

- electrical isolation between input and output circuit
- adaptation to different signal levels
- signal amplification.

The optocoupler modules are available in WAGO's component plug technology that is designed to plug directly into rail-mounted carrier terminal blocks.

The terminal blocks are fitted to the carrier rail and offer all advantages of CAGE CLAMP® technology, which provides safe and maintenance-free connection of the signal wires for cross sections ranging from 0.08 mm<sup>2</sup> to 2.5 mm<sup>2</sup>/ AWG 28-12.

In addition to optimizing space through the combination of terminal points and the "function module," maximum flexibility and ease of service are also achieved.

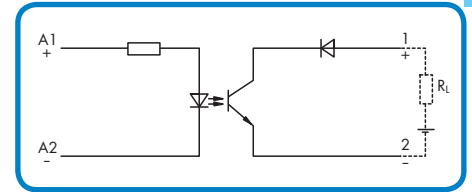


## Input circuit

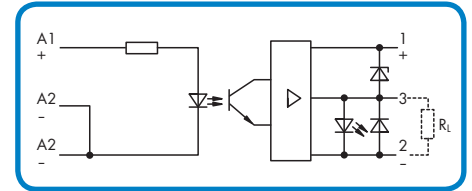
According to the type, triggering the optocoupler modules is performed via direct voltage (residual ripple RR <6%) or AC voltage (50-60 Hz).

In the DC type, a reverse voltage protection diode is always provided; in the AC type optocoupler element, a rectifier is included.

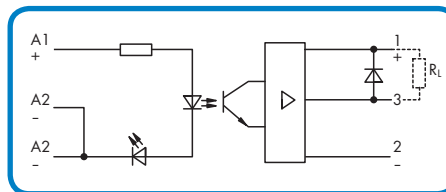
The optocoupler modules are equipped with a LED function indication at either the input side or at the load side, as shown in the wiring diagram.



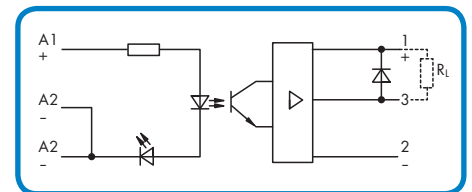
2-wire output



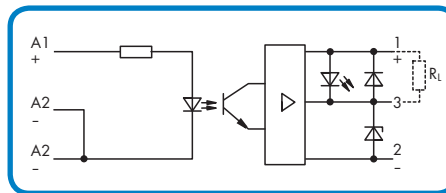
3-wire output positive switching



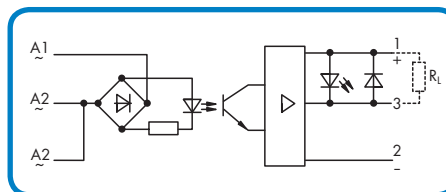
DC triggering with LED function indication in the triggering circuit



3-wire output negative switching



DC triggering with LED function indication in the load circuit



AC triggering with LED function indication in the load circuit

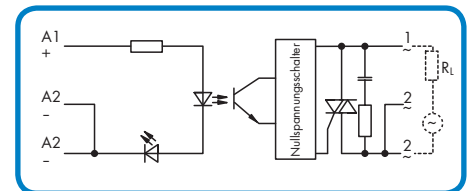
In addition to these different functional outputs, the output voltage range and the maximum switching current must be observed. Also note the correct polarity. In order to protect the output transistors, inductive loads must always be equipped with a protective circuit, e.g., a recovery diode. For other types of protective measures, the cut-off voltage peaks must be lower than the indicated cut-off voltage of the output transistors. For the AC outputs a Triac is used as the switching element.

Due to the low threshold voltages, care must be taken to ensure malfunctions are not caused by the capacitance of long signal lines or the residual off-current of semiconductor devices.

## Output circuit

Depending on the application, an optocoupler module for the AC or DC supply may be chosen. In the case of DC outputs, they can be:

- 2-wire output
- 3-wire output positive switching
- 3-wire output negative switching.



In order to avoid high turn-on currents, the AC output is equipped with a zero-voltage switch which turns on the load at the zero-voltage point. In the current zero-crossing, the Triac will cut off the load, in case inductive loads do not exceed the maximum switching voltage and the maximum switching current.

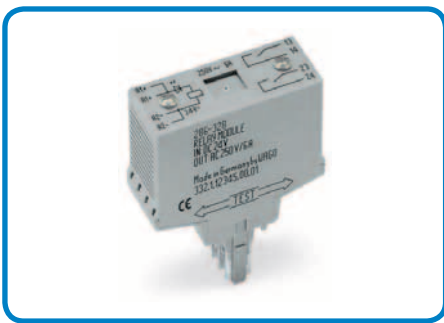


## WAGO Analog Signal Conditioning Modules

### Signal Conditioners for measurement technology

The Recording and processing of numbers of physical values, such as temperature, pressure, speed, humidity, etc., form the basis for modern process control. Special sensors supply these values as analog signals, which must be transmitted as standard analog signals to the processing instruments. These analog signals may be transmitted over long or short distances between sensors and controlling mechanisms, for example PLCs and computers, or in less sophisticated systems directly to relays or actuators. Various standards are used. Normally recognized signals are 0-10 V, 0-20 mA and 4-20 mA.

The transducer/transmitter may also linearize non-linear signals internally, before transmission. In order to prevent these relatively low power signals from distortion, WAGO AUTOMATION offers a complete range of modules for measurement and transmission of these signals, both with and without isolation between the module's input/output and the supply voltage (if necessary). Apart from the converters for various standardized signals, WAGO offers a complete selection of analog/digital and digital/analog converters with a resolution of 10 bits.

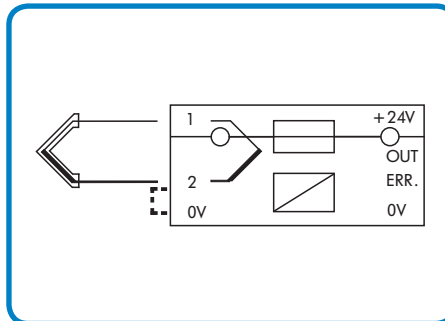


The electronics are protected by an enclosure which can be snapped on a DIN 35 rail. The CAGE CLAMP® connection ensures a secure, maintenance-free connection for conductors sized from 0.08 mm<sup>2</sup> to 2.5 mm<sup>2</sup>/AWG 28-12.

### Temperature Signal Conditioners

Temperature sensing in the process industry is traditionally performed via "Thermocouple" or "RTD" (Platinum Resistance) elements. A popular RTD is the Pt100 element. Having a nominal resistance of 100 ohm at 0°C, and a typical operating temperature range of -200°C to + 650°C, its non-linear characteristics are compensated by the WAGO signal conditioning module, as the Pt100 element typically meets the IEC 60571 specification.

The WAGO Pt100 signal conditioning module is suitable for 2- or 3-wire RTD, with 3-wire RTDs offering greater accuracy over longer distances. Thermocouples consist of two different metals that are connected at the measuring point and utilize of the "Dissimilar Metal (EMF) effect", which can be measured at the open ends of an element.



- When using insulated thermocouples, terminal "2" has to be connected to 0 V.
- In the case of grounded (earthed) thermocouples, the design is such that terminal 2 is already connected to 0 V inside the thermocouple element. Therefore, it is not necessary to jumper 2 → 0 V.
- For commoning 2 → 0 V, 4-wire base terminals are recommended.

WAGO analog signal conditioning modules are designed to work with common types of "J" (Iron/Constantan) and "K" (Chromel/Alumel) thermocouples, which comply with IEC standard 60584 Pt. 1, with cold junction compensation. WAGO temperature transducers are available with industry standard output signals of 0-10 V, 0-20 mA or 4-20 mA.

Additionally, they have an integral wire break/short circuit detection. Visual LED fault indication is standard, but the WAGO modules also include an error output signal that may be used to initiate a safe shutdown before serious damage occurs in the event of a wire break or short circuit of the measuring sensor.

For this purpose, a transistor switches the output as soon as the operating voltage is correct and no error is present in the measuring circuit on VB-2V. The transistor blocks the output in the case of an error.

WAGO temperature transducers are available as follows:

- The "wire break" and "short circuit" error output is available on the Pt100 module.
- The "wire break" function is available on the J and K Thermocouple modules.

In the event of wire break, the outputs switch to the following values:

Output	Value
0(4)-20mA	≥20.5mA
0-10V	≥14V

With Pt100 modules, and in case of short circuit, the outputs switch to 0V or 0mA, respectively.



The mechanical assembly of pluggable modules for rail-mounted terminal blocks on DIN 35 rails offers all the advantages of CAGE CLAMP® connectivity. Additionally, the separation of wiring and function levels offer maximum flexibility and ease of service.



## WAGO Interface Modules

Interface modules connect electronic to electromechanical functions at the control level.

They connect:

- signal transmission, control system ↔ field
- signal distribution, control system ↔ field.

They allow prefabricated plugs to interface to discrete field wiring.

WAGO AUTOMATION offers a wide range of interface modules for commonly used connector types. The use of these interface modules offers the following advantages in the system wiring:

- easy and time-saving planning and calculations
- rapid wiring, starting and fault elimination by clearly arranged wiring and clear pole marking, reduction of wiring faults
- safe and maintenance-free connection of the signal lines with the CAGE CLAMP® terminal strips
- high packing density creates space-saving modules

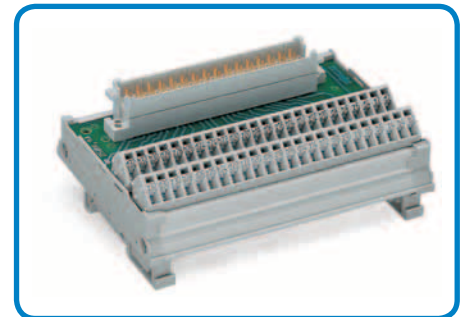
The interface modules are standard in a universal mounting carrier for DIN 35 carrier rails with the following connectors:

## Subminiature-D connectors acc. to DIN 41 652 or MIL-C-24308

Interface modules for male and female connectors are available with 9, 15, 25, 37 or 50 contacts. Compared with the standard solder connection, the mating connector with IDC connection offers additional advantages.

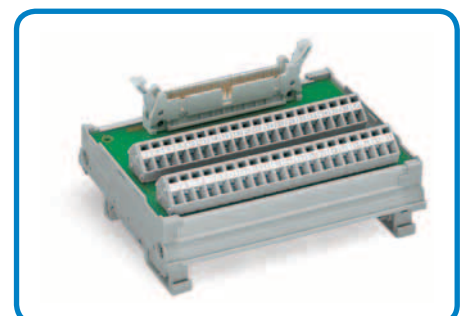
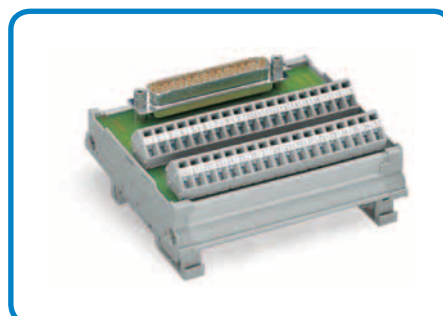
## Connectors acc. to IEC 60603/DIN 41 612, types C, E and F

These connectors are frequently used for compact input and output component groups and are available for 32-, 48- and 64-pole pin and socket connectors, as well as for mating connectors with solder and IDC contacts.



## Connectors acc. to IEC 60603-1 / DIN 41 651 or MIL-C-83503

Interface modules with 10-, 14-, 16-, 20-, 26-, 34-, 40-, 50- and 64-pole connectors are available for ribbon cable connectors.



## WAGO EPSITRON® – 787 Series

High-Performance and Efficient Advanced Power Supplies

### PRO Power Supplies

Slimline, 1- and 3-phase, primary switch mode power supplies feature a wide input voltage range, stabilized, adjustable 24VDC output voltage and up to 93% high efficiency. An integrated Power-Boost (up to 200 % output power for 4 seconds) allows reliable starting of heavy loads with high inrush currents, eliminating expensive oversizing of the switch mode power supply. The TopBoost function, which provides a much higher output current of up to 60A for 50ms, permits use of standard circuit breakers for protection on the secondary side. This enables safe tripping within the time limits required by the EN 60204 standard.



Select devices utilize the LineMonitor feature for current and voltage monitoring, fault memory and parameterization options via LCD display, on-unit function keys, or free monitoring software and available RS-232 interface from a PC and PLC. This allows the power supply to replace additional devices, such as phase failure and phase sequence monitoring devices or operational hour meters.

Additionally, the single-phase power supplies have a stand-by mode to switch off the device output via remote input, while minimizing power consumption. CAGE CLAMP® pluggable terminations permit efficient pre-wiring.



### CLASSIC Power Supplies

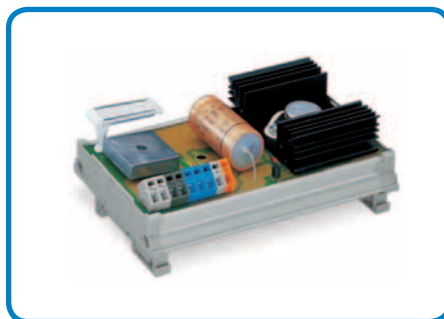
Single-phase, primary switch mode, industrial power supplies provide a wide input voltage range and robust metal housings. The CLASSIC Power Supplies have a stabilized, adjustable output voltage and provide short-circuit and overload protection. The devices achieve high efficiency and the integrated LED status indicator conveniently provides operational status at a glance. CAGE CLAMP® pluggable terminations permit efficient pre-wiring.

The CLASSIC Power Supplies are available in four nominal output voltages: 12VDC, 24VDC or 48VDC, as well as 30.5VDC for AS-Interface networks.



### Rail-Mounted Modules – Constant Voltage Sources

Constant voltage sources provide stabilized 24VDC voltage via integrated longitudinal voltage regulator. CAGE CLAMP® provides fast, vibration-proof and maintenance-free terminations. The modules are DIN-rail mountable.



### ECO Power Supplies

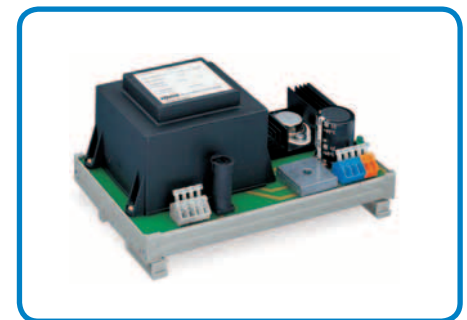
Single-phase, primary switch mode power supplies in sturdy metal housing offer a wide input voltage range from 90 to 264VAC, without manual switching. The stabilized, front-panel adjustable 24VDC output voltage is protected against open and short circuits, and constant current operation is provided in the overload range. LEDs quickly provide operational status at a glance. CAGE CLAMP® provides fast, vibration-proof and maintenance-free terminations.



### Rail-Mounted Modules – Power Supplies

Conventional transformer power supply with bridge rectifier, smoothing capacitors and stabilized output voltage via longitudinal voltage regulator. This power supply is ideal for supplying small loads with nominal output voltages of 24VDC, 12VDC,  $\pm 12$  VDC and  $\pm 15$  VDC. The low residual ripple makes the units well suited to applications using analog technology.

CAGE CLAMP® provides fast, vibration-proof and maintenance-free terminations. The modules are DIN-rail mountable.



## Electronic Circuit Breakers

Configurable protection via 4-channel electronic circuit breakers, for shutting down faulty 24VDC current paths. Offering adjustable trip times, the Electronic Circuit Breakers can respond to short circuits/overloads quicker than traditional circuit breakers or melting fuses, or when unintended start-ups must be prevented in the event of a ground fault (see EN 60204). This is particularly advantageous when using long cables between a power supply and load where loop resistance may be very high. Integrated current and voltage monitoring, as well as parameter setting via display and on-unit function keys, or via free software from a PC or PLC, provides easy operation and diagnosis. Electronic circuit breakers with active current limitation (maximum 1.5 times rated current) are also available as an option. These advanced features enable the Electronic Circuit Breakers to reliably prevent voltage drops in the event of a short circuit.



## DC/DC Converters

DC/DC converters available in 6.2mm-wide terminal block housing or DIN-rail mount carrier. These converters are ideal for applications where it is not necessary to use a separate power supply with special voltage due to low power requirements (e.g., when supplying sensors, actuators or DALI bus devices).



## Uninterruptible Power Supplies (UPS)

The Uninterruptible Power Supply (UPS) provides reliable power applications impacted by long-term power outages. The UPS consists of a charger, controller and a connected battery (capacities ranging from 3.2 to 12 Ah are available). In battery operation, 24VDC can be provided for several hours depending on the load current and battery capacity. The charger and controller are supplied with 24VDC from an external power supply – capacity must be matched to the load. Operation, configuration and diagnosis are simplified by an integrated LCD with keypad, or free software using an RS-232 interface (for connection to a PC or PLC). The battery modules have a temperature sensor NTC 164 (4k7 Ω), allowing for temperature-controlled charging via charger and controller, which may extend the battery's service life.



## Redundancy Module

The redundancy module has two integrated power diodes (2 x 20A) for parallel connection of power supplies, while improving power supply availability or increasing the total current (max. 40A) for the 24VDC loads. A signal contact reports the failure of one or both input voltages, which is also displayed via LED.



## Capacitive Buffer Modules

Capacitive buffer modules ensure smooth operation and protect data during shorter 24VDC power interruptions. Depending on the output current and buffer capacity, buffer times up to several seconds can be achieved. Control units are particularly sensitive to short power interruptions. This is why an integrated signal contact reports buffer operation, offering the control unit sufficient time for preventive measures (e.g., saving valuable production data or program parameters).



## Communication Cable

The communication cable connects the RS-232 interface for power supplies with integrated LineMonitor (787-85x) and electronic circuit breakers (787-86x), as well as UPS charger and controller units (787-87x) to the RS-232 interface of a PC or PLC. When combined with free software, the cable provides easy parameterization and diagnostics for these WAGO power supply solutions.



## WAGO overvoltage protection for increased safety and longer on-line operation

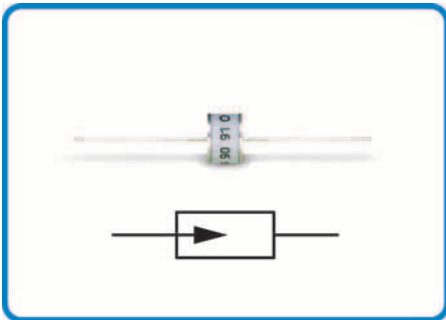
On-the-line overvoltages cause most operating failures for measuring, control, data and power lines. Failure of electronic and semiconductor components due to surges can cause operating interruptions. The overvoltage (also called transients) can be generated by switching electrical equipment on or off or by lightning discharges. Devices designed to protect electrical equipment from these voltages are called SPDs (Surge Protection Devices). SPDs may consist of either a single component or a combination of them. Various components may be subdivided in use by the protection type offered:

- Coarse protection
- Medium protection
- Fine protection.

The boundaries between these levels of protection may not be sharply defined, leading the devices chosen to vary accordingly. The following components have proven performance in these applications:

### Gas-filled surge arresters and spark gaps

The gas filled surge arrester is comprised of two electrodes in a ceramic or glass tube filled with a pressurized inert gas. A spark gap is simply two electrodes in air, spaced a predetermined distance apart.



Once the ignition voltage is reached, resistance drops due to ionization and current begins to flow. The resistance of the device drops from high to low as it conducts. The voltage across the device after the arc is struck is typically 10 V ... 30 V. Therefore, the current will continue to flow until the voltage drops below this level. As this is not a guaranteed occurrence in typical power situations, a fuse must precede the device to ensure disconnection from the supply.

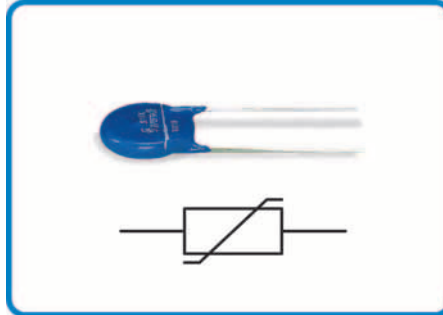
The advantage of a gas-filled arrester: high current carrying capacity for its size. However, the key disadvantages: slow response speed and in AC applications, the crowbar action across the supply.

### Varistor

A varistor is a voltage-dependent resistor. A common type of varistor is referred to as an MOV (Metal Oxide Varistor) due to its method of construction.

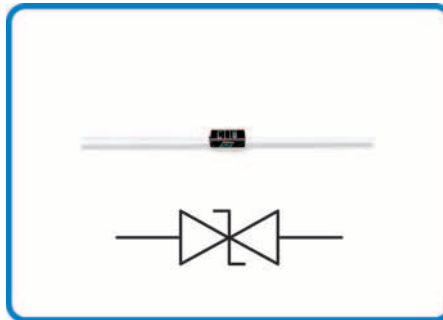
Varistors have a very high resistance until their threshold voltage is exceeded. Then they drop to a low resistance and are capable of carrying high currents for a short period of time. They have a fast response time, and have a current carrying capacity dependent on the surface area of metal oxide material. MOVs can be sized to handle currents exceeding of 100 kA.

Undersized varistors can age with continued



surge conduction, resulting in lower impedance and higher leakage. When subjected to continuous (AC or DC) voltages in excess to the device rating, MOVs can overheat, and even explode, in certain circumstances. This is why a quality surge protection device is important, it will incorporate protective measures to disconnect faulty components before safety is compromised.

### Suppression diode (or silicon avalanche diode)

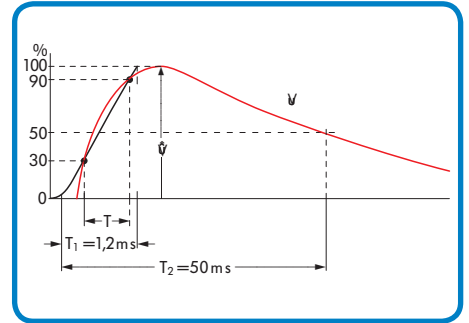


These devices have electrical characteristics similar to Zener diodes, but are rated for surge currents.

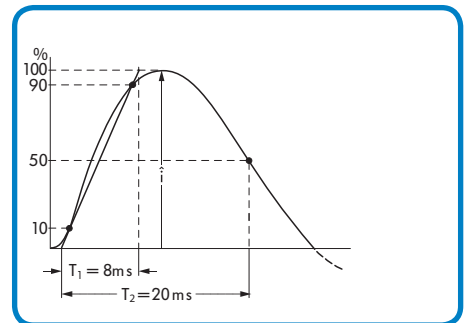
Once the rated breakdown voltage is exceeded (in the non-conductive direction), the diode becomes a conductor. The suppressor diode differs from a Zener in its higher current carrying capability and faster response time (in the picosecond range).

### Test impulse

Surge arresters are subject to standardized test pulses in order to classify capabilities; the effectiveness of protection measures with reference to dissipation capacity and voltage arresting. The form and level of the test pulses are defined by IEC 60060-1/DIN VDE 0432, part 2. Preference is given to voltage pulses of 1.2/50 and current pulses of 8/20.



Voltage pulses 1.2 /50 per IEC 60060-1 /DIN VDE 0432 P. 2



Current pulses 8 /20 per IEC 60060-1 /DIN VDE 0432 P. 2

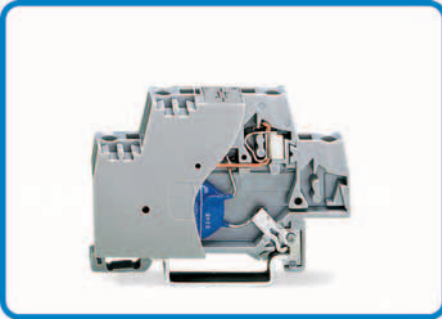
### Application recommendations

The advantages of gas-filled surge arresters lie in their high current carrying capacity, making them ideal for coarse protection. One disadvantage, particularly in the medium protection range, is the relatively long response time, as well as the power follow current. Varistors have a considerably shorter response time; however they also have lower leakage currents. This makes them more suitable for medium protection, as they offer limited applications for coarse protection. If the connection lines of electronic equipment are already "fine" protected, general coarse and medium protection measures are sufficient. If this is not the case, suppressor diodes with very short response time may be employed as fine protection.

WAGO AUTOMATION offers a complete range of modular terminal blocks with integrated surge arresters for coarse, medium and fine protection.

Depending on the application, one can choose the appropriate type from the previously mentioned surge arresters. These are electrically connected in the modular terminal blocks between the connection point and the mounting rail. Snapping the terminal block onto the grounded (earthed) mounting rail automatically ensures the required overvoltage protection.





Double-deck terminal block with varistor, direct connection to the DIN 35 rail

Frequently, only one surge arrester is fitted for cost reasons. However, due to the fact that one surge arrester alone cannot optimally ensure several protection functions, combinations are recommended. Care must be taken to ensure that the single-stage protection devices are decoupled sufficiently by inductors or resistors.

In addition to single-stage surge arresters, WAGO AUTOMATION also offers multi-stage surge arresters, combining components for different applications. These pluggable modules are snapped into "carrier" terminal blocks. These are DIN rail-mounted and offer secure and maintenance-free CAGE CLAMP® terminations for conductors 0.08mm<sup>2</sup>/AWG 28 to 2.5mm<sup>2</sup>/AWG 14.



Pluggable surge suppression modules with on-unit warnings

Addition of interference suppression to surge suppression devices. In addition to overvoltage protection, a high frequency interference filter can be added to the circuitry. This filter cannot only protect the equipment from high frequency energy transmitted by connecting wires, but also prevents a transmission of disturbances to the supply lines. The main component of a filter is an LC network, which produces a mismatch between the filter impedance and the impedance of the disturbance path. This reflects any disturbance back to its source.

**Definition of several important technical terms**

**Nominal operating voltage (V<sub>BN</sub>)**

The nominal operating voltage corresponds to the voltage which may be permanently connected to the appropriate connection terminals of the overvoltage protection module. Alternating voltages are quoted as effective values.

**Max. operating voltage (V<sub>Bmax</sub>)**

The maximum operating voltage corresponds to the voltage which may be permanently connected to the appropriate connection terminals without the operating properties changing or activating the individual module's protection elements.

**Nominal current (I<sub>N</sub>)**

The nominal current corresponds to the current which may permanently flow through the connection terminals of the overvoltage protection device.

**Nominal discharge current (I<sub>SN</sub>)**

The nominal discharge current is the maximum value of a current having the 8/20 μs waveform (DIN VDE 0432/10.78 part 3), which can flow through the surge arrester five times within a time period of 30 seconds (VDE) without destroying it.

**Max. surge current (I<sub>Smax</sub>)**

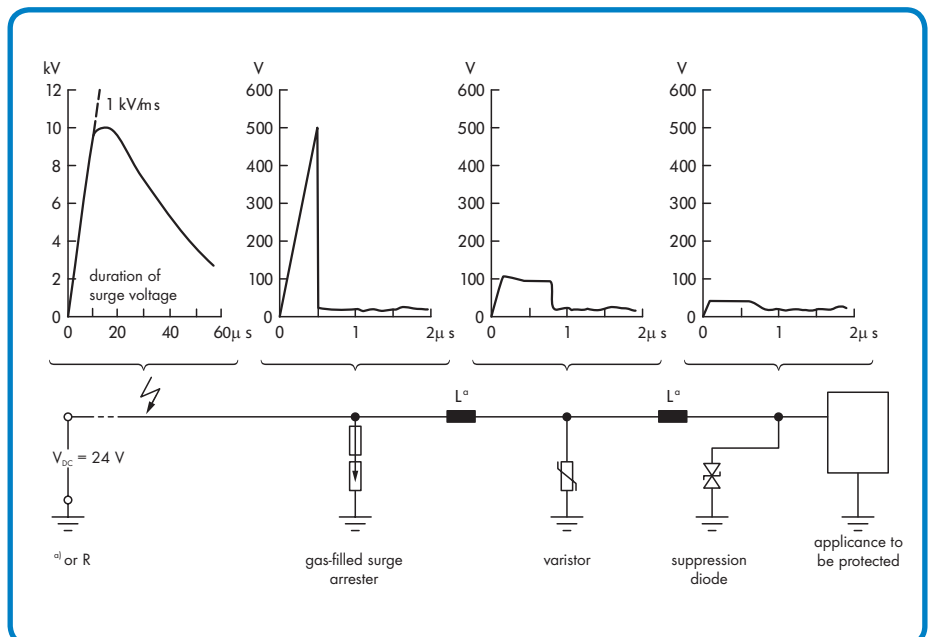
The maximum surge current I<sub>Smax</sub> defines the maximum value of a current having the 8/20μs waveform, which can flow through the surge arrester once without destroying it.

**Protection level**

The protection level is the value of the residual voltage occurring on the "protected" side of the surge arrester when applying the rated discharge current.

**Response time (t<sub>an</sub>)**

The response time is primarily based on the physical properties of the surge arresters and is dependent upon the wave front duration of the surge voltage. WAGO's data refers to a voltage rise of 1 kV/μs.

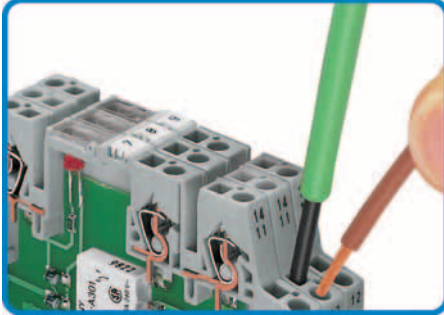


Function diagram of a multi-stage surge voltage protection module

## Installation Notes

### 859 Series

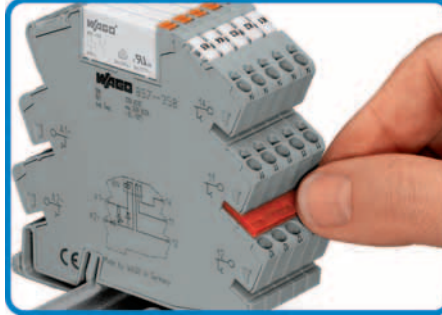
Relay Modules and  
Optocoupler Modules



Connection of conductor

### 857 Series

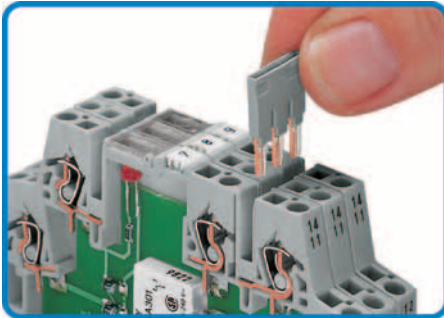
JUMPFLEX® - Signal Conditioners /  
Relay and Optocoupler Modules



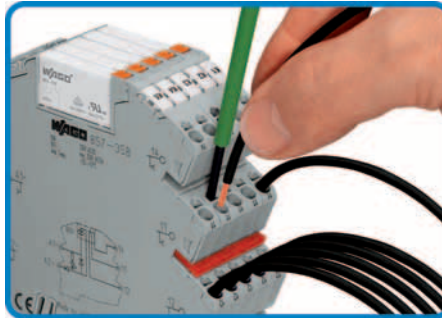
Connection of conductor



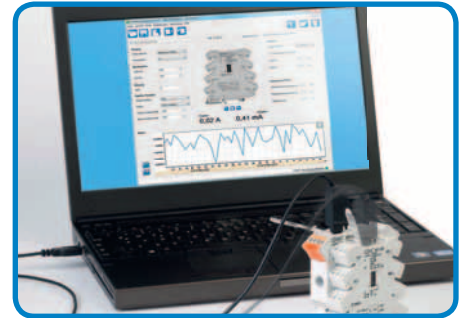
Operation of the relay ejector



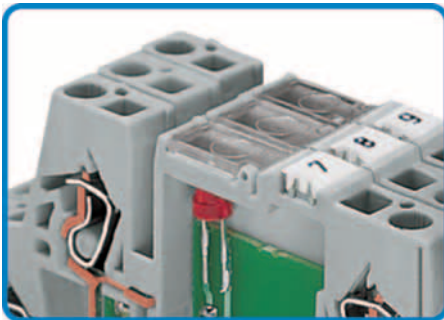
Easy commoning using  
adjacent jumpers



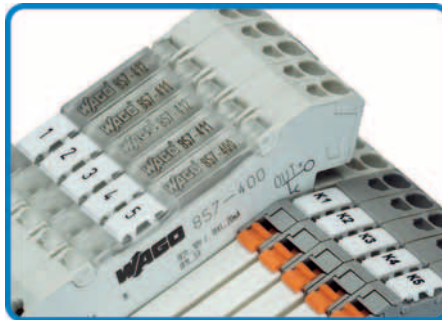
Easy commoning using  
adjacent jumpers



Configuration of the Transducers with  
WAGO-USB-Service-Cable 750-923



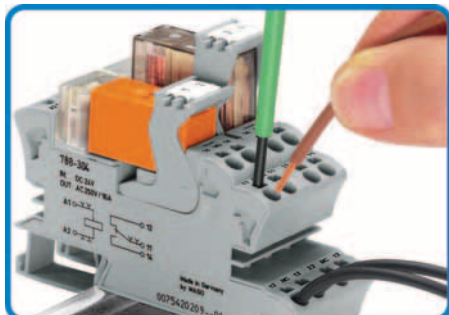
Marking using Miniature quick  
marking card



Marking using WMB Multi markers



**788 Series**  
Sockets for Miniature Switching Relay /  
Optocoupler

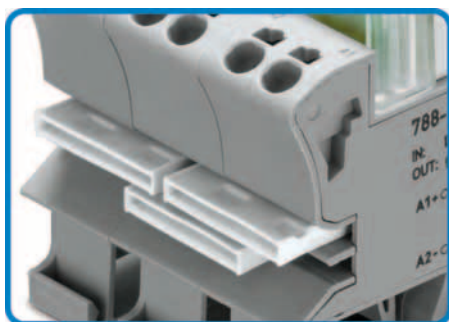


Connection of conductor

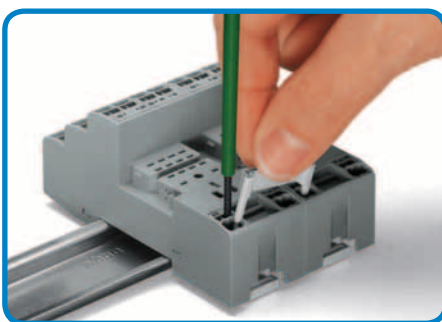
**858 Series**  
Sockets with Industrial Relay



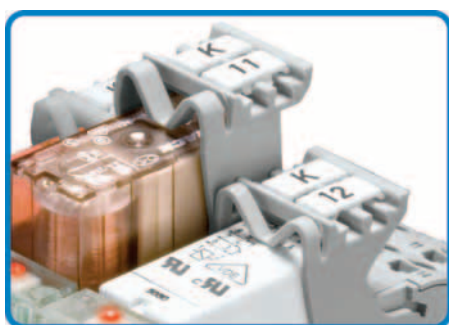
Easy commoning using  
adjacent jumpers



Easy commoning using  
adjacent jumpers



Remove jumper with screwdriver

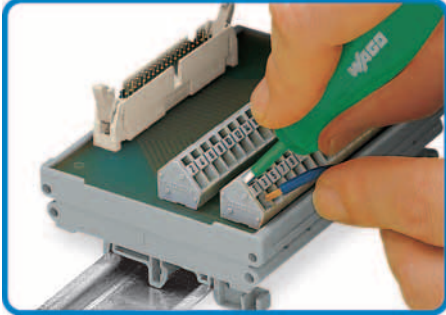


Marking using WMB Multi markers and  
group marker carriers

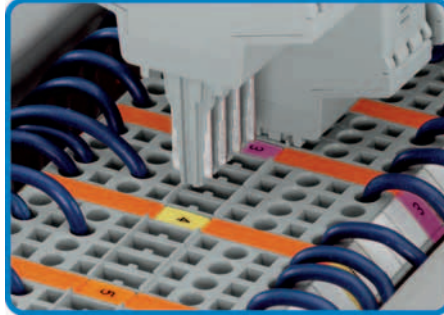
### 287 / 288 Series Mounting Carriers with Miniature Switching Relay

### 286 / 786 Series Pluggable Function Modules

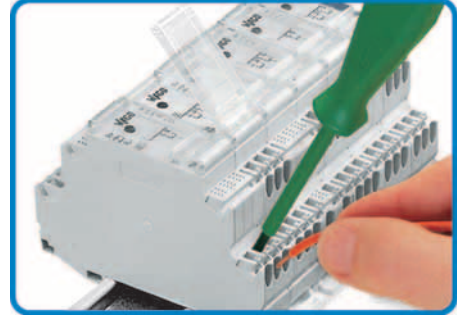
### 789 Series Relay Modules in DIN-Rail Mounted Enclosure



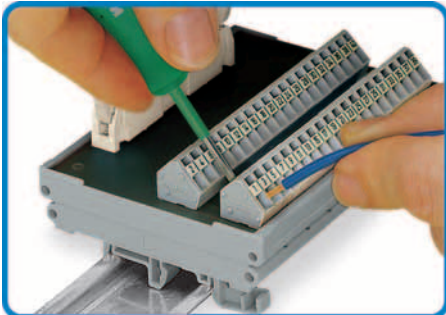
Connection of conductor "front-entry"



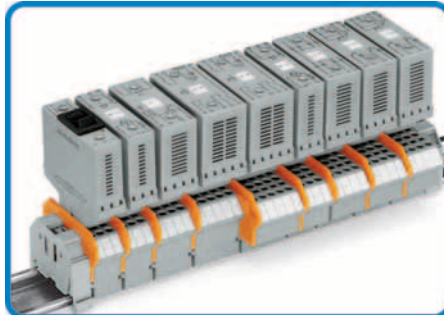
Coding ensures correct polarity



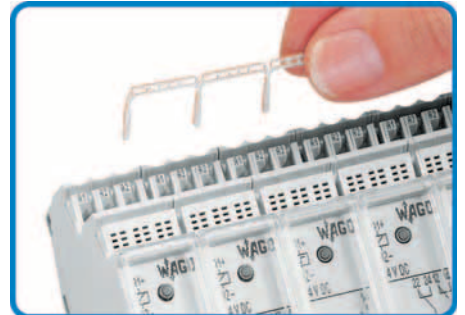
Connection of conductor



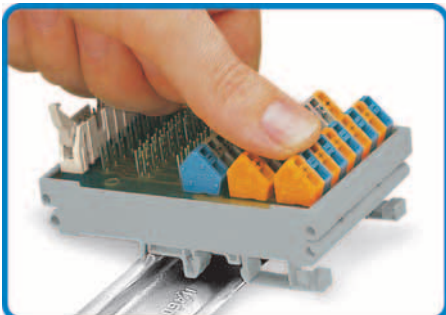
Connection of conductor "side-entry"



Pluggable electronic modules, for application on 2- or 4-conductor carrier terminal blocks



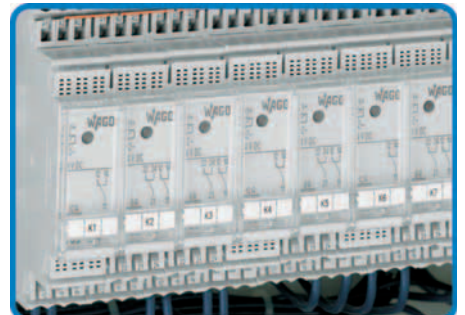
Easy commoning using adjacent jumpers



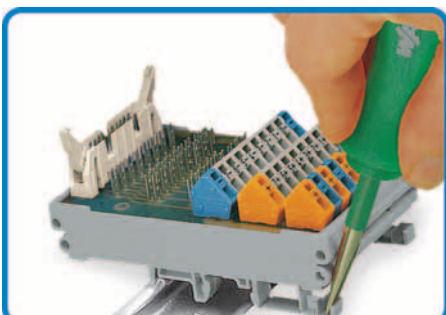
Assembly of a module on the carrier rail



Marking using WMB Multi markers



Marking using Miniature quick marking card



Removal of a module from the carrier rail

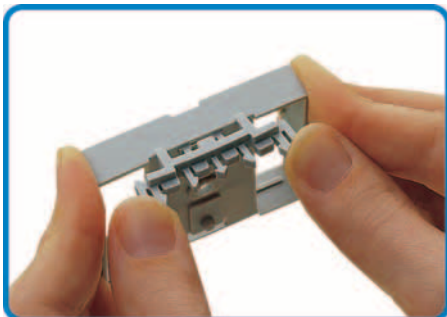


Easy testing at touchproof contacts

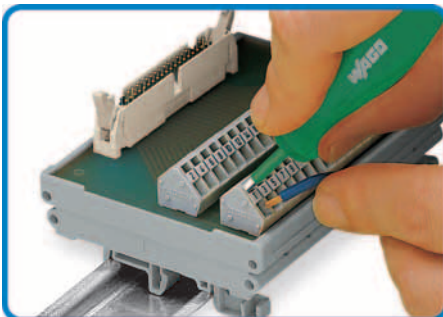
289 Series Interface Modules

289 Series Interface Modules

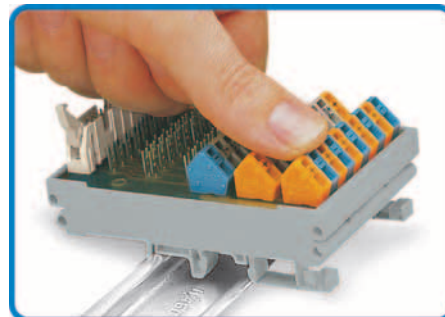
289 Series Interface Modules



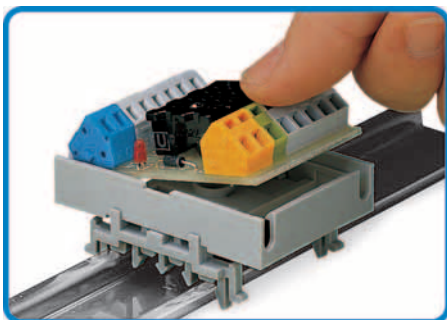
Mounting carrier, gray, snap-fit mounting of universal mounting feet



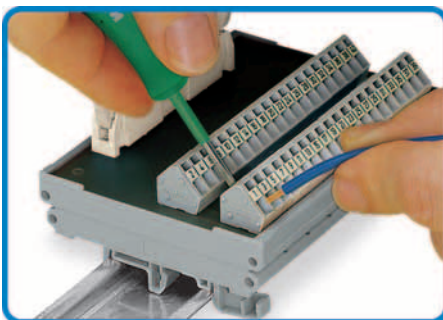
Connection of conductor "front-entry"



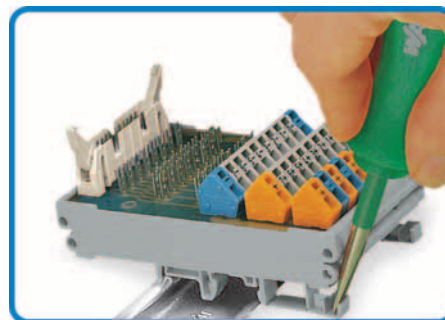
Assembly of a module on the carrier rail



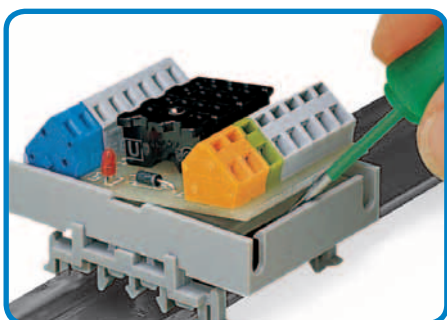
Fitting of an individual module to the mounting carrier



Connection of conductor "side-entry"



Removal of a module from the carrier rail



Removal of an individual module from the mounting carrier





Conditioning  
1st Floor 2nd Floor 3rd Floor

Ventilation  
Left Right

HF115FP  
m-24VDC

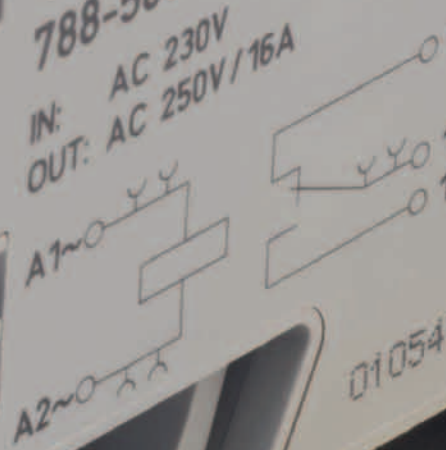
HF115FP  
m-24VDC

HF115FP  
m-24VDC

1st Floor 2nd Floor 3rd Floor  
Lighting

A2 A1 A2 A1 A2 A1 A2 A1 A2 A1

788-508  
IN: AC 230V  
OUT: AC 250V / 16A



010547



## Relay Sockets with Miniature Switching Relay, 857 Series

Relay Sockets with Miniature Switching Relay	26 – 29
Multifunction Time Relays	30 – 32
Accessories, 857 Series	33 – 35



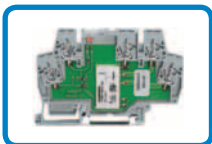
## Relay Sockets with Miniature Switching Relay, 788 Series

Relay Sockets with Miniature Switching Relay	36 – 48
Accessories, 788 Series	50 – 55



## Relay Sockets with Industrial Relay, 858 Series

Relay Sockets with Industrial Relay	56 – 60
Accessories, 858 Series	61 – 65



## Rail-Mounted Terminal Blocks with Miniature Switching Relay, 859 Series

Rail-Mounted Terminal Blocks with Miniature Switching Relay	66 – 70
Rail-Mounted Terminal Blocks with Miniature Switching Relay, with an Extended Input Voltage and Operating Temperature Range	71
Accessories, 859 Series	72



## Mounting Carriers with Miniature Switching Relay, 287/288 Series

Mounting Carriers with Miniature Switching Relay	74 – 81
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## Pluggable Modules – Relays , 286 Series

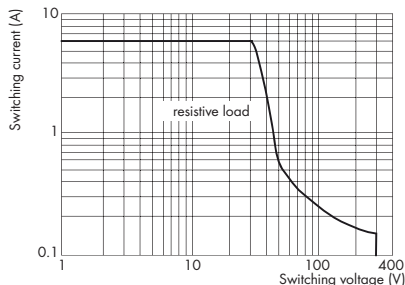
Pluggable Modules – Relays	82 – 90
Pluggable Modules – Relays with an Extended Input Voltage and Operating Temperature Range	91
Pluggable Modules – Latching Relays	92
Pluggable Modules – Time Relays	93 – 98
Accessories, 286 Series	99 – 100



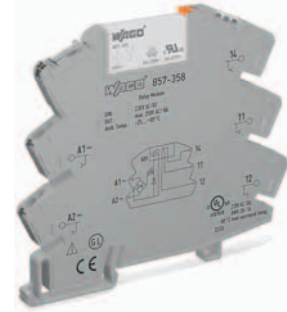
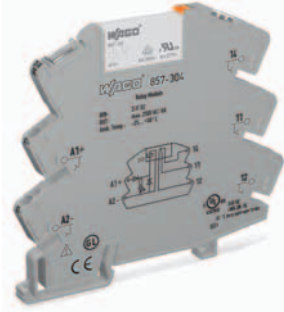
## Relay Modules in DIN-Rail Mounted Enclosure, 789 Series

Relay Modules in DIN-Rail Mounted Enclosure	101 – 113
Latching Relay Modules in DIN-Rail Mounted Enclosure	114
Accessories, 789 Series	115

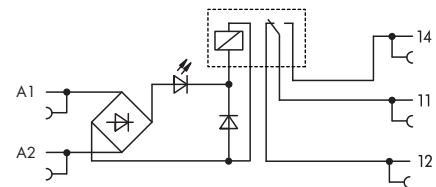
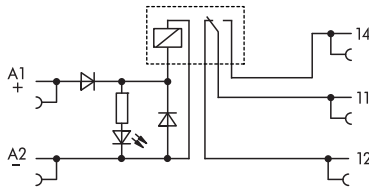
	<b>Relay with 1 changeover contact (1u) for normal switching power</b> <b>Nominal input voltage</b> $V_N$ 12 V, 24 V, 48 V, 60 V, 110 V, 220 V DC	<b>Relay with 1 changeover contact (1u) for normal switching power</b> <b>Nominal input voltage</b> $V_N$ 24 V, 115 V, 230 V AC/DC
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DC load limit curve



**Note:** Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.



Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Relay socket with miniature switching relay, for DIN 35 rail	12 V DC	17 mA	857-303	1	24 V AC/DC	8.5 mA	857-354	1
	24 V DC	10 mA	857-304	1	115 V AC/DC	4 mA	857-357	1
	48 V DC	6.5 mA	857-305	1	230 V AC/DC	3.5 mA	857-358	1
	60 V DC	5.2 mA	857-306	1				

**Technical Data**

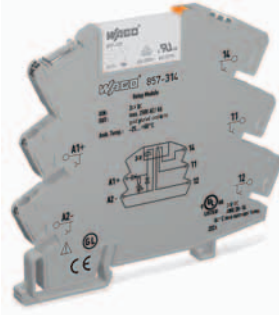
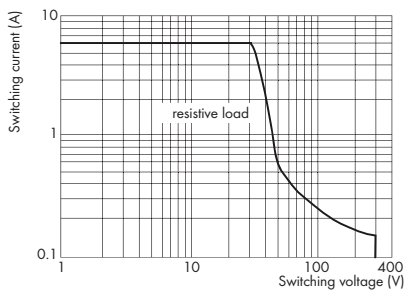
Accessories see pages 33 ... 35

Accessories see pages 33 ... 35

<b>Coil:</b>		
Input voltage range	$V_N$ -15 % ... +20 %	$V_N$ -15 % ... +20 % (857-354/857-357) $V_N$ -15 % ... +10 % (857-358)
<b>Contacts:</b>		
Contact material	AgNi	AgNi
Max. continuous current	6 A	6 A
Max. switching voltage	250 VAC	250 VAC
Max. switching power (resistive)	1500 VA AC; DC see load limit curve	1500 VA AC; DC see load limit curve
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA	10 VDC / 10 mA, 24 VDC / 1 mA
Pull-in/drop-out/bounce time typ.	8ms / 4ms / -	8ms / 4ms / -
Mechanical life	$5 \times 10^6$ switching operations	$5 \times 10^6$ switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	-
Ambient operating temperature at $V_N$	-40 °C ... +60 °C	-25 °C ... +60 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	6 x 81 x 94	6 x 81 x 94
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 ... 2.5 mm <sup>2</sup> / AWG 22 ... 14	0.34 ... 2.5 mm <sup>2</sup> / AWG 22 ... 14
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 60664-1; EN 61810-1; EN 61140; Ⓢ (857-304: Ⓢ)	EN 60664-1; EN 61810-1; Ⓢ (857-358: Ⓢ)

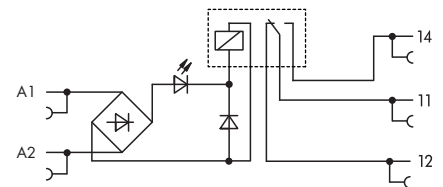
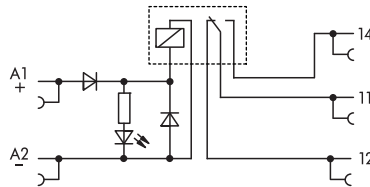


	<p><b>Relay with 1 changeover contact (1u) (gold contacts) for normal switching power Nominal input voltage V<sub>N</sub> 24 V DC</b></p>	<p><b>Relay with 1 changeover contact (1u) (gold contacts) for normal switching power Nominal input voltage V<sub>N</sub> 24 V, 115 V, 230 V AC/DC</b></p>
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DC load limit curve

\* In order to prevent the gold layer from being damaged, 30 VDC switching voltages and 50 mA currents shall not be exceeded. Higher switching power leads to evaporation of the gold layer. The resulting deposits in the housing may reduce the service life.



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Relay socket with miniature switching relay, for DIN 35 rail	24 V DC	10 mA	857-314	1	24 V AC/DC	8.5 mA	857-364	1
					115 V AC/DC	4 mA	857-367	1
					230 V AC/DC	3.5 mA	857-368	1

**Technical Data**

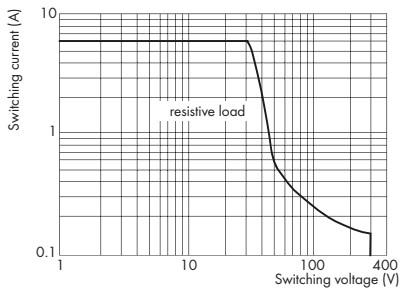
Accessories see pages 33 ... 35

Accessories see pages 33 ... 35

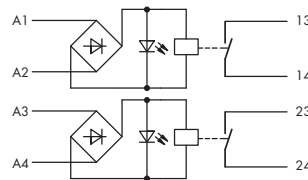
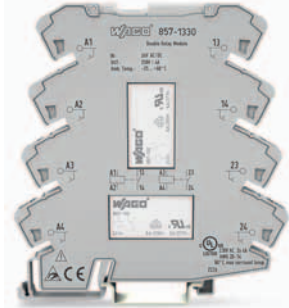
Coil:		
Input voltage range	V <sub>N</sub> -15 % ... +20 %	V <sub>N</sub> -15 % ... +20 % (857-364/857-367) V <sub>N</sub> -15 % ... +10 % (857-368)
<b>Contacts:</b>		
Contact material	AgNi + Au	AgNi + Au
Max. continuous current	6 A *	6 A *
Max. switching voltage	250 VAC *	250 VAC *
Max. switching power (resistive)	(1250 VA AC; DC see load limit curve)	1500 VA AC; DC see load limit curve *
Recommended minimum load	1 VDC / 1 mA / 1 mW, 24 VDC / 0.05 mA	1 VDC / 1 mA / 1 mW
Pull-in/drop-out/bounce time typ.	8ms / 4ms / -	8ms / 4ms / -
Mechanical life	5 x 10 <sup>6</sup> switching operations	5 x 10 <sup>6</sup> switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	-
Ambient operating temperature at V <sub>N</sub>	-25 °C ... +60 °C	-25 °C ... +60 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	6 x 81 x 94	6 x 81 x 94
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 ... 2.5 mm <sup>2</sup> / AWG 22 ... 14	0.34 ... 2.5 mm <sup>2</sup> / AWG 22 ... 14
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 60664-1; EN 61810-1; EN 61140; Ⓢ; (857-314: Ⓢ)	EN 60664-1; EN 61810-1; Ⓢ; (857-368: Ⓢ)



2 relays with 1 make contact (1 a)  
for normal switching power  
Nominal input voltage  
V<sub>N</sub> 24 V AC/DC



DC load limit curve



**Note:** Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.

Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Relay socket with miniature switching relay, for DIN 35 rail	24 V AC/DC	10 mA	857-1330	1

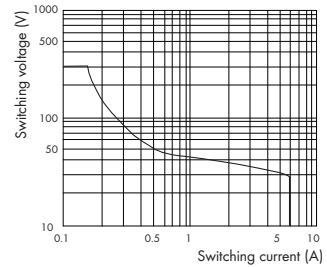
**Technical Data**

Accessories see pages 33 ... 35

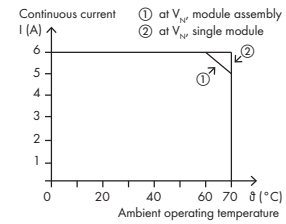
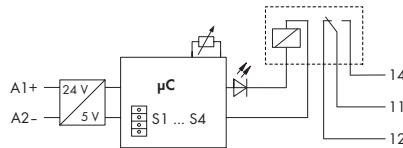
<b>Coil:</b>	
Input voltage range	V <sub>N</sub> -15 % ... +20 %
<b>Contacts:</b>	
Contact material	AgNi
Max. continuous current	4 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1000 VA AC; DC see load limit curve
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA
Pull-in/drop-out/bounce time typ.	8ms / 4ms / -
Mechanical life	5 x 10 <sup>6</sup> switching operations
<b>General specifications:</b>	
Nominal voltage to EN 60664-1	250 V / 4 kV / 2
Dielectric strength, contact-coil (AC, 1 min)	2.5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	
Ambient operating temperature at V <sub>N</sub>	-25 °C ... +60 °C
Storage temperature	-40 °C ... +85 °C
Dimensions (mm) W x H x L	6 x 96 x 94
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 ... 2.5 mm <sup>2</sup> / AWG 22 ... 14
Strip length	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 60664-1; EN 61810-1

	<b>Multifunction time relay with 1 changeover contact (1u)</b> <b>4 time ranges, 4 functions</b> <b>Temperature range: -25 °C ... +70 °C</b> <b>For railway applications</b>	
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- 4 functions:
  - On-delay
  - Single-shot leading edge
  - On-delay and single-shot leading edge (1 s fixed)
  - Blinking
- Function and time range adjustable via DIP switch



DC load limit curve



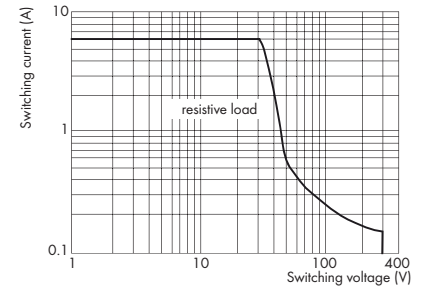
Derating

Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Multifunction time relay, for DIN 35 rail	24 VDC	17.5 mA	857-604	1

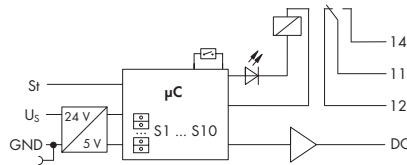
Technical Data		Accessories see pages 33 ... 35
<b>Coil:</b>		
Input voltage range	V <sub>N</sub> -30 % ... +30 %	
Power consumption at V <sub>N</sub>	17.5 mA (active) / 2.3 mA (passive)	
<b>Contacts:</b>		
Contact material	AgNi	
Max. continuous current	6 A	
Max. switching voltage	250 VAC	
Max. switching power (resistive)	1500 VA AC, DC see load curve	
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA	
Pull-in/drop-out/bounce time typ.	8ms / 4ms / -	
Mechanical life	5 x 10 <sup>6</sup> switching operations	
<b>General specifications:</b>		
Time range	adjustable: 0.1 ... 10 s; 3 ... 300 s; 0.3 ... 30 min; 3 ... 300 min	
Reset time	50 ms	
Repeat accuracy	±1 %	
Nominal voltage to EN 60664-1	250 V / 2.5 kV / 2	
Dielectric strength, contact-coil (AC, 1 min)	2.5 kV <sub>rms</sub>	
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	
Ambient operating temperature	-25 °C ... +70 °C	
Storage temperature	-40 °C ... +70 °C	
Dimensions (mm) W x H x L	6 x 81 x 94	
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S	
Cross sections	0.34 ... 2.5 mm <sup>2</sup> / AWG 22 ... 14	
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	
Standards/specifications	EN 60664-1; EN 61812-1; EN 61373; EN50121-3-2	
Approvals	CE	

	<b>Multifunction time relay with 1 changeover contact (1u)</b> <b>8 time ranges, 14 functions</b> <b>Temperature range: -25 °C ... +70 °C</b> <b>For railway applications</b>	
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- 14 functions:
  - On-delay
  - On-delay with control input
  - Off-delay with control input
  - On- and off-delay with control input
  - Single-shot leading edge
  - Single-shot leading edge with control input
  - Single-shot trailing edge with control input
  - Single-shot leading and trailing edge with control input
  - On-delay and single-shot leading edge
  - On-delay and single-shot leading edge with control input
  - Step switching
  - Blinking, pulse start
  - Blinking, interval start
  - Relay switching
- Function and time range adjustable via DIP switch
- Digital output (DO): max. 31.2 VDC, 100 mA
- Control input: max. 31.2 VDC, min. pulse length 10 ms



DC load limit curve



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
<b>Multifunction time relay, for DIN 35 rail</b>	24 VDC	18 mA	<b>857-640</b>	1

**Technical Data**

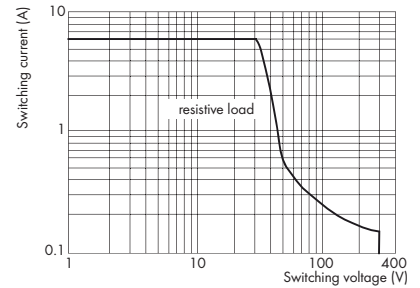
Accessories see pages 33 ... 35

<b>Coil:</b>	
Input voltage range	V <sub>N</sub> -30 % ... +30 %
Power consumption at V <sub>N</sub>	18 mA (active) / 4.5 mA (passive)
<b>Contacts:</b>	
Contact material	AgNi
Max. continuous current	6 A (up to 60 °C) 2 A (60 °C ... 70 °C)
Max. switching voltage	250 VAC
Max. switching power (resistive)	1500 VA AC, DC see load curve
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA
Pull-in/drop-out/bounce time typ.	8ms / 4ms / -
Mechanical life	5 x 10 <sup>6</sup> switching operations
<b>General specifications:</b>	
Time range	adjustable: 0.01 ... 0.1 s; 0.1 ... 1 s; 1 ... 10 s; 10 ... 100 s; 1 ... 10 min; 10 ... 100 min; 1 ... 10 h; 10 ... 100 h
Reset time	50 ms
Nominal voltage to EN 60664-1	250 V / 2.5 kV / 2
Dielectric strength, contact-coil (AC, 1 min)	2.5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +70 °C
Dimensions (mm) W x H x L	6 x 96 x 94
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 ... 2.5 mm <sup>2</sup> / AWG 22 ... 14
Strip length	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 60664-1; EN 61812-1; EN 61373; EN50121-3-2
Approvals	CE

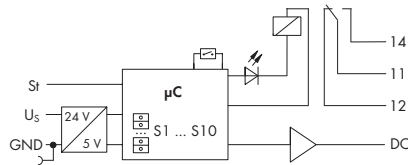


	<b>Multifunction time relay with 1 changeover contact (1u)</b> <b>8 time ranges, 7 functions</b> <b>2 adjustable time ranges</b> <b>Temperature range: -25 °C ... +70 °C</b> <b>For railway applications</b>	
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- 7 functions:
  - On- and off-delay with control input
  - On-delay and single-shot leading edge
  - On-delay and single-shot leading edge with control input
  - Single-shot leading and trailing edge with control input
  - Pulse sequence evaluation with control input
  - Repeat cycle timer, pulse start
  - Repeat cycle timer, interval start, control input
- 2 separately adjustable time ranges
- Function and time range adjustable via DIP switch
- Digital output (DO): max. 31.2 VDC, 100 mA
- Control input: max. 31.2 VDC, min. pulse length 10 ms



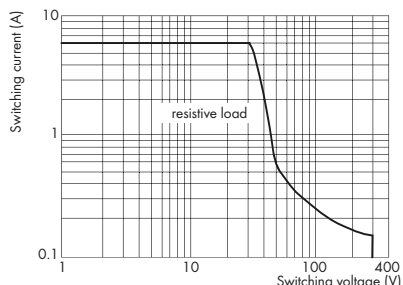
DC load limit curve



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
<b>Multifunction time relay, for DIN 35 rail</b>	24 VDC	18 mA	<b>857-642</b>	1

Technical Data		Accessories see pages 33 ... 35
<b>Coil:</b>		
Input voltage range	V <sub>N</sub> -30 % ... +30 %	
Power consumption at V <sub>N</sub>	18 mA (active) / 4.5 mA (passive)	
<b>Contacts:</b>		
Contact material	AgNi	
Max. continuous current	6 A (up to 60 °C) 2 A (60 °C ... 70 °C)	
Max. switching voltage	250 VAC	
Max. switching power (resistive)	1500 VA AC, DC see load curve	
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA	
Pull-in/drop-out/bounce time typ.	8ms / 4ms / -	
Mechanical life	5 x 10 <sup>6</sup> switching operations	
<b>General specifications:</b>		
Time range	adjustable: 0.01 ... 0.1 s; 0.1 ... 1 s; 1 ... 10 s; 10 ... 100 s; 1 ... 10 min; 10 ... 100 min; 1 ... 10 h; 10 ... 100 h	
Reset time	50 ms	
Nominal voltage to EN 60664-1	250 V / 2.5 kV / 2	
Dielectric strength, contact-coil (AC, 1 min)	2.5 kV <sub>rms</sub>	
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	
Ambient operating temperature	-25 °C ... +70 °C	
Storage temperature	-40 °C ... +70 °C	
Dimensions (mm) W x H x L	6 x 96 x 94	
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S	
Cross sections	0.34 ... 2.5 mm <sup>2</sup> / AWG 22 ... 14	
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	
Standards/specifications	EN 60664-1; EN 61812-1; EN 61373; EN50121-3-2	
Approvals	CE	

	<b>Pluggable miniature switching relays 1 changeover contact</b>	<b>Pluggable miniature switching relays 1 changeover contact (gold contacts)</b>
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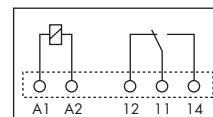
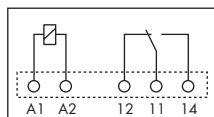


DC load limit curve



\* In order to prevent the gold layer from being damaged, 30 VDC switching voltages and 50 mA currents shall not be exceeded.

Higher switching power leads to evaporation of the gold layer. The resulting deposits in the enclosure may cause sparkovers between the coil and the contact.

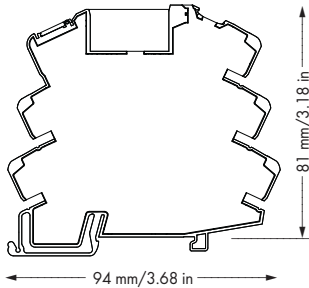


Description	V <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	Item No.	Pack. Unit
<b>Pluggable miniature switching relays</b>	12 V DC	<b>857-150</b>	20			
	24 V DC	<b>857-152</b>	20	24 V DC	<b>857-153</b>	20
	48 V DC	<b>857-154</b>	20			
	60 V DC	<b>857-155</b>	20	60 V DC	<b>857-157</b>	20
The 60 V DC replacement relays must be used with 60 V DC, 110 V DC, 220 V DC and 115 V AC/DC, 230 V AC/DC relay modules.						

### Technical Data

Contacts:		
Contact material	AgNi	AgNi + Au
Max. continuous current	6 A	6 A *
Max. switching voltage	250 VAC	250 VAC *
Max. switching power (resistive)	1500 VA AC; DC see load limit curve	1500 VA AC; DC see load limit curve *
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA	1 VDC / 1 mA / 1 mW
Pull-in/drop-out/bounce time typ.	8ms / 4ms / -	8ms / 4ms / -
Mechanical life	5 x 10 <sup>6</sup> switching operations	5 x 10 <sup>6</sup> switching operations
<b>General specifications:</b>		
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	-
Ambient operating temperature at V <sub>N</sub>	-40 °C ... +85 °C	-40 °C ... +85 °C
Storage temperature	-40 °C ... +85 °C	-40 °C ... +85 °C
Relative humidity	5 % ... 85 %	5 % ... 85 %
Dimensions (mm) W x H x L	5 x 15 x 28	5 x 15 x 28

	<b>Sockets for miniature switching relay and SSR</b>	
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Description	Item No.	Pack. Unit
Socket for miniature switching relay and SSR, 24 V AC/DC for DIN 35 rail	857-104	1
Socket for miniature switching relay and SSR, 110 V AC/DC for DIN 35 rail	857-107	1
Socket for miniature switching relay and SSR, 230 V AC/DC for DIN 35 rail	857-108	1

Technical Data		
Status indication	LED yellow	
Operating temperature	-25 °C ... +70 °C	
Storage temperature	-40 °C ... +70 °C	
Dimensions (mm) W x H x L	6 x 81 x 94	
Wire connection	Height from upper edge of DIN 35 rail CAGE CLAMP® S	
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12	
Strip length	9 ... 10 mm / 0.37 in	
Approvals		

Assignment Socket / Replacement Relay / Replacement Optocoupler				
	Input Voltage	Item No.	Socket	Replacement Relays or Optocouplers
Miniature Switching Relays	12 V DC	857-303	857-103	857-150
	24 V DC	857-304	857-104	857-152
	48 V DC	857-305	857-105	857-154
	60 V DC	857-306	857-106	857-155
	110 V DC	857-307	857-107	857-155
	220 V DC	857-308	857-108	857-155
	24 V AC/DC	857-354	857-104	857-152
	115 V AC/DC	857-357	857-107	857-155
	230 V AC/DC	857-358	857-108	857-155
	Miniature Switching Relays (gold contacts)	24 V DC	857-314	857-104
110 V DC		857-317	857-107	857-157
220 V DC		857-318	857-108	857-157
24 V AC/DC		857-364	857-104	857-153
115 V AC/DC		857-367	857-107	857-157
230 V AC/DC		857-368	857-108	857-157
24 V DC		857-704	857-104	857-164
Solid State Relays	115 V AC/DC	857-707	857-107	857-165
	230 V AC/DC	857-708	857-108	857-165
	24 V DC	857-714	857-104	857-167
	115 V AC/DC	857-717	857-107	857-168
	230 V AC/DC	857-718	857-108	857-168
	24 V DC	857-724	857-104	857-161
	115 V AC/DC	857-727	857-107	857-162
	230 V AC/DC	857-728	857-108	857-162

Push-in type jumper bar



Commoning



Description		Item No.	Pack. Unit
Push-in type jumper bars, light gray, insulated, 18 A	2-way	859-402	200 (8x25)
	3-way	859-403	200 (8x25)
	4-way	859-404	200 (8x25)
	5-way	859-405	200 (8x25)
	6-way	859-406	100 (4x25)
	7-way	859-407	100 (4x25)
	8-way	859-408	100 (4x25)
	9-way	859-409	100 (4x25)
	10-way	859-410	100 (4x25)
	Item no. suffix for colored push-in type jumper bars	yellow	... /000-029
red		... /000-005	
blue		... /000-006	
Comb-style jumper bar, insulated	2-way	281-482	100

WMB Multi marking system



Marking



Description		Item No.	Pack. Unit
WMB Multi marking system	plain	793-501	5 cards
Marking software and printer/plotter see Section 11			
Marking	1 ... 10 (10x)	793-502	5 cards
	11 ... 20 (10x)	793-503	5 cards
	21 ... 30 (10x)	793-504	5 cards
	31 ... 40 (10x)	793-505	5 cards
	41 ... 50 (10x)	793-506	5 cards
	1 ... 50 (2x)	793-566	5 cards
10 strips with 10 markers, white with black printing			

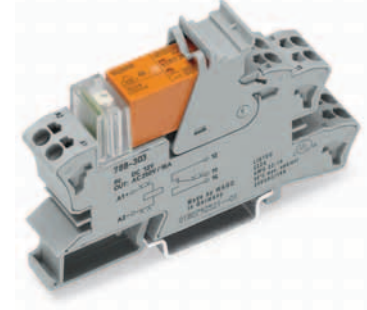
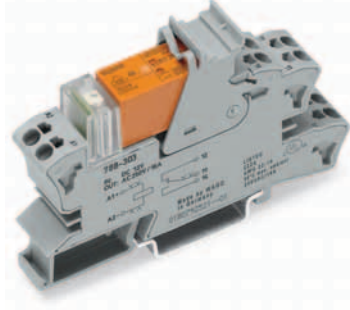
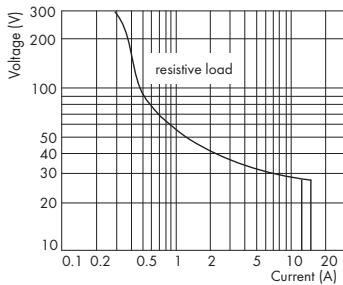
Operating tool



Description		Item No.	Pack. Unit
Operating tool, with partially insulated shaft	Type 2, blade (3.5 x 0.5) mm	210-720	1

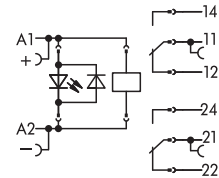
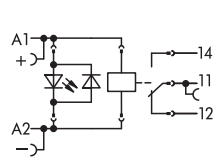
**Relay with 1 changeover contact and status indication**  
 (Relay height: 15 mm)  
 Nominal input voltage  $V_N$   
 12 V, 24 V, 48 V, 60 V, 110 V DC

**Relay with 2 changeover contact and status indication**  
 (Relay height: 15 mm)  
 Nominal input voltage  $V_N$   
 12 V, 24 V, 48 V, 60 V, 110 V DC



Load limit curve for 788-303 to 788-307, 788-506, 788-507 and 788-508

**Note:** Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.

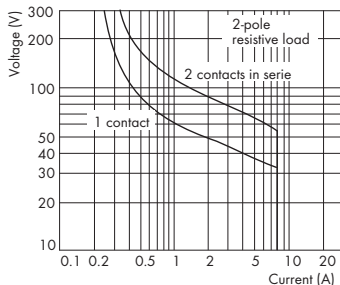


Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Relay socket with miniature switching relay, for DIN 35 rail	12 V DC	36 mA	<b>788-303</b>	1	12 V DC	36 mA	<b>788-311</b>	1
	24 V DC	19.1 mA	<b>788-304</b>	1	24 V DC	19.1 mA	<b>788-312</b>	1
	48 V DC	11 mA	<b>788-305</b>	1	48 V DC	11 mA	<b>788-313</b>	1
	60 V DC	10.5 mA	<b>788-306</b>	1	60 V DC	10.5 mA	<b>788-314</b>	1
	110 V DC	6 mA	<b>788-307</b>	1	110 V DC	6 mA	<b>788-315</b>	1

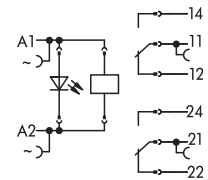
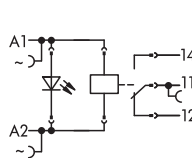
Technical Data	Accessories see pages 50 ... 55	
<b>Coil:</b>		
Input voltage range	$V_N \pm 10\%$	$V_N \pm 10\%$
<b>Contacts:</b>		
Contact material	AgNi 90/10	AgNi 90/10
Max. continuous current	16 A	2 x 8 A
Max. make current	4 s 30 A (AC)	4 s 15 A (AC)
Max. switching voltage	250 V AC	250 V AC
Max. switching power (resistive)	4 kVA AC, DC see load limit curve	2 x 2 kVA AC, DC see load limit curve
Recommended minimum load	12 VDC / 10 mA	12 VDC / 10 mA
Pull-in/drop-out/bounce time typ.	8ms / 6ms / 6 ms	8ms / 6ms / 10 ms
Mechanical life	30 x 10 <sup>6</sup> switching operations	30 x 10 <sup>6</sup> switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>	5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	2.5 kV <sub>eff</sub>
Ambient operating temperature at $V_N$	-25 °C ... +50 °C	-25 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	15 x 54 x 86	15 x 54 x 86
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 60664-1; EN 61810-5; EN 61810-1; UL 508 (788-307: UL 508, max. 40 °C/10 A)	EN 61140; EN 50178; UL 508 (788-315: UL 508, max. 40 °C)



	<b>Relay with 1 changeover contact and status indication</b> (Relay height: 15 mm) Nominal input voltage $V_N$ 24 V, 115 V, 230 V AC	<b>Relay with 2 changeover contact and status indication</b> (Relay height: 15 mm) Nominal input voltage $V_N$ AC 24 V, 115 V, 230 V
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Load limit curve for 788-311 to 788-315, 788-512, 788-515 and 788-516



Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Relay socket with miniature switching relay, for DIN 35 rail	24 V AC	34 mA	<b>788-506</b>	1	24 V AC	34 mA	<b>788-512</b>	1
	115 V AC	8 mA	<b>788-507</b>	1	115 V AC	8 mA	<b>788-515</b>	1
	230 V AC	3.5 mA	<b>788-508</b>	1	230 V AC	3.5 mA	<b>788-516</b>	1

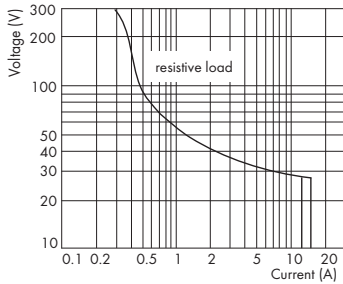
**Technical Data**

Accessories see pages 50 ... 55

Accessories see pages 50 ... 55

Coil:		
Input voltage range	$V_N \pm 10\%$	$V_N \pm 10\%$
<b>Contacts:</b>		
Contact material	AgNi 90/10	AgNi 90/10
Max. continuous current	16 A	2 x 8 A
Max. make current	4 s 30 A (AC)	4 s 15 A (AC)
Max. switching voltage	250 V AC	250 V AC
Max. switching power (resistive)	4 kVA AC, DC see load limit curve	2 x 2 kVA AC, DC see load limit curve
Recommended minimum load	12 VDC / 10 mA	12 VDC / 10 mA
Pull-in/drop-out/bounce time typ.	8ms / 6ms / 6 ms	8ms / 6ms / 10 ms
Mechanical life	10 x 10 <sup>6</sup> switching operations	5 x 10 <sup>6</sup> switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>	5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	2.5 kV <sub>eff</sub>
Ambient operating temperature at $V_N$	-25 °C ... +50 °C	-25 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	15 x 54 x 86	15 x 54 x 86
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 61140; EN 50178; Ⓢ; UL 508 (788-507, 788-508: UL 508, max. 40 °C/10 A)	EN 61140; EN 50178; UL 508; Ⓢ

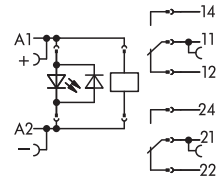
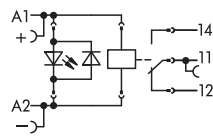
	<b>Relay with 1 changeover contact with gold contacts and and status indication (Relay height: 15 mm)</b> <b>Nominal input voltage <math>V_N</math> 24 V DC</b>	<b>Relay with 2 changeover contact with gold contacts and and status indication (Relay height: 15 mm)</b> <b>Nominal input voltage <math>V_N</math> 24 V DC</b>
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Load limit curve for 788-404, 788-607 and 788-608

\* In order to prevent the gold layer from being damaged, 30 VDC switching voltages and 50 mA currents shall not be exceeded.

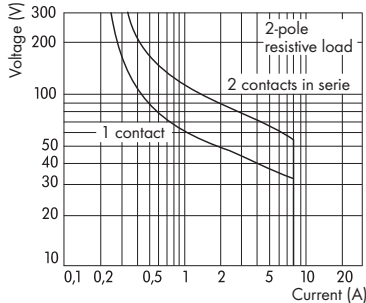
Higher switching power leads to evaporation of the gold layer. The resulting deposits in the enclosure may cause sparkovers between the coil and the contact.



Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Relay socket with miniature switching relay, for DIN 35 rail	24 V DC	19 mA	788-404	1	24 V DC	17 mA	788-412	1

Technical Data	Accessories see pages 50 ... 55				Accessories see pages 50 ... 55			
<b>Coil:</b>								
Input voltage range	$V_N \pm 10 \%$				$V_N \pm 10 \%$			
<b>Contacts:</b>								
Contact material	AgNi + AU				AgNi + AU			
Max. continuous current	16 A *				2 x 8 A *			
Max. switching voltage	250 VAC *				250 VAC *			
Max. switching power (resistive)	4 kVA AC, DC see load limit curve *				2 x 2 kVA AC, DC see load limit curve *			
Recommended minimum load	5 V / 2 mA / 50 mW				5 V / 2 mA / 50 mW			
Pull-in/drop-out/bounce time typ.	7ms / 3ms / -				7ms / 3ms / -			
Mechanical life	$3 \times 10^7$ switching operations				$3 \times 10^7$ switching operations			
<b>General specifications:</b>								
Nominal voltage to EN 60664-1	250 V / 4 kV / 3				250 V / 4 kV / 3			
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>				5 kV <sub>rms</sub>			
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>				1 kV <sub>rms</sub>			
Dielectric strength contact-contact (AC, 1 min)	-				2.5 kV <sub>off</sub>			
Ambient operating temperature at $V_N$	-25 °C ... +50 °C				-25 °C ... +50 °C			
Storage temperature	-40 °C ... +70 °C				-40 °C ... +70 °C			
Dimensions (mm) W x H x L	15 x 54 x 86				15 x 54 x 86			
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S				Height from upper-edge of DIN 35 rail CAGE CLAMP® S			
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12				0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12			
Strip length	9 ... 10 mm / 0.35 ... 0.39 in				9 ... 10 mm / 0.35 ... 0.39 in			
Standards/specifications	EN 61140; EN 50178; UL 508				EN 61140; EN 50178; UL 508			

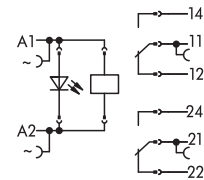
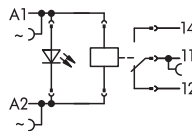
	<b>Relay with 1 changeover contact with gold contacts and status indication (Relay height: 15 mm)</b> <b>Nominal input voltage <math>V_N</math> 115 V, 230 V AC</b>	<b>Relay with 2 changeover contact with gold contacts and status indication (Relay height: 15 mm)</b> <b>Nominal input voltage <math>V_N</math> 115 V, 230 V AC</b>
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Load limit curve for 788-412, 788-615 und 788-616

\* In order to prevent the gold layer from being damaged, 30 VDC switching voltages and 50 mA currents shall not be exceeded.

Higher switching power leads to evaporation of the gold layer. The resulting deposits in the enclosure may cause sparkovers between the coil and the contact.



Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Relay socket with miniature switching relay, for DIN 35 rail	115 V AC	8.2 mA	<b>788-607</b>	1	115 V AC	8.2 mA	<b>788-615</b>	1
	230 V AC	5 mA	<b>788-608</b>	1	230 V AC	5 mA	<b>788-616</b>	1

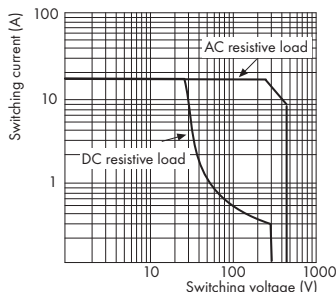
**Technical Data**

Accessories see pages 50 ... 55

Accessories see pages 50 ... 55

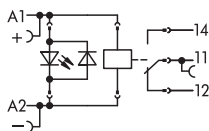
Coil:	$V_N \pm 10\%$	$V_N \pm 10\%$
Input voltage range	$V_N \pm 10\%$	$V_N \pm 10\%$
<b>Contacts:</b>		
Contact material	AgNi + AU	AgNi + AU
Max. continuous current	16 A *	2 x 8 A *
Max. switching voltage	250 VAC *	250 VAC *
Max. switching power (resistive)	4 kVA AC, DC see load limit curve *	2 x 2 kVA AC, DC see load limit curve *
Recommended minimum load	5 V / 2 mA / 50 mW	5 V / 2 mA / 50 mW
Pull-in/drop-out/bounce time typ.	7ms / 3ms / -	7ms / 3ms / -
Mechanical life	$3 \times 10^7$ switching operations	$3 \times 10^7$ switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>	5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	2.5 kV <sub>off</sub>	2.5 kV <sub>off</sub>
Ambient operating temperature at $V_N$	-25 °C ... +50 °C	-25 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	15 x 54 x 86	15 x 54 x 86
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 61140; EN 50178; UL 508	EN 61140; EN 50178; UL 508

**Relay with 1 changeover contact and status indication (15 mm high)**  
**Nominal input voltage  $V_N$  12 V, 24 V DC**



Contact life, type of load	Capability	Electrical life
Incandescent lamp	2200 W	20,000
Halogen lamp 230 VAC	1400 W	50,000
Halogen trafo	120 VA	20,000
Fluorescent lamp not comp., CCG ①, cos φ 0.406	20 x 58 W	25,000
Fluorescent lamp comp., CCG ①, C parallel	9 x 58 W	25,000
Fluorescent lamp comp., CCG ①, Duo-circuit	600 W	20,000
Fluorescent lamp with ECG ②	12 x 58 W	25,000
Energy saving lamp 15 W	25 pcs	20,000
Energy saving lamp 13 W	38 pcs	20,000
Energy saving lamp 9 W	38 pcs	20,000
Gas discharge lamp	1000 W	20,000

Load limit curve



Description	$V_N$	$I_N$	Item No.	Pack. Unit
Relay socket with miniature switching relay, for DIN 35 rail	12 VDC	35 mA	<b>788-353</b>	1
	24 VDC	19 mA	<b>788-354</b>	1

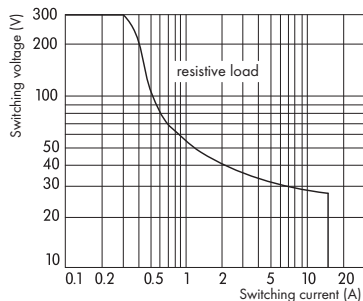
**Technical Data**

Accessories see pages 50 ... 55

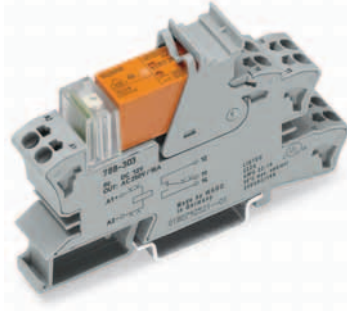
<b>Coil:</b>	
Input voltage range	$V_N - 15\% \dots +20\%$
<b>Contacts:</b>	
Contact material	Ag alloy
Max. continuous current	16 A
Max. make current	120 A / 50 ms
Max. switching voltage	250 VAC
Max. switching power (resistive)	4 kVA AC, DC see load curve
Recommended minimum load	> 100 mA / 12 V AC/DC
Pull-in/drop-out/bounce time typ.	15ms / 5ms / -
Mechanical life	$10 \times 10^6$ switching operations
<b>General specifications:</b>	
Nominal voltage to EN 60664-1	250 V / 4 kV / 3
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-
Ambient operating temperature at $V_N$	-25 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C
Dimensions (mm) W x H x L	15 x 54 x 86
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12
Strip length	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 61140; EN 60664-1; EN 50178; UL 508 (max. 10 A)



Relay with 1 make contact  
and status indication  
(15 mm high)  
Nominal input voltage  $V_N$ : 24 VDC  
for lamp loads

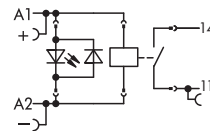


DC load limit curve



Similar to picture

Contact life, type of load	Electrical life
1000 W, incandescent lamp	80,000
16 A, 240 VAC, UL 508	50,000
21/3.5 A, 230 VAC, Compressor, $\cos \phi = 0.5$	230,000



Description	$V_N$	$I_N$	Item No.	Pack. Unit
Relay socket with miniature switching relay, for DIN 35 rail	24 VDC	19 mA	788-356	1

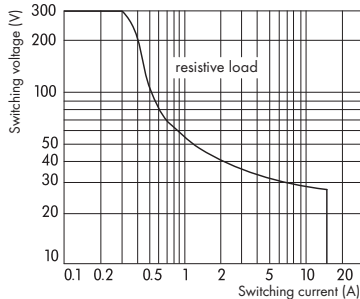
**Technical Data**

Accessories see pages 50 ... 55

<b>Coil:</b>	
Input voltage range	$V_N -15\% \dots +20\%$
<b>Contacts:</b>	
Contact material	AgSnO <sub>2</sub>
Max. continuous current	16 A
Max. make current	30 A / 4 s (AC); 80 A / 20 ms (AC)
Max. switching voltage	250 VAC
Max. switching power (resistive)	4 kVA AC, DC see load curve
Recommended minimum load	$\geq 100 \text{ mA} / 12 \text{ V AC/DC}$
Pull-in/drop-out/bounce time typ.	8ms / 3ms / -
Mechanical life	$30 \times 10^6$ switching operations
<b>General specifications:</b>	
Nominal voltage to EN 60664-1	250 V / 4 kV / 3
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-
Ambient operating temperature at $V_N$	-25 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C
Dimensions (mm) W x H x L	15 x 53 x 96
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12
Strip length	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 61810-1, EN 60664-1, EN 61140, UL 508 (max. 10 A)

# Relay Sockets with Miniature Switching Relay

**Relay with 1 make contact and status indication (15 mm high)**  
**Nominal input voltage  $V_N$ : 24 VDC**  
**for lamp loads**

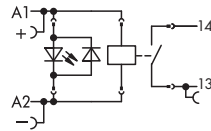


DC load limit curve



Contact life, type of load	Electrical life
3000 W, incandescent lamp, 230 VAC, OT 8.3 % ①, 5 min <sup>-1</sup>	12,000
620 W, gas discharge lamp, CCG ②, 120/277 VAC, UL 508, 50 °C	6,000
1200 W, tungsten lamp, 120/277 VAC, UL 508, 50 °C	6,000
16 A, 250 VAC, cos φ = 1, 85 °C, IEC 61810	5,000

① OT= On-Time  
 ② CCG = Conventional Control Gear



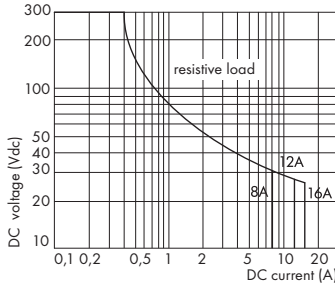
Description	$V_N$	$I_N$	Item No.	Pack. Unit
Relay socket with miniature switching relay, for DIN 35 rail	24 VDC	17 mA	788-357	1

**Technical Data**

Accessories see pages 50 ... 55

<b>Coil:</b>	
Input voltage range	$V_N - 10 \% \dots + 20 \%$
<b>Contacts:</b>	
Contact material	AgSnO <sub>2</sub> , W pre-make contact
Max. continuous current	16 A
Max. make current	165 A / 20 ms (AC)
Max. switching voltage	250 VAC
Max. switching power (resistive)	4 kVA AC, DC see load curve
Recommended minimum load	-
Pull-in/drop-out/bounce time typ.	10ms / 5ms / 4 ms
Mechanical life	5 x 10 <sup>6</sup> switching operations
<b>General specifications:</b>	
Nominal voltage to EN 60664-1	250 V / 4 kV / 3
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1.25 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-
Ambient operating temperature at $V_N$	-25 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C
Dimensions (mm) W x H x L	15 x 53 x 86
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12
Strip length	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 61810-1, EN 60664-1, EN 61140
	-
	-
	-
	-

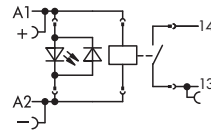
**Relay with 1 make contact and status indication**  
**(Relay height: 25 mm)**  
**Nominal input voltage  $V_N$  24 V DC**



DC load limit curve



Contact life at different lamp loads Load	Switching operations
12 A, 250 V AC, $\cos \phi = 1$	$3 \times 10^5$
TV 8 acc. to UL 508	$25 \times 10^3$
2500 W, 230 V AC Halogen lamp	$> 10^4$
1000 W, 250 V AC Incandescent lamp	$2.3 \times 10^5$
3000 W, 250 V AC Incandescent lamp	$3.6 \times 10^4$
1500 VA, Fluorescent lamp 163 $\mu$ F	$10^4$



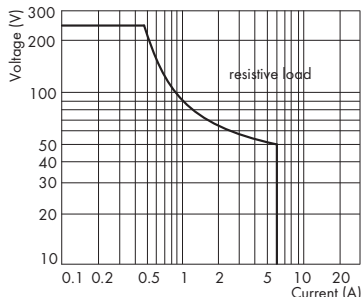
Description	$V_N$	$I_N$	Item No.	Pack. Unit
Relay socket with miniature switching relay, for DIN 35 rail	24 V DC	21.8 mA	788-355	1

**Technical Data**

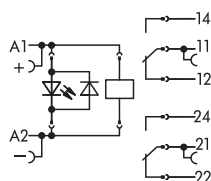
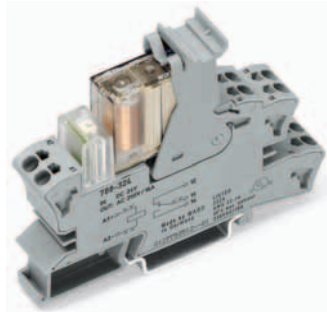
Accessories see pages 50 ... 55

<b>Coil:</b>	
Input voltage range	$V_N - 15 \% \dots + 20 \%$
<b>Contacts:</b>	
Contact material	AgSnO <sub>2</sub>
Max. continuous current	16 A
Max. make current	4 s (AC) 25 A / 20 ms 120 A
Max. switching voltage	250 V AC
Max. switching power (resistive)	4 kVA AC, DC see load limit curve
Recommended minimum load	$> 100 \text{ mA} / 12 \text{ V AC/DC}$
Pull-in/drop-out/bounce time typ.	8ms / 2ms / 2 ms
Mechanical life	$30 \times 10^6$ switching operations
<b>General specifications:</b>	
Nominal voltage to EN 60664-1	250 V / 4 kV / 3
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-
Ambient operating temperature at $V_N$	-25 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C
Dimensions (mm) W x H x L	15 x 64 x 86
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12
Strip length	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	DIN EN 61140; EN 50178; UL 508 (max. 10 A)

**Safety relay SR2M (2 changeover contacts) with forced guided contacts (Type A) and status indication**  
**(Relay height: 25 mm)**  
**Nominal input voltage  $V_N$  24 V DC**



DC load limit curve



In accordance with EN 50205, it is only permitted to use 1 make contact / 1 break contact for safety circuits (11-14 and 22-21 or 12-11 and 21-24)

Description	$V_N$	$I_N$	Item No.	Pack. Unit
<b>Relay socket with miniature switching relay, for DIN 35 rail</b>	24 V DC	31 mA	<b>788-384</b>	1

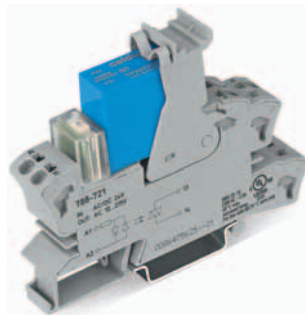
### Technical Data

Accessories see pages 50 ... 55

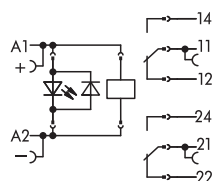
<b>Coil:</b>	
Input voltage range	$V_N - 15\% \dots +10\%$
<b>Contacts:</b>	
Contact material	AgNi
Max. continuous current	6 A
Max. make current	4 s 14 A (AC)
Max. switching voltage	250 V AC
Max. switching power (resistive)	AC 1500 VA; DC see load limit curve
Recommended minimum load	5 V / 10 mA / 50 mW
Pull-in/drop-out/bounce time typ.	10ms / 4ms / -
Mechanical life	$10 \times 10^6$ switching operations
<b>General specifications:</b>	
Nominal voltage to EN 60664-1	250 V / 4 kV / 3
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1.5 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	3 kV <sub>eff</sub>
Ambient operating temperature at $V_N$	-25 °C ... +55 °C
Storage temperature	-40 °C ... +70 °C
Dimensions (mm) W x H x L	15 x 64 x 86
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12
Strip length	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 60664-1, EN 50205; UL 508



	<b>Safety relay (2 changeover contacts) with force-guided gold contacts (Type A) and status indication Nominal input voltage <math>V_N</math> 24 VDC</b>	
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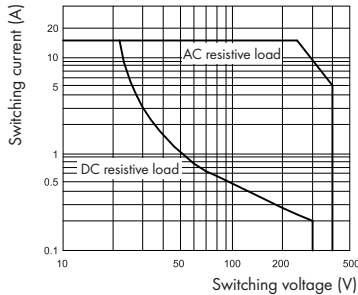
Similar to picture



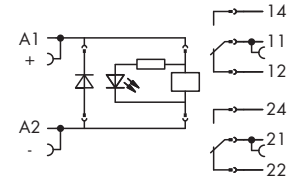
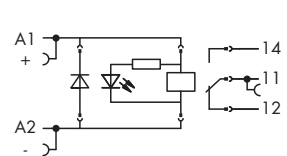
Description	$V_N$	$I_N$	Item No.	Pack. Unit	
Relay socket with miniature switching relay, for DIN 35 rail	24 VDC	30 mA	<b>788-906</b>	1	

Technical Data	Accessories see pages 50 ... 55			
<b>Coil:</b>				
Input voltage range		$V_N - 15 \% \dots + 10 \%$		
<b>Contacts:</b>				
Contact material		AgNi10 + Au		
Max. continuous current		0.3 A		
Max. switching voltage		60 V		
Recommended minimum load		0.1 V / 1 mA / 1 mW		
Pull-in/drop-out/bounce time typ.		15ms / 12ms / -		
Mechanical life		50 x 10 <sup>6</sup> switching operations		
<b>General specifications:</b>				
Nominal voltage to EN 60664-1		250 V / 4 kV / 2		
Dielectric strength, contact-coil (AC, 1 min)		4 kV <sub>rms</sub>		
Dielectric strength contact-contact (AC, 1 min)		2.5 kV <sub>eff</sub>		
Ambient operating temperature at $V_N$		-25 °C ... +55 °C		
Storage temperature		-40 °C ... +70 °C		
Dimensions (mm) W x H x L		15 x 54 x 86		
Wire connection		Height from upper-edge of DIN 35 rail CAGE CLAMP® S		
Cross sections		0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12		
Strip length		9 ... 10 mm / 0.35 ... 0.39 in		
Standards/specifications		EN 61140, EN 60664-1, EN 61810-5, EN 50205, UL 508 (max. 40 °C)		

	<b>Relay with 1 changeover contact</b> <b>Electrical and mechanical status indication</b> <b>Manual operation</b> <b>(Relay height: 25 mm)</b> <b>Nominal input voltage <math>V_N</math>:</b> <b>24 V DC, 48 V DC, 110 V DC</b>	<b>Relay with 2 changeover contact</b> <b>Electrical and mechanical status indication</b> <b>Manual operation</b> <b>(Relay height: 25 mm)</b> <b>Nominal input voltage <math>V_N</math>:</b> <b>24 V DC, 48 V DC, 110 V DC</b>
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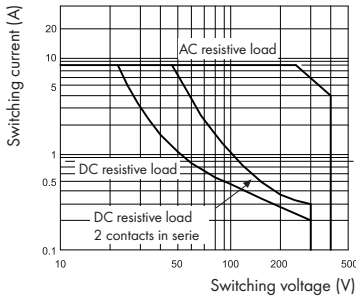
Load limit curve for 788-346, -347, -349, -391



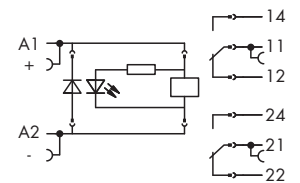
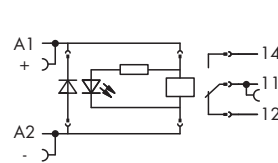
Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Relay socket with miniature switching relay, for DIN 35 rail	24 V DC	16.7 mA	<b>788-341</b>	1	24 V DC	16.7 mA	<b>788-346</b>	1
	48 V DC	8.3 mA	<b>788-342</b>	1	48 V DC	8.3 mA	<b>788-347</b>	1
	110 V DC	3.6 mA	<b>788-344</b>	1	110 V DC	3.6 mA	<b>788-349</b>	1

Technical Data	Accessories see pages 50 ... 55	
<b>Coil:</b>		
Input voltage range	$V_N \pm 10\%$	$V_N \pm 10\%$
<b>Contacts:</b>		
Contact material	AgNi	AgNi
Max. continuous current	16A	2 x 8A
Max. make current	24 A	2 x 12 A
Max. switching voltage	250 V AC	250 V AC
Max. switching power (resistive)	4 kVA AC	2 x 2 kVA AC
Recommended minimum load	10 mA / 12 V AC/DC	10 mA / 12 V AC/DC
Pull-in/drop-out/bounce time typ.	15ms / 8ms / -	15ms / 8ms / -
Mechanical life	$5 \times 10^6$ switching operations	$5 \times 10^6$ switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>	5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	2.5 kV <sub>eff</sub>
Ambient operating temperature at $V_N$	-25 °C ... +50 °C	-25 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	15 x 73 x 86	15 x 73 x 86
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 61140; EN 50178; UL 508 (max. 10 A)	EN 61140; EN 50178; UL 508

	<p><b>Relay with 1 changeover contact</b>  <b>Electrical and mechanical status indication</b>  <b>(25 mm high)</b>  <b>Nominal input voltage <math>V_N</math>: 24 VDC</b>  <b>Railway applications</b></p>	<p><b>Relay with 2 changeover contact</b>  <b>Electrical and mechanical status indication</b>  <b>(25 mm high)</b>  <b>Nominal input voltage <math>V_N</math>: 24 VDC</b>  <b>Railway applications</b></p>
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Load limit curve for 788-341, -342, -344, -390



Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Relay socket with miniature switching relay, for DIN 35 rail	24 VDC	19.1 mA	788-391	1	24 VDC	19.1 mA	788-390	1

**Technical Data**

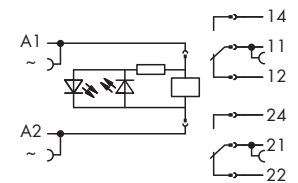
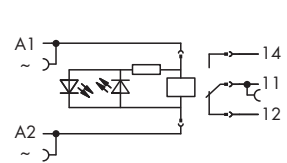
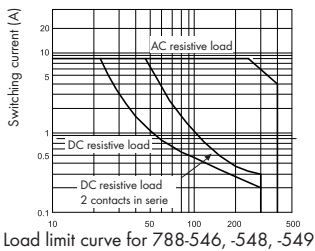
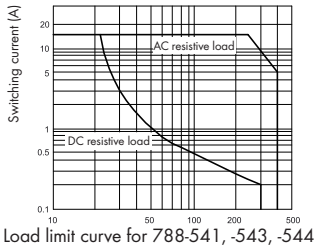
Accessories see pages 50 ... 55

Accessories see pages 50 ... 55

Coil:	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Input voltage range		$V_N -30 \% \dots +25 \%$				$V_N -30 \% \dots +25 \%$		
<b>Contacts:</b>								
Contact material		AgNi				AgNi		
Max. continuous current		3 A (single socket)				2 x 3 A (single socket)		
Max. make current		24 A				2 x 12 A		
Max. switching voltage		250 VAC				250 VAC		
Max. switching power (resistive)		750 VA AC				2 x 750 VA AC		
Recommended minimum load		10 mA / 12 V AC/DC				10 mA / 12 V AC/DC		
Pull-in/drop-out/bounce time typ.		15ms / 8ms / -				15ms / 8ms / -		
Mechanical life		$5 \times 10^6$ switching operations				$5 \times 10^6$ switching operations		
<b>General specifications:</b>								
Nominal voltage to EN 60664-1		250 V / 4 kV / 3				250 V / 4 kV / 3		
Dielectric strength, contact-coil (AC, 1 min)		5 kV <sub>rms</sub>				5 kV <sub>rms</sub>		
Dielectric strength open contact (AC, 1 min)		1 kV <sub>rms</sub>				1 kV <sub>rms</sub>		
Dielectric strength contact-contact (AC, 1 min)		-				2.5 kV <sub>eff</sub>		
Ambient operating temperature at $V_N$		-25 °C ... +70 °C				-25 °C ... +70 °C		
Storage temperature		-40 °C ... +70 °C				-40 °C ... +70 °C		
Dimensions (mm) W x H x L		15 x 73 x 86				15 x 73 x 86		
Wire connection		Height from upper-edge of DIN 35 rail CAGE CLAMP® S				Height from upper-edge of DIN 35 rail CAGE CLAMP® S		
Cross sections		0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12				0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12		
Strip length		9 ... 10 mm / 0.35 ... 0.39 in				9 ... 10 mm / 0.35 ... 0.39 in		
Standards/specifications		EN 61810-1, EN 60664-1, EN 61140				EN 61810-1, EN 60664-1, EN 61140		

**Relay with 1 changeover contact**  
**Electrical and mechanical status indication**  
**Manual operation**  
**(Relay height: 25 mm)**  
**Nominal input voltage  $V_N$ :**  
**24 V AC, 115 V AC, 230 V AC**

**Relay with 2 changeover contact**  
**Electrical and mechanical status indication**  
**Manual operation**  
**(Relay height: 25 mm)**  
**Nominal input voltage  $V_N$ :**  
**24 V AC, 115 V AC, 230 V AC**



Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Relay socket with miniature switching relay, for DIN 35 rail	24 V AC	31.6 mA	<b>788-541</b>	1	24 V AC	31.6 mA	<b>788-546</b>	1
	115 V AC	6.6 mA	<b>788-543</b>	1	115 V AC	6.6 mA	<b>788-548</b>	1
	230 V AC	3.2 mA	<b>788-544</b>	1	230 V AC	3.2 mA	<b>788-549</b>	1

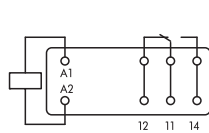
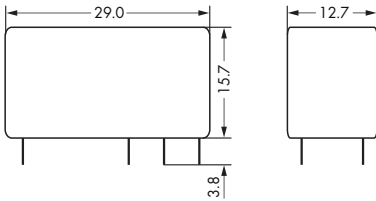
Technical Data	Accessories see pages 50 ... 55	
<b>Coil:</b>		
Input voltage range	$V_N \pm 10\%$	$V_N \pm 10\%$
<b>Contacts:</b>		
Contact material	AgNi	AgNi
Max. continuous current	16A	2 x 8A
Max. make current	24 A	2 x 12 A
Max. switching voltage	250 V AC	250 V AC
Max. switching power (resistive)	4 kVA AC	2 x 2 kVA AC
Recommended minimum load	10 mA / 12 V AC/DC	10 mA / 12 V AC/DC
Pull-in/drop-out/bounce time typ.	15ms / 8ms / -	15ms / 8ms / -
Mechanical life	5 x 10 <sup>6</sup> switching operations	5 x 10 <sup>6</sup> switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>	5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	2.5 kV <sub>eff</sub>
Ambient operating temperature at $V_N$	-25 °C ... +50 °C	-25 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	15 x 73 x 86	15 x 73 x 86
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 61140; EN 50178; UL 508 (max. 10 A)	EN 61140; EN 50178; UL 508



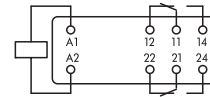
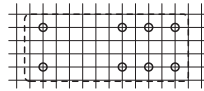


	<b>Pluggable miniature switching relays</b> (Relay height: 15 mm) 1 changeover contact	<b>Pluggable miniature switching relays</b> (Relay height: 15 mm) 2 changeover contact
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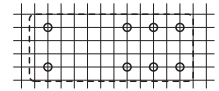
Relay height 15 mm



Pinning 5 mm



Pinning 5 mm



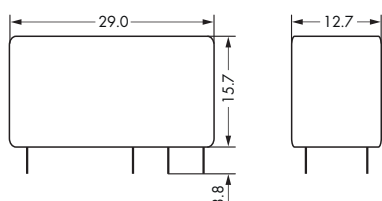
Description	V <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	Item No.	Pack. Unit
Pluggable miniature switching relays	12 V DC	788-150	20	12 V DC	788-152	20
	24 V DC	788-154	20	24 V DC	788-156	20
	48 V DC	788-158	20	48 V DC	788-160	20
	60 V DC	788-162	20	60 V DC	788-164	20
	110 V DC	788-166	20	110 V DC	788-168	20
	24 V AC	788-170	20	24 V AC	788-172	20
	115 V AC	788-174	20	115 V AC	788-176	20
	230 V AC	788-178	20	230 V AC	788-180	20

### Technical Data

Contacts:		
Contact material	AgNi 90/10	AgNi 90/10
Max. continuous current	16 A	2 x 8 A
Max. make current	30 A (4 s)	15 A (4 s)
Max. switching voltage	250 V AC	250 V AC
Max. switching power (resistive)	4 kVA AC	2 x 2 kVA AC
Recommended minimum load	12 VDC / 10 mA	12 VDC / 10 mA
Pull-in/drop-out/bounce time typ.	8ms / 6ms / 6 ms	8ms / 6ms / 10 ms
Mechanical life	> 30 x 10 <sup>5</sup> switching operations	> 30 x 10 <sup>6</sup> switching operations
General specifications:		
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>	5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	2.5 kV <sub>eff</sub>
Ambient operating temperature at V <sub>N</sub>	-40 °C ... +85 °C	-40 °C ... +85 °C
Dimensions (mm) W x H x L	12.7 x 15.7 x 29	12.7 x 15.7 x 29

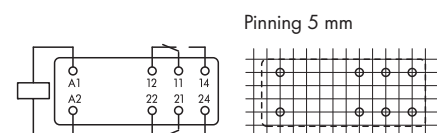
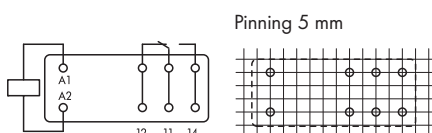
	<b>Pluggable miniature switching relays</b> (Relay height: 15 mm) 1 changeover contact (gold contacts)	<b>Pluggable miniature switching relays</b> (Relay height: 15 mm) 2 changeover contact (gold contacts)
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Relay height 15 mm



\* In order to prevent the gold layer from being damaged, 30 VDC switching voltages and 50 mA currents shall not be exceeded.

Higher switching power leads to evaporation of the gold layer. The resulting deposits in the enclosure may cause sparkovers between the coil and the contact.



Description	V <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	Item No.	Pack. Unit
Pluggable miniature switching relays	24 V DC	788-155	20	24 V DC	788-157	20
	115 V AC	788-175	20	115 V AC	788-177	20
	230 V AC	788-179	20	230 V AC	788-181	20

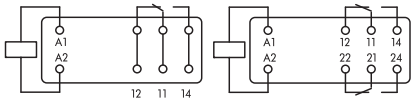
**Technical Data**

Contacts:		
Contact material	AgNi + Au	AgNi + Au
Max. continuous current	16 A *	2 x 8 A *
Max. switching voltage	250 V AC *	250 V AC *
Max. switching power (resistive)	4 kVA AC *	2 x 2 kVA AC *
Recommended minimum load	5 V / 2 mA / 50 mW	5 V / 2 mA / 50 mW
Pull-in/drop-out/bounce time typ.	7ms / 3ms / -	7ms / 3ms / -
Mechanical life	> 3 x 10 <sup>7</sup> switching operations	> 3 x 10 <sup>7</sup> switching operations
General specifications:		
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>	5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	2.5 kV <sub>eff</sub>
Ambient operating temperature at V <sub>N</sub>	-40 °C ... +85 °C	-40 °C ... +85 °C
Dimensions (mm) W x H x L	12.7 x 15.7 x 29	12.7 x 15.7 x 29

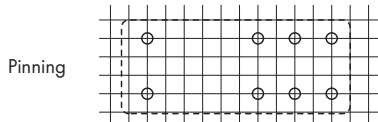


**Sockets for miniature switching relay**  
**1 changeover contact / 2 changeover contact**

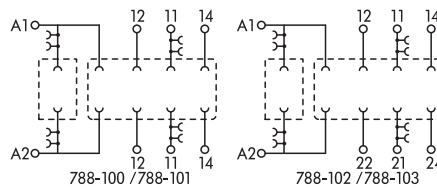
1 changeover contact    2 changeover contacts



View on pins



Pinning



Description	Item No.	Pack. Unit
Socket without relay, for DIN 35 rail Relay height 15 mm, 1 changeover contact	788-100	1
Relay height 15 mm, 2 changeover contacts	788-102	1
Relay height 25 mm, 1 changeover contact	788-101	1
Relay height 25 mm, 2 changeover contacts	788-103	1

**Technical Data**

<b>Contacts:</b>		
Max. continuous current	16 A / 2 x 8 A	
Max. switching voltage	250 V AC	
Max. switching power (resistive)	4 kVA / 2 x 2 kVA AC	
<b>General specifications:</b>		
Nominal input voltage ( $V_N$ )	depending on relay; max. 250 V AC	
Nominal voltage to EN 60664-1	250 V / 4 kV / 3	
Dielectric strength	5 kV <sub>rms</sub> (depending on relay)	
Storage temperature	-40 °C ... +80 °C	
Ambient operating temperature	-25 °C ... +70 °C (depending on relay)	
Wire connection	CAGE CLAMP® S	
Cross sections	0,34 mm <sup>2</sup> ... 2,5 mm <sup>2</sup> / AWG 22 ... 12	
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	
Standards/specifications	EN 61140; EN 50178	



### Status indication



Description	Power consumption at $V_N$	Item No.	Pack. Unit
Status indication with recovery diode, 24 V DC (12 V ... 24 V)	2.4 mA	788-120	50 (2x25)
Status indication with recovery diode, 48 V DC (48 V ... 60 V)	1.9 mA	788-121	50 (2x25)
Status indication 110 V DC	1.9 mA	788-122	50 (2x25)
Status indication 24 V AC	2.1 mA	788-123	50 (2x25)
Status indication 115 V AC	1.7 mA	788-124	50 (2x25)
Status indication 230 V AC	1.6 mA	788-125	50 (2x25)

### Push-in type jumper bar 788-113



### Commoning



### Push-in type jumper bar



Description			Item No.	Pack. Unit
Push-in type jumper bar, I max. 18 A	2-way	(module/module)	788-113	200 (8x25)
	3-way		788-114	100 (4x25)
	4-way		788-115	100 (4x25)
	6-way		788-116	100 (4x25)
	8-way		788-117	100 (4x25)
Push-in type jumper bars, light gray, insulated, 18 A	2-way	(internal)	859-402	200 (8x25)

### WMB Multi marking system



### Marking



### Group marker carrier



Description		Item No.	Pack. Unit
WMB Multi marking system	plain	793-501	5 cards
Marking software and printer/plotter see Section 11			
Marking	1 ... 10 (10x)	793-502	5 cards
	11 ... 20 (10x)	793-503	5 cards
	21 ... 30 (10x)	793-504	5 cards
	31 ... 40 (10x)	793-505	5 cards
	41 ... 50 (10x)	793-506	5 cards
	1 ... 50 (2x)	793-566	5 cards
10 strips with 10 markers, white with black printing			
Group marker carrier		209-145	100 (50)

## Operating tool



Description		Item No.	Pack. Unit
Operating tool, with partially insulated shaft	Type 2, blade (3.5 x 0.5) mm	210-720	1

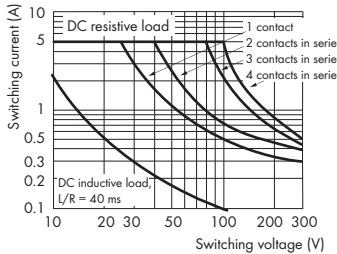
## Ferrule



Description	Sleeve for mm <sup>2</sup> / AWG	Item No.	Pack. Unit
Ferrule, red insulated, 12 mm	2 x 1 mm <sup>2</sup> / 2 x 18	216-542	500

# 1 Sockets with Industrial Relay

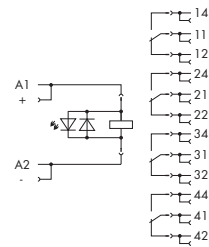
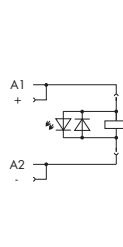
	<b>Socket with industrial relay</b> <b>Coil voltage: 24 V, 48 V, 110 V, 220 v DC</b> <b>4 changeover contacts</b>	<b>Socket with industrial relay</b> <b>Coil voltage: 24 V DC</b> <b>4 changeover contacts (gold contacts)</b>
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DC load limit curve

\* In order to prevent the gold layer from being damaged, 30 VDC switching voltages and 50 mA currents shall not be exceeded.

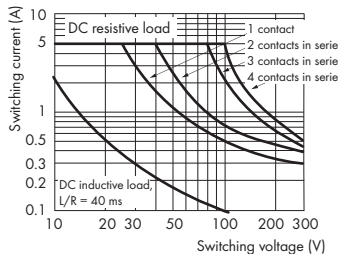
Higher switching power leads to evaporation of the gold layer. The resulting deposits in the enclosure may cause sparkovers between the coil and the contact.



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
<b>Socket with industrial relay, for DIN 35 rail</b>	24 VDC	36.9 mA	<b>858-304</b>	1	24 VDC	36.9 mA	<b>858-314</b>	1
	48 VDC	18.5 mA	<b>858-305</b>	1				
	110 VDC	10 mA	<b>858-307</b>	1				
	220 VDC	4.1 mA	<b>858-308</b>	1				

Technical Data	Accessories see pages 61 ... 65	
<b>Coil:</b>		
Input voltage range	V <sub>N</sub> -20 % ... +10 %	V <sub>N</sub> -20 % ... +10 %
<b>Contacts:</b>		
Contact material	AgCe	AgCe + Au
Max. continuous current	5 A	5 A *
Max. make current	15 A (4 s)	15 A (4 s)
Max. switching voltage	250 VAC	250 VAC *
Max. switching power (resistive)	1250 VA AC, DC see load limit curve	1250 VA AC, DC see load limit curve *
Recommended minimum load	100 mA / 12 V AC/DC	1 mA / 5 VDC / 50 mW
Pull-in/drop-out/bounce time typ.	25ms / 25ms / 4 ms	25ms / 25ms / 4 ms
Mechanical life	20 x 10 <sup>6</sup> switching operations	20 x 10 <sup>6</sup> switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 2.5 kV / 2	250 V / 2.5 kV / 2
Dielectric strength, contact-coil (AC, 1 min)	1.5 kV <sub>rms</sub>	1.5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1.5 kV <sub>eff</sub>	1.5 kV <sub>eff</sub>
Ambient operating temperature at V <sub>N</sub>	-25 °C ... +70 °C	-25 °C ... +70 °C
Storage temperature	-40 °C ... +80 °C	-40 °C ... +80 °C
Dimensions (mm) W x H x L	31 x 73 x 97	31 x 73 x 97
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	2 x 0.34 mm <sup>2</sup> ... 2 x 1.5 mm <sup>2</sup> / 1 x 2.5 mm <sup>2</sup> / AWG 22 ... 16	2 x 0.34 mm <sup>2</sup> ... 2 x 1.5 mm <sup>2</sup> / 1 x 2.5 mm <sup>2</sup> / AWG 22 ... 16
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 61810-1; EN 60664-1; (858-304: GL; UL 508, max. 50 °C)	EN 61810-1; EN 60664-1; GL; UL 508 (max. 50 °C)

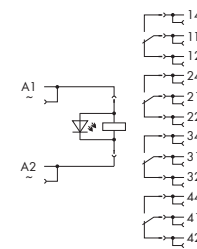
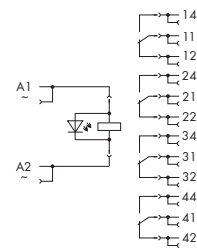
	<p><b>Relay sockets with industrial relay</b>                  Coil voltage: 24 V, 48 V, 115 V AC                  4 changeover contacts</p>	<p><b>Relay sockets with industrial relay</b>                  Coil voltage: 24 V, 48 V, 115 V AC                  4 changeover contacts (gold plating)</p>
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DC load limit curve

\* In order to prevent the gold layer from being damaged, 30 VDC switching voltages and 50 mA currents shall not be exceeded.

Higher switching power leads to evaporation of the gold layer. The resulting deposits in the enclosure may cause sparkovers between the coil and the contact.



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Socket with industrial relay, for DIN 35 rail	24 VAC	50 mA	858-504	1	24 VAC	50 mA	858-514	1
	115 VAC	10 mA	858-507	1	115 VAC	10 mA	858-517	1
	230 VAC	8.3 mA	858-508	1	230 VAC	8.3 mA	858-518	1

**Technical Data**

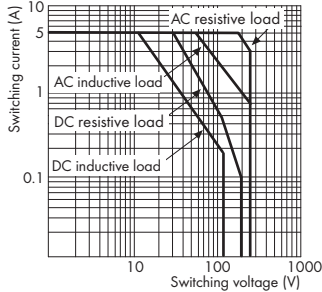
Accessories see pages 61 ... 65

Accessories see pages 61 ... 65

Coil:		
Input voltage range	V <sub>N</sub> -20 % ... +10 %	V <sub>N</sub> -20 % ... +10 %
<b>Contacts:</b>		
Contact material	AgCe	AgCe + Au
Max. continuous current	5 A	5 A *
Max. make current	15 A (4 s)	15 A (4 s)
Max. switching voltage	250 VAC	250 VAC *
Max. switching power (resistive)	1250 VA AC, DC see load limit curve	1250 VA AC, DC see load limit curve *
Recommended minimum load	100 mA / 12 V AC/DC	1 mA / 5 VDC / 50 mW
Pull-in/drop-out/bounce time typ.	25ms / 25ms / 4 ms	25ms / 25ms / 4 ms
Mechanical life	20 x 10 <sup>6</sup> switching operations	20 x 10 <sup>6</sup> switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 2.5 kV / 2	250 V / 2.5 kV / 2
Dielectric strength, contact-coil (AC, 1 min)	1.5 kV <sub>rms</sub>	1.5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1.5 kV <sub>eff</sub>	1.5 kV <sub>eff</sub>
Ambient operating temperature at V <sub>N</sub>	-25 °C ... +70 °C	-25 °C ... +70 °C
Storage temperature	-40 °C ... +80 °C	-40 °C ... +80 °C
Dimensions (mm) W x H x L	31 x 73 x 97	31 x 73 x 97
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	2 x 0.34 mm <sup>2</sup> ... 2 x 1.5 mm <sup>2</sup> / 1 x 2.5 mm <sup>2</sup> / AWG 22 ... 16	2 x 0.34 mm <sup>2</sup> ... 2 x 1.5 mm <sup>2</sup> / 1 x 2.5 mm <sup>2</sup> / AWG 22 ... 16
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 61810-1; EN 60664-1; (858-508: GL; UL 508, max. 50 °C)	EN 61810-1; EN 60664-1; (858-518: GL; UL 508, max. 50 °C)

# 1 Sockets with Industrial Relay

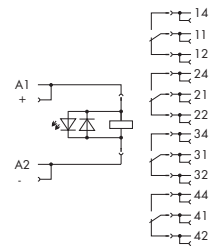
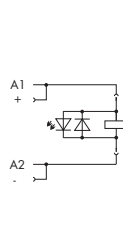
	<b>Relay socket with industrial relay</b> <b>Coil voltage: 24 VDC</b> <b>4 changeover contacts</b> <b>Railway applications</b>	<b>Relay socket with industrial relay</b> <b>Coil voltage: 24 VDC</b> <b>4 changeover contacts (gold plating)</b> <b>Railway applications</b>
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Load limit curve

\* In order to prevent the gold layer from being damaged, 30 VDC switching voltages and 50 mA currents shall not be exceeded.

Higher switching power leads to evaporation of the gold layer. The resulting deposits in the enclosure may cause sparkovers between the coil and the contact.

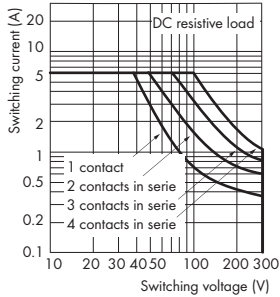


Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Socket with industrial relay, for DIN 35 rail	24 VDC	42 mA	858-354	1	24 VDC	42 mA	858-355	1

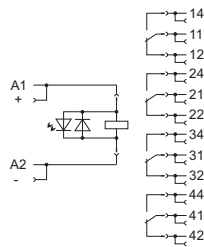
Technical Data	Accessories see pages 61 ... 65				Accessories see pages 61 ... 65			
<b>Coil:</b>								
Input voltage range	V <sub>N</sub> -30 % ... +25 %				V <sub>N</sub> -30 % ... +25 %			
<b>Contacts:</b>								
Contact material	AgCe				AgCe + Au			
Max. continuous current	5 A				5 A *			
Max. make current	15 A (4 s)				15 A (4 s)			
Max. switching voltage	250 VAC				250 VAC *			
Max. switching power (resistive)	1 kVA AC, DC see load limit curve				1 kVA AC, DC see load limit curve *			
Recommended minimum load	100 mA / 12 V AC/DC				1 mA / 5 VDC / 50 mW			
Pull-in/drop-out/bounce time typ.	25ms / 25ms / 4 ms				25ms / 25ms / 4 ms			
Mechanical life	20 x 10 <sup>6</sup> switching operations				20 x 10 <sup>6</sup> switching operations			
<b>General specifications:</b>								
Nominal voltage to EN 60664-1	250 V / 2.5 kV / 2				250 V / 2.5 kV / 2			
Dielectric strength, contact-coil (AC, 1 min)	1.5 kV <sub>rms</sub>				1.5 kV <sub>rms</sub>			
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>				1 kV <sub>rms</sub>			
Dielectric strength contact-contact (AC, 1 min)	1.5 kV <sub>eff</sub>				1.5 kV <sub>eff</sub>			
Ambient operating temperature at V <sub>N</sub>	-25 °C ... +70 °C				-25 °C ... +70 °C			
Storage temperature	-40 °C ... +80 °C				-40 °C ... +80 °C			
Dimensions (mm) W x H x L	31 x 72 x 96				31 x 72 x 96			
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S				Height from upper-edge of DIN 35 rail CAGE CLAMP® S			
Cross sections	2 x 0.34 mm <sup>2</sup> ... 2 x 1.5 mm <sup>2</sup> / 1 x 2.5 mm <sup>2</sup> / AWG 22 ... 16				2 x 0.34 mm <sup>2</sup> ... 2 x 1.5 mm <sup>2</sup> / 1 x 2.5 mm <sup>2</sup> / AWG 22 ... 16			
Strip length	9 ... 10 mm / 0.35 ... 0.39 in				9 ... 10 mm / 0.35 ... 0.39 in			
Standards/specifications	EN 61810-1; EN 60664-1				EN 61810-1; EN 60664-1			



**Relay sockets with industrial relay**  
**Coil voltage:**  
**24 V, 110 V, 220 V DC**  
**4 changeover contacts**



DC load limit curve



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Socket with industrial relay, for DIN 35 rail	24 VDC	31.5 mA	<b>858-390</b>	1
	110 VDC	7.7 mA	<b>858-392</b>	1
	220 VDC	4.3 mA	<b>858-391</b>	1

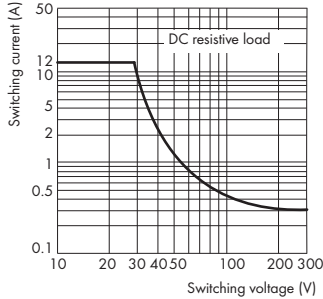
**Technical Data**

Accessories see pages 61 ... 65

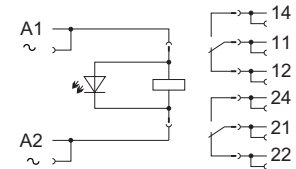
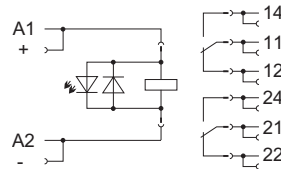
<b>Coil:</b>	
Input voltage range	V <sub>N</sub> -10 % ... +30 %
<b>Contacts:</b>	
Contact material	AgNi 90/10
Max. continuous current	4 x 6 A
Max. make current	12 A (20 ms)
Max. switching voltage	240 VAC
Max. switching power (resistive)	4 AC x 1500 VA, DC see load limit curve
Recommended minimum load	10 mA / 12 V AC/DC
Pull-in/drop-out/bounce time typ.	15ms / 18ms / 8 ms
Mechanical life	30 x 10 <sup>6</sup> switching operations
<b>General specifications:</b>	
Nominal voltage to EN 60664-1	250 V / 2.5 kV / 2
Dielectric strength, contact-coil (AC, 1 min)	2.5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1.2 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	2 kV <sub>eff</sub>
Ambient operating temperature at V <sub>N</sub>	-40 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Dimensions (mm) W x H x L	31 x 55 x 97
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	2 x 0.34 mm <sup>2</sup> ... 2 x 1.5 mm <sup>2</sup> / 1 x 2.5 mm <sup>2</sup> / AWG 22 ... 16
Strip length	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 61810-1; EN 60664-1; (858-390, -391: UL 508, max. 50 °C)

# 1 Sockets with Industrial Relay

	<b>Relay sockets with industrial relay</b> <b>Coil voltage: 24 V, 48 V, 110 V, 220 V DC</b> <b>2 changeover contacts</b>	<b>Relay socket with industrial relay</b> <b>Coil voltage: AC 230 V</b> <b>2 changeover contacts</b>
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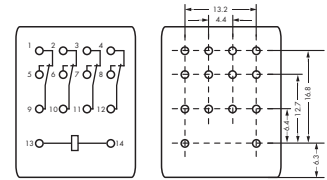
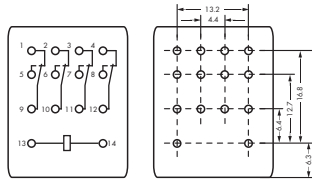
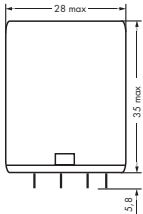
DC load limit curve



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Socket with industrial relay, for DIN 35 rail	24 VDC	37.5 mA	858-324	1	230 VAC	11 mA	858-528	1
	48 VDC	18.5 mA	858-325	1				
	110 VDC	8.1 mA	858-327	1				
	220 VDC	4.1 mA	858-328	1				

Technical Data		Accessories see pages 61 ... 65		Accessories see pages 61 ... 65	
<b>Coil:</b>					
Input voltage range		V <sub>N</sub> -20 % ... +10 %		V <sub>N</sub> -20 % ... +10 %	
<b>Contacts:</b>					
Contact material		AgNi		AgNi	
Max. continuous current		2 x 12 A		2 x 12 A	
Max. make current		24 A (4 s)		24 A (4 s)	
Max. switching voltage		250 VAC		250 VAC	
Max. switching power (resistive)		2 AC x 3000 VA, DC see load limit curve		2 AC x 3000 VA, DC see load limit curve	
Recommended minimum load		5 V / 5 mA / 0.3 W		5 V / 5 mA / 0.3 W	
Pull-in/drop-out/bounce time typ.		13ms / 3ms / -		10ms / 8ms / -	
Mechanical life		2 x 10 <sup>7</sup> switching operations		2 x 10 <sup>7</sup> switching operations	
<b>General specifications:</b>					
Nominal voltage to EN 60664-1		250 V / 2.5 kV / 2		250 V / 2.5 kV / 2	
Dielectric strength, contact-coil (AC, 1 min)		2.5 kV <sub>rms</sub>		2.5 kV <sub>rms</sub>	
Dielectric strength open contact (AC, 1 min)		1.5 kV <sub>rms</sub>		1.5 kV <sub>rms</sub>	
Dielectric strength contact-contact (AC, 1 min)		2.5 kV <sub>eff</sub>		2.5 kV <sub>eff</sub>	
Ambient operating temperature at V <sub>N</sub>		-40 °C ... +70 °C		-40 °C ... +70 °C	
Storage temperature		-40 °C ... +70 °C		-40 °C ... +70 °C	
Dimensions (mm) W x H x L		31 x 73 x 97		31 x 73 x 97	
Wire connection		Height from upper-edge of DIN 35 rail CAGE CLAMP® S		Height from upper-edge of DIN 35 rail CAGE CLAMP® S	
Cross sections		2 x 0.34 mm <sup>2</sup> ... 2 x 1.5 mm <sup>2</sup> / 1 x 2.5 mm <sup>2</sup> / AWG 22 ... 16		2 x 0.34 mm <sup>2</sup> ... 2 x 1.5 mm <sup>2</sup> / 1 x 2.5 mm <sup>2</sup> / AWG 22 ... 16	
Strip length		9 ... 10 mm / 0.35 ... 0.39 in		9 ... 10 mm / 0.35 ... 0.39 in	
Standards/specifications		EN 61810-1; EN 60664-1		EN 61810-1; EN 60664-1	

	<b>Pluggable industrial relays, 4 changeover contacts with integrated LED and recovery diode and manual operation, Nominal input voltage <math>V_N</math> 24 VDC</b>	<b>Pluggable industrial relays, 4 changeover contacts with integrated LED and recovery diode and manual operation, Nominal input voltage <math>V_N</math> 24 V ... 230 VAC</b>
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Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Pluggable industrial relay	24 VDC	36.9 mA	<b>858-150</b>	1	24 VAC	50 mA	<b>858-154</b>	1
					230 VAC	8.3 mA	<b>858-151</b>	1

**Technical Data**

<b>Coil:</b>		
Input voltage range	$V_N$ -20 % ... +10 %	$V_N$ -20 % ... +10 %
<b>Contacts:</b>		
Contact material	AgCe	AgCe
Max. continuous current	5 A	5 A
Max. switching voltage	250 VAC	250 VAC
Max. switching power (resistive)	1250 VA AC	1250 VA AC
Recommended minimum load	100 mA / 12 V AC/DC	100 mA / 12 V AC/DC
Pull-in/drop-out/bounce time typ.	25ms / 25ms / 4 ms	25ms / 25ms / 4 ms
Mechanical life	$20 \times 10^6$ switching operations	$20 \times 10^6$ switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 2.5 kV / 2	250 V / 2.5 kV / 2
Dielectric strength, contact-coil (AC, 1 min)	1.5 kV <sub>rms</sub>	1.5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1.5 kV <sub>eff</sub>	1.5 kV <sub>eff</sub>
Ambient operating temperature at $V_N$	-25 °C ... +70 °C	-25 °C ... +70 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	21.5 x 35 x 28	21.5 x 35 x 28



	<p><b>Suppressor module, pluggable, for 788 and 858 Series Relay Sockets</b></p>	
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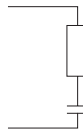


**Note:** To guarantee safe operation, residual voltages (due to the cable capacitance of long connection lines or leakage currents of semi-conductor switches and their protective circuits) must be lower than the release voltage of the relays.

For DC relays, the release voltage is specified with  $\leq 5\%$  of the nominal voltage; for AC relays, it is 15 % of the nominal voltage (acc. to VDE 0435).

The relay may not reset if a high residual voltage exists.

Depending on the reason for the residual voltage, changing the cable routing or a parallel connection of an RC element could remedy this situation.

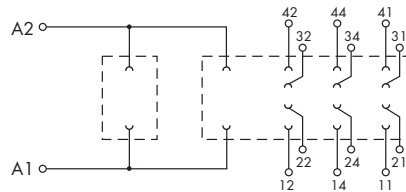


Description	Item No.	Pack. Unit
Suppressor module for miniature switching relay	788-148	50

Technical Data		
<b>Operating data:</b>		
Operating voltage	max. 230 VAC, 50 ... 60 Hz	
Operating current	3.6 mA at 115 VAC, 50 Hz	
	7.2 mA at 230 VAC, 50 Hz	
<b>Module's characteristics:</b>		
Resistor	470 $\Omega$	
Capacity	100 nF	
<b>General specifications:</b>		
Ambient operating temperature	-25 °C ... +70 °C	
Storage temperature	-40 °C ... +70 °C	
Dimensions (mm) W x H x L	15 x 15 x 10	
Standards/specifications	EN 60664-1	



Socket for industrial relays  
2 and 4 changeover contacts



Description	Item No.	Pack. Unit
Relay socket with industrial relay, for DIN 35 rail	858-100	1

Technical Data		
<b>Contacts:</b>		
Max. switching voltage	250 V AC	
Max. continuous current	4 x 6 A (4 changeover contacts); 2 x 12 A (2 changeover contacts)	
<b>General specifications:</b>		
Nominal input voltage (V <sub>N</sub> )	depending on Relay; max. 250 V AC	
Nominal voltage to EN 60664-1	250 V / 4 kV / 3	
Dielectric strength	4 kV (depending on relay)	
Storage temperature	-40 °C ... +80 °C	
Ambient operating temperature	-25 °C ... +70 °C (depending on relay)	
Dimensions (mm) W x H x L	31 x 39 x 97	
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S	
Cross sections	2 x 0.34 mm <sup>2</sup> ... 2 x 1.5 mm <sup>2</sup> / 1 x 2.5 mm <sup>2</sup> / AWG 22 ... 16	
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	
Standards/specifications	EN 60664-1	

## Holding bracket



Description	Item No.	Pack. Unit
Holding bracket for industrial relays (height 33.5 mm ... 35.5 mm)	858-110	1

## Push-in type jumper bar



Description	Item No.	Pack. Unit
Push-in type jumper bar	858-402	200

## Status indication



Description	Power consumption at $V_N$	Item No.	Pack. Unit
Status indication with recovery diode, 24 V DC (12 V ... 24 V)	2.4 mA	788-120	50 (2x25)
Status indication with recovery diode, 48 V DC (48 V ... 60 V)	1.9 mA	788-121	50 (2x25)
Status indication 110 V DC	1.9 mA	788-122	50 (2x25)
Status indication 24 V AC	2.1 mA	788-123	50 (2x25)
Status indication 115 V AC	1.7 mA	788-124	50 (2x25)
Status indication 230 V AC	1.6 mA	788-125	50 (2x25)

## NOTE:

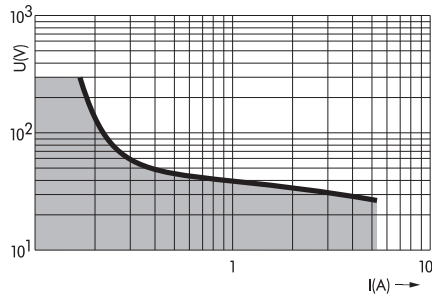
Only required when using relays without integrated operating indicator!

## Operating tool

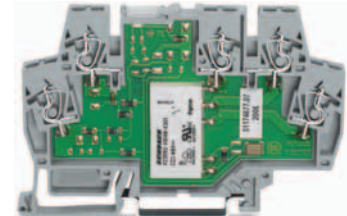
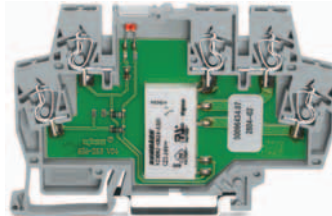


Description	Item No.	Pack. Unit
Operating tool, with partially insulated shaft      Type 2, blade (3.5 x 0.5) mm	210-720	1

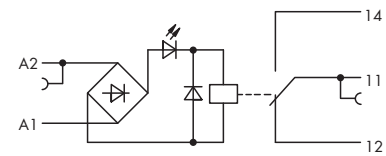
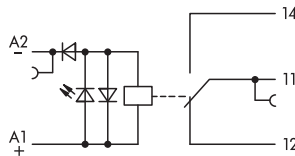
	<b>Relay with 1 changeover contact (1u) for normal switching power</b> <b>Nominal input voltage <math>V_N</math></b> <b>5 V ... 220 V DC</b>	<b>Relay with 1 changeover contact (1u) for normal switching power</b> <b>Nominal input voltage <math>V_N</math></b> <b>12 V, 24 V, 48 V, 115 V, 230 V AC/DC</b>
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DC load limit curve



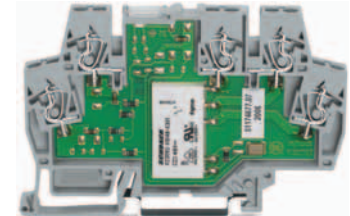
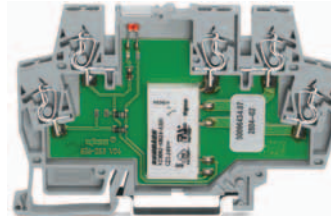
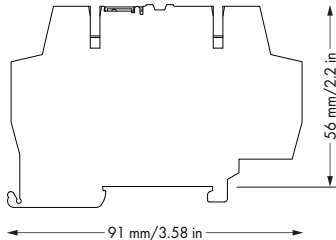
**Note:** Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.



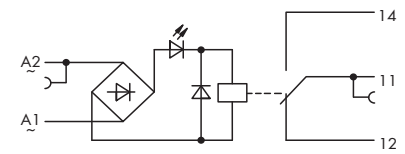
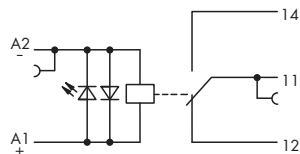
Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Rail-mounted terminal block with miniature switching relay, for DIN 35 rail	5 V DC	31 mA	859-302	1	12 V AC/DC	15 mA	859-353	1
	12 V DC	17 mA	859-303	1	24 V AC/DC	8 mA	859-354	1
	24 V DC	10 mA	859-304	1	48 V AC/DC	5.3 mA	859-355	1
	48 V DC	6.5 mA	859-305	1	60 VAC/DC	4.1 mA	859-356	1
	60 V DC	5.2 mA	859-306	1	115 V AC/DC	3.5 mA	859-357	1
	120 V DC	3.5 mA	859-307	1	230 V AC/DC	3.5 mA	859-358	1
	220 V DC	3.2 mA	859-308	1				

Technical Data	Accessories see page 72	
<b>Coil:</b>		
Input voltage range	$V_N -15 \% \dots +20 \%$	$V_N -15 \% \dots +20 \%$
<b>Contacts:</b>		
Contact material	AgNi	AgNi
Max. continuous current	5 A	5 A
Max. make current	4s (AC), 10A	4s (AC) 10A
Max. switching voltage	250 V AC	250 V AC
Max. switching power (resistive)	1250 VA AC ; DC see load limit curve	1250 VA AC ; DC see load limit curve
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA	10 VDC / 10 mA, 24 VDC / 1 mA
Pull-in/drop-out/bounce time typ.	5ms / 6ms / 5 ms	5ms / 6ms / 5 ms
Mechanical life	$5 \times 10^6$ switching operations	$5 \times 10^6$ switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	-
Ambient operating temperature at $V_N$	-25 °C ... +50 °C	-25 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	6 x 56 x 91	6 x 56 x 91
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.2 ... 0.24 in	5 ... 6 mm / 0.2 ... 0.24 in
Standards/specifications	EN 60664-1; EN 61810-5; UL 508; EEx nC II T4; @	EN 60664-1; EN 61810-5; UL 508; EEx nC II T4; @
	-	-

	<p><b>Relay with 1 changeover contact (1 u)</b>  <b>Gold-plated contacts</b>  <b>for normal switching power</b>  <b>Nominal input voltage V<sub>N</sub></b>  <b>5 V, 24 V, 220 V DC</b></p>	<p><b>Relay with 1 changeover contact (1u)</b>  <b>Gold-plated contacts</b>  <b>for normal switching power</b>  <b>Nominal input voltage V<sub>N</sub></b>  <b>115 V, 230 V AC</b></p>
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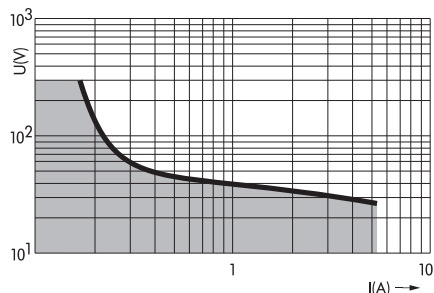
\* In order to prevent the gold layer from being damaged, 30 VDC switching voltages and 50 mA currents shall not be exceeded.  
 Higher switching power leads to evaporation of the gold layer. The resulting deposits in the housing may reduce the service life.



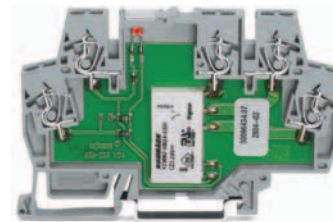
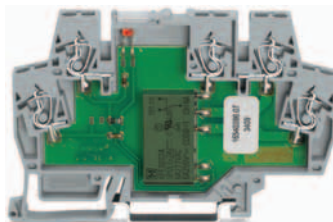
Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Rail-mounted terminal block with miniature switching relay, for DIN 35 rail	5 VDC	31 mA	859-312	1	115 V AC	3.1 mA	859-360	1
	24 V DC	10 mA	859-314	1	230 V AC	3.5 mA	859-359	1
	220 V DC	3.2 mA	859-318	1				

Technical Data	Accessories see page 72	
<b>Coil:</b>		
Input voltage range	V <sub>N</sub> -15 % ... +20 %	V <sub>N</sub> -15 % ... +20 %
<b>Contacts:</b>		
Contact material	AgNi + Au	AgNi + Au
Max. continuous current	5 A *	5 A *
Max. switching voltage	250 VAC *	250 VAC *
Max. switching power (resistive)	1250 VA AC; DC see load limit curve *	1250 VA AC; DC see load limit curve *
Recommended minimum load	1 VDC / 1 mA / 1 mW	1 VDC / 1 mA / 1 mW
Pull-in/drop-out/bounce time typ.	5ms / 6ms / 5 ms	5ms / 6ms / 5 ms
Mechanical life	5 x 10 <sup>6</sup> switching operations	5 x 10 <sup>6</sup> switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	-
Ambient operating temperature at V <sub>N</sub>	-25 °C ... +50 °C	-25 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	6 x 56 x 91	6 x 56 x 91
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.2 ... 0.24 in	5 ... 6 mm / 0.2 ... 0.24 in
Standards/specifications	EN 60664-1; EN 61810-5; UL 508; EEx nC II T4; © 859-312: EN 60664-1; EN 61810-5; UL 508; ©	EN 60664-1; EN 61810-5; UL 508; EEx nC II T4; ©

	<p>Relay with 1 changeover contact (1 u)                  Extended input voltage range: <math>V_N - 30\% \dots +25\%</math>;                  Operating temperature range: <math>-25\text{ °C} \dots +70\text{ °C}</math>                  for normal switching power                  Railway applications                  Nominal input voltage <math>V_N</math> 24 V DC</p>	<p>Relay with 1 changeover contact (1 u)                  Gold-plated contacts                  Extended input voltage range: <math>V_N - 30\% \dots +25\%</math>;                  Operating temperature range: <math>-25\text{ °C} \dots +70\text{ °C}</math>                  for normal switching power                  Railway applications                  Nominal input voltage <math>V_N</math> 24 V ... 110 V DC</p>
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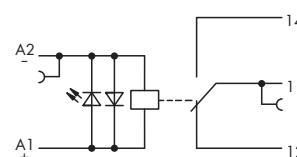
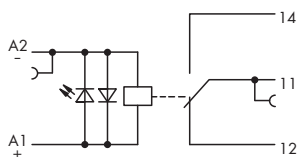


DC load limit curve



\* In order to prevent the gold layer from being damaged, 30 VDC switching voltages and 50 mA currents shall not be exceeded.

Higher switching power leads to evaporation of the gold layer. The resulting deposits in the housing may reduce the service life.

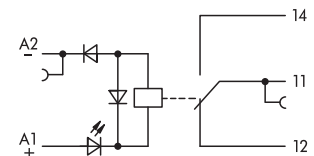
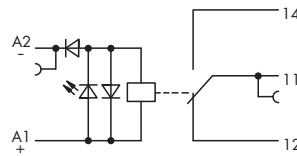
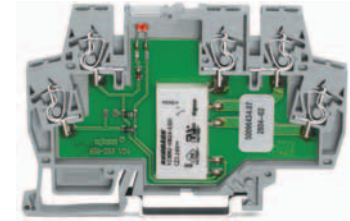
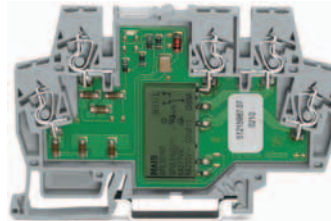
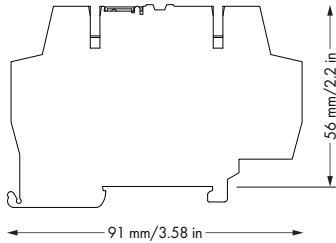


Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Rail-mounted terminal block with miniature switching relay, for DIN 35 rail	24 V DC	12 mA	859-390	1	24 VDC	10 mA	859-392	
					36 VDC	10.1 mA	859-386	
					48 VDC	7.9 mA	859-384	
					110 VDC	3.1 mA	859-317	

Technical Data	Accessories see page 72	
<b>Coil:</b>		
Input voltage range	$V_N - 30\% \dots +25\%$	$V_N - 30\% \dots +25\%$
<b>Contacts:</b>		
Contact material	AgNi	AgNi + Au
Max. continuous current	3 A	3 A *
Max. switching voltage	250 V AC	250 VAC *
Max. switching power (resistive)	750 VA AC ; DC see load limit curve	750 VA AC; DC see load limit curve *
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA	1 VDC / 1 mA / 1 mW
Pull-in/drop-out/bounce time typ.	5ms / 6ms / 5 ms	5ms / 6ms / 5 ms
Mechanical life	$5 \times 10^6$ switching operations	$5 \times 10^6$ switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	-
Ambient operating temperature at $V_N$	$-25\text{ °C} \dots +70\text{ °C}$	$-25\text{ °C} \dots +70\text{ °C}$
Storage temperature	$-40\text{ °C} \dots +70\text{ °C}$	$-40\text{ °C} \dots +70\text{ °C}$
Dimensions (mm) W x H x L	6 x 56 x 91	6 x 56 x 91
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.2 ... 0.24 in	5 ... 6 mm / 0.2 ... 0.24 in
Standards/specifications	EN 60664-1; EN 61810-5; UL 508; EEx nC II T4; Ⓢ	EN 60664-1; EN 61810-5 859-392: EN 60664-1; EN 61810-5; UL 508; Ⓢ 859-317: EN 60664-1; EN 61810-5; UL 508; EEx nC II T4; Ⓢ



	<p>Relay with 1 changeover contact (1u) with an extended                  Input voltage range: <math>V_N \pm 30\%</math>                  Operating temperature range: <math>-25\text{ °C} \dots +70\text{ °C}</math>                  for normal switching power                  Railway applications                  Nominal input voltage <math>V_N</math> 110 V DC</p>	<p>Relay with 1 changeover contact (1u) with an extended                  Input voltage range: <math>V_N \pm 40\%</math>                  Operating temperature range: <math>-25\text{ °C} \dots +70\text{ °C}</math>                  for normal switching power                  Railway applications                  Nominal input voltage <math>V_N</math> 24 V, 48 V, 110 V DC</p>
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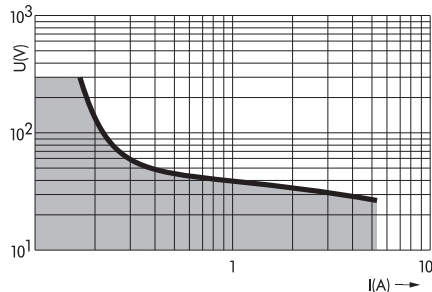


**Note:** Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.

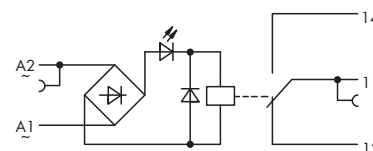
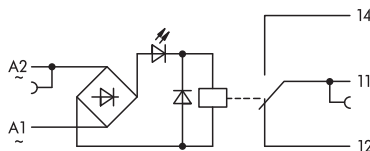
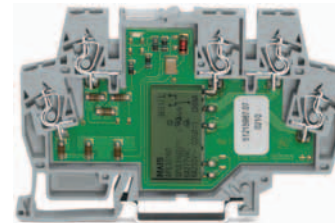
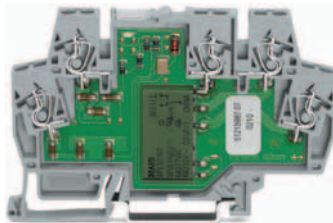
Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Rail-mounted terminal block with miniature switching relay, for DIN 35 rail	110 V DC	2.7 mA	859-391	1	24 V DC	14.4 mA	859-398	1
					48 V DC	7.9 mA	859-397	1
					110 V DC	3.1 mA	859-399	1

Technical Data	Accessories see page 72	
<b>Coil:</b>		
Input voltage range	$V_N \pm 30\%$	$V_N \pm 40\%$
<b>Contacts:</b>		
Contact material	AgNi	AgNi
Max. continuous current	3 A	3 A
Max. switching voltage	250 V AC	250 V AC
Max. switching power (resistive)	750 VA AC ; DC see load limit curve	750 VA AC ; DC see load limit curve
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA	10 VDC / 10 mA, 24 VDC / 1 mA
Pull-in/drop-out/bounce time typ.	5ms / 6ms / 5 ms	5ms / 6ms / 5 ms
Mechanical life	$5 \times 10^6$ switching operations	$5 \times 10^6$ switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	-
Ambient operating temperature at $V_N$	$-25\text{ °C} \dots +70\text{ °C}$	$-25\text{ °C} \dots +70\text{ °C}$
Storage temperature	$-40\text{ °C} \dots +70\text{ °C}$	$-40\text{ °C} \dots +70\text{ °C}$
Dimensions (mm) W x H x L	6 x 56 x 91	6 x 56 x 91
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.2 ... 0.24 in	5 ... 6 mm / 0.2 ... 0.24 in
Standards/specifications	EN 60664-1; EN 61810-5; UL 508; EEx nC II T4; ☉	EN 60664-1; EN 61810-5; ☉

	Relay with 1 changeover contact (1u) defined turn-on/turn-off threshold for normal switching power Nominal input voltage $V_N$ 115 V AC	Relay with 1 changeover contact (1u) defined turn-on/turn-off threshold for normal switching power Nominal input voltage $V_N$ 230 V AC
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DC load limit curve



**Note:** Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.

Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Rail-mounted terminal block with miniature switching relay, for DIN 35 rail	115 V AC	4.2 mA	859-367	1	230 V AC	4.2 mA	859-368	1

**Technical Data**

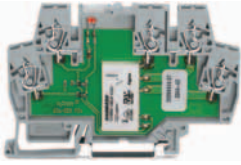
Accessories see page 72

Accessories see page 72

Coil:		
Input voltage range	$V_N \pm 10\%$	$V_N \pm 10\%$
Turn-on threshold relay/LED	95 VAC / 80 VAC	190 VAC / 165 VAC
Turn-off threshold relay/LED	60 VAC / 60 VAC	140 VAC / 150 VAC
Contacts:		
Contact material	AgNi	AgNi
Max. continuous current	5 A	5 A
Max. switching voltage	250 V AC	250 V AC
Max. switching power (resistive)	1250 VA AC ; DC see load limit curve	1250 VA AC ; DC see load limit curve
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA	10 VDC / 10 mA, 24 VDC / 1 mA
Pull-in/drop-out/bounce time typ.	5ms / 6ms / 5 ms	5ms / 6ms / 5 ms
Mechanical life	$5 \times 10^6$ switching operations	$5 \times 10^6$ switching operations
General specifications:		
Nominal voltage to EN 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	-
Ambient operating temperature at $V_N$	-25 °C ... +50 °C	-25 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	6 x 56 x 91	6 x 56 x 91
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.2 ... 0.24 in	5 ... 6 mm / 0.2 ... 0.24 in
Standards/specifications	EN 60664-1; EN 61810-5; UL 508; Ⓢ	EN 60664-1; EN 61810-5; UL 508; EEx nC II T4; Ⓢ

# Rail-Mounted Terminal Blocks with Miniature Switching Relay

with an extended input voltage and operating temperature range, for railway applications



Description	Nominal input voltage ( $V_N$ )	Input voltage range	Max. switching capacity	Ambient operating temperature at $V_N$	Item No.	Pack. Unit
Relay with 1 changeover contact (1 u)	110 VDC	$V_N$ -30 % ... +25 %	(Gold-plated contacts)	-25 °C ... +70 °C	<b>859-317</b>	1
Relay with 1 changeover contact (1 u)	48 VDC	$V_N$ -30 % ... +25 %	(Gold-plated contacts)	-25 °C ... +70 °C	<b>859-384</b>	1
Relay with 1 changeover contact (1 u)	36 VDC	$V_N$ -30 % ... +25 %	(Gold-plated contacts)	-25 °C ... +70 °C	<b>859-386</b>	1
Relay with 1 changeover contact (1 u)	24 V DC	$V_N$ -30 % ... +25 %	250 VAC / 3 A	-25 °C ... +70 °C	<b>859-390</b>	1
Relay with 1 changeover contact (1 u)	110 V DC	$V_N \pm 30$ %	250 VAC / 3 A	-25 °C ... +70 °C	<b>859-391</b>	1
Relay with 1 changeover contact (1 u)	24 VDC	$V_N$ -30 % ... +25 %	(Gold-plated contacts)	-25 °C ... +70 °C	<b>859-392</b>	1
Relay with 1 changeover contact (1 u)	72 V DC	$V_N$ -30 % ... +25 %	250 VAC / 3 A	-25 °C ... +70 °C	<b>859-393</b>	1
Relay with 1 changeover contact (1 u)	36 V DC	$V_N$ -30 % ... +25 %	250 VAC / 3 A	-25 °C ... +70 °C	<b>859-394</b>	1
Relay with 1 changeover contact (1 u)	48 VDC	$V_N \pm 40$ %	250 VAC / 3 A	-25 °C ... +70 °C	<b>859-397</b>	1
Relay with 1 changeover contact (1 u)	24 V DC	$V_N \pm 40$ %	250 VAC / 3 A	-25 °C ... +70 °C	<b>859-398</b>	1
Relay with 1 changeover contact (1 u)	110 VDC	$V_N \pm 40$ %	250 VAC / 3 A	-25 °C ... +70 °C	<b>859-399</b>	1

For additional technical data see: [www.wago.com](http://www.wago.com)

# 1 Accessories, 859 Series

72

Operating tool



Marking pen with fiber tip



Test pin



End and intermediate plate

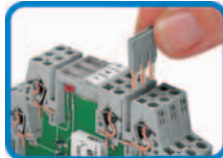


Description	Item No.	Pack. Unit
End and intermediate plate; 1 mm / 0.039 in thick, gray	859-525	100 (4x25)
Test pin; Ø 1 mm / 0.039 in; test wire for sold. onto test plug	859-500	1
Marking pen for permanent marking	210-110	1
Operating tool, with partially insulated shaft Type 2, blade (3.5 x 0.5) mm	210-720	1

Push-in type jumper bar



Commoning



Description	Item No.	Pack. Unit	
Push-in type jumper bars, light gray, insulated, 18 A	2-way	859-402	200 (8x25)
	3-way	859-403	200 (8x25)
	4-way	859-404	200 (8x25)
	5-way	859-405	200 (8x25)
	6-way	859-406	100 (4x25)
	7-way	859-407	100 (4x25)
	8-way	859-408	100 (4x25)
	9-way	859-409	100 (4x25)
	10-way	859-410	100 (4x25)
	Item no. suffix for colored push-in type jumper bars	yellow	... /000-029
red		... /000-005	
blue		... /000-006	

Miniature quick marking card



Marking

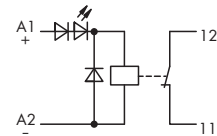
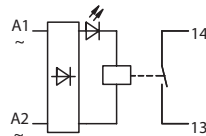
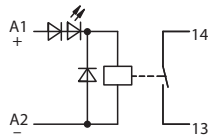


Description	Item No.	Pack. Unit	
Miniature WSB Quick marking system plain	248-501	5 cards	
Marking software and printer/plotter see Section 11			
Marking	1 ... 10 (10 x)	248-502	5 cards
	11 ... 20 (10x)	248-503	5 cards
	21 ... 30 (10x)	248-504	5 cards
	31 ... 40 (10x)	248-505	5 cards
	41 ... 50 (10 x)	248-506	5 cards
	1 ... 50 (2 x)	248-566	5 cards
	K 1 ... K 10 (10 x)	248-450	5 cards
	K 11 ... K 20 (10 x)	248-451	5 cards
	K 100 (10 x)	248-452	5 cards
	U 1 ... U 10 (10 x)	248-453	5 cards
U 11 ... U 20 (10 x)	248-454	5 cards	
U 100 (10 x)	248-455	5 cards	
10 strips with 10 markers, white with black printing			



# 1 Rail Mounted Relay Modules

	Relay with 1 make contact Relay direct soldered with universal mounting carrier	Relay with 1 break contact Relay direct soldered with universal mounting carrier
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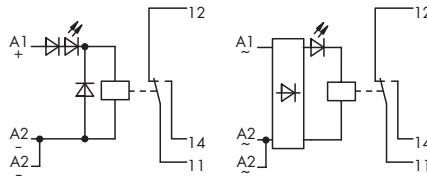


Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Switching relay module	24 V DC	16 mA	<b>288-364</b>	1	24 V DC	16 mA	<b>288-368</b>	1
	24 V AC/DC	16 mA	<b>288-564</b>	1				
	48 V AC/DC	9.1 mA	<b>288-565</b>	1				
	115 V AC/DC	4.4 mA	<b>288-567</b>	1				

Technical Data			
Contact material	AgNi 0.15 + Au	AgNi 0.15 + Au	AgNi 0.15 + Au
Max. switching voltage	250 V DC / 250 V AC	250 V DC / 250 V AC	250 V DC / 250 V AC
Max. make / break current	4 s 16 A / 8 A	4 s 16 A / 8 A	4 s 16 A / 8 A
Max. continuous current	5 A	5 A	5 A
Max. switching power (resistive)	100 W / 1500 VA	100 W / 1500 VA	100 W / 1500 VA
Pull-in / operating power	240 mW / 500 mW	240 mW / 500 mW	240 mW / 500 mW
Pull-in/drop-out/bounce time typ.	4 ms / 6 ms / 2 ms	4 ms / 6 ms / 2 ms	4 ms / 6 ms / 2 ms
Dielectric strength contact-coil (AC, 1 min)	4 kV	4 kV	4 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2	250 V / 4 kV / 2
Mechanical life	30 x 10 <sup>6</sup> switching operations	30 x 10 <sup>6</sup> switching operations	30 x 10 <sup>6</sup> switching operations
Mechanical life at max. load (resistance)	2 x 10 <sup>5</sup> switching operations	2 x 10 <sup>5</sup> switching operations	2 x 10 <sup>5</sup> switching operations
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C	-25 °C ... +40 °C
Dimensions (mm) L x W x H incl. mounting carrier and relay	13 x 47 x 85	13 x 47 x 85	13 x 47 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
<b>Accessories</b>			
WMB Multi marking system for mounting carrier	see from page 506	see from page 506	see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197



Relay with 1 changeover contact Relay direct soldered with universal mounting carrier



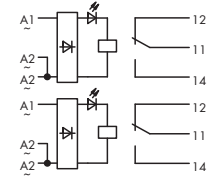
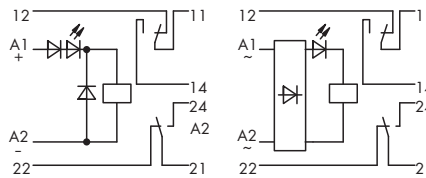
Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Switching relay module	24 V DC	21.8	<b>288-304</b>	1
	24 V AC/DC	21.8	<b>288-504</b>	1
	230 V AC	6.1 mA	<b>288-508</b>	1

### Technical Data

Contact material	AgNi 0.15 + Au
Max. switching voltage	300 V DC / 250 V AC
Max. make / break current	4 s 20 A / 8 A
Max. continuous current	6 A
Max. switching power (resistive)	192 W / 1750 VA
Pull-in / operating power	261 mW / 533 mW
Pull-in/drop-out/bounce time typ.	9 ms / 3 ms / 2 ms
Dielectric strength contact-coil (AC, 1 min)	4 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2
Mechanical life	30 x 10 <sup>6</sup> switching operations
Mechanical life at max. load (resistance)	1 x 10 <sup>5</sup> switching operations
Ambient operating temperature	-25 °C ... +40 °C
Dimensions (mm) L x W x H incl. mounting carrier and relay	20.5 x 48 x 85 Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in
<b>Accessories</b>	
WMB Multi marking system for mounting carrier	see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197

# 1 Rail Mounted Relay Modules

	Relay with 2 changeover contacts Relay direct soldered with universal mounting carrier	with 2 relays, 1 changeover contact each Relay direct soldered with universal mounting carrier
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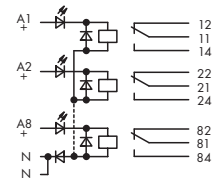
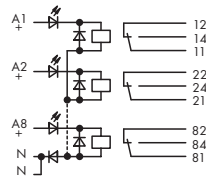
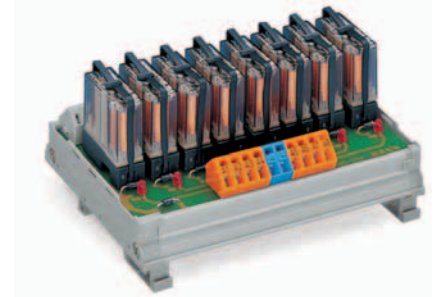


Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Switching relay module	24 V DC	21.8	<b>288-312</b>	1	24 V AC/DC	21.8	<b>288-758</b>	1
	24 V AC/DC	21.8	<b>288-512</b>	1	11.5 V AC/DC	4.8 mA	<b>288-761</b>	1
					230 V AC	4.1 mA	<b>288-762</b>	1

## Technical Data

Contact material	AgNi 0.15	AgNi 0.15
Max. switching voltage	250 VAC	250 VAC
Max. make current	4 s, 14 A	16 A
Max. continuous current	6 A	6 A
Max. switching power (resistive)	1500 VA	1500 VA
Pull-in/drop-out/bounce time typ.	8ms / 3ms / 2 ms	9ms / 3ms / 2 ms
Dielectric strength, contact-coil (AC, 1 min)	2 kV <sub>rms</sub>	2.5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1.5 kV <sub>eff</sub>	1.5 kV <sub>eff</sub>
Nominal voltage to EN 60664-1	250V / 2.5kV / 2	250V / 2.5kV / 2
Mechanical life	20 x 10 <sup>6</sup> switching operations	30 x 10 <sup>6</sup> switching operations
Mechanical life at max. load (resistance)	1 x 10 <sup>5</sup> switching operations	1 x 10 <sup>5</sup> switching operations
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Storage temperature	-40 °C ... +80 °C	-40 °C ... +80 °C
Dimensions (mm) L x W x H incl. mounting carrier and relay	22.5 x 48 x 85	38.5 x 48 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

	with 8 relays, 1 changeover contact each Relay direct soldered with universal mounting carrier	with 8 relays, 1 changeover contact each Relay in socket with universal mounting carrier
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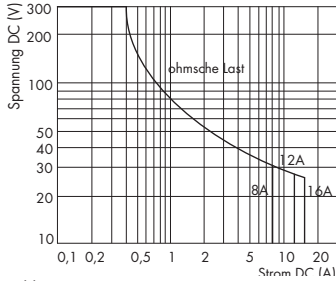


Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Switching relay module	24 V DC	10.2	287-804	1	24 V DC	21.8	287-824	1

**Technical Data**

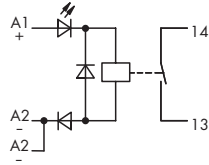
Contact material	AgNi 0.15	AgNi 0.15
Max. switching voltage	250 V AC	250 V AC
Max. make current	4 s 30	20 A
Max. continuous current	6 A	6 A
Max. switching power (resistive)	1500 VA	1500 VA
Pull-in/drop-out/bounce time typ.	7ms / 3ms / 2 ms	9ms / 3ms / 2 ms
Dielectric strength contact-coil (AC, 1 min)	4 kV	4 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250V / 2.5kV / 2	250V / 2.5kV / 2
Mechanical life	20 x 10 <sup>6</sup> switching operations	20 x 10 <sup>6</sup> switching operations
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Dimensions (mm) L x W x H incl. mounting carrier and relay	85 x 38 x 127 Height from upper-edge of DIN 35 rail	85 x 58 x 127 Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	CAGE CLAMP® (WAGO 236 Series)
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

**Relay with 1 make contact Relay direct soldered with universal mounting carrier  
 Designed for switching high inrush current loads i.e. filament lamp loads**



DC load limit curve

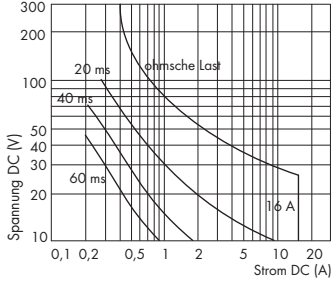
Kontaktlebensdauer bei Lampenlast Last	Schaltspiele
12 A, AC 250 V, $\cos \varphi = 1$	$3 \times 10^5$
TV 8 nach UL 508	$25 \times 10^3$
2500 W, AC 230 V Halogen	$> 10^4$
1000 W, AC 250 V Glühlampe	$2,3 \times 10^5$
3000 W, AC 250 V Glühlampe	$3,6 \times 10^4$
1500 VA, Leuchtstoff 163 µF	$10^4$



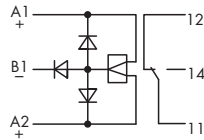
Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Switching relay module	24 V DC	21.8	288-320	1

Technical Data	
Input voltage range	V <sub>N</sub> -15 % ... +20 %
Contact material	AgSnO <sub>2</sub>
Max. switching voltage	250 V AC
Peak inrush current	20 ms/120 A
Max. continuous current	16 A
Max. switching power (resistive)	4000 VA AC, DC see load limit curve
Recommended minimum load	> 100 mA / 12 V AC/DC
Pull-in/drop-out/bounce time typ.	8ms / 2ms / 2 ms
Dielectric strength contact-coil (AC, 1 min)	4 kV
Dielectric strength open contact	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250V / 4kV / 2
Mechanical life	30 x 10 <sup>6</sup> switching operations
Ambient operating temperature	-25 °C ... +40 °C
Storage temperature	-40 °C ... +70 °C
Dimensions (mm) L x W x H incl. mounting carrier and relay	20.5 x 47 x 85 Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in
Standards/specifications	EN 60664-1; UL 508
<b>Accessories</b>	
WMB Multi marking system for mounting carrier	see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197

	<b>Bistable relay with 1 changeover contact</b> <b>Relay direct soldered with universal mounting carrier</b>	
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DC load limit curve



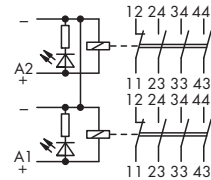
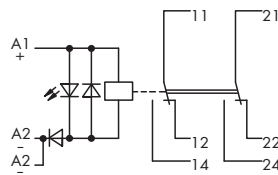
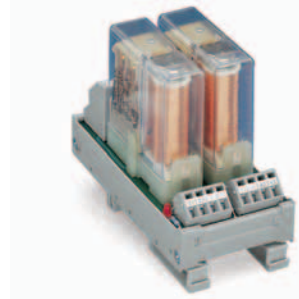
Description	$V_N$	$I_N$	Item No.	Pack. Unit	
<b>Switching relay module</b>	24 V DC	41.5	<b>288-380</b>	1	

Technical Data					
Input voltage range		$V_N -15\% \dots +20\%$			
Contact material		AgNi 0,15			
Max. switching voltage		250 V AC			
Max. make / break current		4 s 20 A / 8 A			
Max. continuous current		6 A			
Max. switching power (resistive)		1500 VA			
Pull-in/drop-out/bounce time typ.		9ms / 3ms / 2 ms			
Dielectric strength contact-coil (AC, 1 min)		4 kV			
Dielectric strength open contact		1 kV			
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1		250V / 4kV / 2			
Mechanical life		$30 \times 10^6$ switching operations			
Ambient operating temperature		-25 °C ... +40 °C			
Storage temperature		-40 °C ... +70 °C			
Dimensions (mm) L x W x H incl. mounting carrier and relay		20.5 x 48 x 85			
Wire connection		Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)			
Cross sections		0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12			
Strip length		5 ... 6 mm / 0.22 in			
<b>Accessories</b>					
WMB Multi marking system for mounting carrier			see from page 506		
Marker strips for mounting carrier			white 709-198 / transparent 709-197		

# 1 Rail Mounted Relay Modules

80

	Relay with 2 changeover contacts with forced operated contacts, Type A, Relay direct soldered with universal mounting carrier	2 pluggable relays with 3 make contacts and 1 break contact with forced operated contacts, Type A, plugged in universal mounting carrier
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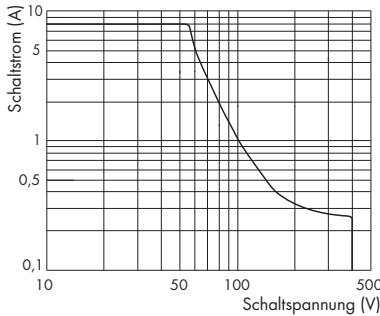


Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Switching relay module	24 V DC	30 mA	288-437	1	24 V DC	50 mA	288-435	1

Technical Data			
Input voltage range	V <sub>N</sub> -15 % ... +10 %	V <sub>N</sub> -15 % ... +10 %	V <sub>N</sub> -15 % ... +10 %
Contact material	AgNi 10	AgCdO	AgCdO
Contact type	2 changeover contacts	3 make contacts / 1 break contact	3 make contacts / 1 break contact
Max. switching voltage	380V	300 V DC / 230 V AC	300 V DC / 230 V AC
Max. make / break current	0,3 A	10 A / 7 A	10 A / 7 A
Max. continuous current	5 A	6 A	6 A
Max. switching power (resistive)	7 VA	2000 VA	2000 VA
Recommended minimum load	1 mA / 100 mV AC/DC	300 mA / 12 V	300 mA / 12 V
Pull-in/drop-out/bounce time typ.	15ms / 12ms	23ms / 20ms	23ms / 20ms
Dielectric strength contact-coil (AC, 1 min)	4 kV	2,5 kV	2,5 kV
Nominal voltage to EN 60664-1	250V / 2,5kV / 2	250V / 2,5kV / 2	250V / 2,5kV / 2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>	2,5 kV <sub>rms</sub>	2,5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)		2,5 kV <sub>rms</sub>	2,5 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1 kV <sub>eff</sub>	2,5 kV <sub>eff</sub>	2,5 kV <sub>eff</sub>
Mechanical life	5 x 10 <sup>7</sup> switching operations	1 x 10 <sup>7</sup> switching operations	1 x 10 <sup>7</sup> switching operations
Ambient operating temperature	-40 °C ... +85 °C	-25 °C ... +70 °C	-25 °C ... +70 °C
Relay fixing mechanism	soldered	plastic holden with locking latches (by relay manufacturer)	plastic holden with locking latches (by relay manufacturer)
Dimensions (mm) L x W x H	19 x 38 x 85	57 x 90 x 107	57 x 90 x 107
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 736 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 736 Series)
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
<b>Accessories</b>			
WMB Multi marking system for mounting carrier	see from page 506	see from page 506	see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197



<p><b>If required a ventilation hole (e) can be made in the cover, reducing the degree of protection from IP67 to IP30.</b></p>	<p><b>Safety relay type SDS SF4D with 4 break contacts and 4 make contacts with 1 relay with universal mounting carrier with force-guided contacts, type B</b></p>	
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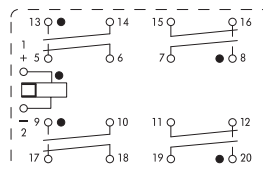


DC load limit curve

If an outer contact (20) should weld then the forced operated inner contact (12) driven by the actuator (d) remains open. The rotating armature (c) remains free to move. The unaffected contact pairs can operate normally, (i. e. their function to make or break remains unaffected).

If an inner contact should weld (12) then the movement of the rotating armature (c) is blocked via the operator (d). Open contacts of all four contact pairs remain open. This arrangement corresponds to conventional, forced contact operation.

If required a breathing hole can be made in the cover. However be aware that the degree of waterproof protection will reduce from IP 67 to IP 30!

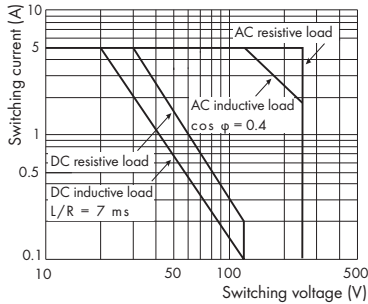


Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Switching relay module	5 V DC	104 mA	<b>288-412</b>	1
	12 V DC	48 mA	<b>288-413</b>	1
	24 V AC/DC	26 mA	<b>288-414</b>	1
	48 V AC/DC	16.7 mA	<b>288-415</b>	1
	60 V AC/DC	15.7 mA	<b>288-416</b>	1
	230 V AC	10 mA	<b>288-418</b>	1

**Technical Data**

<b>Coil:</b>		
Input voltage range	V <sub>N</sub> -15 % ... +10 %	
<b>Contacts:</b>		
Contact material	AgSnO <sub>2</sub>	
Max. continuous current	6 A	
Max. make current	20 A	
Max. switching voltage	250 VAC	
Max. switching power (resistive)	150 W / 1500 VA	
Recommended minimum load	≥ 10 V / 10 mA	
Pull-in/drop-out/bounce time typ.	18ms / 21ms / 4 ms	
Mechanical life	1 x 10 <sup>7</sup> switching operations	
Mechanical life at max. load (resistance)	1 x 10 <sup>5</sup> switching operations	
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250V / 2.5kV / 2	
Dielectric strength, contact-coil (AC, 1 min)	2 kV <sub>rms</sub>	
Dielectric strength contact-contact (AC, 1 min)	1.5 kV <sub>eff</sub>	
Ambient operating temperature at V <sub>N</sub>	-40 °C ... +70 °C	
Storage temperature	-40 °C ... +80 °C	
Dimensions (mm) L x W x H		
incl. mounting carrier and relay	63.5 x 40 x 85	
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 256 Series)	
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Strip length	5 ... 6 mm / 0.22 in	
Standards/specifications	EN 60664-1; EN 50205; EN 61810-1	
Relay approvals	ESTI (SEV): 09.1133 UL: E120782 TÜV: 968/EZ 116.02/09	
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	
Marker strips for mounting carrier	white 709-198 / transparent 709-197	

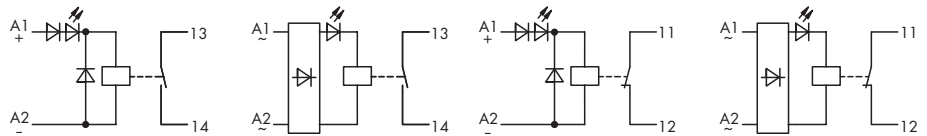
	<b>Relay with 1 make contact</b> <b>Module width 10 mm / 0.394 in</b>	<b>Relay with 1 break contact</b> <b>Module width 10 mm / 0.394 in</b>
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DC load limit curve

**WSB marker cards**

- Marking K; Item No.: 209-782
  - Marking 1 ... 10; Item No.: 209-702
  - Marking A1, A2, 13, 14; Item No.: 209-952
  - Marking A1, A2, 11, 12; Item No.: 209-953
- 5 cards, each containing 10 strips with 10 markers



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Switching relay module	24 V DC	7.4 mA	<b>286-364</b>	1	24 V DC	20.4 mA	<b>286-368</b>	1
	48 V DC	8.6 mA	<b>286-365</b>	1	48 V DC	11.1 mA	<b>286-369</b>	1
	60 V DC	7.3 mA	<b>286-366</b>	1	60 V DC	10.7 mA	<b>286-370</b>	1
	24 V AC	10.2 mA	<b>286-564</b>	1	24 V AC	18.5 mA	<b>286-568</b>	1
	115 V AC	10.5 mA	<b>286-566</b>	1				
	230 V AC	7.3 mA	<b>286-567</b>	1				

**Technical Data**

Accessories see pages 99 ... 100

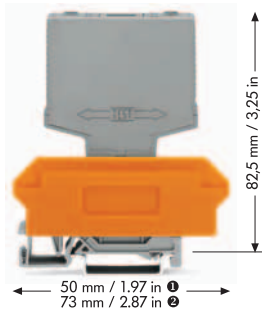
Accessories see pages 99 ... 100

Parameter	Value	Value
Contact material	AgSnO	AgNi
Max. switching voltage	250 V AC	250 V AC
Max. continuous current	5 A	5 A
Max. switching power (resistive)	1250 VA	1250 VA
Pull-in/drop-out/bounce time typ.	6ms / 6ms / ms	10ms / 4ms / ms
Dielectric strength contact-coil (AC, 1 min)	3 kV	4 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 2,5 kV / 2	250 V / 4 kV / 2
Mechanical life	5 x 10 <sup>4</sup> switching operations	5 x 10 <sup>6</sup> switching operations
Mechanical life at max. load (resistance)	1 x 10 <sup>5</sup> switching operations	5 x 10 <sup>4</sup> switching operations
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C

**Accessories**

Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①</b>	12 mm / 0.472 in wide <b>280-618</b>	1	12 mm / 0.472 in wide <b>280-618</b>
<b>with 4-conductor terminal blocks, orange separator ②</b>	12 mm / 0.472 in wide <b>280-608</b>	1	12 mm / 0.472 in wide <b>280-608</b>
<b>with 4-conductor terminal blocks, marker plate ③</b>	15 mm / 0.591 in wide <b>280-762</b>	1	15 mm / 0.591 in wide <b>280-762</b>
<b>wire range 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in</b>			

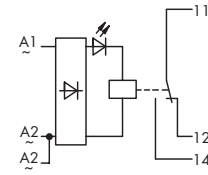
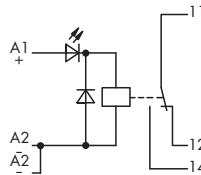
	Relay with 1 changeover contact Module width 15 mm / 0.591 in	Relay with 1 changeover contact Module width 15 mm / 0.591 in
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WSB marker cards

- Marking K; Item No.: 209-782
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A2, A2, 11, 12, 14, A1, A2, A2;  
Item No.: 209-994

5 cards, each containing 10 strips with 10 markers



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Switching relay module	5/6 V DC	94.3 mA	<b>286-302</b>	1	5/6 V AC/DC	94.3 mA	<b>286-502</b>	1
	12 V DC	49.4 mA	<b>286-303</b>	1	12 V AC/DC	49.4 mA	<b>286-503</b>	1
	24 V DC	19.4 mA	<b>286-304</b>	1	24 V AC/DC	21.8 mA	<b>286-504</b>	1
	48 V DC	11.4 mA	<b>286-305</b>	1	48 V AC/DC	11.4 mA	<b>286-505</b>	1
	60 V DC	9.2 mA	<b>286-306</b>	1	60 V AC/DC	9.2 mA	<b>286-506</b>	1
	115 V DC	4.8 mA	<b>286-307</b>	1	115 V AC	4.8 mA	<b>286-507</b>	1
	220 V DC	6.1 mA	<b>286-308</b>	1	230 V AC	6.1 mA	<b>286-508</b>	1

### Technical Data

Accessories see pages 99 ... 100

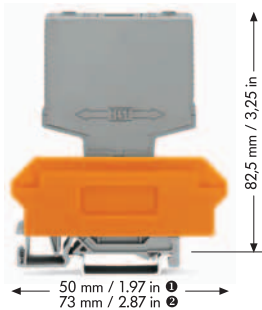
Accessories see pages 99 ... 100

Contact material	AgNi 0.15	AgNi 0.15
Max. switching voltage	250 V AC	250 V AC
Max. continuous current	7 A	7 A
Max. switching power (resistive)	1750 VA	1750 VA
Pull-in/drop-out/bounce time typ.	8ms / 6ms / ms	8ms / 6ms / ms
Dielectric strength contact-coil (AC, 1 min)	4 kV	4 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2
Mechanical life	30 x 10 <sup>6</sup> switching operations	30 x 10 <sup>6</sup> switching operations
Mechanical life at max. load (resistance)	1 x 10 <sup>5</sup> switching operations	1 x 10 <sup>5</sup> switching operations
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	17 mm / 0.669 in wide <b>280-619</b>	1	17 mm / 0.669 in wide <b>280-619</b>	1
with 4-conductor terminal blocks, orange separator ②	17 mm / 0.669 in wide <b>280-609</b>	1	17 mm / 0.669 in wide <b>280-609</b>	1
with 4-conductor terminal blocks, marker plate ②	20 mm / 0.787 in wide <b>280-763</b>	1	20 mm / 0.787 in wide <b>280-763</b>	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				

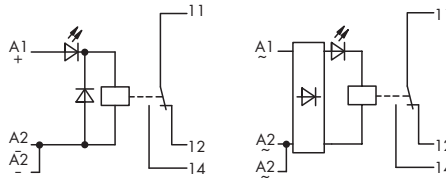
# 1 Pluggable Modules - Relays

	<b>Relay with 1 changeover contact</b> <b>Contact hard gold plated</b>  <b>Module width 15 mm / 0.591 in</b>	-
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\* In order to prevent the gold layer from being damaged, 30 VDC switching voltages and 50 mA currents shall not be exceeded.

Higher switching power leads to evaporation of the gold layer. The resulting deposits in the housing may reduce the service life.



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Switching relay module	24 V DC	21.8 mA	<b>286-394</b>	1
	48 V DC	11.4 mA	<b>286-395</b>	1
	24 V AC/DC	21.8 mA	<b>286-594</b>	1

## Technical Data

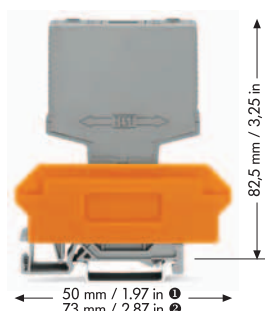
Accessories see pages 99 ... 100

Contact material	AgNi + Au
Max. switching voltage	250 VAC *
Max. continuous current	1 A *
Pull-in/drop-out/bounce time typ.	9ms / 3ms / ms
Dielectric strength contact-coil (AC, 1 min)	4 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2
Mechanical life	30 x 10 <sup>6</sup> switching operations
Mechanical life at max. load (resistance)	1 x 10 <sup>5</sup> switching operations
Ambient operating temperature	-25 °C ... +40 °C

## Accessories

	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	17 mm / 0.669 in wide	<b>280-619</b>		1
with 4-conductor terminal blocks, orange separator ②	17 mm / 0.669 in wide	<b>280-609</b>		1
with 4-conductor terminal blocks, marker plate ③	20 mm / 0.787 in wide	<b>280-763</b>		1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				

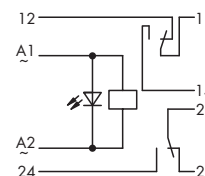
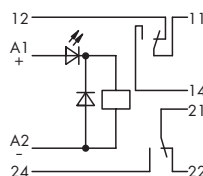
	<b>Relay with 2 changeover contacts</b> <b>Module width 20 mm / 0.787 in</b>	<b>Relay with 2 changeover contacts</b> <b>Module width 20 mm / 0.787 in</b>
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WSB marker cards

- Marking K; Item No.: 209-782
- Marking 1 ... 10; Item No.: 209-702
- Marking 12, A1, A2, 24, 11, 14, 21, 22; Item No.: 209-995

5 cards, each containing 10 strips with 10 markers



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Switching relay module	5/6 V DC	82.8 mA	<b>286-310</b>	1	5/6 V AC	174 mA	<b>286-510</b>	1
	12 V DC	46.1 mA	<b>286-311</b>	1	12 V AC	89 mA	<b>286-511</b>	1
	24 V DC	21.8 mA	<b>286-312</b>	1	24 V AC	47 mA	<b>286-512</b>	1
	48 V DC	10.3 mA	<b>286-313</b>	1	48 V AC	23.3 mA	<b>286-513</b>	1
	60 V DC	8.8 mA	<b>286-314</b>	1				
	110 V DC	4.9 mA	<b>286-315</b>	1	115 V AC	10.5 mA	<b>286-515</b>	1
	220 V DC	5 mA	<b>286-316</b>	1	230 V AC	5.5 mA	<b>286-516</b>	1

### Technical Data

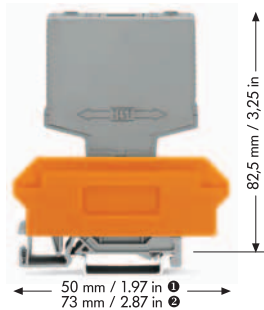
Accessories see pages 99 ... 100

Accessories see pages 99 ... 100

Contact material	AgNi 0.15	Ag Ni 0.15
Max. switching voltage	250 V AC	250 V AC
Max. make current	0,2 s 30 A	0,2 s 30 A
Max. continuous current	7 A	7 A
Max. switching power (resistive)	1750 VA	1750 VA
Pull-in/drop-out/bounce time typ.	18ms / 3ms / ms	15ms / 5ms / ms
Dielectric strength contact-coil (AC, 1 min)	4 kV	4 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2
Mechanical life	30 x 10 <sup>7</sup> switching operations	30 x 10 <sup>7</sup> switching operations
Mechanical life at max. load (resistance)	2.5 x 10 <sup>5</sup> switching operations	2.5 x 10 <sup>5</sup> switching operations
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	22 mm / 0.866 in wide <b>280-638</b>	1	22 mm / 0.866 in wide <b>280-638</b>	1
with 4-conductor terminal blocks, orange separator ②	22 mm / 0.866 in wide <b>280-628</b>	1	22 mm / 0.866 in wide <b>280-628</b>	1
with 4-conductor terminal blocks, marker plate ②	25 mm / 0.984 in wide <b>280-764</b>	1	25 mm / 0.984 in wide <b>280-764</b>	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				

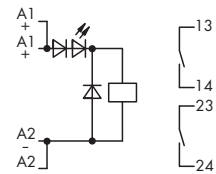
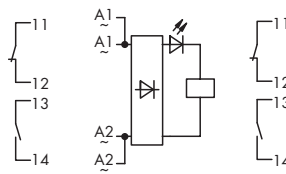
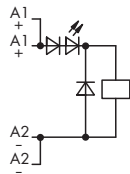
	<b>Relay with 1 break and 1 make contact</b> <b>Module width 20 mm / 0.787 in</b>	<b>Relay with 2 make contacts</b> <b>Module width 20 mm / 0.787 in</b>
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WSB marker cards

- Marking K; Item No.: 209-782
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A1, A2, A2, 11, 12, 13, 14, 23, 24; Item No.: 209-693

5 cards, each containing 10 strips with 10 markers



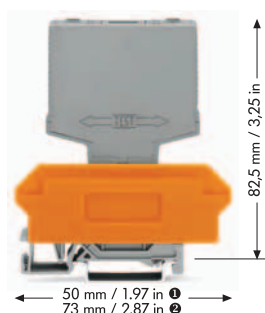
Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Switching relay module	5/6 V DC	47.2 mA	<b>286-318</b>	1	5/6 V DC	47.2 mA	<b>286-326</b>	1
	12 V DC	19.9 mA	<b>286-319</b>	1	12 V DC	19.9 mA	<b>286-327</b>	1
	24 V DC	7.4 mA	<b>286-320</b>	1	24 V DC	7.4 mA	<b>286-328</b>	1
	48 V DC	3.9 mA	<b>286-321</b>	1	48 V DC	3.9 mA	<b>286-329</b>	1
	60 V DC	3.9 mA	<b>286-322</b>	1	60 V DC	3.9 mA	<b>286-330</b>	1
	220 V DC	3.7 mA	<b>286-324</b>	1	220 V DC	3.7 mA	<b>286-332</b>	1
	24 V AC	8.3 mA	<b>286-520</b>	1				

Technical Data	Accessories see pages 99 ... 100	
Contact material	AgSnO <sub>2</sub>	AgSnO <sub>2</sub>
Max. switching voltage	380 V AC	380 V AC
Max. make current	1 s 15 A	1 s 15 A
Max. continuous current	6 A	6 A
Max. switching power (resistive)	2000 VA	2000 VA
Pull-in/drop-out/bounce time typ.	10ms / 4ms / ms	10ms / 4ms / ms
Dielectric strength contact-coil (AC, 1 min)	3 kV	3 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2
Mechanical life	5 x 10 <sup>7</sup> switching operations	5 x 10 <sup>7</sup> switching operations
Mechanical life at max. load (resistance)	1 x 10 <sup>5</sup> switching operations	1 x 10 <sup>5</sup> switching operations
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	22 mm / 0.866 in wide <b>280-638</b>	1	22 mm / 0.866 in wide <b>280-638</b>	1
with 4-conductor terminal blocks, orange separator ②	22 mm / 0.866 in wide <b>280-628</b>	1	22 mm / 0.866 in wide <b>280-628</b>	1
with 4-conductor terminal blocks, marker plate ③	25 mm / 0.984 in wide <b>280-764</b>	1	25 mm / 0.984 in wide <b>280-764</b>	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				



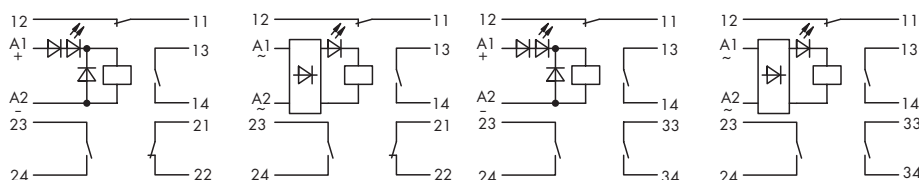
	<b>Relay with 2 break contacts and 2 make contacts</b>  <b>Module width 25 mm / 0.984 in</b>	<b>Relay with 1 break contact and 3 make contacts</b>  <b>Module width 25 mm / 0.984 in</b>
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#### WSB marker cards

- Marking K; Item No.: 209-782
- Marking 1 ... 10; Item No.: 209-702
- Marking 12, A1, A2, 23, 24, 11, 13, 14, 21, 22; Item No.: 209-691
- Marking 12, A1, A2, 23, 24, 11, 13, 14, 33, 34; Item No.: 209-690

5 cards, each containing 10 strips with 10 markers



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Switching relay module	5/6 V DC	42.3 mA	<b>286-334</b>	1	5/6 V DC	42.3 mA	<b>286-342</b>	1
	12 V DC	22.2 mA	<b>286-335</b>	1	12 V DC	22.2 mA	<b>286-343</b>	1
	24 V DC	8.5 mA	<b>286-336</b>	1	24 V DC	8.5 mA	<b>286-344</b>	1
	48 V DC	5.7 mA	<b>286-337</b>	1	48 V DC	5.7 mA	<b>286-345</b>	1
	60 V DC	5.7 mA	<b>286-338</b>	1	60 V DC	5.7 mA	<b>286-346</b>	1
	110 V DC	6.6 mA	<b>286-339</b>	1	110 V DC	6.6 mA	<b>286-347</b>	1
	24 V AC	11.2 mA	<b>286-536</b>	1	24 V AC	11.2 mA	<b>286-544</b>	1
	230 V AC	16.2 mA	<b>286-540</b>	1	115 V AC	10.6 mA	<b>286-547</b>	1
					230 V AC	16.2 mA	<b>286-548</b>	1

#### Technical Data

Accessories see pages 99 ... 100

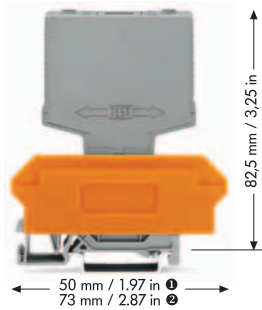
Accessories see pages 99 ... 100

Contact material	AgNi 15 + Au	AgNi 15 + Au
Max. switching voltage	250 V AC	250 V AC
Max. make current	20 A	20 A
Max. continuous current	5 A	5 A
Max. switching power (resistive)	1250 VA	1250 VA
Pull-in/drop-out/bounce time typ.	8ms / 5ms / ms	9ms / 5ms / ms
Dielectric strength contact-coil (AC, 1 min)	1,5 kV	1,5 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 2,5 kV / 2	250 V / 2,5 kV / 2
Mechanical life	2 x 10 <sup>8</sup> switching operations	2 x 10 <sup>8</sup> switching operations
Mechanical life at max. load (resistance)	1 x 10 <sup>5</sup> switching operations	1 x 10 <sup>5</sup> switching operations
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	27 mm / 1.063 in wide <b>280-639</b>	1	27 mm / 1.063 in wide <b>280-639</b>	1
with 4-conductor terminal blocks, orange separator ②	27 mm / 1.063 in wide <b>280-629</b>	1	27 mm / 1.063 in wide <b>280-629</b>	1
with 4-conductor terminal blocks, marker plate ②	30 mm / 1.181 in wide <b>280-765</b>	1	30 mm / 1.181 in wide <b>280-765</b>	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				

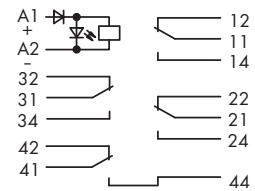
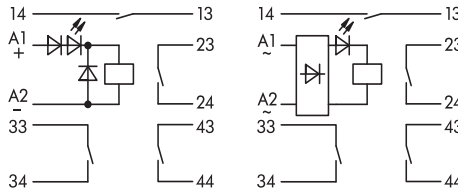
# 1 Pluggable Modules - Relays

	<b>Relay with 4 make contacts</b> <b>Module width 25 mm / 0.984 in</b>	<b>Relay with 4 changeover contacts</b> <b>Module width 35 mm / 1.378 in</b>
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**WSB marker cards**

- Marking K; Item No.: 209-782
  - Marking 1 ... 10; Item No.: 209-702
  - Marking 14, A1, A2, 33, 34, 13, 23, 24, 43, 44; Item No.: 209-692
  - Marking A1, A2, 32, 31, 34, 42, 41, 12, 11, 14; Item No.: 249-656
- 5 cards, each containing 10 strips with 10 markers



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Switching relay module	5/6 V DC	42.3 mA	<b>286-350</b>	1	24 V DC	32 mA	<b>286-375</b>	1
	12 V DC	22.2 mA	<b>286-351</b>	1	115 V AC	9.2 mA	<b>286-578</b>	1
	24 V DC	8.5 mA	<b>286-352</b>	1	230 V AC	9.9 mA	<b>286-579</b>	1
	48 V DC	5.7 mA	<b>286-353</b>	1				
	60 V DC	5.7 mA	<b>286-354</b>	1				
	110 V DC	6.6 mA	<b>286-355</b>	1				
	24 V AC	11.2 mA	<b>286-552</b>	1				
	115 V AC	10.6 mA	<b>286-555</b>	1				
	230 V AC	16.2 mA	<b>286-556</b>	1				

**Technical Data**

Accessories see pages 99 ... 100

Accessories see pages 99 ... 100

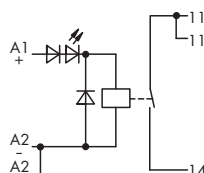
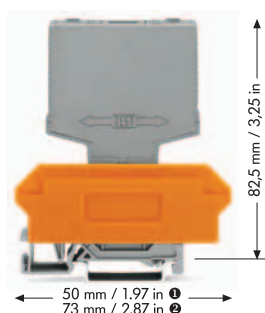
Contact material	AgNi 15 + Au	AgNi
Max. switching voltage	250 V AC	240 V AC
Max. make current	20 A	
Max. continuous current	5 A	4 A
Max. switching power (resistive)	1000 VA	960 VA
Pull-in/drop-out/bounce time typ.	10ms / 5ms / ms	6ms / - / ms
Dielectric strength contact-coil (AC, 1 min)	1,5 kV	1,5 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 2,5 kV / 2	250 V / 4 kV / 2
Mechanical life	2 x 10 <sup>8</sup> switching operations	30 x 10 <sup>6</sup> switching operations
Mechanical life at max. load (resistance)	1 x 10 <sup>5</sup> switching operations	10 x 10 <sup>5</sup> switching operations
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C

**Accessories**

	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	27 mm / 1.063 in wide <b>280-639</b>	1		
with 4-conductor terminal blocks, orange separator ②	27 mm / 1.063 in wide <b>280-629</b>	1	37 mm / 1.457 in wide <b>280-636</b>	1
with 4-conductor terminal blocks, marker plate ③	30 mm / 1.181 in wide <b>280-765</b>	1		
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				

Relay with 1 make contact for higher DC loads

Module width 15 mm / 0.591 in



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Switching relay module	24 V DC	20 mA	286-376	1

#### Technical Data

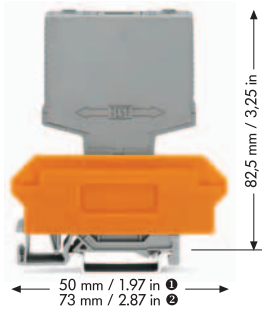
Accessories see pages 99 ... 100

Contact material	AgNi 0.15
Max. switching voltage	250 V AC
Max. make current (resistive)	4 s 14A
Recommended minimum load	> 12 V / 10 mA AC/DC
Max. continuous current	5 A
Max. switching power (resistive)	2000 VA
Pull-in/drop-out/bounce time typ.	9ms / 3ms / ms
Dielectric strength contact-coil (AC, 1 min)	4 kV
Dielectric strength open contact	2 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2
Mechanical life	20 x 10 <sup>6</sup> switching operations
Mechanical life at max. load (resistance)	3 x 10 <sup>5</sup> switching operations
Ambient operating temperature	-25 °C ... +40 °C
Standards/specifications	EN 60664-1

#### Accessories

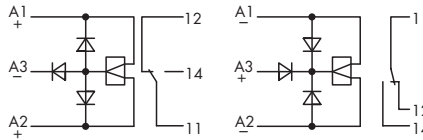
Accessories	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	17 mm / 0.669 in wide 280-619	1
with 4-conductor terminal blocks, orange separator ②	17 mm / 0.669 in wide 280-609	1
with 4-conductor terminal blocks, marker plate ②	20 mm / 0.787 in wide 280-763	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in		

	<b>Bistable relay with 1 changeover contact</b> <b>positive switching, negative switching</b>  <b>Module width 15 mm / 0.591 in</b>	
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**WSB marker cards**

- Marking K; Item No.: 209-782
  - Marking 1 ... 10; Item No.: 209-702
  - Marking A1, A1, A2, A2, 11, 12, 13, 14, 23, 24; Item No.: 209-693
  - Marking A1, A3, A2, 11, 12, 14; Item No.: 249-607
- 5 cards, each containing 10 strips with 10 markers



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
<b>Switching relay module</b>	24 V DC	41.5 mA	<b>286-380</b>	1
	24 V DC	41.5 mA	<b>286-381</b>	1

<b>Technical Data</b>		Accessories see pages 99 ... 100		
Contact material	AgNi 0,15			
Max. switching voltage	250 V AC			
Max. make current	20 A			
Max. continuous current	6 A			
Max. switching power (resistive)	1500 VA			
Pull-in/drop-out/bounce time typ.	9ms / 3ms / ms			
Dielectric strength contact-coil (AC, 1 min)	4 kV			
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2			
Mechanical life	30 x 10 <sup>6</sup> switching operations			
Mechanical life at max. load (resistance)	1 x 10 <sup>5</sup> switching operations			
Ambient operating temperature	-25 °C ... +40 °C			

<b>Accessories</b>	Item No.	Pack. Unit
<b>Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①</b>	17 mm / 0.669 in wide <b>280-619</b>	1
<b>with 4-conductor terminal blocks, orange separator ②</b>	17 mm / 0.669 in wide <b>280-609</b>	1
<b>with 4-conductor terminal blocks, marker plate ③</b>	20 mm / 0.787 in wide <b>280-763</b>	1
<b>wire range 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in</b>		

# Overview Pluggable Modules – Switching Relays

with an extended input voltage and operating temperature range, for railway applications

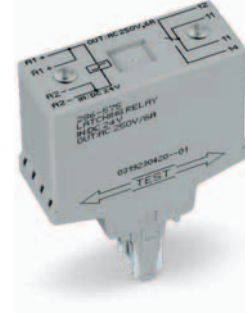
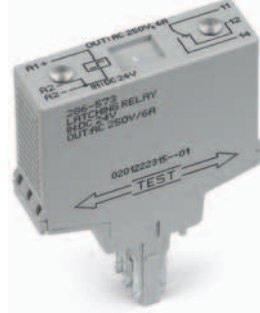
Switching relay module



Description	Nominal input voltage (V <sub>N</sub> )	Input voltage range	Max. switching voltage	Module width	Item No.	Pack. Unit
<b>Switching relay module, Relay with 1 changeover contact</b>	24 V DC	V <sub>N</sub> -30 % ...+25 %	250 V AC/DC	15 mm / 0.591 in	<b>286-304/004-000</b>	1
<b>Relay with 1 changeover contact</b>	110 V DC	V <sub>N</sub> -30 % ...+25 %	250 V AC/DC	15 mm / 0.591 in	<b>286-307/004-000</b>	1
<b>Relay with 2 changeover contacts</b>	24 V DC	V <sub>N</sub> -30 % ...+25 %	250 V AC / 200 V DC	20 mm / 0.787 in	<b>286-312/004-000</b>	1
<b>Relay with 1 break contact and 1 make contact</b>	24 V DC	V <sub>N</sub> -30 % ...+25 %	250 V AC / 200 V DC	20 mm / 0.787 in	<b>286-320/004-000</b>	1
<b>Relay with 2 make contacts</b>	24 V DC	V <sub>N</sub> -30 % ...+25 %	250 V AC / 200 V DC	20 mm / 0.787 in	<b>286-328/004-000</b>	1
<b>Relais with 2 make contacts and 2 make contacts</b>	24 V DC	V <sub>N</sub> -30 % ...+25 %	250 V AC / 200 V DC	25 mm / 0.984 in	<b>286-336/001-000</b>	1
<b>Relay with 3 make contacts and 1 break contact</b>	24 V DC	V <sub>N</sub> -30 % ...+25 %	250 V AC / 200 V DC	25 mm / 0.984 in	<b>286-344/004-000</b>	1
<b>Relay with 4 make contacts</b>	24 V DC	V <sub>N</sub> -30 % ...+25 %	250 V AC / 30 V DC	25 mm / 0.984 in	<b>286-352/004-000</b>	1
<b>Relay with 1 make contact</b>	24 V DC	V <sub>N</sub> -30 % ...+25 %	250 V AC	10 mm / 0.394 in	<b>286-364/004-000</b>	1
<b>Relay with 1 changeover contact</b>	24 V DC	V <sub>N</sub> -30 % ...+25 %	36 V DC	15 mm / 0.591 in	<b>286-394/004-000</b>	1
<b>Time relay (on-delay timing) with 1 changeover contact</b>	24 V DC	V <sub>N</sub> -30 % ...+25 %	250 V AC / 200 V DC	20 mm / 0.787 in	<b>286-604/004-000</b>	1
<b>Multifunction timing relay with 1 changeover contact</b>	24 V DC	V <sub>N</sub> -30 % ...+25 %	250 V AC / 120 V DC	20 mm / 0.787 in	<b>286-640/004-000</b>	1

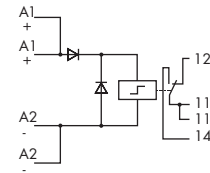
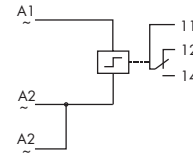
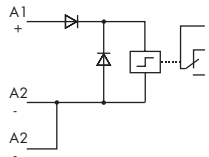
For additional technical data see: [www.wago.com](http://www.wago.com)

	Latching relays with 1 changeover contact (1 u)	Latching relay with 1 changeover contact (1 u) Extended input voltage and temperature range Railway applications
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WSB marker cards

- Marking K; Item No.: 209-782
  - Marking 1 ... 10; Item No.: 209-702
  - Marking A1, A1, A2, A2, 11, 12, 13, 14, 23, 24; Item No.: 209-693
  - Marking A1, A3, A2, 11, 12, 14; Item No.: 249-607
- 5 cards, each containing 10 strips with 10 markers



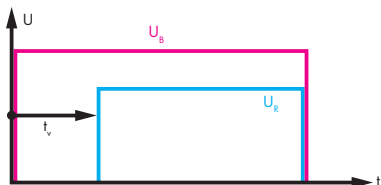
Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Latching relay	24 VDC	40 mA	<b>286-573</b>	1	24 VDC	70 mA	<b>286-575</b>	1
	230 VAC	10 mA	<b>286-574</b>	1				

Technical Data	Accessories see pages 61 ... 65	
<b>Coil:</b>		
Input voltage range	V <sub>N</sub> -15 % ... +10 %	V <sub>N</sub> -30 % ... +25 %
<b>Contacts:</b>		
Contact material	AgSnO <sub>2</sub>	AgSnO <sub>2</sub>
Max. continuous current	6 A	3 A (6 A at 50 °C)
Max. make current	50 A (20 ms)	50 A (20 ms)
Max. switching voltage	250 V	250 V
Max. switching power (resistive)	1500 VA	1500 VA
Recommended minimum load	≥ 10 mA / 10 V	≥ 10 mA / 10 V
Mechanical life	10 x 10 <sup>6</sup> switching operations at DC 1 x 10 <sup>5</sup> switching operations at AC	10 x 10 <sup>6</sup> switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250V / 4kV / 2	250V / 4kV / 2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1.5 kV <sub>rms</sub>	1.5 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	-
Ambient operating temperature at V <sub>N</sub>	-25 °C ... +50 °C	-25 °C ... +70 °C (I <sub>a</sub> < 3 A)
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	17 x 82.5 x 73	22 x 82.5 x 73
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Standards/specifications	EN 60664	EN 60664

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①				
with 4-conductor terminal blocks, orange separator ②				
with 4-conductor terminal blocks, marker plate ②				
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				



	On-delay timing 1 changeover contact specified time acc. to IEC 255, part 1 Module width 20 mm / 0.787 in	On-delay timing 1 changeover contact specified time acc. to IEC 255, part 1 Module width 20 mm / 0.787 in
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$V_B$  = operating voltage;  $V_{Si}$  = control voltage;  $V_R$  = voltage on relay;  
 $t_v$  = delay time



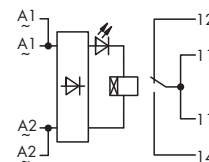
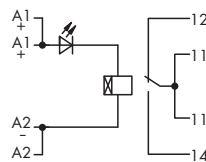
**On-delay time relay**

$V_B$  on A1+ and A2- applied: relay stays in rest position  
delay time  $t_v$  is over: relay switches to working condition

**WSB marker cards**

- Marking K; Item No.: 209-782
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A1, A2, A2, 12, 11, 11, 14;  
Item No.: 209-996

5 cards, each containing 10 strips with 10 markers



Description	Time range	Item No.	Pack. Unit	Time range	Item No.	Pack. Unit
Time relay module	0.1 - 1 s	286-600	1	0.1 - 1 s	286-610	1
	1 - 10 s	286-602	1	1 - 10 s	286-612	1
	10 - 100 s	286-604	1	10 - 100 s	286-614	1

**Technical Data**

Accessories see pages 99 ... 100

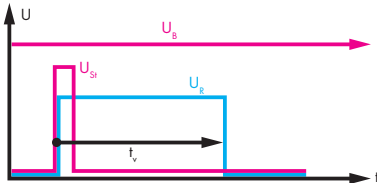
Accessories see pages 99 ... 100

Nominal input voltage ( $V_N$ )	24 V DC	230 V AC
Current input at rated voltage (coil 20 °C)	12,5 mA	14,4 mA
Contact material	AgCdO	AgCdO
Max. switching voltage	380 V AC	380 V AC
Max. make current	1 s 15 A	1 s 15 A
Max. continuous current	6 A	6 A
Max. switching power (resistive)	2000 VA	2000 VA
Pull-in/drop-out/bounce time typ.	0 ms / 15 ms / 1 ms	0 ms / 15 ms / 1 ms
Reset time	100 ms	100 ms
Repeat accuracy	±0.5 %	±0.5 %
Dielectric strength contact-coil (AC, 1 min)	3 kV	3 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2
Mechanical life	5 x 10 <sup>7</sup> switching operations	5 x 10 <sup>7</sup> switching operations
Mechanical life at max. load (resistance)	1 x 10 <sup>5</sup> switching operations	1 x 10 <sup>5</sup> switching operations
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Dimensions (mm) L x H x W incl. terminal block	20 x 82.5 x 50	20 x 82.5 x 50

**Accessories**

	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	22 mm / 0.866 in wide 280-638	1	22 mm / 0.866 in wide 280-638	1
with 4-conductor terminal blocks, orange separator ②	22 mm / 0.866 in wide 280-628	1	22 mm / 0.866 in wide 280-628	1
with 4-conductor terminal blocks, marker plate ②	25 mm / 0.984 in wide 280-764	1	25 mm / 0.984 in wide 280-764	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				

	<p><b>Pulse lengthening, with trigger voltage 1 changeover contact</b>  <b>Module width 20 mm / 0.787 in</b></p>	
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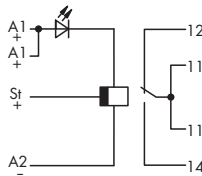
$V_B$  = operating voltage;  $V_{St}$  = control voltage;  $V_R$  = voltage on relay;  
 $t_v$  = delay time

Pulse lengthening time relay, with auxiliary voltage  
 $V_B$  on A1+ and A2- applied: relay stays in rest position;  $V_{St}$  - pulse on St+; relay switches to working condition and switches off after  $t_v$  is over.

WSB marker cards

- Marking K; Item No.: 209-782
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A1, St, A2, A2, 12, 11, 11, 14; Item No.: 209-601

5 cards, each containing 10 strips with 10 markers



Description	Time range	Item No.	Pack. Unit
Time relay module	0.1 - 1 s	<b>286-426</b>	1
	1 - 10 s	<b>286-427</b>	1
	10 - 100 s	<b>286-428</b>	1

### Technical Data

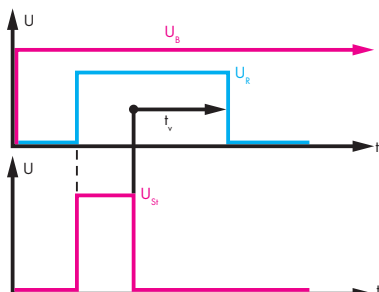
Accessories see pages 99 ... 100

Nominal input voltage ( $V_N$ )	24 V DC
Current input at rated voltage (coil 20 °C)	15,0 mA
Contact material	AgCdO
Max. switching voltage	380 V AC
Max. make current	1 s 15 A
Max. continuous current	5 A
Max. switching power (resistive)	2000 VA
Pull-in/drop-out/bounce time typ.	10ms / 0ms / 1 ms
Trigger voltage	24 V DC
Reset time	100 ms
Repeat accuracy	±0.5 %
Dielectric strength contact-coil (AC, 1 min)	3 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250V / 4kV / 3
Mechanical life	5 x 10 <sup>7</sup> switching operations
Mechanical life at max. load (resistance)	1 x 10 <sup>5</sup> switching operations
Ambient operating temperature	3 kV
Dimensions (mm) L x H x W incl. terminal block	250 V / 4 kV / 2

### Accessories

Accessories	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	22 mm / 0.866 in wide <b>280-638</b>	1
with 4-conductor terminal blocks, orange separator ②	22 mm / 0.866 in wide <b>280-628</b>	1
with 4-conductor terminal blocks, marker plate ③	25 mm / 0.984 in wide <b>280-764</b>	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in		

	<p><b>Off-delay timing with trigger voltage 1 changeover contact specified time acc. to IEC 255, part 1</b>  <b>Module width 20 mm / 0.787 in</b></p>	<p><b>Off-delay timing with trigger voltage 1 changeover contact specified time acc. to IEC 255, part 1</b>  <b>Module width 20 mm / 0.787 in</b></p>
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$V_B$  = operating voltage;  $V_{St}$  = control voltage;  $V_R$  = voltage on relay;  
 $t_v$  = delay time

Off-delay time relay with auxiliary voltage

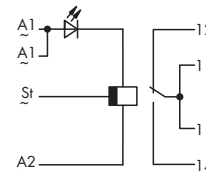
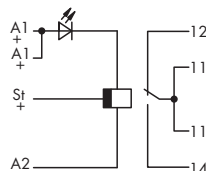
$V_B$  on A1+ and A2- applied: relay stays in rest position;

$V_S$  on St+ applied: relay switches to working condition

$V_{St}$  interrupted:  $t_v$  is activated;  $t_v$  is over: relay switches off

WSB marker cards

- Marking K; Item No.: 209-782
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A1, St, A2, A2, 12, 11, 11, 14; Item No.: 209-601

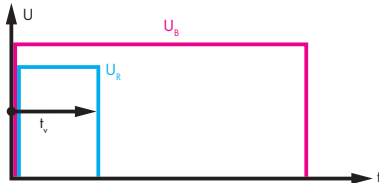


Description	Time range	Item No.	Pack. Unit	Time range	Item No.	Pack. Unit
Time relay module	0.1 - 1 s	286-440	1	0.1 - 1 s	286-446	1
	1 - 10 s	286-442	1	1 - 10 s	286-448	1
	10 - 100 s	286-444	1	10 - 100 s	286-450	1

Technical Data	Accessories see pages 99 ... 100		Accessories see pages 99 ... 100	
Nominal input voltage ( $V_N$ )	24 V DC		230 V AC	
Current input at rated voltage (coil 20 °C)	16,0 mA		16,8 mA	
Contact material	Ag-Leg.		Ag-Leg.	
Max. switching voltage	250 V DC / 250 V AC		250 V DC / 250 V AC	
Max. make current	26 A		26 A	
Max. continuous current	5 A		5 A	
Max. switching power (resistive)	1250 VA		1250 VA	
Pull-in/drop-out/bounce time typ.	15ms / 0ms / 2 ms		15ms / 0ms / 2 ms	
Trigger voltage	24 V DC		230 V AC	
Reset time	15 ms		15 ms	
Repeat accuracy	±0.5 %		±0.5 %	
Dielectric strength contact-coil (AC, 1 min)	2 kV		2 kV	
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2		250 V / 2,5 kV / 2	
Mechanical life	5 x 10 <sup>7</sup> switching operations		5 x 10 <sup>7</sup> switching operations	
Mechanical life at max. load (resistance)	1 x 10 <sup>5</sup> switching operations		1 x 10 <sup>5</sup> switching operations	
Ambient operating temperature	-25 °C ... +40 °C		-25 °C ... +40 °C	
Dimensions (mm) L x H x W incl. terminal block	20 x 82.5 x 50		20 x 82.5 x 50	

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	22 mm / 0.866 in wide 280-638	1	22 mm / 0.866 in wide 280-638	1
with 4-conductor terminal blocks, orange separator ②	22 mm / 0.866 in wide 280-628	1	22 mm / 0.866 in wide 280-628	1
with 4-conductor terminal blocks, marker plate ②	25 mm / 0.984 in wide 280-764	1	25 mm / 0.984 in wide 280-764	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				

	<p><b>Pulse time delay relay</b>  <b>1 changeover contact specified time</b>  <b>acc. to IEC 255, part 1</b>  <b>Module width 20 mm / 0.787 in</b></p>	<p><b>Pulse time delay relay</b>  <b>1 changeover contact specified time</b>  <b>acc. to IEC 255, part 1</b>  <b>Module width 20 mm / 0.787 in</b></p>
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$V_B$  = operating voltage;  $V_{St}$  = control voltage;  $V_R$  = voltage on relay;  
 $t_v$  = delay time

Pulse time delay relay

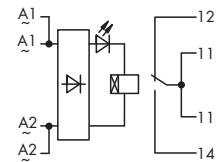
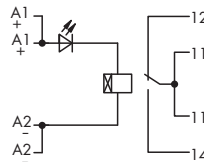
$V_B$  on A1+ and A2- applied: relay switches to working condition;

$t_v$  is over: relay switches off

WSB marker cards

- Marking K; Item No.: 209-782
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A1, A2, A2, 12, 11, 11, 14; Item No.: 209-996

5 cards, each containing 10 strips with 10 markers



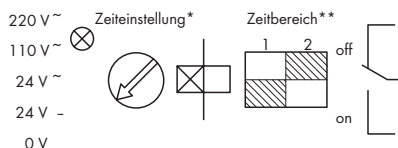
Description	Time range	Item No.	Pack. Unit	Time range	Item No.	Pack. Unit
Time relay module	0.1 - 1 s	<b>286-460</b>	1	0.1 - 1 s	<b>286-470</b>	1
	1 - 10 s	<b>286-462</b>	1	1 - 10 s	<b>286-472</b>	1
	10 - 100 s	<b>286-464</b>	1	10 - 100 s	<b>286-474</b>	1

Technical Data	Accessories see pages 99 ... 100		Accessories see pages 99 ... 100	
Nominal input voltage ( $V_N$ )	24 V DC		230 V AC	
Current input at rated voltage (coil 20 °C)	37,8 mA		39,7 mA	
Contact material	AgCdO		AgCdO	
Max. switching voltage	380 V AC		380 V AC	
Max. make current	1 s 15 A		1 s 15 A	
Max. continuous current	5 A		5 A	
Max. switching power (resistive)	2000 VA		2000 VA	
Pull-in/drop-out/bounce time typ.	15ms / 15ms / 1 ms		15ms / 15ms / 1 ms	
Reset time	100 ms		100 ms	
Repeat accuracy	±0.5 %		±0.5 %	
Dielectric strength contact-coil (AC, 1 min)	2,3 kV		3 kV	
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 3		250 V / 2,5 kV / 3	
Mechanical life	5 x 10 <sup>7</sup> switching operations		5 x 10 <sup>7</sup> switching operations	
Mechanical life at max. load (resistance)	1 x 10 <sup>5</sup> switching operations		1 x 10 <sup>5</sup> switching operations	
Ambient operating temperature	-25 °C ... +40 °C		-25 °C ... +40 °C	
Dimensions (mm) L x H x W incl. terminal block	20 x 82.5 x 50		20 x 82.5 x 50	

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	22 mm / 0.866 in wide <b>280-638</b>	1	22 mm / 0.866 in wide <b>280-638</b>	1
with 4-conductor terminal blocks, orange separator ②	22 mm / 0.866 in wide <b>280-628</b>	1	22 mm / 0.866 in wide <b>280-628</b>	1
with 4-conductor terminal blocks, marker plate ③	25 mm / 0.984 in wide <b>280-764</b>	1	25 mm / 0.984 in wide <b>280-764</b>	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				

**Multirange timing relay, on-delay**  
**4 selectable time ranges**  
**4 voltage ranges**  
**1 changeover contact**  
**Module width 25 mm / 0.984 in**

Zeitbereich	03-3s	3-12s	10-100s	100-800s	Schalter
Schalterstellung	OFF	ON	ON	OFF	1
	ON	OFF	ON	OFF	2



\* with trimming potentiometer; \*\* DIL switch

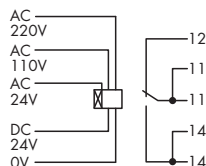


Within these time ranges, time adjustment can be made with the timing potentiometer.

WSB marker cards

- Marking K; Item No.: 209-782
- Marking 1 ... 10; Item No.: 209-702
- Marking U1, U2, U3, U4, 0V, 12, 11, 11, 14, 14; Item No.: 209-951

5 cards, each containing 10 strips with 10 markers



Description	Item No.	Pack. Unit
<b>Multirange timing relay module; on-delay,</b> <b>4 voltage ranges</b> <b>230 V AC, 115 V AC, 24 V AC, 24 V DC;</b> <b>0.3 s ... 3 s, 3 s ... 12 s, 10 s ... 100 s, 100 s ... 800 s</b> <b>Time ranges selectable with DIL switch</b>	<b>286-616</b>	1

### Technical Data

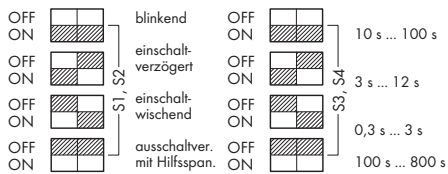
Accessories see pages 99 ... 100

Nominal input voltage ( $V_N$ )	230 V AC, 115 V AC, 24 V AC, 24 V DC
Current input at rated voltage (coil 20 °C)	30,4 mA, 32,6 mA, 20,2 mA, 17,5 mA
Contact material	AgNi
Max. switching voltage	240 V AC
Max. make current	5 A
Max. continuous current	5 A
Max. switching power (resistive)	1200 VA
Pull-in/drop-out/bounce time typ.	0ms / 15ms / 3 ms
Reset time	100 ms
Repeat accuracy	±0.5 %
Dielectric strength contact-coil (AC, 1 min)	2 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2
Mechanical life	$2 \times 10^7$ switching operations
Mechanical life at max. load (resistance)	$1 \times 10^5$ switching operations
Ambient operating temperature	-25 °C ... +40 °C
Dimensions (mm) L x H x W incl. terminal block	25 x 82.5 x 50

### Accessories

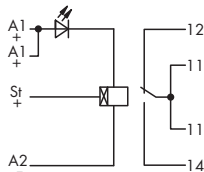
	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①</b>	27 mm / 1.063 in wide	<b>280-639</b>		1
<b>with 4-conductor terminal blocks, orange separator ②</b>	27 mm / 1.063 in wide	<b>280-629</b>		1
<b>with 4-conductor terminal blocks, marker plate ②</b>	30 mm / 1.181 in wide	<b>280-765</b>		1
<b>wire range 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in</b>				

	<b>Multifunction timing relay</b> <b>4 selectable time ranges</b> <b>4 functions</b> <b>1 changeover contact</b> <b>Module width 20 mm / 0.787 in</b>	
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Schalterstellung / Funktion		Schalterstellung / Zeitbereich (s)	
S1	S2	S3	S4
OFF	OFF	OFF	OFF
ON	ON	ON	ON
OFF	ON	OFF	ON
ON	OFF	ON	OFF
ON	ON	ON	ON

Fine adjustment of time within these time ranges can be made with the trimming potentiometer.  
 St+ will only be connected for the function „off-delay“ with auxiliary voltage.  
 WSB marker cards  
 • Marking K; Item No.: 209-782  
 • Marking 1 ... 10; Item No.: 209-702  
 • Marking A1, A1, St, A2, A2, 12, 11, 11, 14; Item No.: 209-601  
 5 cards, each containing 10 strips with 10 markers



Description	Item No.	Pack. Unit
<b>Multifunction timing relay module;</b> <b>on-delay, off-delay with auxiliary voltage,</b> <b>pulsing in make position, flashing;</b> <b>input voltage 24 V DC;</b> <b>0.3 s ... 3 s, 3 s ... 12 s, 10 s ... 100 s, 100 s ... 800 s</b> <b>Function and timing range are selected with a DIL switch</b>	<b>286-640</b>	1

Technical Data	Accessories see pages 99 ... 100	
Nominal input voltage (V <sub>N</sub> )	24 V DC	
Current input at rated voltage (coil 20 °C)	24 mA	
Contact material	Ag-Leg	
Max. switching voltage	380 V AC	
Max. make current	4 s 10 A	
Max. continuous current	5 A	
Max. switching power (resistive)	1250 VA	
Pull-in/drop-out/bounce time typ.	0ms / 0ms / 2 ms	
Trigger voltage	24 V DC	
Reset time	100 ms	
Repeat accuracy	±1 %	
Dielectric strength contact-coil (AC, 1 min)	3 kV	
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2	
Mechanical life	1.5 x 10 <sup>7</sup> switching operations	
Mechanical life at max. load (resistance)	1 x 10 <sup>5</sup> switching operations	
Ambient operating temperature	-25 °C ... +40 °C	
Dimensions (mm) L x H x W incl. terminal block	20 x 82.5 x 50	

Accessories	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	22 mm / 0.866 in wide <b>280-638</b>	1
with 4-conductor terminal blocks, orange separator ②	22 mm / 0.866 in wide <b>280-628</b>	1
with 4-conductor terminal blocks, marker plate ③	25 mm / 0.984 in wide <b>280-764</b>	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in		



# Accessories, 286 Series

2-conductor terminal block



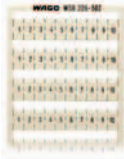
4-conductor terminal block



Description		Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator	12 mm / 0.472 in wide	280-618	1
with 4-conductor terminal blocks, orange separator	12 mm / 0.472 in wide	280-608	1
with 4-conductor terminal blocks, marker plate	15 mm / 0.591 in wide	280-762	1
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator	17 mm / 0.669 in wide	280-619	1
with 4-conductor terminal blocks, orange separator	17 mm / 0.669 in wide	280-609	1
with 4-conductor terminal blocks, marker plate	20 mm / 0.787 in wide	280-763	1
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator	22 mm / 0.866 in wide	280-638	1
with 4-conductor terminal blocks, orange separator	22 mm / 0.866 in wide	280-628	1
with 4-conductor terminal blocks, marker plate	25 mm / 0.984 in wide	280-764	1
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator	27 mm / 1.063 in wide	280-639	1
with 4-conductor terminal blocks, orange separator	27 mm / 1.063 in wide	280-629	1
with 4-conductor terminal blocks, marker plate	30 mm / 1.181 in wide	280-765	1
Terminal block for pluggable modules, with 4-conductor terminal blocks, orange separator	37 mm / 1.457 in wide	280-636	1

Wire range 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 28 ... 14; Stripped lengths 8 ... 9 mm / 0.33 in

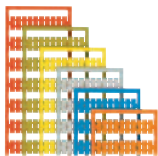
### Miniature quick marking card



Description	Item No.	Pack. Unit
Marking: K	209-782	5 cards
1 ... 10 (10 x)	209-702	5 cards
A1, A2, 13, 14	209-952	5 cards
A1, A2, 11, 12	209-953	5 cards
11, 12, 14, A1, A2, A2, 11, 12, 14	209-994	5 cards
12, A1, A2, 24, 11, 14, 21, 22	209-995	5 cards
A1, A1, A2, A2, 11, 12, 13, 14, 23, 24	209-693	5 cards
12, A1, A2, 23, 24, 11, 13, 14, 21, 22	209-691	5 cards
12, A1, A2, 23, 24, 11, 13, 14, 33, 34	209-690	5 cards
14, A1, A2, 33, 34, 13, 23, 24, 43, 44	209-692	5 cards
A1, A2, 32, 31, 34, 42, 41, 12, 11, 14, 22, 21, 24, 44	249-656	5 cards
L+, 1, L-, 11, 12, 13, 14	209-954	5 cards
A1, A2, A3, 11, 12, 14	249-607	5 cards
A1, A1, A2, A2, 12, 11, 11, 14	209-996	5 cards
A1, A1, St, A2, A2, 12, 11, 11, 14	209-601	5 cards
U1, U2, U3, U4, 0V, 12, 11, 11, 14, 14	209-951	5 cards
U	209-789	5 cards
A1, A2, A2, 1, 3, 2	209-685	5 cards
A1, A2, A2, 1, 2, 2	209-686	5 cards
A1+, A1+, A2-, A2-, 1, RL1, RL2, 2	209-955	5 cards
A1+, A1+, A2-, A2-, 1+, 1+, A, 2-	249-651	5 cards
+/-	209-552	5 cards
1, 2, 3, 0V, +UB, OUT, ERR., 0V	249-622	5 cards
1, 2, 0V, +UB, OUT, ERR., 0V	249-623	5 cards
lin, Lin, Lout, Lout, 24V, UA, UA, 0V	209-957	5 cards
Lin, Lin, Lout, 11, 14, 14, Lin, Lin, Lout	249-654	5 cards
lin, lin, lout, lout, 24V, 11, 12, 14, 0V	209-997	5 cards
S	209-682	5 cards
V	209-784	5 cards
F1 ... F10	209-787	5 cards
D	209-783	5 cards
+, -, 1, 2, 3, 13, 14, 4, 5, 6	249-608	5 cards
L, N, Quitt, Störung, Test, N, 14, 24	249-606	5 cards
A1, A2, Quitt, Störung, 12, 11, 11, 14	249-653	5 cards

5 cards, each containing 10 strips with 10 markers

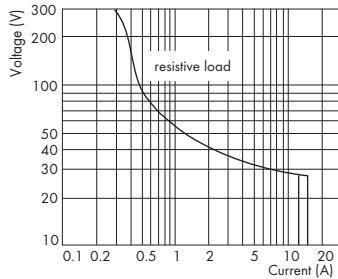
### Colored marker cards



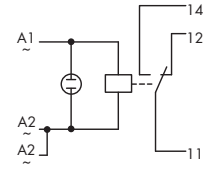
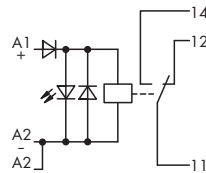
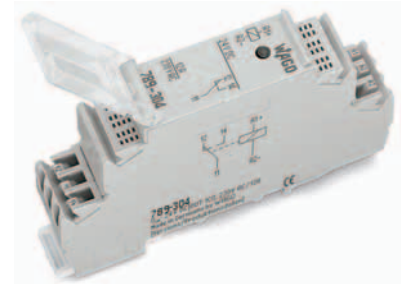
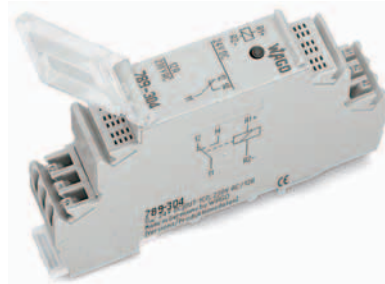
Description	Item No.	Pack. Unit	
Marker cards and tags WSB 4 mm/0.157 in (plain)	white	209-701	5 cards
Marking software and printer/plotter see Section 11	yellow	209-701/000-002	5 cards
	red	209-701/000-005	5 cards
	blue	209-701/000-006	5 cards
	gray	209-701/000-007	5 cards
	orange	209-701/000-012	5 cards
	light green	209-701/000-017	5 cards
	green	209-701/000-023	5 cards
	violet	209-701/000-024	5 cards

5 cards, each containing 10 strips with 10 markers

	<b>Relay with 1 changeover contact (1 u)</b> <b>Nominal input voltage <math>V_N</math></b> <b>24 V DC</b>	<b>Relay with 1 changeover contact (1 u)</b> <b>Nominal input voltage <math>V_N</math></b> <b>24 V AC/DC, 230 V AC</b>
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DC load limit curve



Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Relay module in DIN-rail mount enclosure, for DIN 35 rail	24 V DC	19 mA	789-304	1	24 V AC/DC	20 mA	789-504	1
					230 V AC	4.2 mA	789-508	1

**Technical Data**

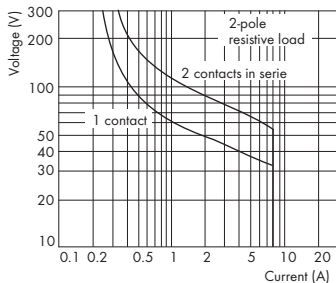
Accessories see pages 115

Accessories see pages 115

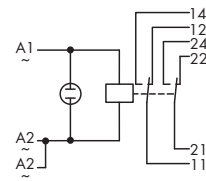
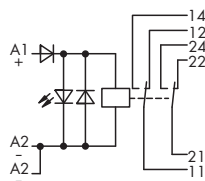
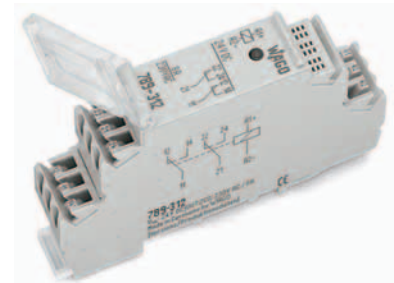
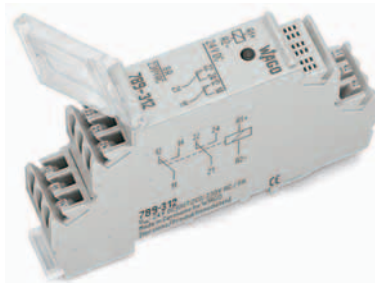
Coil:		
Input voltage range	$V_N - 15\% \dots +10\%$	$V_N - 15\% \dots +10\%$
<b>Contacts:</b>		
Contact material	AgNi 90/10	AgNi 90/10
Max. continuous current	12 A	12 A
Max. make current	25 A / 4 s	25 A / 4 s
Max. switching voltage	250 VAC	250 VAC
Max. switching power (resistive)	3 kVA AC, DC see load limit curve	3 kVA AC, DC see load limit curve
Recommended minimum load	12 V AC/DC, 100 mA	12 V AC/DC, 100 mA
Pull-in/drop-out/bounce time typ.	7ms / 3ms / 3ms	15ms / 15ms / 3ms
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>	5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	-
Ambient operating temperature at $V_N$	-25 °C ... +40 °C	-25 °C ... +40 °C
Storage temperature	-40 °C ... +85 °C	-40 °C ... +85 °C
Dimensions (mm) W x H x L	17.5 x 55 x 90	17.5 x 55 x 90
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.2 ... 0.24 in	5 ... 6 mm / 0.2 ... 0.24 in
Standards/specifications	EN 60664-1	EN 60664-1

# 1 Relay Modules in DIN-Rail Mount Enclosure

	<b>Relay with 2 changeover contacts (2 u)</b> <b>Nominal input voltage <math>V_N</math></b> <b>24 V, 48 V, 110 V DC</b>	<b>Relay with 2 changeover contacts (2 u)</b> <b>Nominal input voltage <math>V_N</math> 24 V AC/DC, 115 V, 230 V AC</b>
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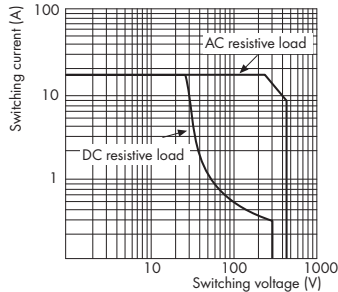
DC load limit curve



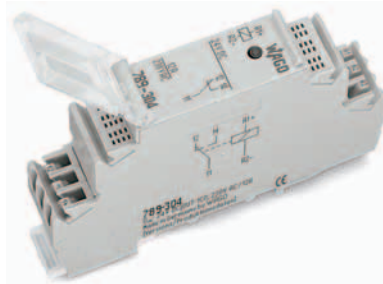
Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Relay module in DIN-rail mount enclosure, for DIN 35 rail	24 V DC	21 mA	<b>789-312</b>	1	24 V AC/DC	22 mA	<b>789-512</b>	1
	48 V DC	13 mA	<b>789-313</b>	1	115 V AC	7.6 mA	<b>789-515</b>	1
	110 V DC	6 mA	<b>789-315</b>	1	230 V AC	4.2 mA	<b>789-516</b>	1

Technical Data	Accessories see pages 115	
<b>Coil:</b>		
Input voltage range	$V_N - 15\% \dots +10\%$	$V_N - 15\% \dots +10\%$
<b>Contacts:</b>		
Contact material	AgNi 90/10	AgNi 90/10
Max. continuous current	8 A	8 A
Max. make current	15 A / 4 s	15 A / 4 s
Max. switching voltage	250 VAC	250 VAC
Max. switching power (resistive)	2 kVA AC, DC see load limit curve	2 kVA AC, DC see load limit curve
Recommended minimum load	12 V AC/DC, 100 mA	12 V AC/DC, 100 mA
Pull-in/drop-out/bounce time typ.	7ms / 2ms / 3 ms	7ms / 2ms / 3 ms
Mechanical life	$3 \times 10^7$ switching operations	$5 \times 10^6$ switching operation
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>	5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	2.5 kV <sub>eff</sub>	1.5 kV <sub>eff</sub>
Ambient operating temperature at $V_N$	-25 °C ... +40 °C	-25 °C ... +40 °C
Storage temperature	-40 °C ... +85 °C	-40 °C ... +85 °C
Dimensions (mm) W x H x L	17.5 x 55 x 90	17.5 x 55 x 90
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.2 ... 0.24 in	5 ... 6 mm / 0.2 ... 0.24 in
Standards/specifications	EN 60664-1	EN 60664-1

**Relay with 1 make contact (1 a)**  
**Nominal input voltage  $V_N$ : 24 VDC**  
**for lamp loads**



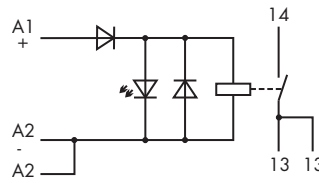
Load limit curve



Similar to picture

Contact life, type of load	Capability	Electrical life
Incandescent lamp	2200 W	20,000
Halogen lamp 230 VAC	1400 W	50,000
Halogen trafo	120 VA	20,000
Fluorescent lamp not comp., CCG ①, cos φ 0.406	20 x 58 W	25,000
Fluorescent lamp comp., CCG ①, C parallel	9 x 58 W	25,000
Fluorescent lamp comp., CCG ①, Duocircuit	600 W	20,000
Fluorescent lamp with ECG ②	12 x 58 W	25,000
Energy saving lamp 15 W	25 pcs	20,000
Energy saving lamp 13 W	30 pcs	20,000
Energy saving lamp 9 W	38 pcs	20,000
Gas discharge lamp	1000 W	20,000
Dulux-Lamp not compensated	800 W	20,000
Dulux-Lamp compensated	500 W	20,000
Max. capacitance at 230 VAC	60 µF	> 5,000

① CCG = Conventional Control Gear  
 ② ECG = Electronic Control Gear



**Note:** Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.

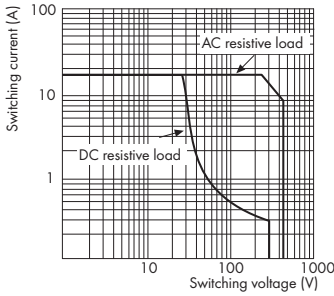
Description	$V_N$	$I_N$	Item No.	Pack. Unit
Relay module in DIN-rail mount enclosure, for DIN 35 rail	24 VDC	19 mA	789-320	1

**Technical Data**

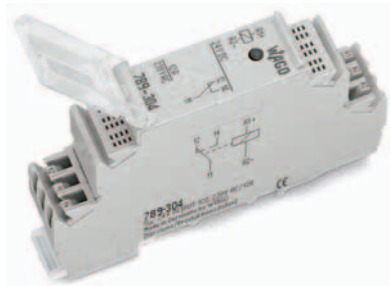
Accessories see pages 115

<b>Coil:</b>		
Input voltage range	$V_N - 15\% \dots +20\%$	
<b>Contacts:</b>		
Contact material	Ag alloy	
Max. continuous current	16 A	
Max. make current	120 A / 50 ms (AC)	
Max. switching voltage	250 VAC	
Max. switching power (resistive)	4 kVA AC, DC see load curve	
Recommended minimum load	12 V AC/DC, 100 mA	
Pull-in/drop-out/bounce time typ.	15ms / 5ms / -	
Mechanical life	$10 \times 10^6$ switching operations	
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 4 kV / 3	
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>	
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	
Dielectric strength contact-contact (AC, 1 min)	-	
Ambient operating temperature at $V_N$	-25 °C ... +40 °C	
Storage temperature	-40 °C ... +70 °C	
Dimensions (mm) W x H x L	17.5 x 55 x 90	
Wire connection	Height from upper-edge of DIN 35 rail	
	CAGE CLAMP®	
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	
Strip length	5 ... 6 mm / 0.2 ... 0.24 in	
Standards/specifications	EN 60664-1, EN 61810-1, EN 61140, EN 50178	

	<b>Relay with 1 make contact (1 a)</b> <b>Nominal input voltage <math>V_N</math>: 24 V, 230 V AC</b> <b>for lamp loads</b>	
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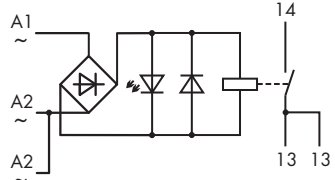
Load limit curve



Similar to picture

Contact life, type of load	Capability	Electrical life
Incandescent lamp	2200 W	20,000
Halogen lamp 230 VAC	1400 W	50,000
Halogen trafo	120 VA	20,000
Fluorescent lamp not comp., CCG ①, cos φ 0.406	20 x 58 W	25,000
Fluorescent lamp comp., CCG ①, C parallel	9 x 58 W	25,000
Fluorescent lamp comp., CCG ①, Duocircuit	600 W	20,000
Fluorescent lamp with ECG ②	12 x 58 W	25,000
Energy saving lamp 15 W	25 pcs	20,000
Energy saving lamp 13 W	30 pcs	20,000
Energy saving lamp 9 W	38 pcs	20,000
Gas discharge lamp	1000 W	20,000
Dulux-Lamp not compensated	800 W	20,000
Dulux-Lamp compensated	500 W	20,000
Max. capacitance at 230 VAC	60 μF	> 5,000

① CCG = Conventional Control Gear  
② ECG = Electronic Control Gear

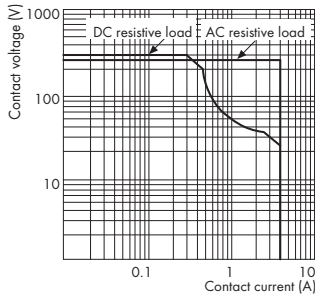


**Note:** Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.

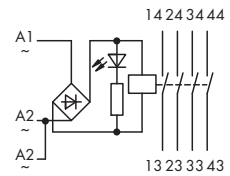
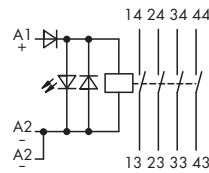
Description	$V_N$	$I_N$	Item No.	Pack. Unit
Relay module in DIN-rail mount enclosure, for DIN 35 rail	24 VAC	32 mA	789-520	1
	230 VAC	15 mA	789-321	1

Technical Data		Accessories see pages 115
<b>Coil:</b>		
Input voltage range		$V_N - 15\% \dots +20\%$
<b>Contacts:</b>		
Contact material		Ag alloy
Max. continuous current		16 A
Max. make current		120 A / 50 ms (AC)
Max. switching voltage		250 VAC
Max. switching power (resistive)		4 kVA AC, DC see load curve
Recommended minimum load		12 V AC/DC, 100 mA
Pull-in/drop-out/bounce time typ.		15ms / 5ms / -
Mechanical life		$10 \times 10^6$ switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1		250 V / 4 kV / 3
Dielectric strength, contact-coil (AC, 1 min)		4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)		1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)		-
Ambient operating temperature at $V_N$		-25 °C ... +40 °C
Storage temperature		-40 °C ... +70 °C
Dimensions (mm) W x H x L		17.5 x 55 x 90
Wire connection		Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections		0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length		5 ... 6 mm / 0.2 ... 0.24 in
Standards/specifications		EN 60664-1, EN 61810-1, EN 61140, EN 50178

	<b>Relay with 4 make contacts (4 a)</b> <b>Nominal input voltage <math>V_N</math></b> <b>24 V DC</b>	<b>Relay with 4 make contacts (4 a)</b> <b>Nominal input voltage <math>V_N</math></b> <b>12 V, 24 V AC/DC</b>
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Load limit curve



Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Relay module in DIN-rail mount enclosure, for DIN 35 rail	24 V DC	12 mA	789-352	1	12 V AC/DC	21 mA	789-551	1
					24 V AC/DC	12 mA	789-552	1

**Technical Data**

Accessories see pages 115

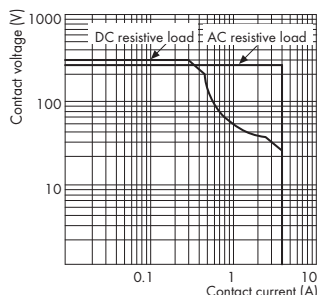
Accessories see pages 115

<b>Coil:</b>								
Input voltage range		$V_N - 15\% \dots +10\%$				$V_N - 15\% \dots +10\%$		
<b>Contacts:</b>								
Contact material		AgNi + Au				AgNi + Au		
Max. continuous current		4 A				4 A		
Max. make current		-				-		
Max. switching voltage		250 VAC				250 VAC		
Max. switching power (resistive)		1 kVA / 90 W, resistive see load limit curve				1 kVA / 90 W, resistive see load limit curve		
Recommended minimum load		12 V AC/DC, 100 mA				12 V AC/DC, 100 mA		
Pull-in/drop-out/bounce time typ.		15ms / 10ms / 1 ms				20ms / 20ms / 1 ms		
<b>General specifications:</b>								
Nominal voltage to EN 60664-1		230 V / 2.5 kV / 2				230 V / 2.5 kV / 2		
Dielectric strength, contact-coil (AC, 1 min)		1.5 kV <sub>rms</sub>				1.5 kV <sub>rms</sub>		
Dielectric strength open contact (AC, 1 min)		0.75 kV <sub>rms</sub>				0.75 kV <sub>rms</sub>		
Dielectric strength contact-contact (AC, 1 min)		1 kV <sub>off</sub>				1 kV <sub>off</sub>		
Ambient operating temperature at $V_N$		-25 °C ... +40 °C				-25 °C ... +40 °C		
Storage temperature		-40 °C ... +85 °C				-40 °C ... +85 °C		
Dimensions (mm) W x H x L		17.5 x 55 x 90				17.5 x 55 x 90		
Wire connection		Height from upper-edge of DIN 35 rail CAGE CLAMP®				Height from upper-edge of DIN 35 rail CAGE CLAMP®		
Cross sections		0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14				0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14		
Strip length		5 ... 6 mm / 0.2 ... 0.24 in				5 ... 6 mm / 0.2 ... 0.24 in		
Standards/specifications		EN 60664-1, EN 61810-1				EN 60664-1, EN 61810-1		

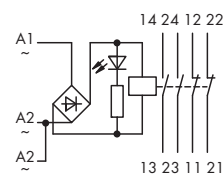
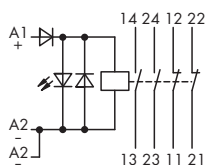
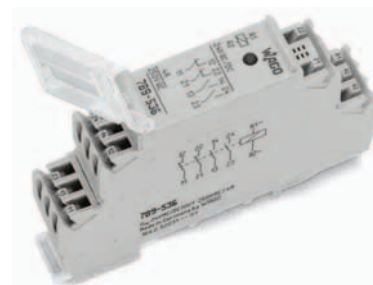
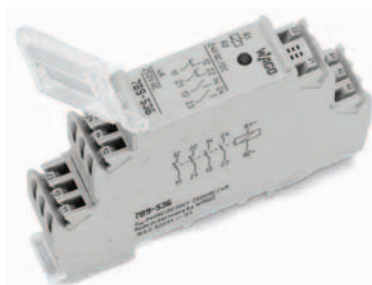


# Relay Modules in DIN-Rail Mount Enclosure

	<b>Relay with 2 break and 2 make contacts (2 ar)</b> <b>Nominal input voltage <math>V_N</math></b> <b>24 V DC</b>	<b>Relay with 2 break and 2 make contacts (2 ar)</b> <b>Nominal input voltage <math>V_N</math></b> <b>12 V, 24 V AC/DC</b>
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Load limit curve

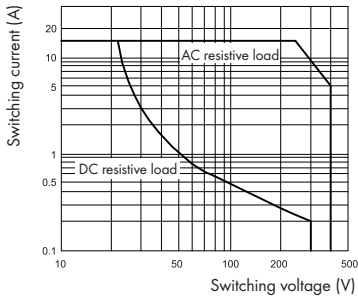


**Note:** Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts!

Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Relay module in DIN-rail mount enclosure, for DIN 35 rail	24 V DC	12 mA	789-336	1	12 V AC/DC	21 mA	789-535	1
					24 V AC/DC	12 mA	789-536	1

Technical Data	Accessories see pages 115	
<b>Coil:</b>		
Input voltage range	$V_N - 15\% \dots +10\%$	$V_N - 15\% \dots +10\%$
<b>Contacts:</b>		
Contact material	AgNi + Au	AgNi + Au
Max. continuous current	4 A	4 A
Max. make current	-	-
Max. switching voltage	250 VAC	250 VAC
Max. switching power (resistive)	1 kVA / 90 W, resistive see load limit curve	1 kVA / 90 W, resistive see load limit curve
Recommended minimum load	12 V AC/DC, 100 mA	12 V AC/DC, 100 mA
Pull-in/drop-out/bounce time typ.	15ms / 10ms / 1 ms	20ms / 20ms / 1 ms
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	230 V / 2.5 kV / 2	230 V / 2.5 kV / 2
Dielectric strength, contact-coil (AC, 1 min)	1.5 kV <sub>rms</sub>	1.5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	0.75 kV <sub>rms</sub>	0.75 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1 kV <sub>off</sub>	1 kV <sub>off</sub>
Ambient operating temperature at $V_N$	-25 °C ... +40 °C	-25 °C ... +40 °C
Storage temperature	-40 °C ... +85 °C	-40 °C ... +85 °C
Dimensions (mm) W x H x L	17.5 x 55 x 90	17.5 x 55 x 90
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.2 ... 0.24 in	5 ... 6 mm / 0.2 ... 0.24 in
Standards/specifications	EN 60664-1, EN 61810-1	EN 60664-1, EN 61810-1

	Relay with 1 changeover contact (1 u), manual configuration, electrical and mechanical activation indicator	Relay with 2 changeover contacts (2 u), manual configuration, electrical and mechanical activation indicator
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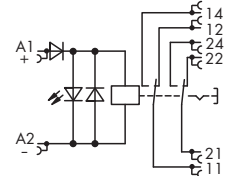
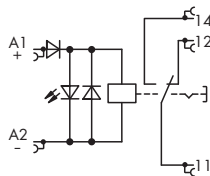
Load limit curve for 788-346, -347, -349, -391



Similar to picture



Similar to picture



**Note:** Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.

Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Relay module in DIN-rail mount enclosure, for DIN 35 rail	24 VDC	17 mA	789-1341	1	24 VDC	17 mA	789-1346	1

**Technical Data**

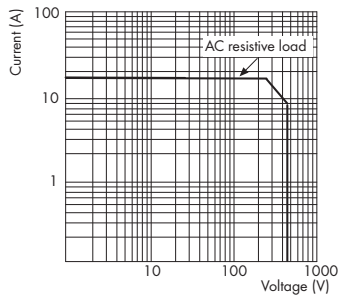
Accessories see pages 115

Accessories see pages 115

<b>Coil:</b>		
Input voltage range	U <sub>N</sub> -10% ... +10 %	U <sub>N</sub> -10% ... +10 %
<b>Contacts:</b>		
Contact material	AgNi	AgNi
Max. continuous current	12 A	8 A
Max. make current	16 A	8 A
Max. switching voltage	250 VAC	250 VAC
Max. switching power (resistive)	3000 VA AC	2 x 2000 VA AC
Pull-in/drop-out/bounce time typ.	15ms / 8ms / -	15ms / 8ms / -
Mechanical life	5 x 10 <sup>6</sup> switching operations	5 x 10 <sup>6</sup> switching operations
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250V / 4kV / 3	250V / 4kV / 3
Dielectric strength, contact-coil (AC, 1 min)	3.5 kV <sub>rms</sub>	3.5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	-	1.5 kV <sub>eff</sub>
Ambient operating temperature at V <sub>N</sub>	-25 °C ... +50 °C	-25 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	17.5 x 55 x 90	17.5 x 55 x 90
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.2 ... 0.24 in	5 ... 6 mm / 0.2 ... 0.24 in
Standards/specifications	EN 60664-1	EN 60664-1



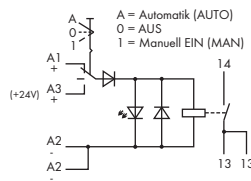
### Relay with 1 make contact (1a), manual-0-automatic switch



Contact life, type of load	Capability	Electrical life
Incandescent lamp	2200 W	20,000
Halogen lamp 230 VAC	1400 W	50,000
Halogen trafo	120 VA	20,000
Fluorescent lamp not comp., CCG ①,		
cos φ 0.406	20 x 58 W	25,000
Fluorescent lamp comp., CCG ①, C parallel	9 x 58 W	25,000
Fluorescent lamp comp., CCG ①, Duocircuit	600 W	20,000
Fluorescent lamp with ECG ②	12 x 58 W	25,000
Energy saving lamp 15 W	25 pcs	20,000
Energy saving lamp 13 W	30 pcs	20,000
Energy saving lamp 9 W	38 pcs	20,000
Gas discharge lamp	1000 W	20,000
Dulux-Lamp not compensated	800 W	20,000
Dulux-Lamp compensated	500 W	20,000
Max. capacitance at 230 VAC	60 µF	> 5,000

① CCG = Conventional Control Gear  
② ECG = Electronic Control Gear

Load limit curve



**Note:** Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts!

Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Relay module in DIN-rail mount enclosure, for DIN 35 rail	24 V DC	19 mA	<b>789-323</b>	1

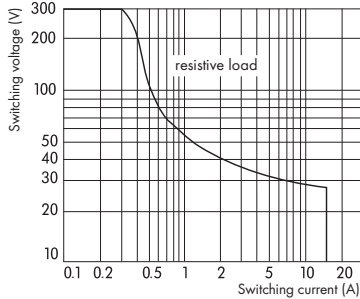
### Technical Data

Accessories see pages 115

<b>Coil:</b>		
Input voltage range	V <sub>N</sub> - 15 % ... + 20 %	
<b>Contacts:</b>		
Contact material	Ag alloy	
Max. continuous current	16 A	
Max. make current	120 A / 50 ms (AC)	
Max. switching voltage	250 V AC	
Max. switching power (resistive)	4 kVA AC, DC see load curve	
Recommended minimum load	12 V AC/DC, 100 mA	
Pull-in/drop-out/bounce time typ.	15ms / 5ms / -	
Mechanical life	10 x 10 <sup>6</sup> switching operations	
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 4 kV / 2	
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>	
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	
Dielectric strength contact-contact (AC, 1 min)	-	
Ambient operating temperature at V <sub>N</sub>	-25 °C ... +40 °C	
Storage temperature	-40 °C ... +70 °C	
Dimensions (mm) W x H x L	17.5 x 55 x 90	
Wire connection	Height from upper-edge of DIN 35 rail	
	CAGE CLAMP®	
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	
Strip length	5 ... 6 mm / 0.2 ... 0.24 in	
Standards/specifications	EN 60664-1, EN 61140, EN 50178, degree of protection II	

# Relay Modules in DIN-Rail Mount Enclosure

Relay with 1 make contact (1 a), manual-0-automatic switch with monitoring contact

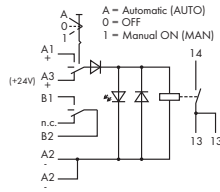


DC load limit curve



Contact life, type of load	Electrical life
3000 W, incandescent lamp, 230 VAC, OT 8.3 % ①, 5 min <sup>-1</sup>	12,000
620 W, gas discharge lamp, CCG ②, 120/277 VAC, UL 508, 50 °C	6,000
1200 W, tungsten lamp, 120/277 VAC, UL 508, 50 °C	6,000
16 A, 250 VAC, cos φ = 1, 85 °C, IEC 61810	5,000

① OT= On-Time  
② CCG = Conventional Control Gear

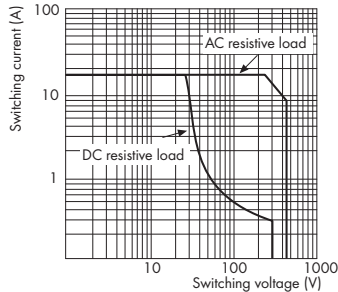


Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Relay module in DIN-rail mount enclosure, for DIN 35 rail	24 VDC	17 mA	789-324	1

Accessories see pages 115

Technical Data	
<b>Coil:</b>	Input voltage range V <sub>N</sub> -15 % ... +20 %
<b>Contacts:</b>	Contact material AgSnO <sub>2</sub> , W pre-make contact
	Max. continuous current 16 A
	Max. make current 165 A / 20 ms (AC)
	Max. switching voltage 250 VAC
	Max. switching power (resistive) 4 kVA AC, DC see load curve
	Recommended minimum load -
	Pull-in/drop-out/bounce time typ. 10ms / 5ms / 4 ms
	Mechanical life 5 x 10 <sup>6</sup> switching operations
<b>General specifications:</b>	Nominal voltage to EN 60664-1 250 V / 4 kV / 3
	Dielectric strength, contact-coil (AC, 1 min) 4 kV <sub>rms</sub>
	Dielectric strength open contact (AC, 1 min) 1.25 kV <sub>rms</sub>
	Dielectric strength contact-contact (AC, 1 min) -
	Ambient operating temperature at V <sub>N</sub> -25 °C ... +40 °C
	Storage temperature -40 °C ... +70 °C
	Dimensions (mm) W x H x L 17.5 x 55 x 90
	Height from upper-edge of DIN 35 rail
	Wire connection CAGE CLAMP®
	Cross sections 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
	Strip length 5 ... 6 mm / 0.2 ... 0.24 in
	Standards/specifications EN 60664-1, EN 61810-1, EN 61140

**Relay with 1 make contact (1 a), manual-0-automatic switch with monitoring contact**

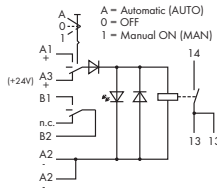


Contact life, type of load	Capability	Electrical life
Incandescent lamp	2200 W	20,000
Halogen lamp 230 VAC	1400 W	50,000
Halogen trafo	120 VA	20,000
Fluorescent lamp not comp., CCG ①, cos φ 0.406	20 x 58 W	25,000
Fluorescent lamp comp., CCG ①, C parallel	9 x 58 W	25,000
Fluorescent lamp comp., CCG ①, Duocircuit	600 W	20,000
Fluorescent lamp with ECG ②	12 x 58 W	25,000
Energy saving lamp 15 W	25 pcs	20,000
Energy saving lamp 13 W	30 pcs	20,000
Energy saving lamp 9 W	38 pcs	20,000
Gas discharge lamp	1000 W	20,000
Dulux-Lamp not compensated	800 W	20,000
Dulux-Lamp compensated	500 W	20,000
Max. capacitance at 230 VAC	60 µF	> 5,000

① CCG = Conventional Control Gear  
② ECG = Electronic Control Gear

Load limit curve

**Note:** Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts!



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Relay module in DIN-rail mount enclosure, for DIN 35 rail	24 V DC	19 mA	789-325	1

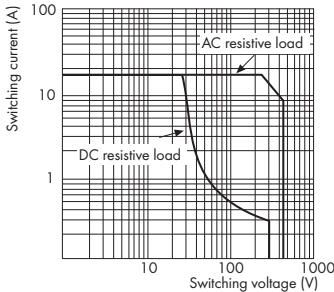
**Technical Data**

Accessories see pages 115

<b>Coil:</b>		
Input voltage range	V <sub>N</sub> -15 % ... +20 %	
<b>Contacts:</b>		
Contact material	Ag alloy	
Max. continuous current	16 A	
Max. make current	120 A / 50 ms (AC)	
Max. switching voltage	250 V AC	
Max. switching power (resistive)	4 kVA AC, DC see load curve	
Recommended minimum load	12 V AC/DC, 100 mA	
Pull-in/drop-out/bounce time typ.	15ms / 5ms / -	
Mechanical life	10 x 10 <sup>6</sup> switching operations	
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 4 kV / 2	
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>	
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	
Dielectric strength contact-contact (AC, 1 min)	-	
Ambient operating temperature at V <sub>N</sub>	-25 °C ... +40 °C	
Storage temperature	-40 °C ... +70 °C	
Dimensions (mm) W x H x L	17.5 x 55 x 90	
Wire connection	Height from upper-edge of DIN 35 rail	
	CAGE CLAMP®	
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	
Strip length	5 ... 6 mm / 0.2 ... 0.24 in	
Standards/specifications	EN 60664-1, EN 50178, degree of protection II	

# 1 Relay Modules in DIN-Rail Mount Enclosure

	<b>Relay with 1 changeover contact (1 u), Manual/OFF/Auto switch for lamp loads</b>	
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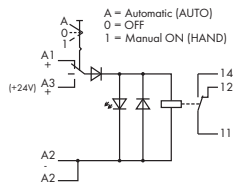


Contact life, type of load	Capability	Electrical life
Incandescent lamp	2200 W	20,000
Halogen lamp 230 VAC	1400 W	50,000
Halogen trafo	120 VA	20,000
Fluorescent lamp not comp., CCG ①, cos φ 0.406	20 x 58 W	25,000
Fluorescent lamp comp., CCG ①, C parallel	9 x 58 W	25,000
Fluorescent lamp comp., CCG ①, Duocircuit	600 W	20,000
Fluorescent lamp with ECG ②	12 x 58 W	25,000
Energy saving lamp 15 W	25 pcs	20,000
Energy saving lamp 13 W	30 pcs	20,000
Energy saving lamp 9 W	38 pcs	20,000
Gas discharge lamp	1000 W	20,000
Dulux-Lamp not compensated	800 W	20,000
Dulux-Lamp compensated	500 W	20,000
Max. capacitance at 230 VAC	60 µF	> 5,000

① CCG = Conventional Control Gear  
② ECG = Electronic Control Gear

Load limit curve

**Note:** Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.

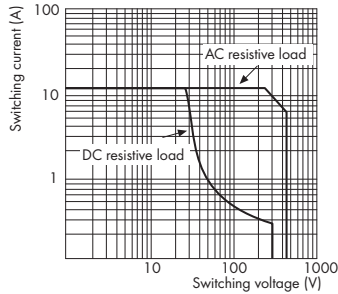


Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Relay module in DIN-rail mount enclosure, for DIN 35 rail	24 VDC	19 mA	789-326	1

Technical Data		Accessories see pages 115
<b>Coil:</b>	Input voltage range	V <sub>N</sub> -15 % ... +20 %
<b>Contacts:</b>	Contact material	Ag alloy
	Max. continuous current	12 A
	Max. make current	120 A / 50 ms (AC)
	Max. switching voltage	250 VAC
	Max. switching power (resistive)	4 kVA AC, DC DC see load curve
	Recommended minimum load	12 V AC/DC, 100 mA
	Pull-in/drop-out/bounce time typ.	15ms / 5ms / -
	Mechanical life	10 x 10 <sup>6</sup> switching operations
<b>General specifications:</b>	Nominal voltage to EN 60664-1	250 V / 4 kV / 3
	Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
	Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
	Dielectric strength contact-contact (AC, 1 min)	-
	Ambient operating temperature at V <sub>N</sub>	-20 °C ... +40 °C
	Storage temperature	-40 °C ... +70 °C
	Dimensions (mm) W x H x L	17.5 x 55 x 90
	Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®
	Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
	Strip length	5 ... 6 mm / 0.2 ... 0.24 in
	Standards/specifications	EN 60664-1, EN 61810-1, EN 61140, EN 50178



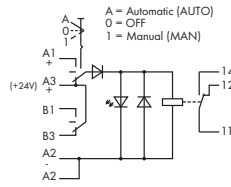
Relay with 1 changeover contact (1 u), manual-0-automatic switch with switch position monitoring



Contact life, type of load	Capability	Electrical life
Incandescent lamp	2200 W	20,000
Halogen lamp 230 VAC	1400 W	50,000
Halogen trafo	120 VA	20,000
Fluorescent lamp not comp., CCG ①,		
cos φ 0.406	20 x 58 W	25,000
Fluorescent lamp comp., CCG ①, C parallel	9 x 58 W	25,000
Fluorescent lamp comp., CCG ①, Duocircuit	600 W	20,000
Fluorescent lamp with ECG ②	12 x 58 W	25,000
Energy saving lamp 15 W	25 pcs	20,000
Energy saving lamp 13 W	30 pcs	20,000
Energy saving lamp 9 W	38 pcs	20,000
Gas discharge lamp	1000 W	20,000
Dulux-Lamp not compensated	800 W	20,000
Dulux-Lamp compensated	500 W	20,000
Max. capacitance at 230 VAC	60 µF	> 5,000

① CCG = Conventional Control Gear  
 ② ECG = Electronic Control Gear

Load limit curve



**Note:** Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts!

Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Relay module in DIN-rail mount enclosure, for DIN 35 rail	24 V DC	19 mA	789-329	1

Technical Data

Accessories see pages 115

<b>Coil:</b>				
Input voltage range		V <sub>N</sub> -15 % ... +20 %		
<b>Contacts:</b>				
Contact material		Ag alloy		
Max. continuous current		12 A		
Max. make current		120 A / 50 ms (AC)		
Max. switching voltage		250 V AC		
Max. switching power (resistive)		4 kVA AC, DC see load curve		
Recommended minimum load		12 V AC/DC, 100 mA		
Pull-in/drop-out/bounce time typ.		15ms / 5ms / -		
Mechanical life		10 x 10 <sup>6</sup> switching operations		
<b>General specifications:</b>				
Nominal voltage to EN 60664-1		250 V / 4 kV / 2		
Dielectric strength, contact-coil (AC, 1 min)		4 kV <sub>rms</sub>		
Dielectric strength open contact (AC, 1 min)		1 kV <sub>rms</sub>		
Dielectric strength contact-contact (AC, 1 min)		-		
Ambient operating temperature at V <sub>N</sub>		-25 °C ... +40 °C		
Storage temperature		-40 °C ... +70 °C		
Dimensions (mm) W x H x L		17.5 x 55 x 90		
Wire connection		Height from upper-edge of DIN 35 rail		
		CAGE CLAMP®		
Cross sections		0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14		
Strip length		5 ... 6 mm / 0.2 ... 0.24 in		
Standards/specifications		EN 60664-1, EN 50178, degree of protection II		



# Accessories, 789 Series

Push-in type jumper bars



Commoning



Description		Item No.	Pack. Unit
Push-in type jumper bars	uninsulated, 12-way, to be cut to the required length	789-112	100 (4x25)

Operating tool



Marking pen with fiber tip

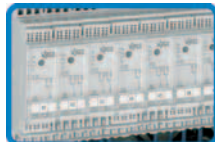


Description		Item No.	Pack. Unit
Marking pen	for permanent marking	210-110	1
Operating tool, with partially insulated shaft	Type 2, blade (3.5 x 0.5) mm	210-720	1

Miniature quick marking card



Marking



Description		Item No.	Pack. Unit
Miniature WSB Quick marking system	plain	248-501	5 cards
Marking software and printer/plotter see Section 11			
Marking	1 ... 10 (10 x)	248-502	5 cards
	11 ... 20 (10x)	248-503	5 cards
	21 ... 30 (10x)	248-504	5 cards
	31 ... 40 (10x)	248-505	5 cards
	41 ... 50 (10 x)	248-506	5 cards
	1 ... 50 (2 x)	248-566	5 cards
	K 1 ... K 10 (10 x)	248-450	5 cards
	K 11 ... K 20 (10 x)	248-451	5 cards
	K 100 (10 x)	248-452	5 cards
	U 1 ... U 10 (10 x)	248-453	5 cards
	U 11 ... U 20 (10 x)	248-454	5 cards
	U 100 (10 x)	248-455	5 cards
10 strips with 10 markers, white with black printing			

**WAGO**<sup>®</sup>

857-167



24V= 2A/240V~

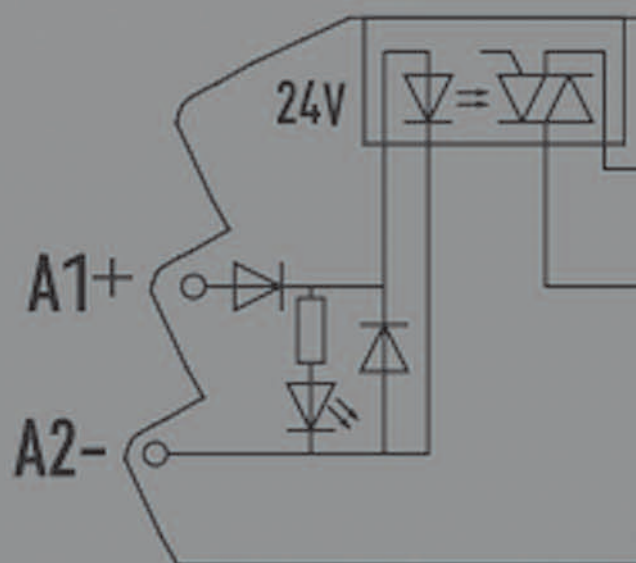
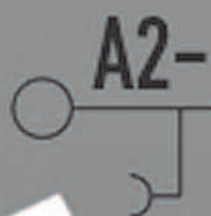
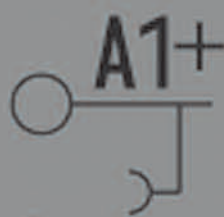
c **UL**

2A/27

**WAGO**<sup>®</sup> 857-7

Solid State-Relay

UIN: 24V DC  
OUT: 24V...240V AC / 1A  
Amb. Temp.: -25...+60°C





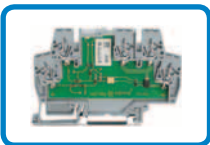
## Relay Sockets with Solid State Relay and Optocoupler, 857 Series

Relay Sockets with Solid State Relay	118 - 123
Optocoupler Modules	124 - 125
Multifunction Time Relays mit Solid State Relay	126 - 127
Accessories, 857 Series	128 - 130



## Relay Sockets with Solid State Relay, 788 Series

Relay Sockets with Solid State Relay	132 - 133
Accessories, 788 Series	134 - 136



## Rail-Mounted Terminal Blocks with Optocoupler, 859 Series

Rail-Mounted Terminal Blocks with Optocoupler	138 - 154
Rail-Mounted Terminal Blocks with Optocoupler, with an Extended Input Voltage and Operating Temperature Range	155
Accessories, 859 Series	156

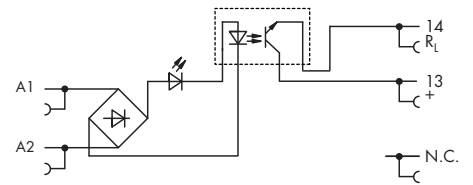
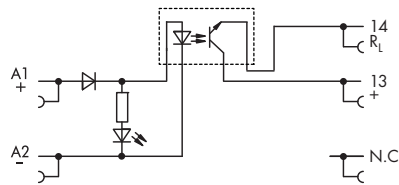
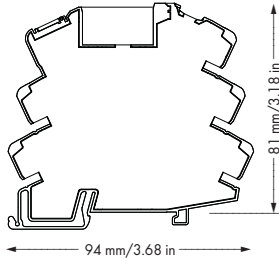


## Pluggable Modules – Optocouplers, 286 Series

Pluggable Modules – Optocouplers	158 - 165
Accessories, 286 Series	165 - 166

## 2 Relay Sockets with Solid State Relay

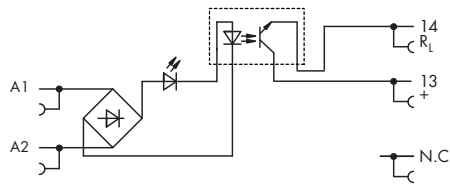
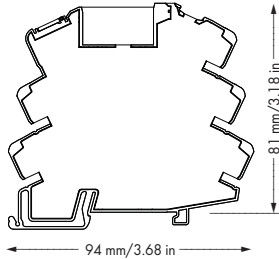
	<b>Solid state relay</b> <b>Input: 24 V DC</b> <b>Output: 0 V ... 48 V DC / 0.1 A</b>	<b>Solid state relay</b> <b>Input: 115 V AC/DC</b> <b>Output: 0 ... 48 V DC / 0.1 A</b>
--	---	---



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Relay socket with solid state relay, for DIN 35 rail	24VDC	9 mA	857-704	1	115V AC/DC	4.2 mA	857-707	1

Technical Data	Accessories see pages 128 ... 130				Accessories see pages 128 ... 130			
<b>Control circuit:</b>								
Input voltage range (low level)		0 V ... 10 V DC				0 V ... 25 V AC/DC		
Input voltage range (high level)		18 V ... 28.8 V DC				100 V ... 138 V AC/DC		
<b>Load circuit:</b>								
Output voltage range		0 V ... 48 V DC				0 V ... 48 V DC		
Max. continuous current		0.1 ADC				0.1 ADC		
Max. voltage drop at output		< 1VDC				< 1VDC		
Reverse voltage transistor/triac		54 V				54 V		
<b>General specifications:</b>								
Dielectric strength, control/load circuit (AC, 1 min)		2.5 kV <sub>rms</sub>				2.5 kV <sub>rms</sub>		
Ambient operating temperature		-20 °C ... +60 °C				-20 °C ... +60 °C		
Storage temperature		-40 °C ... +70 °C				-40 °C ... +70 °C		
Dimensions (mm) W x H x L		6 x 81 x 94				6 x 81 x 94		
Wire connection		Height from upper-edge of DIN 35 rail CAGE CLAMP® S				Height from upper-edge of DIN 35 rail CAGE CLAMP® S		
Cross sections		0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12				0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12		
Strip length		9 ... 10 mm / 0.37 in				9 ... 10 mm / 0.37 in		
Standards/specifications		EN 61000-6-2; EN 61000-6-4				EN 61000-6-2; EN 61000-6-4		
Approvals		CE; UL 508				CE; UL 508		

**Solid state relay**  
**Input: 230 V AC/DC**  
**Output: 0 V ... 48 V DC / 0.1 A**



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Relay socket with solid state relay, for DIN 35 rail	230V AC/DC	3.25 mA	857-708	1

**Technical Data**

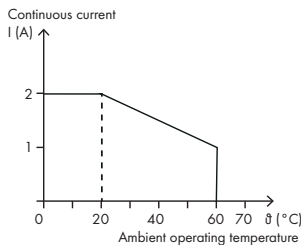
Accessories see pages 128 ... 130

<b>Control circuit:</b>	
Input voltage range (low level)	0 V ... 30 V AC/DC
Input voltage range (high level)	200 V ... 253 V AC/DC
<b>Load circuit:</b>	
Output voltage range	0 V ... 48 V DC
Max. continuous current	0.1 ADC
Max. voltage drop at output	< 1VDC
Reverse voltage transistor/triac	54 V
<b>General specifications:</b>	
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Ambient operating temperature	-20 °C ... +60 °C
Storage temperature	-40 °C ... +70 °C
Dimensions (mm) W x H x L	6 x 81 x 94
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12
Strip length	9 ... 10 mm / 0.37 in
Standards/specifications	EN 61000-6-2; EN 61000-6-4
Approvals	CE; UL 508

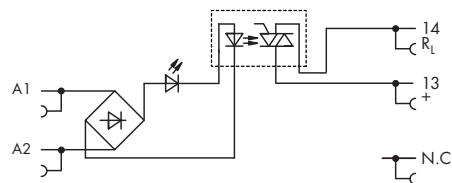




**Solid state relay**  
**Input: 230 V AC/DC**  
**Output: 24 V ... 240 V AC / 2 A**



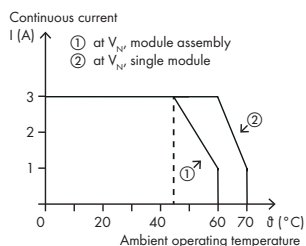
Derating



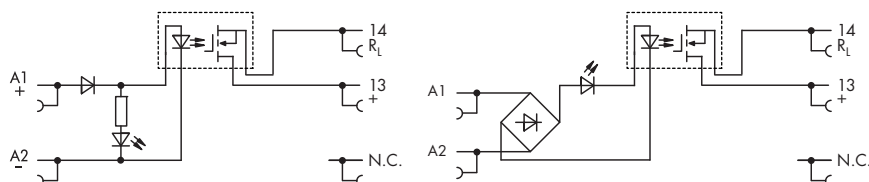
Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Relay socket with solid state relay, for DIN 35 rail	230V AC/DC	3.2 mA	857-718	1
<b>Technical Data</b> <span style="float: right;">Accessories see pages 128 ... 130</span>				
<b>Control circuit:</b>				
Input voltage range (low level)	0 V ... 60 V AC/DC			
Input voltage range (high level)	200 V ... 253 V AC/DC			
<b>Load circuit:</b>				
Output voltage range	24 ... 240 V AC			
Max. continuous current	2 A AC			
Max. voltage drop at output	< 1 V AC			
Reverse voltage transistor/triac	600 V			
<b>General specifications:</b>				
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>			
Ambient operating temperature	-20 °C ... +60 °C			
Storage temperature	-40 °C ... +70 °C			
Dimensions (mm) W x H x L	6 x 81 x 94			
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S			
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12			
Strip length	9 ... 10 mm / 0.37 in			
Standards/specifications	EN 61000-6-2; EN 61000-6-4			
Approvals	CE; UL 508			

# 2 Relay Sockets with Solid State Relay

	<b>Solid state relay</b> <b>Input: 24 V DC</b> <b>Output: 0 V ... 24 V DC / 3 A</b>	<b>Solid state relay</b> <b>Input: 115 V AC/DC</b> <b>Output: 0 V ... 24 V DC / 3 A</b>
--	---	---



Derating



Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Relay socket with solid state relay, for DIN 35 rail	24VDC	9.2 mA	857-724	1	115V AC/DC	3.9 mA	857-727	1

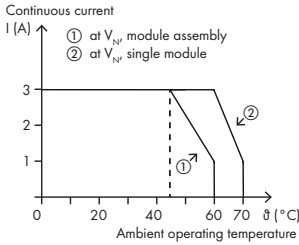
**Technical Data**

Accessories see pages 128 ... 130

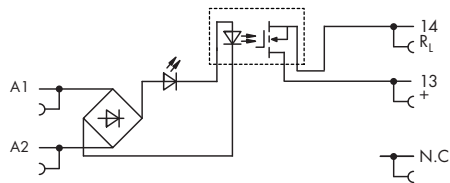
Accessories see pages 128 ... 130

Control circuit:	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Input voltage range (low level)	24VDC	9.2 mA	857-724	1	115V AC/DC	3.9 mA	857-727	1
Input voltage range (high level)	24VDC	9.2 mA	857-724	1	115V AC/DC	3.9 mA	857-727	1
<b>Load circuit:</b>								
Output voltage range	24VDC	9.2 mA	857-724	1	115V AC/DC	3.9 mA	857-727	1
Max. continuous current	24VDC	9.2 mA	857-724	1	115V AC/DC	3.9 mA	857-727	1
Max. voltage drop at output	24VDC	9.2 mA	857-724	1	115V AC/DC	3.9 mA	857-727	1
Reverse voltage transistor/triac	24VDC	9.2 mA	857-724	1	115V AC/DC	3.9 mA	857-727	1
<b>General specifications:</b>								
Dielectric strength, control/load circuit (AC, 1 min)	24VDC	9.2 mA	857-724	1	115V AC/DC	3.9 mA	857-727	1
Ambient operating temperature	24VDC	9.2 mA	857-724	1	115V AC/DC	3.9 mA	857-727	1
Storage temperature	24VDC	9.2 mA	857-724	1	115V AC/DC	3.9 mA	857-727	1
Dimensions (mm) W x H x L	24VDC	9.2 mA	857-724	1	115V AC/DC	3.9 mA	857-727	1
Wire connection	24VDC	9.2 mA	857-724	1	115V AC/DC	3.9 mA	857-727	1
Cross sections	24VDC	9.2 mA	857-724	1	115V AC/DC	3.9 mA	857-727	1
Strip length	24VDC	9.2 mA	857-724	1	115V AC/DC	3.9 mA	857-727	1
Standards/specifications	24VDC	9.2 mA	857-724	1	115V AC/DC	3.9 mA	857-727	1
Approvals	24VDC	9.2 mA	857-724	1	115V AC/DC	3.9 mA	857-727	1

	<b>Solid state relay</b> <b>Input: 230 V AC/DC</b> <b>Output: 0 V ... 24 V DC / 3 A</b>	
--	---	--



Derating



Description	$V_N$	$I_N$	Item No.	Pack. Unit	
Relay socket with solid state relay, for DIN 35 rail	230V AC/DC	3.2 mA	857-728	1	

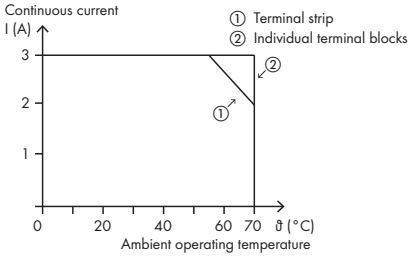
**Technical Data**

Accessories see pages 128 ... 130

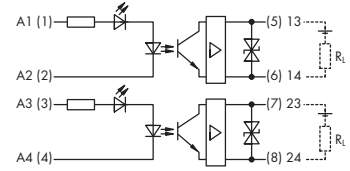
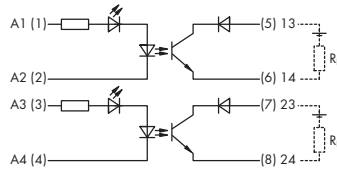
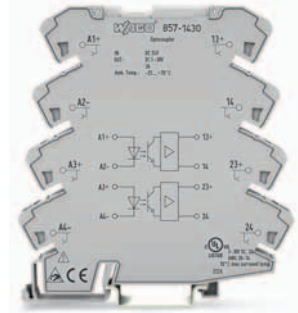
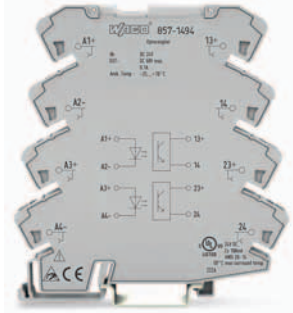
<b>Control circuit:</b>		
Input voltage range (low level)	0 V ... 60 V AC/DC	
Input voltage range (high level)	200 V ... 253 V AC/DC	
<b>Load circuit:</b>		
Output voltage range	0 V ... 24 V DC	
Max. continuous current	3 ADC	
Max. voltage drop at output	< 120mV DC	
Reverse voltage transistor/triac	33 V	
<b>General specifications:</b>		
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>	
Ambient operating temperature	-20 °C ... +70 °C	
Storage temperature	-40 °C ... +70 °C	
Dimensions (mm) W x H x L	6 x 81 x 94	
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S	
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12	
Strip length	9 ... 10 mm / 0.37 in	
Standards/specifications	EN 61000-6-2; EN 61000-6-4	
Approvals	CE; UL 508	

# 2 Pluggable Modules - Optocouplers

	<b>Dual channel optocoupler</b> <b>Input: 24 VDC</b> <b>Output: 9 – 60 VDC / 0.1 A</b>	<b>Dual channel optocoupler</b> <b>Input: 24 VDC</b> <b>Output: 3 – 31.2 VDC / 3 A</b>
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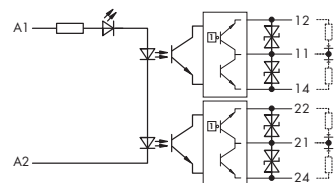
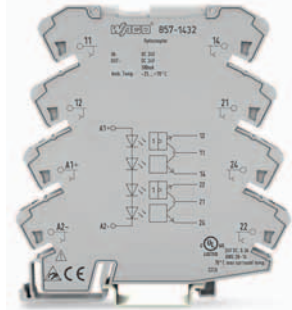
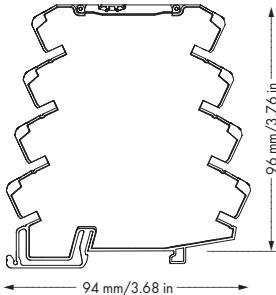
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Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Optocoupler module, for DIN 35 rail	24 VDC	5.6 mA	857-1494	1	24 VDC	7.75	857-1430	1

Technical Data	Accessories see pages 128 ... 130				Accessories see pages 128 ... 130			
<b>Control circuit:</b>								
Input voltage range (low level)	0-5 VDC				0-5 VDC			
Input voltage range (high level)	16.8 ... 31.2 VDC				16.8 ... 31.2 VDC			
<b>Load circuit:</b>								
Output voltage range	9-60 VDC				3-31.2 VDC			
Max. continuous current	0.1 ADC				3 ADC			
Turn-on time	20 μs				25 μs			
Turn-off time	120 μs				250 μs			
Max. switching frequency	1.5 kHz				300Hz			
Max. voltage drop at output	2 V				0.2 V			
Reverse voltage transistor/triac	100 V				55 V			
<b>General specifications:</b>								
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>				2.5 kV <sub>rms</sub>			
Dielectric strength, channel/channel (AC, 1 min)	4 kV <sub>rms</sub>				4 kV <sub>rms</sub>			
Ambient operating temperature	-20 °C ... +70 °C				-20 °C ... +70 °C			
Storage temperature	-40 °C ... +85 °C				-40 °C ... +85 °C			
Dimensions (mm) W x H x L	6 x 96 x 94				6 x 96 x 94			
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S				Height from upper-edge of DIN 35 rail CAGE CLAMP® S			
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12				0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14			
Strip length	9 ... 10 mm / 0.35 ... 0.39 in				9 ... 10 mm / 0.35 ... 0.39 in			
Standards/specifications	EN 60664-1; EN 60947-5; EN 61000-6-2; EN 61000-6-4				EN 60664-1; EN 60947-5; EN 61000-6-2; EN 61000-6-4			
Approvals	UL 508 (max. 50 °C/100 mA)				CE; g; UL 508 (max. 70 °C/2 A)			

**Dual channel optocoupler**  
**Input: 24 VDC**  
**Output: 2 changeover contacts, 3 ... 30 VDC / 0.5 A**



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	
Optocoupler module, for DIN 35 rail	24 V DC	5.9 mA	857-1432	1	

### Technical Data

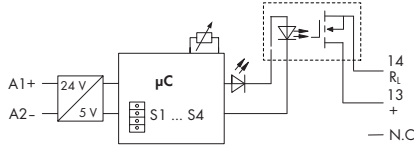
Accessories see pages 128 ... 130

<b>Control circuit:</b>			
Input voltage range (low level)		0 V ... 5 V DC	
Input voltage range (high level)		16.8 V ... 30 V DC	
<b>Load circuit:</b>			
Output voltage range		2 x 9 V ... 60 VDC	
Max. continuous current		2 x 500 mA	
Turn-on time		25 μs	
Turn-off time		250 μs	
Max. switching frequency		1.5 kHz	
Max. voltage drop at output		1.5 V	
<b>General specifications:</b>			
Dielectric strength, control/load circuit (AC, 1 min)		3.75 kV <sub>rms</sub>	
Dielectric strength, channel/channel (AC, 1 min)		-	
Ambient operating temperature		-20 °C ... +70 °C	
Storage temperature		-40 °C ... +85 °C	
Dimensions (mm) W x H x L		6 x 96 x 94	
Wire connection		Height from upper-edge of DIN 35 rail CAGE CLAMP® S	
Cross sections		0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Strip length		9 ... 10 mm / 0.35 ... 0.39 in	
Standards/specifications		EN 60664-1	

## 2 Multifunction Time Relays with Solid State Relay

	<b>Multifunction time relay with plugged SSR</b> <b>1 make contact (1 a)</b> <b>4 time ranges, 4 functions</b> <b>Switching voltage: 0 ... 24 VDC</b>	
--	--	--

- 4 functions:
  - On-delay
  - Single-shot leading edge
  - On-delay and single-shot leading edge (1 s fixed)
  - Blinking
- Function and time range adjustable via DIP switch



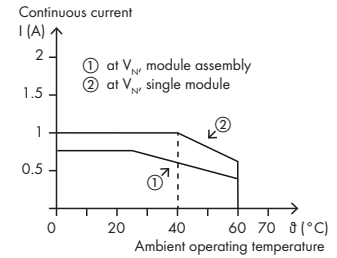
Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
<b>Multifunction time relay, for DIN 35 rail</b>	24 VDC	9.15 mA	<b>857-624</b>	1

<b>Technical Data</b>		Accessories see pages 128 ... 130
<b>Control circuit:</b>		
Input voltage range	V <sub>N</sub> -15 % ... +30 %	
Power consumption at V <sub>N</sub>	9.15 mA (active) / 2.5 mA (passive)	
<b>Load circuit:</b>		
Switching voltage	0 V ... 24 V DC	
Peak reverse voltage	33 V	
Max. switching current	2 A	
Turn-on time	100 µs	
Turn-off time	2 ms	
Forward voltage at max. switching current	< 120mV DC	
<b>General specifications:</b>		
Time range	adjustable: 0.1 ... 10 s; 3 ... 300 s; 0.3 ... 30 min; 3 ... 300 min	
Reset time	50 ms	
Repeat accuracy	±1 %	
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>	
Ambient operating temperature	-20 °C ... +60 °C	
Storage temperature	-40 °C ... +70 °C	
Dimensions (mm) W x H x L	6 x 81 x 94	
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S	
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 14	
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	
Standards/specifications	EN 60664-1; EN 61812-1; EN 61373; EN50121-3-2	
Approvals	CE	

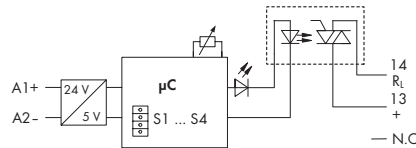


	<b>Multifunction time relay with plugged SSR</b> <b>1 make contact (1 a)</b> <b>4 time ranges, 4 functions</b> <b>Switching voltage: 24 ... 230 VAC</b>	
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- 4 functions:
  - On-delay
  - Single-shot leading edge
  - On-delay and single-shot leading edge (1 s fixed)
  - Blinking
- Function and time range adjustable via DIP switch



Derating



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Multifunction time relay, for DIN 35 rail	24 VDC	9.15 mA	857-634	1

**Technical Data**

Accessories see pages 128 ... 130

<b>Control circuit:</b>	
Input voltage range	V <sub>N</sub> -15 % ... +30 %
Power consumption at V <sub>N</sub>	9.15 mA (active) / 2.5 mA (passive)
<b>Load circuit:</b>	
Switching voltage	24 V ... 230 V AC
Peak reverse voltage	600 V
Max. switching current	1 A
Turn-on time	1 ms
Turn-off time	10 ms
Forward voltage at max. switching current	< 1 VAC
<b>General specifications:</b>	
Time range	adjustable: 0.1 ... 10 s; 3 ... 300 s; 0.3 ... 30 min; 3 ... 300 min
Reset time	50 ms
Repeat accuracy	±1 %
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Ambient operating temperature	-20 °C ... +60 °C
Storage temperature	-40 °C ... +70 °C
Dimensions (mm) W x H x L	6 x 81 x 94
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 14
Strip length	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 60664-1; EN 61812-1; EN 61373; EN50121-3-2
Approvals	CE

	Pluggable replacement solid state relay	Pluggable replacement solid state relay
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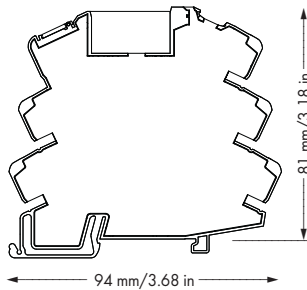
Description	Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
Pluggable replacement solid state relay	857-161	20	857-164	20	857-167	20

Technical Data						
<b>Control circuit:</b>						
Nominal input voltage (V <sub>N</sub> )	24 V DC		24 V DC		24 V DC	
Input voltage range	18 V ... 30 V DC		16 V ... 30 V DC		18 V ... 30 V DC	
Nominal input current (I <sub>N</sub> )	7 mA		7 mA		7 mA	
<b>Load circuit:</b>						
Switching voltage	0 V ... 24 V DC		0 V ... 48 V DC		24 V ... 240 V AC	
Peak reverse voltage	33 V		54 V		600 V	
Max. switching current	3 A DC		100 mA DC		2 A AC	
Forward voltage at max. switching current	< 120 mV DC		< 1 V DC		< 1 V AC	
Dielectric strength control/switching circuit	2.5 kV		2.5 kV		2.5 kV	
<b>General Specifications</b>						
Ambient operating temperature	-30 °C ... +80 °C		-20 °C ... +60 °C		-30 °C ... +80 °C	
Storage temperature	-40 °C ... +100 °C		-40 °C ... +70 °C		-40 °C ... +100 °C	
Dimensions (mm) W x H x L	5 x 15 x 28		5 x 15 x 28		5 x 15 x 28	

Description	Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
Pluggable replacement solid state relay	857-162	20	857-165	20	857-168	20

Technical Data						
<b>Control circuit:</b>						
Nominal input voltage (V <sub>N</sub> )	60 V DC		60 V DC		60 V DC	
Input voltage range	35 V ... 72 V DC		52 V ... 72 V DC		35 V ... 72 V DC	
Nominal input current (I <sub>N</sub> )	3 mA		2.8 mA		3.1 mA	
<b>Load circuit:</b>						
Switching voltage	0 V ... 24 V DC		0 V ... 48 V DC		24 V ... 240 V AC	
Peak reverse voltage	33 V		54 V		600 V	
Max. switching current	3 A DC		100 mA DC		2 A AC	
Forward voltage at max. switching current	< 120 mV DC		< 1 V DC		< 1 V AC	
Dielectric strength control/switching circuit	2.5 kV		2.5 kV		2.5 kV	
<b>General Specifications</b>						
Ambient operating temperature	-30 °C ... +80 °C		-20 °C ... +60 °C		-20 °C ... +80 °C	
Storage temperature	-40 °C ... +100 °C		-40 °C ... +70 °C		-40 °C ... +100 °C	
Dimensions (mm) W x H x L	5 x 15 x 28		5 x 15 x 28		5 x 15 x 28	

Sockets for miniature switching relay and SSR



Description	Item No.	Pack. Unit
Socket for miniature switching relay and SSR, 24 V AC/DC for DIN 35 rail	857-104	1
Socket for miniature switching relay and SSR, 110 V AC/DC for DIN 35 rail	857-107	1
Socket for miniature switching relay and SSR, 230 V AC/DC for DIN 35 rail	857-108	1

Technical Data

Status indication	LED yellow
Operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +70 °C
Dimensions (mm) W x H x L	6 x 81 x 94
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12
Strip length	9 ... 10 mm / 0.37 in
Approvals	UL

Assignment Socket / Replacement Relay / Replacement Optocoupler

	Input Voltage	Item No.	Socket	Replacement Relays or Optocouplers
Miniature Switching Relays	12 V DC	857-303	857-103	857-150
	24 V DC	857-304	857-104	857-152
	48 V DC	857-305	857-105	857-154
	60 V DC	857-306	857-106	857-155
	110 V DC	857-307	857-107	857-155
	220 V DC	857-308	857-108	857-155
	24 V AC/DC	857-354	857-104	857-152
	115 V AC/DC	857-357	857-107	857-155
	230 V AC/DC	857-358	857-108	857-155
Miniature Switching Relays (gold contacts)	24 V DC	857-314	857-104	857-153
	110 V DC	857-317	857-107	857-157
	220 V DC	857-318	857-108	857-157
	24 V AC/DC	857-364	857-104	857-153
	115 V AC/DC	857-367	857-107	857-157
	230 V AC/DC	857-368	857-108	857-157
Solid State Relays	24 V DC	857-704	857-104	857-164
	115 V AC/DC	857-707	857-107	857-165
	230 V AC/DC	857-708	857-108	857-165
	24 V DC	857-714	857-104	857-167
	115 V AC/DC	857-717	857-107	857-168
	230 V AC/DC	857-718	857-108	857-168
	24 V DC	857-724	857-104	857-161
	115 V AC/DC	857-727	857-107	857-162
230 V AC/DC	857-728	857-108	857-162	

## 2 Accessories, 857 Series

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Push-in type jumper bar



Commoning



Description		Item No.	Pack. Unit
Push-in type jumper bars, light gray, insulated, 18 A	2-way	859-402	200 (8x25)
	3-way	859-403	200 (8x25)
	4-way	859-404	200 (8x25)
	5-way	859-405	200 (8x25)
	6-way	859-406	100 (4x25)
	7-way	859-407	100 (4x25)
	8-way	859-408	100 (4x25)
	9-way	859-409	100 (4x25)
	10-way	859-410	100 (4x25)
	Item no. suffix for colored push-in type jumper bars	yellow	... /000-029
red		... /000-005	
blue		... /000-006	
Comb-style jumper bar, insulated	2-way	281-482	100

WMB Multi marking system



Marking



Description		Item No.	Pack. Unit
WMB Multi marking system	plain	793-501	5 cards
Marking software and printer/plotter see Section 11			
Marking	1 ... 10 (10x)	793-502	5 cards
	11 ... 20 (10x)	793-503	5 cards
	21 ... 30 (10x)	793-504	5 cards
	31 ... 40 (10x)	793-505	5 cards
	41 ... 50 (10x)	793-506	5 cards
	1 ... 50 (2x)	793-566	5 cards
10 strips with 10 markers, white with black printing			

Operating tool

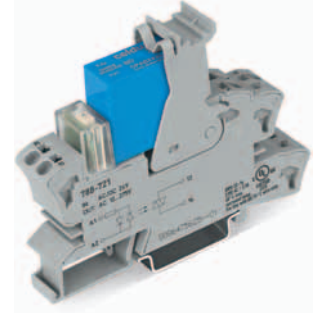
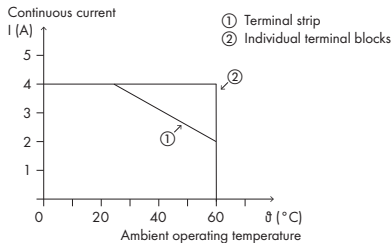


Description		Item No.	Pack. Unit
Operating tool, with partially insulated shaft	Type 2, blade (3.5 x 0.5) mm	210-720	1

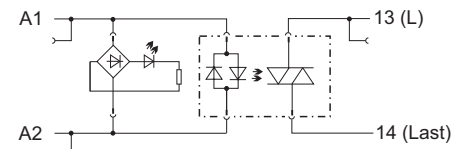
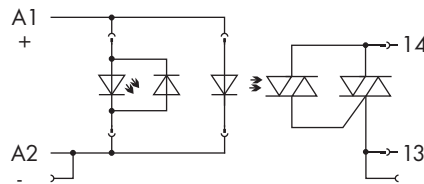




	<b>Solid state relay</b> Input: 24 V DC Output: 24 V ... 240 V AC / 1 A Zero voltage switch	<b>Solid state relay</b> Input: 24 V AC/DC Output: 12 – 275 VAC / 4 A Zero voltage switch
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Derating 788-721



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Relay socket with solid state relay, for DIN 35 rail	24 V DC	7 mA	788-720	1	24 V AC/DC	10 mA	788-721	

**Technical Data**

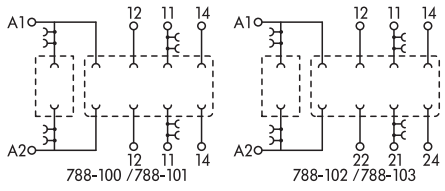
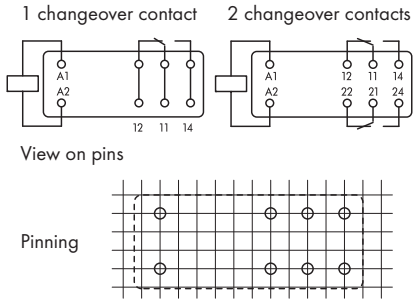
Accessories see pages 134 ... 136

Accessories see pages 134 ... 136

Control circuit:		
Input voltage range (low level)	0V...4 VDC	0V...2.5 V AC/DC
Input voltage range (high level)	18 V ... 30 V DC	15 V ... 30 V AC/DC
<b>Load circuit:</b>		
Output voltage range	24 ... 240 V AC	12 V ... 275 VAC (50/60 Hz)
Max. continuous current	1 A AC	4 A AC
Turn-on time	10 ms	10 ms
Turn-off time	10 ms	10 ms
Max. voltage drop at output	< 1.1 VAC	< 1.1 VAC
Reverse voltage transistor/triac	600 V	600 V
<b>General specifications:</b>		
Nominal voltage to EN 60664-1	250 V / 2.5 kV / 2	250 V / 2.5 kV / 2
Dielectric strength, control/load circuit (AC, 1 min)	3.75 kV <sub>rms</sub>	4 kV <sub>rms</sub>
Ambient operating temperature	-20 °C ... +60 °C	-20 °C ... +60 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	15 x 53 x 86	15 x 53 x 86
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® S	Height from upper-edge of DIN 35 rail CAGE CLAMP® S
Cross sections	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12	0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 12
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	9 ... 10 mm / 0.35 ... 0.39 in
Standards/specifications	EN 61140; EN 50178, UL 508 (max. 60 °C/1 A)	EN 61140; EN 50178, UL 508 (max. 40 °C/2.5 A)



	<b>Sockets for miniature switching relay</b> <b>1 changeover contact / 2 changeover contact</b>	
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Description	Item No.	Pack. Unit
<b>Socket without relay, for DIN 35 rail</b>		
Relay height 15 mm, 1 changeover contact	<b>788-100</b>	1
Relay height 15 mm, 2 changeover contacts	<b>788-102</b>	1
Relay height 25 mm, 1 changeover contact	<b>788-101</b>	1
Relay height 25 mm, 2 changeover contacts	<b>788-103</b>	1

Technical Data		
<b>Contacts:</b>		
Max. continuous current	16 A / 2 x 8 A	
Max. switching voltage	250 V AC	
Max. switching power (resistive)	4 kVA / 2 x 2 kVA AC	
<b>General specifications:</b>		
Nominal input voltage (V <sub>N</sub> )	depending on relay; max. 250 V AC	
Nominal voltage to EN 60664-1	250 V / 4 kV / 3	
Dielectric strength	5 kV <sub>eff</sub> (depending on relay)	
Storage temperature	-40 °C ... +80 °C	
Ambient operating temperature	-25 °C ... +70 °C (depending on relay)	
Wire connection	CAGE CLAMP® S	
Cross sections	CAGE CLAMP® S	
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	
Standards/specifications	EN 61140; EN 50178	

## Status indication



Description	Power consumption at $V_N$	Item No.	Pack. Unit
Status indication with recovery diode, 24 V DC (12 V ... 24 V)	2.4 mA	788-120	50 (2x25)
Status indication with recovery diode, 48 V DC (48 V ... 60 V)	1.9 mA	788-121	50 (2x25)
Status indication 110 V DC	1.9 mA	788-122	50 (2x25)
Status indication 24 V AC	2.1 mA	788-123	50 (2x25)
Status indication 115 V AC	1.7 mA	788-124	50 (2x25)
Status indication 230 V AC	1.6 mA	788-125	50 (2x25)

Push-in type jumper bar  
788-113

## Commoning



## Push-in type jumper bar



Description			Item No.	Pack. Unit
Push-in type jumper bar, I max. 18 A	2-way	(module/module)	788-113	200 (8x25)
	3-way		788-114	100 (4x25)
	4-way		788-115	100 (4x25)
	6-way		788-116	100 (4x25)
	8-way		788-117	100 (4x25)
Push-in type jumper bars, light gray, insulated, 18 A	2-way	(internal)	859-402	200 (8x25)

## WMB Multi marking system



## Marking



## Group marker carrier



Description		Item No.	Pack. Unit
WMB Multi marking system	plain	793-501	5 cards
Marking software and printer/plotter see Section 11			
Marking	1 ... 10 (10x)	793-502	5 cards
	11 ... 20 (10x)	793-503	5 cards
	21 ... 30 (10x)	793-504	5 cards
	31 ... 40 (10x)	793-505	5 cards
	41 ... 50 (10x)	793-506	5 cards
	1 ... 50 (2x)	793-566	5 cards
10 strips with 10 markers, white with black printing			
Group marker carrier		209-145	100 (50)

## 2 Accessories, 788 Series

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Operating tool



Description		Item No.	Pack. Unit
Operating tool, with partially insulated shaft	Type 2, blade (3.5 x 0.5) mm	210-720	1

Ferrule



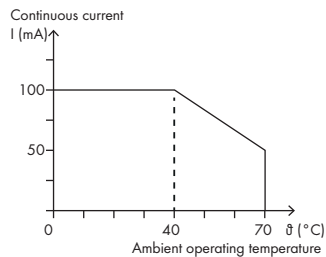
Description	Sleeve for mm <sup>2</sup> / AWG	Item No.	Pack. Unit
Ferrule, red insulated, 12 mm	2 x 1 mm <sup>2</sup> / 2 x 18	216-542	500



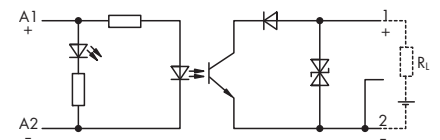
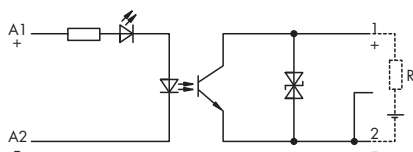
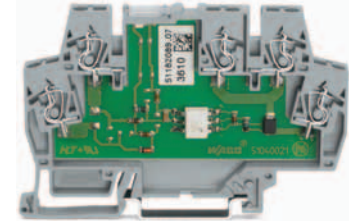
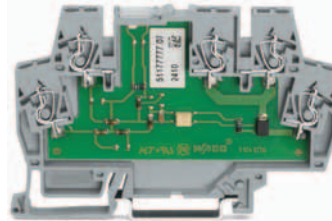


**Optocoupler**  
 Input: 24 V DC  
 Output: 24 V DC/100 mA  
 with an extended input voltage and operating temperature range for railway applications

**Optocoupler**  
 Input: 5 V DC  
 Output: 24 V DC/100 mA  
 with an extended input voltage and operating temperature range for railway applications



Derating



Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Rail-mounted terminal block with optocoupler, for DIN 35 rail	24 V DC	9.2 mA	859-796	1	5 V DC	17 mA	859-795	1

**Technical Data**

Accessories see page 156

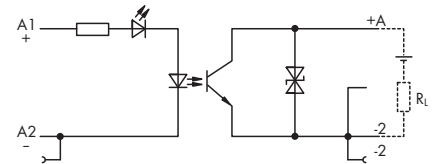
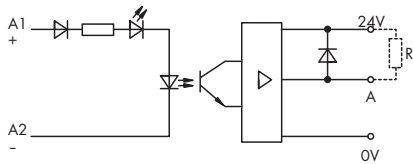
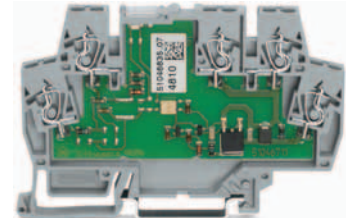
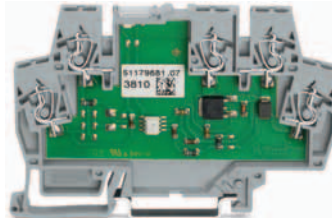
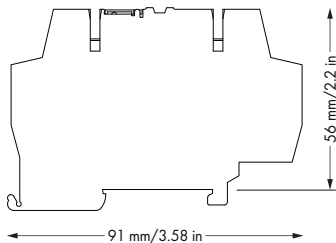
Accessories see page 156

Control circuit:		
Input voltage range (low level)	0 ... 5 VDC	0 ... 0.8 VDC
Input voltage range (high level)	18 ... 30 VDC	2 ... 6.25 VDC
<b>Load circuit:</b>		
Output voltage range	3 V ... 30 V DC	3 V ... 30 V DC
Max. continuous current	100 mA	100 mA
Turn-on time	10 $\mu$ s	10 $\mu$ s
Turn-off time	50 $\mu$ s	50 $\mu$ s
Max. switching frequency	10 kHz	10 kHz
Max. voltage drop at output	1 V	1 V
Reverse voltage transistor/triac	65 V	65 V
<b>General specifications:</b>		
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>	2.5 kV <sub>rms</sub>
Ambient operating temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	6 x 56 x 91	6 x 56 x 91
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.2 ... 0.24 in	5 ... 6 mm / 0.2 ... 0.24 in
Standards/specifications	EN 60664-1; EN 61810-5; UL 508; EEx nA II T4	EN 60664-1; EN 61810-5; UL 508; EEx nA II T4





	<p><b>Power optocoupler</b>          Input: 24 V DC          Output: 24 V DC/3 A          Negative switching</p>	<p><b>Power optocoupler</b>          Input: 24 V DC          Output: 24 V DC/3 A</p>
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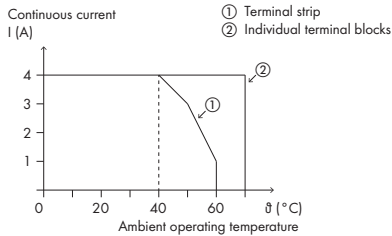


Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Rail-mounted terminal block with optocoupler, for DIN 35 rail	24 V DC	4 mA	859-720	1	24 V DC	14 mA	859-730	1

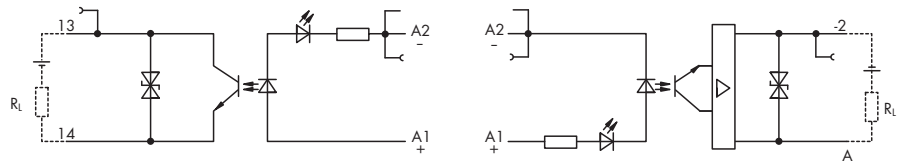
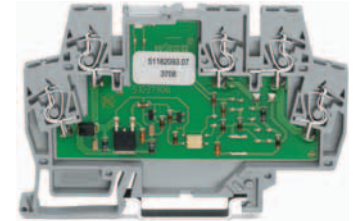
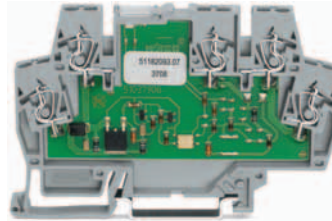
Technical Data	Accessories see page 156	
<b>Control circuit:</b>		
Input voltage range (low level)		0 ... 5 VDC
Input voltage range (high level)	16 V ... 30 V DC	15 V ... 27 V DC
<b>Load circuit:</b>		
Output voltage range	10 V ... 30 V DC	3 V ... 30 V DC
Max. continuous current	3 A	3 A
Peak output current	20 A	25 A
Turn-on time	25 µs	25 µs
Turn-off time	75 µs	450 µs
Max. switching frequency	1 kHz / < 2 A, 2 kHz / < 1 A, 3 kHz / < 0.5 A	350 Hz
Max. voltage drop at output	0.5 V	0.2 V
Reverse voltage transistor/triac	55 V	55 V
<b>General specifications:</b>		
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>	2.5 kV <sub>rms</sub>
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +55 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	6 x 56 x 91	6 x 56 x 91
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.2 ... 0.24 in	5 ... 6 mm / 0.2 ... 0.24 in
Standards/specifications	EN 60664-1; EN 61810-5; UL 508; EEx nA II T4	EN 60664-1; EN 61810-5; UL 508; EEx nA II T4



	<b>Power optocoupler</b> Input: 24 VDC Output: 3 ... 30 VDC/3 A	<b>Power optocoupler</b> Input: 12 ... 48 VDC Output: 3 ... 53 VDC / 4 A
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Derating 859-744



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Rail-mounted terminal block with optocoupler, for DIN 35 rail	24 VDC	7 mA	859-762	1	48 VDC	5 mA	859-744	1

**Technical Data**

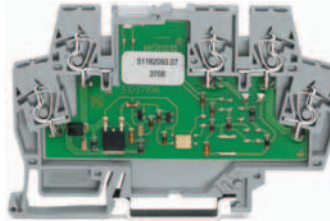
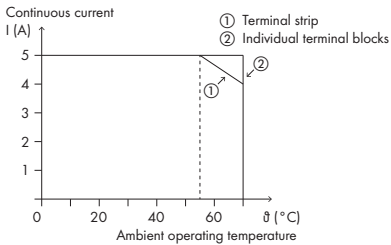
Accessories see page 156

Accessories see page 156

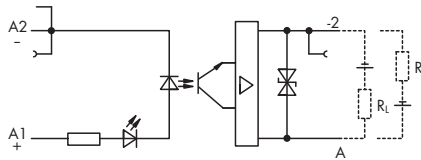
Control circuit:		
Input voltage range (low level)	0 ... 9 VDC	0 ... 4 VDC
Input voltage range (high level)	19-27 VDC	10 ... 53 VDC
<b>Load circuit:</b>		
Output voltage range	3 ... 30 VDC	3 ... 53 VDC
Max. continuous current	3 A	4 A
Peak output current	25 A	30 A
Turn-on time	25 $\mu$ s	200 $\mu$ s
Turn-off time	450 $\mu$ s	450 $\mu$ s
Max. switching frequency	350 Hz	100 Hz
Max. voltage drop at output	0.2 V	0.2 V
Reverse voltage transistor/triac	55 V	80 V
<b>General specifications:</b>		
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>	2.5 kV <sub>rms</sub>
Ambient operating temperature	-25 °C ... +55 °C	-40 °C ... +70 °C (Derating must be observed)
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	6 x 56 x 91	6 x 56 x 91
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.2 ... 0.24 in	5 ... 6 mm / 0.2 ... 0.24 in
Standards/specifications	EN 60664-1	EN 60664-1



	<b>Power optocoupler</b> <b>Input: 12 VDC</b> <b>Output: 3 ... 30 VDC / 5 A</b>	
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Derating



Description	$V_N$	$I_N$	Item No.	Pack. Unit	
Rail-mounted terminal block with optocoupler, for DIN 35 rail	12 VDC	3.2 mA	859-739	1	

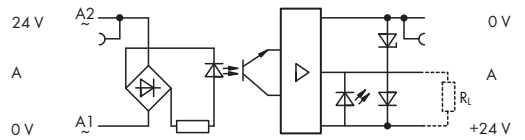
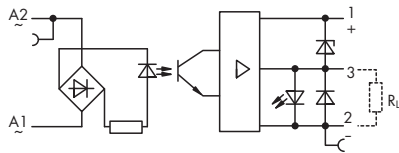
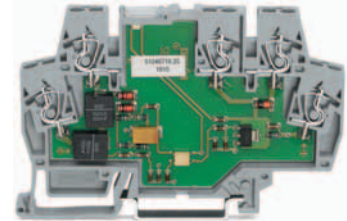
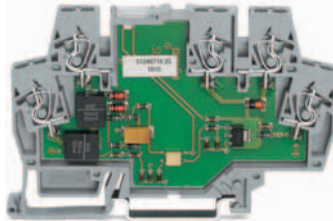
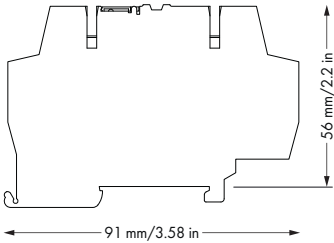
**Technical Data**

Accessories see page 156

<b>Control circuit:</b>	
Input voltage range (low level)	0 ... 5 VDC
Input voltage range (high level)	9.6 V ... 14.4 VDC
<b>Load circuit:</b>	
Output voltage range	3 ... 30 VDC
Max. continuous current	5 A
Peak output current	25 A
Turn-on time	200 $\mu$ s
Turn-off time	450 $\mu$ s
Max. switching frequency	100 Hz
Max. voltage drop at output	0.2 V
Reverse voltage transistor/triac	55 V
<b>General specifications:</b>	
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +70 °C
Dimensions (mm) W x H x L	6 x 56 x 91
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.2 ... 0.24 in
Standards/specifications	EN 60664-1

# 2 Rail-Mounted Terminal Blocks with Optocoupler

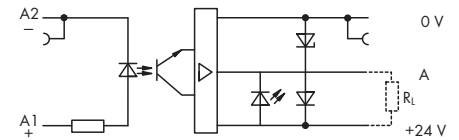
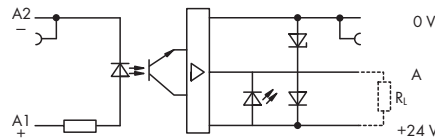
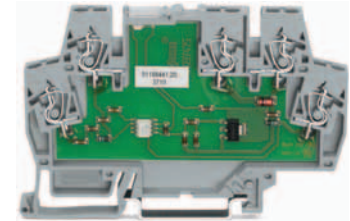
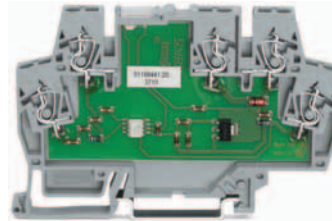
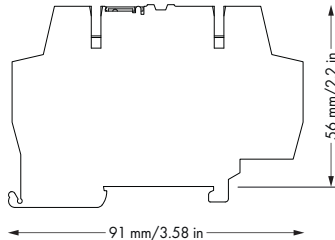
	<b>Optocoupler</b> Input: 230 V AC Output: 24 VDC/0.5 A Positive switching increased input frequency up to 100 Hz Input voltage up to 270 V AC	<b>Optocoupler</b> Input: 230 V DC Output: 24 VDC/0.5 A Negative switching
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Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Rail-mounted terminal block with optocoupler, for DIN 35 rail	230 V AC	0.6 mA	859-772	1	230 V AC	0.6 mA	859-712	1

Technical Data		Accessories see page 156		Accessories see page 156	
<b>Control circuit:</b>					
Input voltage range (low level)		0 ... 90 VAC		0 ... 90 VAC	
Input voltage range (high level)		175 ... 270 VAC		175 ... 240 VAC	
<b>Load circuit:</b>					
Output voltage range		20 V ... 30 V DC		20 V ... 30 V DC	
Max. continuous current		500 mA		500 mA	
Turn-on time		< 30 ms		< 30 ms	
Turn-off time		< 30 ms		< 30 ms	
Max. voltage drop at output		1.2 V		1.2 V	
Reverse voltage transistor/triac		80 V		80 V	
<b>General specifications:</b>					
Dielectric strength, control/load circuit (AC, 1 min)		2.5 kV <sub>rms</sub>		2.5 kV <sub>rms</sub>	
Ambient operating temperature		-25 °C ... +55 °C		-25 °C ... +55 °C	
Storage temperature		-40 °C ... +70 °C		-40 °C ... +70 °C	
Dimensions (mm) W x H x L		6 x 56 x 91		6 x 56 x 91	
Wire connection		Height from upper-edge of DIN 35 rail CAGE CLAMP®		Height from upper-edge of DIN 35 rail CAGE CLAMP®	
Cross sections		0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14		0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	
Strip length		5 ... 6 mm / 0.2 ... 0.24 in		5 ... 6 mm / 0.2 ... 0.24 in	
Standards/specifications		EN 60664-1; UL 508; EEx nA II T4		EN 60664-1; UL 508; EEx nA II T4	

	<b>Optocoupler</b> Input: 5 V DC Output: 24 VDC/0.5A/10 kHz Negative switching	<b>Optocoupler</b> Input: 24 V DC Output: 24 VDC/0.5A/10 kHz Negative switching
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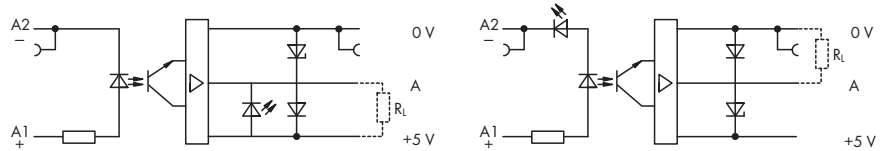
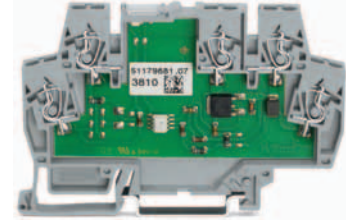
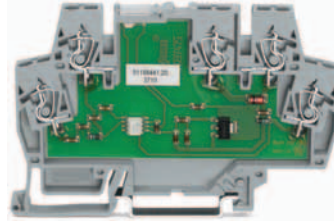
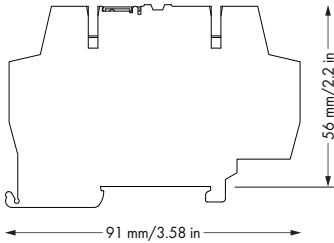
Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
<b>Rail-mounted terminal block with optocoupler, for DIN 35 rail</b>	5 V DC	9.6 mA	<b>859-702</b>	1	24 V DC	7.7 mA	<b>859-708</b>	1

<b>Technical Data</b>		Accessories see page 156	Accessories see page 156
<b>Control circuit:</b>			
Input voltage range (low level)	0 ... 1 VDC		0 ... 5 VDC
Input voltage range (high level)	4 ... 6.25 VDC		19 ... 30 VDC
<b>Load circuit:</b>			
Output voltage range	20 V ... 30 V DC		20 V ... 30 V DC
Max. continuous current	500 mA		500 mA
Turn-on time	< 7 µs		< 10 µs
Turn-off time	< 15 ms		< 10 µs
Max. switching frequency	10 kHz		10 kHz
Max. voltage drop at output	1.2 V		1.2 V
Reverse voltage transistor/triac	80 V		80 V
<b>General specifications:</b>			
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>		2.5 kV <sub>rms</sub>
Ambient operating temperature	-25 °C ... +55 °C		-25 °C ... +55 °C
Storage temperature	-40 °C ... +70 °C		-40 °C ... +70 °C
Dimensions (mm) W x H x L	6 x 56 x 91		6 x 56 x 91
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®		Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14		0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.2 ... 0.24 in		5 ... 6 mm / 0.2 ... 0.24 in
Standards/specifications	EN 60664-1; UL 508; EEx nA II T4		EN 60664-1; UL 508; EEx nA II T4





	<p><b>Optocoupler</b>  <b>Input: 24 V DC</b>  <b>Output: 5 VDC/0.5A/10 kHz</b>  <b>Negative switching</b></p>	<p><b>Optocoupler</b>  <b>Input: 24 VDC</b>  <b>Output: 5 VDC/100 mA/100 kHz</b>  <b>Positive switching</b></p>
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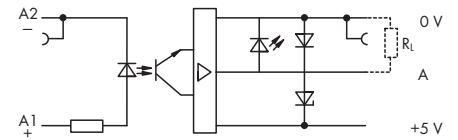
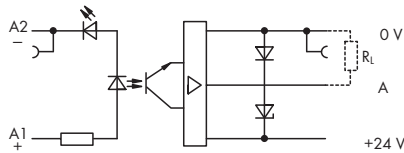
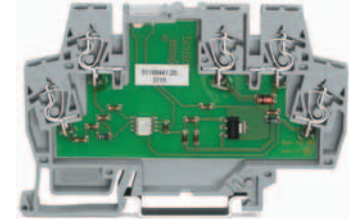
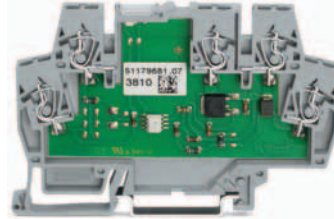
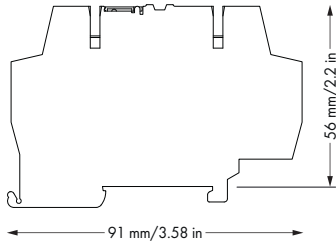


Description	$V_N$	$I_N$	Item No.	Pack. Unit	$V_N$	$I_N$	Item No.	Pack. Unit
Rail-mounted terminal block with optocoupler, for DIN 35 rail	24 V DC	11 mA	859-706	1	24 VDC	9 mA	859-755	1

Technical Data	Accessories see page 156				Accessories see page 156			
<b>Control circuit:</b>								
Input voltage range (low level)	0 ... 5 VDC				0 ... 5 VDC			
Input voltage range (high level)	18 ... 30 VDC				20 ... 30 VDC			
<b>Load circuit:</b>								
Output voltage range	4 V ... 6.25 V DC				4 ... 6 VDC			
Max. continuous current	500 mA				100 mA			
Peak output current					0.8 A			
Turn-on time	< 7 $\mu$ s				< 0.5 $\mu$ s			
Turn-off time	< 15 $\mu$ s				< 2 $\mu$ s			
Max. switching frequency	10 kHz				100 kHz			
Max. voltage drop at output	1.2 V				0.6 V			
Reverse voltage transistor/triac	80 V				40 V			
<b>General specifications:</b>								
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>				2.5 kV <sub>rms</sub>			
Ambient operating temperature	-25 °C ... +55 °C				-25 °C ... +55 °C			
Storage temperature	-40 °C ... +70 °C				-40 °C ... +70 °C			
Dimensions (mm) W x H x L	6 x 56 x 91				6 x 56 x 91			
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®				Height from upper-edge of DIN 35 rail CAGE CLAMP®			
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14				0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14			
Strip length	5 ... 6 mm / 0.2 ... 0.24 in				5 ... 6 mm / 0.2 ... 0.24 in			
Standards/specifications	EN 60664-1; UL 508; EEx nA II T4				EN 60664-1			



	<p><b>Optocoupler</b>                  Input: 24 VDC                  Output: 24 VDC/100 mA/100 kHz                  Positive switching</p>	<p><b>Optocoupler</b>                  Input: 24 V DC                  Output: 5 V DC/0.5 A/10 kHz                  Positive switching</p>
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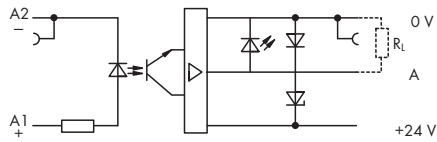
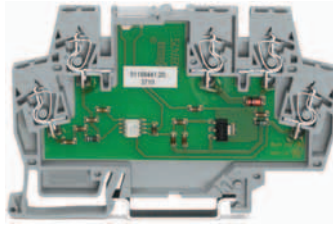
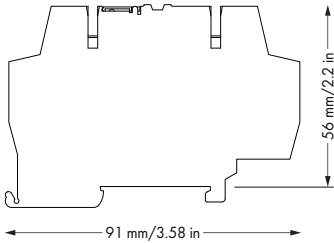
Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Rail-mounted terminal block with optocoupler, for DIN 35 rail	24 VDC	9 mA	859-759	1	24 V DC	11 mA	859-756	1

Technical Data	Accessories see page 156				Accessories see page 156			
<b>Control circuit:</b>								
Input voltage range (low level)		0 ... 5 VDC				0 ... 5 VDC		
Input voltage range (high level)		20 ... 30 VDC				18 ... 30 VDC		
<b>Load circuit:</b>								
Output voltage range		20 ... 28.8 VDC				4 V ... 6.25 V DC		
Max. continuous current		100 mA				500 mA		
Peak output current		0.8 A						
Turn-on time		< 0.5 μs				< 15 μs		
Turn-off time		< 2 μs				< 30 μs		
Max. switching frequency		100 kHz				10 kHz		
Max. voltage drop at output		1.2 V				1.2 V		
Reverse voltage transistor/triac		40 V				80 V		
<b>General specifications:</b>								
Dielectric strength, control/load circuit (AC, 1 min)		2.5 kV <sub>rms</sub>				2.5 kV <sub>rms</sub>		
Ambient operating temperature		-25 °C ... +55 °C				-25 °C ... +40 °C		
Storage temperature		-40 °C ... +70 °C				-40 °C ... +70 °C		
Dimensions (mm) W x H x L		6 x 56 x 91				6 x 56 x 91		
		Height from upper-edge of DIN 35 rail				Height from upper-edge of DIN 35 rail		
Wire connection		CAGE CLAMP®				CAGE CLAMP®		
Cross sections		0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14				0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14		
Strip length		5 ... 6 mm / 0.2 ... 0.24 in				5 ... 6 mm / 0.2 ... 0.24 in		
Standards/specifications		EN 60664-1				EN 60664-1; UL 508; EEx nA II T4		

## 2 Rail-Mounted Terminal Blocks with Optocoupler

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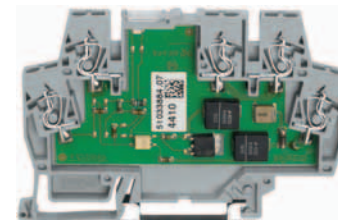
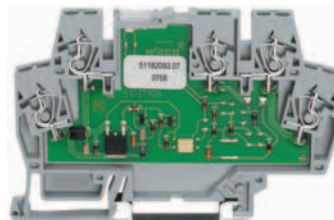
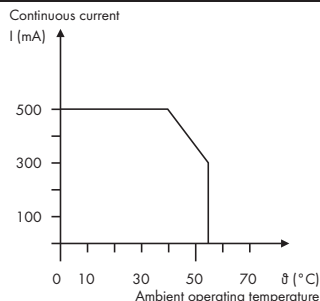
	<p><b>Optocoupler</b>  <b>Input: 24 V DC</b>  <b>Output: 24 V DC/0.5 A/10 kHz</b>  <b>Positive switching</b></p>	
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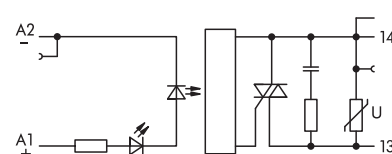
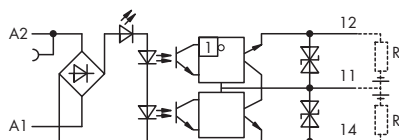
Description	$V_N$	$I_N$	Item No.	Pack. Unit
Rail-mounted terminal block with optocoupler, for DIN 35 rail	24 V DC	8 mA	859-758	1

<b>Technical Data</b> <span style="float: right;">Accessories see page 156</span>				
<b>Control circuit:</b>				
Input voltage range (low level)	0 ... 5 VDC			
Input voltage range (high level)	18 ... 30 VDC			
<b>Load circuit:</b>				
Output voltage range	20 V ... 30 V DC			
Max. continuous current	500 mA			
Turn-on time	< 15 $\mu$ s			
Turn-off time	< 30 $\mu$ s			
Max. switching frequency	10 kHz			
Max. voltage drop at output	1.2 V			
Reverse voltage transistor/triac	80 V			
<b>General specifications:</b>				
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>			
Ambient operating temperature	-25 °C ... +40 °C			
Storage temperature	-40 °C ... +70 °C			
Dimensions (mm) W x H x L	6 x 56 x 91			
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®			
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14			
Strip length	5 ... 6 mm / 0.2 ... 0.24 in			
Standards/specifications	EN 60664-1; UL 508; EEx nA II T4			

	<b>Optocoupler</b> <b>Input: 24 VDC</b> <b>Output: 3 ... 30 VDC / 500 mA</b> <b>Changeover contact output</b>	<b>Optocoupler</b> <b>Input: 5 V DC</b> <b>Output: 230 V AC/0.5 A</b>
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Derating



Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Rail-mounted terminal block with optocoupler, for DIN 35 rail	24 VDC	5.3 mA	859-732	1	5 V DC	7.7 mA	859-902	1

**Technical Data**

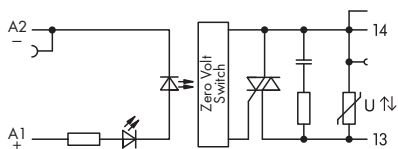
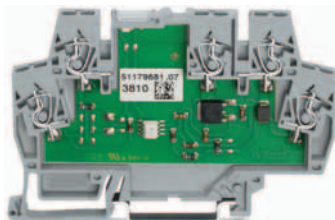
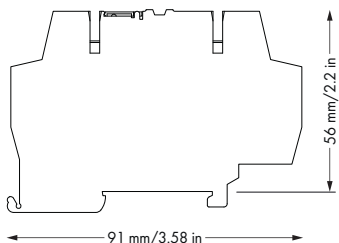
Accessories see page 156

Accessories see page 156

	24 VDC Model	5 V DC Model
<b>Control circuit:</b>		
Input voltage range (low level)	0 ... 5 VDC	0 ... 1 VDC
Input voltage range (high level)	15 V ... 42 VDC	4 ... 6.25 VDC
<b>Load circuit:</b>		
Output voltage range	3 ... 30 VDC	24 V ... 260 V AC (50 Hz ... 60 Hz)
Max. continuous current	500 mA	500 mA
Peak output current	4 A	30 A
Turn-on time	25 µs	10 ms
Turn-off time	150 µs	10 ms
Max. switching frequency	1.5 kHz	
Max. voltage drop at output	1.5 V	1.2 V
Reverse voltage transistor/triac	80 V	600 V
<b>General specifications:</b>		
Dielectric strength, control/load circuit (AC, 1 min)	3.75 kV <sub>rms</sub>	2.5 kV <sub>rms</sub>
Ambient operating temperature	-25 °C ... +55 °C	-25 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L	6 x 56 x 91	6 x 56 x 91
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.2 ... 0.24 in	5 ... 6 mm / 0.2 ... 0.24 in
Standards/specifications	EN 60664-1; UL 508	EN 60664-1

## 2 Rail-Mounted Terminal Blocks with Optocoupler

**Optocoupler**  
**Input: 24 VDC**  
**Output: 24 ... 260 VAC / 500 mA**  
**Zero-voltage switching**



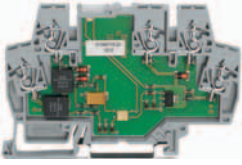
Description	V <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
Rail-mounted terminal block with optocoupler, for DIN 35 rail	24 VDC	6 mA	859-734	1

Technical Data				
Accessories see page 156				
<b>Control circuit:</b>				
Input voltage range (low level)	0 ... 5 VDC			
Input voltage range (high level)	19 ... 28.8 VDC			
<b>Load circuit:</b>				
Output voltage range	24 ... 260 VAC (50 Hz ... 60 Hz)			
Max. continuous current	500 mA			
Peak output current	30 A			
Turn-on time	10 ms			
Turn-off time	10 ms			
Max. switching frequency	-			
Max. voltage drop at output	1 V			
Reverse voltage transistor/triac	600 V			
<b>General specifications:</b>				
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>			
Ambient operating temperature	-25 °C ... +55 °C			
Storage temperature	-40 °C ... +70 °C			
Dimensions (mm) W x H x L	6 x 56 x 91			
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®			
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14			
Strip length	5 ... 6 mm / 0.2 ... 0.24 in			
Standards/specifications	EN 60664-1; UL 508			

# Rail-Mounted Terminal Blocks with Optocoupler

with an extended input voltage and operating temperature range, for railway applications

Rail-mounted terminal blocks with optocouplers



Description	Nominal input voltage (V <sub>N</sub> )	Input voltage range (high level)	Max. switching capacity	Ambient operating temperature at V <sub>N</sub>	Item No.	Pack. Unit
Optocoupler, 2-wire output	5 V DC	2 ... 6.25 VDC	3 V ... 30 V DC / 50 mA	-40 °C ... +70 °C	859-795	1
Optocoupler, 2-wire output	5 V DC	2 ... 6.25 VDC	3 V ... 60 V DC / 50 mA	-40 °C ... +70 °C	859-793	1
Optocoupler, 2-wire output	12 VDC	8.4 - 15 VDC	9 V ... 60 VDC / 50 mA	-40 °C ... +70 °C	859-798	1
Optocoupler, 2-wire output	24 V DC	18 ... 30 VDC	3 V ... 30 V DC / 50 mA	-40 °C ... +70 °C	859-796	1
Optocoupler, 2-wire output	24 V DC	16 ... 30 VDC	7 V ... 60 V DC / 50 mA	-40 °C ... +70 °C	859-791	1
Optocoupler, 2-wire output	24 V DC	16 V ... 30 V DC	9 V ... 60 V DC / 50 mA	-40 °C ... +70 °C	859-794	1

For additional technical data see: [www.wago.com](http://www.wago.com)

## 2 Accessories, 859 Series

156

Operating tool



Marking pen with fiber tip



Test pin



End and intermediate plate

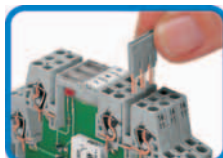


Description	Item No.	Pack. Unit
End and intermediate plate; 1 mm / 0.039 in thick, gray	859-525	100 (4x25)
Test pin; Ø 1 mm / 0.039 in; test wire for sold. onto test plug	859-500	1
Marking pen for permanent marking	210-110	1
Operating tool, with partially insulated shaft Type 2, blade (3.5 x 0.5) mm	210-720	1

Push-in type jumper bar



Commoning



Description	Item No.	Pack. Unit	
Push-in type jumper bars, light gray, insulated, 18 A	2-way	859-402	200 (8x25)
	3-way	859-403	200 (8x25)
	4-way	859-404	200 (8x25)
	5-way	859-405	200 (8x25)
	6-way	859-406	100 (4x25)
	7-way	859-407	100 (4x25)
	8-way	859-408	100 (4x25)
	9-way	859-409	100 (4x25)
	10-way	859-410	100 (4x25)
	Item no. suffix for colored push-in type jumper bars	yellow	... /000-029
red		... /000-005	
blue		... /000-006	

Miniature quick marking card



Marking



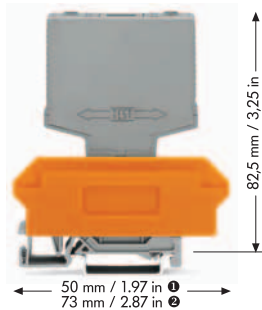
Description	Item No.	Pack. Unit	
Miniature WSB Quick marking system plain	248-501	5 cards	
Marking software and printer/plotter see Section 11			
Marking	1 ... 10 (10 x)	248-502	5 cards
	11 ... 20 (10x)	248-503	5 cards
	21 ... 30 (10x)	248-504	5 cards
	31 ... 40 (10x)	248-505	5 cards
	41 ... 50 (10 x)	248-506	5 cards
	1 ... 50 (2 x)	248-566	5 cards
	K 1 ... K 10 (10 x)	248-450	5 cards
	K 11 ... K 20 (10 x)	248-451	5 cards
	K 100 (10 x)	248-452	5 cards
	U 1 ... U 10 (10 x)	248-453	5 cards
U 11 ... U 20 (10 x)	248-454	5 cards	
U 100 (10 x)	248-455	5 cards	
10 strips with 10 markers, white with black printing			





## 2 Pluggable Modules - Optocouplers

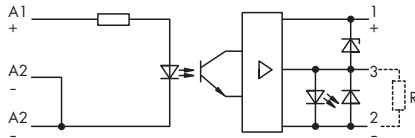
	<b>Optocoupler</b> <b>Input 24 V DC</b> <b>Output 5 V, 15 V, 24 V DC/500 mA</b> <b>Positive switching</b> <b>Module width 15 mm / 0.591 in</b>	
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WSB marker cards

- Marking U; Item No.: 209-789
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A2, A2, 1, 3, 2, A1, A2, A2; Item No.: 209-685

5 cards, each containing 10 strips with 10 markers



Description	Output	Item No.	Pack. Unit
<b>Optocoupler module</b>	5 V DC (3 V ... 6 V DC)	<b>286-750</b>	1
	24 V DC (20 V ... 30 V DC)	<b>286-752</b>	1
	15 V DC (10 V ... 20 V DC)	<b>286-751</b>	1

### Technical Data

Accessories see pages 99 ... 100

Nominal input voltage (V <sub>N</sub> )	24 V DC
Input voltage range	12 V ... 30 V DC
Input current range	5 mA ... 20 mA DC
Current at nominal voltage	15 mA DC
Reverse voltage transistor/triac	80 V DC V
Max. permissible continuous current	500 mA
Switch on / Switch off time	< 7 μs / < 15 μs
Max. operating frequency	25 kHz
Leakage current at nominal voltage	2.5 μA
Collector / emitter voltage drop V <sub>ce sat</sub>	≤ 1,2 V
Max. output (reverse current)	5 mA ; 10 mA ; 12 mA
Test voltage input / output	2,5 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250V / 4 kV / 2
Ambient operating temperature	-25 °C ... +40 °C

### Accessories

Accessories	Item No.	Pack. Unit
<b>Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①</b>	17 mm / 0.669 in wide <b>280-619</b>	1
<b>with 4-conductor terminal blocks, orange separator ②</b>	17 mm / 0.669 in wide <b>280-609</b>	1
<b>with 4-conductor terminal blocks, marker plate ③</b>	20 mm / 0.787 in wide <b>280-763</b>	1
<b>wire range 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in</b>		

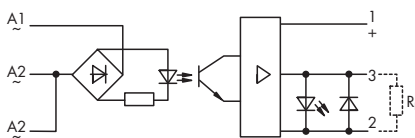
**Optocoupler**  
**Input 230 V AC**  
**Output 5 V, 15 V, 24 V DC/500 mA**  
**Positive switching**  
**Module width 15 mm / 0.591 in**



WSB marker cards

- Marking U; Item No.: 209-789
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A2, A2, 1, 3, 2, A1, A2, A2;  
Item No.: 209-685

5 cards, each containing 10 strips with 10 markers



Description	Output	Item No.	Pack. Unit
<b>Optocoupler module</b>	5 V DC (3.5 V ... 7 V DC)	<b>286-754</b>	1
	15 V DC (10 V ... 20 V DC)	<b>286-756</b>	1
	24 V DC (20 V ... 30 V DC)	<b>286-758</b>	1

### Technical Data

Accessories see pages 99 ... 100

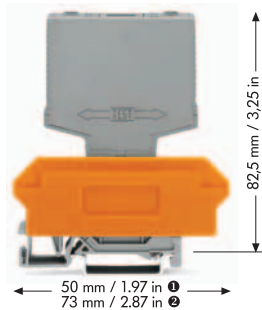
Nominal input voltage ( $V_N$ )	230 V AC
Input voltage range	40 V ... 250 V AC
Input current range	0.2 mA ... 2.9 mA AC
Current at nominal voltage	2,6 mA AC
Reverse voltage transistor/triac	80 V DC V
Max. permissible continuous current	500 mA
Switch on / Switch off time	< 10 ms / < 40 ms
Leakage current at nominal voltage	2.5 $\mu$ A
Collector / emitter voltage drop $V_{ce sat}$	$\leq 1,2$ V
Max. output (reverse current)	5 mA ; 7,5 mA ; 7,5 mA
Test voltage input / output	2,5 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250V / 4 kV / 2
Ambient operating temperature	-25 °C ... +40 °C

### Accessories

	Item No.	Pack. Unit
<b>Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator 1</b>	17 mm / 0.669 in wide <b>280-619</b>	1
<b>with 4-conductor terminal blocks, orange separator 2</b>	17 mm / 0.669 in wide <b>280-609</b>	1
<b>with 4-conductor terminal blocks, marker plate 2</b>	20 mm / 0.787 in wide <b>280-763</b>	1
<b>wire range 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in</b>		

# 2 Pluggable Modules - Optocouplers

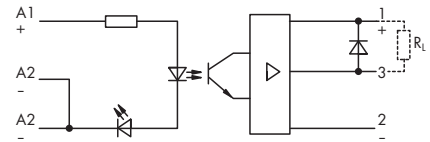
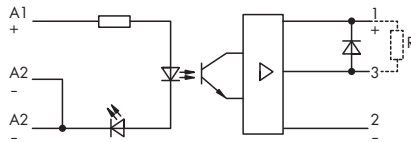
	<b>Optocoupler</b> <b>Input 24 V DC</b> <b>Output 24 V DC/2 A</b> <b>Negative switching</b> <b>Module width 15 mm / 0.591 in</b>	<b>Optocoupler</b> <b>Input 24 V DC</b> <b>Output 24 V DC/5 A</b> <b>Negative switching</b> <b>Module width 15 mm / 0.591 in</b>
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WSB marker cards

- Marking U; Item No.: 209-789
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A2, A2, 1, 3, 2, A1, A2, A2; Item No.: 209-685

5 cards, each containing 10 strips with 10 markers

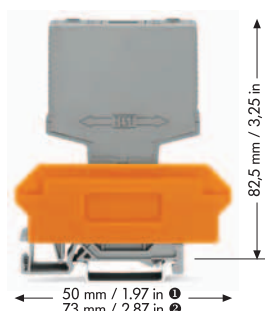


Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Optocoupler module	286-720	1	286-721	1

Technical Data	Accessories see pages 99 ... 100		Accessories see pages 99 ... 100	
Nominal input voltage (V <sub>N</sub> )	24 V DC		24 V DC	
Input voltage range	15 V ... 30 V DC		15 V ... 30 V DC	
Input current range	7.5 mA ... 18 mA DC		7.5 mA ... 18 mA DC	
Current at nominal voltage	13,5 mA DC		13,5 mA DC	
Output nominal voltage	24 V DC		24 V DC	
Output voltage range	15 V ... 40 V DC		15 V ... 40 V DC	
Reverse voltage transistor/triac	50 V DC V		50 V DC V	
Max. permissible continuous current	2 A		5 A	
Switch on / Switch off time	< 15 µs / < 40 µs		< 20 µs / < 80 µs	
Max. operating frequency	1 kHz		1 kHz	
Leakage current at nominal voltage	2.5 µA		2.5 µA	
Collector / emitter voltage drop V <sub>ce sat</sub>	≤ 0,5 V		≤ 0,5 V	
Test voltage input / output	2,5 kV		2,5 kV	
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250V / 4 kV / 2		250V / 4 kV / 2	
Ambient operating temperature	-25 °C ... +40 °C		-25 °C ... +40 °C	

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	17 mm / 0.669 in wide 280-619	1	17 mm / 0.669 in wide 280-619	1
with 4-conductor terminal blocks, orange separator ②	17 mm / 0.669 in wide 280-609	1	17 mm / 0.669 in wide 280-609	1
with 4-conductor terminal blocks, marker plate ③	20 mm / 0.787 in wide 280-763	1	20 mm / 0.787 in wide 280-763	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				

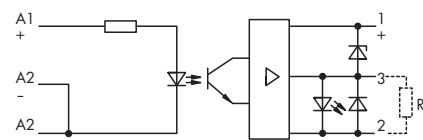
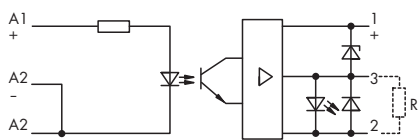
	<b>Optocoupler</b> <b>Input 5 V DC</b> <b>Output 24 V DC/500 mA</b> <b>Positive switching</b> <b>Module width 15 mm / 0.591 in</b>	<b>Optocoupler</b> <b>Input 24 V DC</b> <b>Output 24 V DC/4 A</b> <b>Positive switching</b> <b>Module width 15 mm / 0.591 in</b>
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WSB marker cards

- Marking U; Item No.: 209-789
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A2, A2, 1, 3, 2, A1, A2, A2;  
Item No.: 209-685

5 cards, each containing 10 strips with 10 markers



Description	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Optocoupler module</b>	<b>286-752/002-000</b>	<b>1</b>	<b>286-723</b>	<b>1</b>

### Technical Data

Accessories see pages 99 ... 100

Accessories see pages 99 ... 100

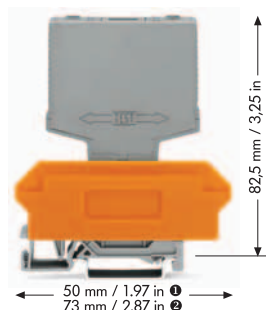
	5 V DC	24 V DC
Nominal input voltage (V <sub>N</sub> )	5 V DC	24 V DC
Input voltage range	2 V ... 6,25 V DC	15 V ... 30 V DC
Input current range	3.3 mA ... > 18.5 mA	7.6 mA ... 15.0 mA DC
Current at nominal voltage	14 mA DC	13,5 mA DC
Output nominal voltage	24 V DC	24 V DC
Output voltage range	20 V ... 30 V DC	20 V ... 30 V DC
Reverse voltage transistor/triac	80 V DC V	100 V DC V
Max. permissible continuous current	500 mA	4 A
Switch on / Switch off time	< 5 µs / < 10 µs	≤ 15 µs / ≤ 25 µs
Max. operating frequency	25 kHz	2,5 kHz
Leakage current at nominal voltage	2.5 µA	2.5 µA
Collector / emitter voltage drop V <sub>ce sat</sub>	≤ 1,2 V	≤ 1,2 V
Max. output (reverse current)	12 mA	12 mA
Test voltage input / output	2,5 kV	2,5 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250V / 4 kV / 2	250V / 4 kV / 3
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Standards/specifications	IEC 60664 / IEC 60664A / DIN VDE 0110; pollution degree 2; overvoltage category III	

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①</b>	17 mm / 0.669 in wide <b>280-619</b>	1	17 mm / 0.669 in wide <b>280-619</b>	1
<b>with 4-conductor terminal blocks, orange separator ②</b>	17 mm / 0.669 in wide <b>280-609</b>	1	17 mm / 0.669 in wide <b>280-609</b>	1
<b>with 4-conductor terminal blocks, marker plate ②</b>	20 mm / 0.787 in wide <b>280-763</b>	1	20 mm / 0.787 in wide <b>280-763</b>	1
<b>wire range 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in</b>				

## 2 Pluggable Modules - Optocouplers

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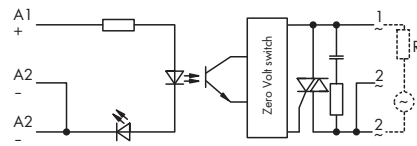
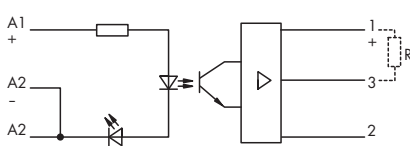
	<b>Optocoupler</b> <b>Input 5 V DC 12 V DC 24 V DC</b> <b>Output 110 V DC/1.6 A</b> <b>Negative switching</b> <b>Module width 15 mm / 0.591 in</b>	<b>Optocoupler</b> <b>Input 5 V DC 12 V DC 24 V DC</b> <b>Output 230 V AC/50 mA ... 1 A</b> <b>Module width 15 mm / 0.591 in</b>
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### WSB marker cards

- Marking U; Item No.: 209-789
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A2, A2, 1, 3, 2, A1, A2, A2; Item No.: 209-685
- Marking A1, A2, A2, 1, 2, 2, A1, A2, A2; Item No.: 209-686

5 cards, each containing 10 strips with 10 markers

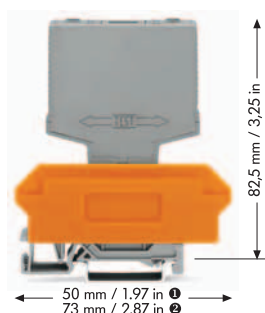


Description	Input	Item No.	Pack. Unit	Input	Item No.	Pack. Unit
<b>Optocoupler module</b>	5 V DC (4.5 V ... 6.5 V DC)	<b>286-726</b>	1	5 V DC (3.5 V ... 7.5 V DC)	<b>286-732</b>	1
	12 V DC (10 V ... 20 V DC)	<b>286-728</b>	1	12 V DC (9 V ... 18 V DC)	<b>286-733</b>	1
	24 V DC (15 V ... 30 V DC)	<b>286-730</b>	1	24 V DC (10 V ... 33 V DC)	<b>286-734</b>	1

Technical Data	Accessories see pages 99 ... 100		Accessories see pages 99 ... 100	
Input current range	6.5 mA ... 20 mA DC 4 mA ... 12 mA DC 3.5 mA ... 8 mA DC		0.5 mA ... 17 mA DC 4 mA ... 11 mA DC 2 mA ... 8 mA DC	
Current at nominal voltage	6,5 mA DC 6,4 mA DC 6,2 mA DC		DC 6 mA	
Output nominal voltage	110 V DC		230 V AC	
Output voltage range	99 V ... 121 V DC		24 V ... 280 V AC	
Reverse voltage transistor/triac	150 V DC V		600 V AC V	
Max. permissible continuous current	1,6 A		1 A	
Switch on / Switch off time	≤ 20 μs / ≤ 0,5 ms		1 Halbwelle ms / 1 Halbwelle ms	
Max. operating frequency	350 Hz			
Leakage current at nominal voltage	3 μA		5 mA	
Collector / emitter voltage drop Vce sat	≤ 0,5 V			
Max. voltage drop at output			< 1,7 V AC	
Test voltage input / output	2,5 kV		2,5 kV	
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250V / 4 kV / 2		250V / 4 kV / 2	
Ambient operating temperature	-25 °C ... +40 °C		-25 °C ... +40 °C	

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit	
<b>Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①</b>					
17 mm / 0.669 in wide	<b>280-619</b>	1	17 mm / 0.669 in wide	<b>280-619</b>	1
<b>with 4-conductor terminal blocks, orange separator ②</b>					
17 mm / 0.669 in wide	<b>280-609</b>	1	17 mm / 0.669 in wide	<b>280-609</b>	1
<b>with 4-conductor terminal blocks, marker plate ③</b>					
20 mm / 0.787 in wide	<b>280-763</b>	1	20 mm / 0.787 in wide	<b>280-763</b>	1
<b>wire range 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in</b>					

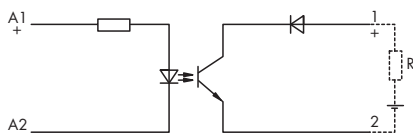
**Optocoupler**  
**Input 24 V DC**  
**Output 60 V DC/100 mA**  
**Module width 10 mm / 0.394 in**



WSB marker cards

- Marking U; Item No.: 209-789
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A2, A2, 1, 3, 2, A1, A2, A2;  
Item No.: 209-685
- Marking A1, A2, A2, 1, 2, 2, A1, A2, A2;  
Item No.: 209-686

5 cards, each containing 10 strips with 10 markers



Description	Item No.	Pack. Unit
Optocoupler module	286-791	1

#### Technical Data

Accessories see pages 99 ... 100

Nominal input voltage ( $V_N$ )	24 V DC
Input voltage range	15 V ... 30 V DC
Input current range	7.5 mA ... 18 mA DC
Current at nominal voltage	14 mA DC
Output nominal voltage	60 V DC
Output voltage range	20 V ... 60 V DC
Reverse voltage transistor/triac	80 V DC V
Max. permissible continuous current	100 mA
Switch on / Switch off time	10 $\mu$ s / 50 $\mu$ s
Max. operating frequency	3 kHz
Leakage current at nominal voltage	2.5 $\mu$ A
Max. voltage drop at output	$\leq$ 2 V
Test voltage input / output	2,5 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250V / 4 kV / 2
Ambient operating temperature	-25 °C ... +40 °C

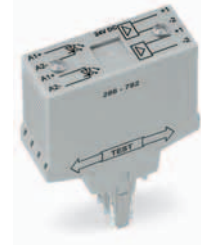
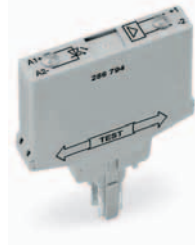
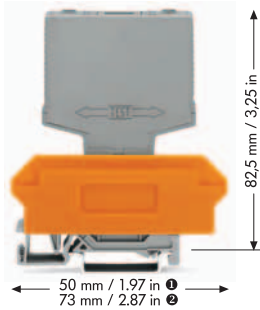
#### Accessories

Accessories	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	12 mm / 0.472 in wide <b>280-618</b>	1
with 4-conductor terminal blocks, orange separator ②	12 mm / 0.472 in wide <b>280-608</b>	1
with 4-conductor terminal blocks, marker plate ②	15 mm / 0.591 in wide <b>280-762</b>	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in		

## 2 Pluggable Modules - Optocouplers

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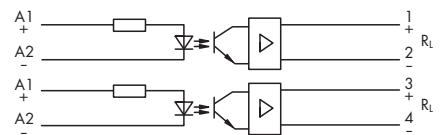
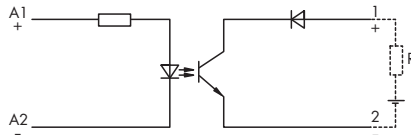
	<b>Optocoupler</b> <b>Input 24 V DC</b> <b>Output 60 V DC/100 mA</b> <b>Module width 10 mm / 0.394 in</b>	<b>Dual channel optocoupler</b> <b>2 inputs 2 x 24 V DC</b> <b>2 outputs 2 x 24 V DC/2 x 250 mA</b> <b>Module width 20 mm / 0.787 in</b>
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WSB marker cards

- Marking U; Item No.: 209-789
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A2, A2, 1, 2, 2, A1, A2, A2; Item No.: 209-686
- Marking A1+, A1+, A2-, A2-, 1, RL1, RL2, 2; Item No.: 209-955
- Marking A1+, A1+, A2-, A2-, 1+, 1+, A, 2-; Item No.: 249-651

5 cards, each containing 10 strips with 10 markers



Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Optocoupler module	286-794	1	286-792	1

Technical Data	Accessories see pages 99 ... 100		Accessories see pages 99 ... 100	
Nominal input voltage (V <sub>N</sub> )	24 V DC		24 V DC	
Input voltage range	18 V ... 30 V DC		7,5 V ... 30 V DC	
Input current range	2 mA ... 5 mA DC		4 mA ... 19 mA DC	
Current at nominal voltage	4 mA DC		15 mA DC	
Output nominal voltage	60 V DC		24 V DC	
Output voltage range	20 V ... 60 V DC		20 V ... 30 V DC	
Reverse voltage transistor/triac	80 V DC V		80 V DC V	
Max. permissible continuous current	100 mA		250 mA	
Switch on / Switch off time	80 μs / 100 μs		< 60 μs / < 120 μs	
Max. operating frequency	1,5 kHz		1,5 kHz	
Leakage current at nominal voltage	2.5 μA		2.6 μA	
Collector / emitter voltage drop V <sub>ce sat</sub>	≤ 2 V		< 2,5 V	
Max. voltage drop at output	≤ 2 V		2,5 kV	
Test voltage input / output	2,5 kV		2,5 kV	
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250V / 4 kV / 2		250V / 4 kV / 2	
Ambient operating temperature	-25 °C ... +60 °C		-25 °C ... +40 °C	

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	12 mm / 0.472 in wide 280-618	1	22 mm / 0.866 in wide 280-638	1
with 4-conductor terminal blocks, orange separator ②	12 mm / 0.472 in wide 280-608	1	22 mm / 0.866 in wide 280-628	1
with 4-conductor terminal blocks, marker plate ③	15 mm / 0.591 in wide 280-762	1	25 mm / 0.984 in wide 280-764	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				



	<b>Optocoupler with 2 inverted outputs</b> <b>Input 24 V DC</b> <b>Output 2 x 24 V DC/500 mA</b> <b>Module width 20 mm / 0.787 in</b>	<b>Optocoupler with bridge plug and programmable outputs</b> <b>Input 24 V DC</b> <b>Output 24 V DC,</b> <b>Short-circuit protected, positive switching</b> <b>Module width 20 mm/ 0.787 in</b>
--	--	---

286-938:

Optocoupler module with short-circuit protected, positive switching output.

Two sockets with plug for programming the output.

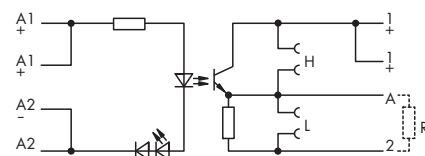
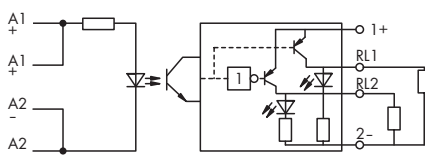
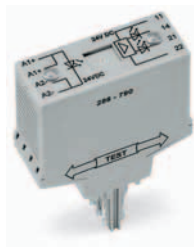
Independent of the input signal the output can be switched over to "H" (high) or "L" (low) by means of a bridge plug (supplied with the module).

The short-circuit protected output is equipped with a current limiter which limits load currents above 800 mA to 200 mA.

The maximum operating time of the current limiter is 60 s.

Status indication:

- Input green LED
- Output yellow LED
- Short circuit red LED



Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Optocoupler module	286-790	1	286-938	1

### Technical Data

Accessories see pages 99 ... 100

Accessories see pages 99 ... 100

Nominal input voltage (V <sub>N</sub> )	24 V DC	24 V DC
Input voltage range	20 V ... 30 V DC	10 V ... 30 V DC
Input current range	7 mA ... 12 mA DC	4 mA ... 19 mA DC
Current at nominal voltage	9 mA DC	14 mA DC
Output nominal voltage	24 V DC	24 V DC
Output voltage range	20 V ... 30 V DC	20 V ... 30 V DC
Reverse voltage transistor/triac	100 V DC V	50 V DC V
Max. permissible continuous current	500 mA	300 mA (800 mA max. 30 s)
Switch on / Switch off time	4 µs / 15 µs	< 5 µs / < 25 µs
Max. operating frequency	2,5 kHz	20 kHz an 80 R
Leakage current at nominal voltage	2.5 µA	< 1 µA
Collector / emitter voltage drop V <sub>ce sat</sub>	< 1,2 V	< 1,1 V
Max. output (reverse current)		5.5 mA (Input high, output low); 3 mA (Input low, output low); 11 mA (Output high) programmed with bridge plug
Test voltage input / output	2,5 kV	2,5 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250V / 4 kV / 2	250V / 4 kV / 2
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C

### Accessories

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	22 mm / 0.866 in wide 280-638	1	22 mm / 0.866 in wide 280-638	1
with 4-conductor terminal blocks, orange separator ②	22 mm / 0.866 in wide 280-628	1	22 mm / 0.866 in wide 280-628	1
with 4-conductor terminal blocks, marker plate ②	25 mm / 0.984 in wide 280-764	1	25 mm / 0.984 in wide 280-764	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				

2-conductor terminal block



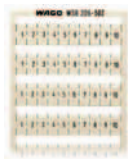
4-conductor terminal block



Description		Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator	12 mm / 0.472 in wide	280-618	1
with 4-conductor terminal blocks, orange separator	12 mm / 0.472 in wide	280-608	1
with 4-conductor terminal blocks, marker plate	15 mm / 0.591 in wide	280-762	1
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator	17 mm / 0.669 in wide	280-619	1
with 4-conductor terminal blocks, orange separator	17 mm / 0.669 in wide	280-609	1
with 4-conductor terminal blocks, marker plate	20 mm / 0.787 in wide	280-763	1
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator	22 mm / 0.866 in wide	280-638	1
with 4-conductor terminal blocks, orange separator	22 mm / 0.866 in wide	280-628	1
with 4-conductor terminal blocks, marker plate	25 mm / 0.984 in wide	280-764	1
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator	27 mm / 1.063 in wide	280-639	1
with 4-conductor terminal blocks, orange separator	27 mm / 1.063 in wide	280-629	1
with 4-conductor terminal blocks, marker plate	30 mm / 1.181 in wide	280-765	1
Terminal block for pluggable modules, with 4-conductor terminal blocks, orange separator	37 mm / 1.457 in wide	280-636	1

Wire range 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 28 ... 14; Stripped lengths 8 ... 9 mm / 0.33 in

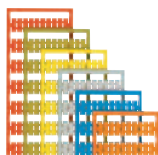
## Miniature quick marking card



Description	Item No.	Pack. Unit
Marking: K	209-782	5 cards
1 ... 10 (10 x)	209-702	5
A1, A2, 13, 14	209-952	5 cards
A1, A2, 11, 12	209-953	5 cards
11, 12, 14, A1, A2, A2, 11, 12, 14	209-994	5 cards
12, A1, A2, 24, 11, 14, 21, 22	209-995	5 cards
A1, A1, A2, A2, 11, 12, 13, 14, 23, 24	209-693	5 cards
12, A1, A2, 23, 24, 11, 13, 14, 21, 22	209-691	5 cards
12, A1, A2, 23, 24, 11, 13, 14, 33, 34	209-690	5 cards
14, A1, A2, 33, 34, 13, 23, 24, 43, 44	209-692	5 cards
A1, A2, 32, 31, 34, 42, 41, 12, 11, 14, 22, 21, 24, 44	249-656	5 cards
L+, 1, L-, L-, 11, 12, 13, 14	209-954	5 cards
A1, A2, A3, 11, 12, 14	249-607	5 cards
A1, A1, A2, A2, 12, 11, 11, 14	209-996	5 cards
A1, A1, St, A2, A2, 12, 11, 11, 14	209-601	5 cards
U1, U2, U3, U4, 0V, 12, 11, 11, 14, 14	209-951	5 cards
U	209-789	5 cards
A1, A2, A2, 1, 3, 2	209-685	5 cards
A1, A2, A2, 1, 2, 2	209-686	5 cards
A1+, A1+, A2-, A2-, 1, RL1, RL2, 2	209-955	5 cards
A1+, A1+, A2-, A2-, 1+, 1+, A, 2-	249-651	5 cards
+/-	209-552	5 cards
1, 2, 3, 0V, +UB, OUT, ERR., 0V	249-622	5 cards
1, 2, 0V, +UB, OUT, ERR., 0V	249-623	5 cards
lin, lin, lout, lout, 24V, UA, UA, 0V	209-957	5 cards
lin, lin, lout, 11, 14, 14, lin, lin, lout	249-654	5 cards
lin, lin, lout, lout, 24V, 11, 12, 14, 0V	209-997	5 cards
S	209-682	5 cards
V	209-784	5 cards
F1 ... F10	209-787	5 cards
D	209-783	5 cards
+, -, 1, 2, 3, 13, 14, 4, 5, 6	249-608	5 cards
L, N, Quitt, Störung, Test, N, 14, 24	249-606	5 cards
A1, A2, Quitt, Störung, 12, 11, 11, 14	249-653	5 cards

5 cards, each containing 10 strips with 10 markers

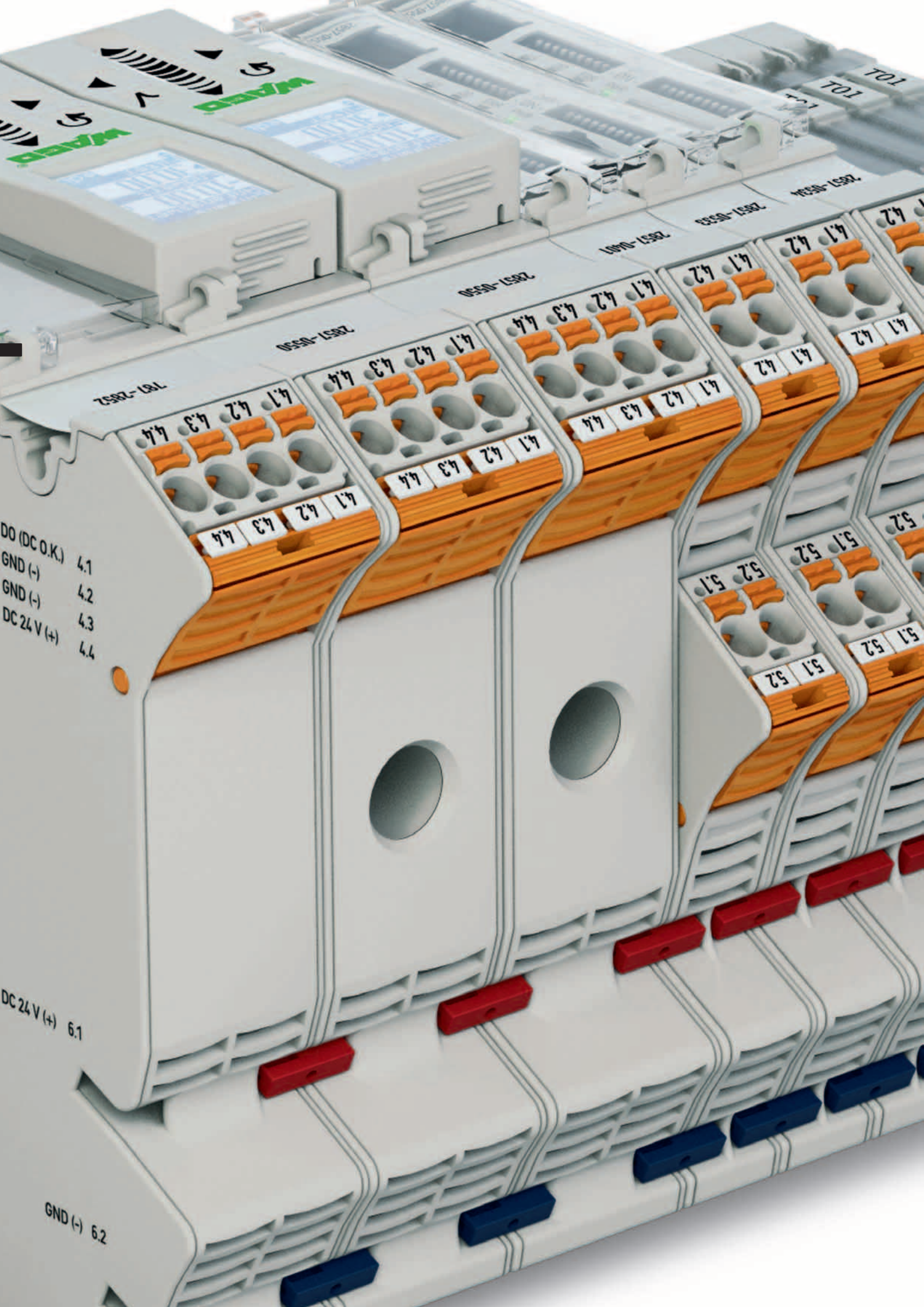
## Colored marker cards



Description	Item No.	Pack. Unit	
Marker cards and tags WSB 4 mm/0.157 in (plain)	white	209-701	5 cards
Marking software and printer/plotter see Section 11	yellow	209-701/000-002	5 cards
	red	209-701/000-005	5 cards
	blue	209-701/000-006	5 cards
	gray	209-701/000-007	5 cards
	orange	209-701/000-012	5 cards
	light green	209-701/000-017	5 cards
	green	209-701/000-023	5 cards
	violet	209-701/000-024	5 cards

5 cards, each containing 10 strips with 10 markers





7851-0550

7851-0550

7851-0550

7851-0401

7851-0533

7851-0534

T01

T01

T01

DO (DC O.K.) 4.1  
GND (-) 4.2  
GND (-) 4.3  
DC 24 V (+) 4.4

DC 24 V (+) 6.1

GND (-) 6.2

# 3



**JUMPFLEX® Isolation Amplifiers**

2857 Series  
857 Series

170 - 171  
172 - 191



**JUMPFLEX® Current and Voltage Signal Conditioners**

2857 Series  
857 Series

192 - 193  
194 - 199



**JUMPFLEX® Threshold Value Switches**

2857 Series  
857 Series

200 - 203  
204 - 205



**JUMPFLEX® Temperature Signal Conditioners**

857 Series

206 - 217



**JUMPFLEX® Potentiometer Position Signal Conditioner**

857 Series

218 - 221



**JUMPFLEX® Frequency Signal Conditioner**

857 Series

222 - 225



**Configuration Software**

Interface Configuration Software and Configuration App

226 - 227



**Accessories**

Configuration Display, Serie 2857

228

EPSITRON® Power for JUMPFLEX® - Switched-Mode Power Supply, 787 Series

229

WAGO Bluetooth® Adapter and WAGO USB Service Cable, 750 Series

230 - 231

Supply and Through Module, 857 Series

232 - 233

Interface Adapter, 857 Series

234

WAGO Interface Cables, 706 Series

235

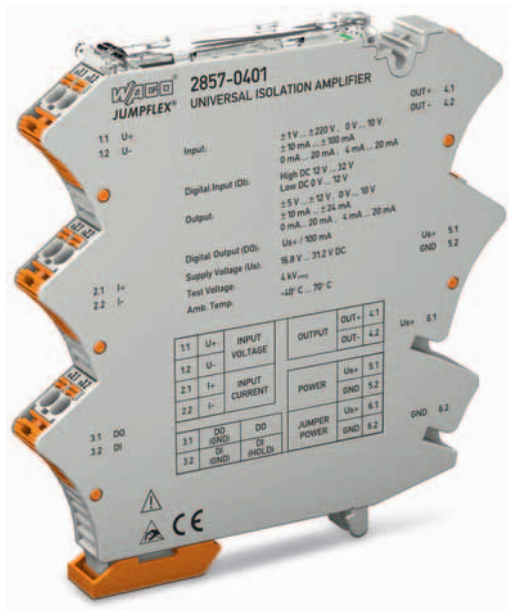
Accessories, 857 Series

236

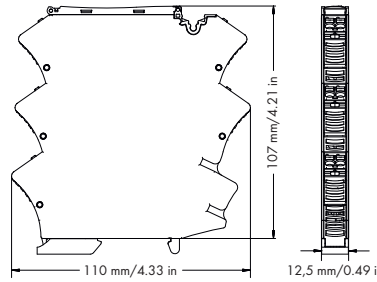
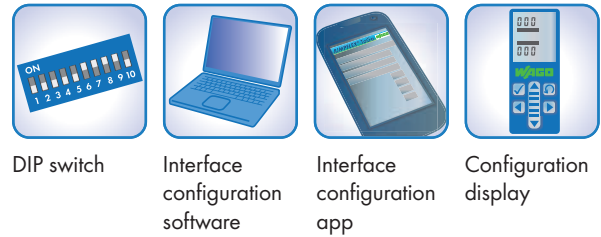


# 3 JUMPFLEX® Signal Conditioners

## Universal Isolation Amplifier



Configuration via:



1.1	U+	INPUT VOLTAGE	OUTPUT	OUT+ 4.1
1.2	U-		OUTPUT	OUT- 4.2
2.1	I+	INPUT CURRENT	POWER	Us+ 5.1
2.2	I-		POWER	GND 5.2
3.1	DO (GND)	DO	JUMPER POWER	Us+ 6.1
3.2	DI (HOLD)	DI (HOLD)	JUMPER POWER	GND 6.2

**Short description:**

The Universal Isolation Amplifier converts, amplifies, filters and electrically isolates analog signals.

**Features:**

- Analog unipolar/bipolar signals at input/output
- A digital signal output reacts to configured measuring range limits (switching ON/OFF delay and threshold value switch function configurable with up to two threshold values).
- A digital HOLD input freezes the output signal.
- Clipping capability provides analog signal limitation to output end values.
- Adjustable software/hardware filter
- Input/Output response simulation via configuration display
- Safe 3-way isolation with 4 kV test voltage acc. to EN 61140

**Technical Data**

<b>Configuration:</b>	
Configuration	DIP switch, interface configuration software, interface configuration app, configuration display
<b>Input:</b>	
Input signal	<b>Current:</b> ± 1 mA; 0 ... 1 mA; ± 10 mA; 0 ... 10 mA; 2 ... 10 mA; ± 20 mA; 0 ... 20 mA; 4 ... 20 mA; ± 100 mA; 0 ... 100 mA <b>Voltage:</b> ± 1 V; 0 ... 1 V; ± 10 V; 0 ... 10 V; 2 ... 10 V; ± 30 V; 0 ... 30 V; ± 100 V; 0 ... 100 V; ± 200 V; 0 ... 220 V
Input resistance	≥ 1 MΩ (U input); ≤ 50 Ω (I input)
Max. operating frequency	10 kHz / 5 kHz / 100 Hz / 30 Hz (configurable via DIP switch)
<b>Input – Digital:</b>	
HOLD signal	11.8 V ... U <sub>S</sub>
<b>Output:</b>	
Output signal	<b>Current:</b> ± 10 mA; 0 ... 10 mA; 2 ... 10 mA; ± 20 mA; 0 ... 20 mA; 4 ... 20 mA <b>Voltage:</b> ± 5 V; 0 ... 5 V; 1 ... 5 V; ± 10 V; 0 ... 10 V; 2 ... 10 V
Load impedance	<b>Current:</b> ≤ 600 Ω; <b>Voltage:</b> ≥ 1 kΩ
Overload capacity	-250 V; +250 V / -120 mA; +120 mA
<b>Output – Digital:</b>	
Max. switching voltage	Supply voltage applied -0.3 V
Max. continuous current I <sub>DO</sub>	100 mA (no internal restriction)

Description	Item No.	Pack. Unit
JUMPFLEX® Signal Conditioner, for DIN 35 rail Universal Isolation Amplifier	2857-401	1
<b>Technical Data</b>		
<b>General specifications:</b>		
Nominal supply voltage V <sub>S</sub>	24 VDC	
Supply voltage range	16.8 V ... 31.2 V (-30 % ... +30 %)	
Current consumption at 24 VDC	≤ 70 mA (+ IDO)	
Response time (T <sub>10/90</sub> )	< 1 ms	
Transmission error	≤ 0.1 % of the full scale value	
Temperature coefficient	≤ 0.01 %/K	
<b>Environmental requirements:</b>		
Ambient operating temperature	-40 °C ... +70 °C	
Storage temperature	-40 °C ... +85 °C	
<b>Safety and protection:</b>		
Test voltage (input/output/supply)	4 kV AC, 50 Hz, 1 min.	
<b>Connection and type of mounting:</b>		
Wire connection	CAGE CLAMP® S (picoMAX® 5.0)	
Cross sections	solid/fine-stranded: 0.2 ... 2.5 mm <sup>2</sup> / AWG 24 ... 12	
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	12.5 x 107 x 110	
Weight	Height from upper-edge of DIN 35 rail 86 g	
<b>Standards and approvals:</b>		
Conformity marking	CE	
Standards/Specifications	DIN EN 61010-1:2010; DIN EN 60664-1:2008; Safe isolation acc. to DIN EN 61140:2002; IEC 61000-6-2; IEC 61000-6-4	
<b>Accessories:</b>	see pages 226 ... 236	

## DIP Switch Adjustability

● = ON

2857-401

## DIP Switch S1

Input													
1	Signal	2	Polarity	3	4	5	Range / mA	Range / V	6	Inverted Characteristic	7	8	Limit Frequency
	Current		Unipolar				0 ... 20	0 ... 10		Not inverted			10 kHz
●	Voltage	●	Bipolar *	●			0 ... 1	0 ... 1	●	Inverted	●		5 kHz
					●		0 ... 5	0 ... 5				●	100 Hz
				●	●		0 ... 10	1 ... 5				●	30 Hz
						●	2 ... 10	2 ... 10					
				●		●	4 ... 20	0 ... 30					
					●	●	0 ... 50	0 ... 100					
				●	●	●	0 ... 100	0 ... 220					

## DIP Switch S1

## DIP Switch S2

Output				Output			
9	Signal	10	Polarity	1	2	Range / mA	Range / V
	Current		Unipolar			0 ... 20	0 ... 10
●	Voltage	●	Bipolar *	●		4 ... 20	2 ... 10
					●	0 ... 10	0 ... 5
				●	●	2 ... 10	1 ... 5

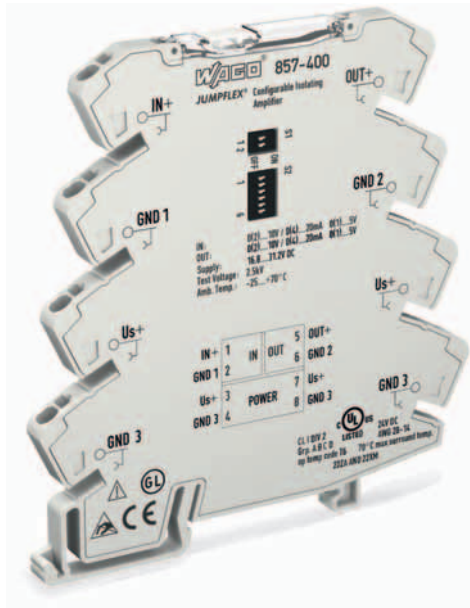
## DIP Switch S2

Output				Digital Output (DO)			
3	4	Measuring Range Underflow	Measuring Range Overflow	5	6		
		Lower limit of output range -5% **	Upper limit of output range +2.5% **			Off	
●		Lower limit of output range	Upper limit of output range +2.5%	●		DO U <sub>s</sub> switching	
	●	Lower limit of output range	Upper limit of output range		●	DO GND switching	
●	●	Lower limit of output range -5%	Upper limit of output range +5%	●	●	Off	

\* Bipolar only applies to ranges starting with 0.

\*\* acc. to NAMUR NE 43

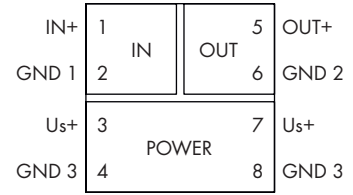
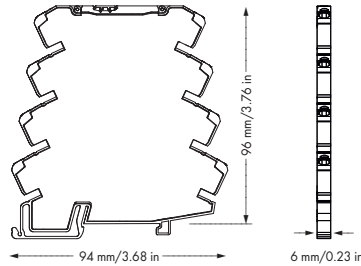
**3** **JUMPFLEX® Signal Conditioners**  
Isolation Amplifier, with Zero/Span Adjustment



Configuration via:



DIP switch



**Short description:**

The configurable 857-400 Isolation Amplifier is used to convert, amplify, filter and electrically isolate analog standard signals.

**Characteristics:**

- Zero/span adjustment across the entire measuring range
- Calibrated scale switching
- Switchable max. operating frequency
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

Description	Item No.	Pack. Unit
<b>JUMPFLEX® Signal Conditioner, for DIN 35 rail</b> Isolation Amplifier, with Zero/Span Adjustment	<b>857-400</b>	1
<b>Technical Data</b>		
<b>Environmental requirements:</b>		
Ambient operating temperature	-25 °C ... +70 °C	
Storage temperature	-40 °C ... +85 °C	
<b>Safety and protection:</b>		
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min	
<b>Connection and type of mounting:</b>		
Wire connection	CAGE CLAMP® S	
Cross sections	solid: 0.08 mm² ... 2.5 mm² / AWG 28 ... 14	
	fine-stranded: 0.34 mm² ... 2.5 mm² / AWG 22 ... 14	
Strip lengths	9 ... 10 mm / 0.37 in	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	6 x 96 x 94	
	Height from upper-edge of DIN 35 rail	
Weight	36.8 g	
<b>Standards and approvals:</b>		
Conformity marking	CE	
UL 508		
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4	
Shipbuilding		
<b>Accessories</b>	see pages 226 ... 236	

Technical Data	
<b>Configuration:</b>	
Configuration	DIP switch
<b>Input:</b>	
Input signal	0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 0 ... 10 V, 2 ... 10 V, 1 ... 5 V (calibrated switchable)
Input resistance	≤ 50 Ω (In = mA) ≥ 100 kΩ (In = V)
<b>Output:</b>	
Output signal	0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 0 ... 10 V, 2 ... 10 V, 1 ... 5 V (calibrated switchable)
Load impedance	600 Ω (Out = mA) 2 kΩ (Out = V)
<b>General specifications:</b>	
Nominal supply voltage V <sub>s</sub>	24V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 25 mA
Max. operating frequency	100 Hz / 5 kHz (switchable via DIP switch)
Response time (T <sub>10/90</sub> )	< 3.5 ms / < 100 μs
Transmission error	≤ 0.1 % of the full scale value
Temperature coefficient	≤ 0.01 % /K
Zero/span adjustment	± 3% of upper range value



## DIP Switch Adjustability

● = ON

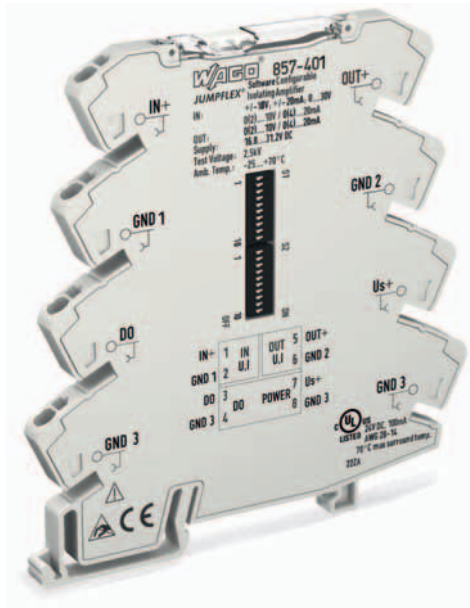
857-400

Dip Switch S1 (2-fold)		Dip Switch S2 (6-fold)					Max. Operating Frequency		
1	2	Output Signal					6		
●	0 ... 20 mA						0 ... 20 mA	●	5 kHz
					●		4 ... 20 mA		100 Hz
		●	●				0 ... 10 V		
		●	●		●		2 ... 10 V		
		●	●	●			0 ... 5 V		
		●	●	●	●		1 ... 5 V		
●	4 ... 20 mA					●	0 ... 20 mA		
							4 ... 20 mA		
		●	●				0 ... 10 V		
		●	●				2 ... 10 V		
		●	●	●			0 ... 5 V		
		●	●	●			1 ... 5 V		
●	0 ... 10 V					●	0 ... 20 mA		
							4 ... 20 mA		
		●	●				0 ... 10 V		
		●	●		●		2 ... 10 V		
		●	●	●			0 ... 5 V		
		●	●	●	●		1 ... 5 V		
●	2 ... 10 V					●	0 ... 20 mA		
							4 ... 20 mA		
		●	●				0 ... 10 V		
		●	●				2 ... 10 V		
		●	●	●			0 ... 5 V		
		●	●	●			1 ... 5 V		
	0 ... 5 V					●	0 ... 20 mA		
							4 ... 20 mA		
		●	●				0 ... 10 V		
		●	●		●		2 ... 10 V		
		●	●	●			0 ... 5 V		
		●	●	●	●		1 ... 5 V		
	1 ... 5 V					●	0 ... 20 mA		
							4 ... 20 mA		
		●	●				0 ... 10 V		
		●	●				2 ... 10 V		
		●	●	●			0 ... 5 V		
		●	●	●			1 ... 5 V		

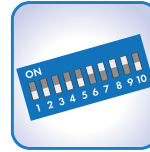
## Default Settings

Input	0 ... 20 mA
Output	0 ... 20 mA
Max. Operating Frequency	5 kHz

**3** JUMPFLEX® Signal Conditioners  
174 Isolation Amplifier, configurable with Digital Output



Configuration via:



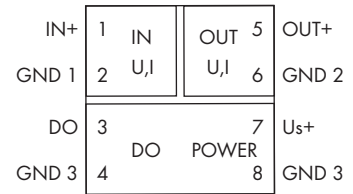
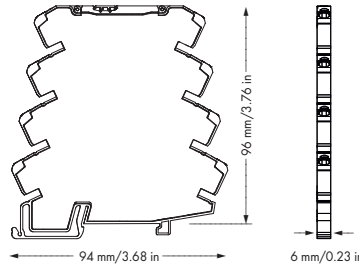
DIP switch



Interface configuration software



Interface configuration app



**Short description:**

The software-configurable 857-401 Isolation Amplifier converts standard signals and amplifies, filters and electrically isolates analog standard signals.

**Characteristics:**

- PC configuration interface
- Digital switching output
- Calibrated scale switching
- Analog, unipolar and bipolar, standard signals at input
- Clipping capability allows analog standard signal limitation to upper range values.
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

Description	Item No.	Pack. Unit
<b>JUMPFLEX® Signal Conditioner, for DIN 35 rail</b>	<b>857-401</b>	<b>1</b>
Isolation Amplifier, configurable with Digital Output		
<b>Technical Data</b>		
<b>Environmental requirements:</b>		
Ambient operating temperature	-25 °C ... +70 °C	
Storage temperature	-40 °C ... +85 °C	
<b>Safety and protection:</b>		
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.	
<b>Connection and type of mounting:</b>		
Wire connection	CAGE CLAMP® S	
Cross sections	solid: 0.08 mm² ... 2.5 mm² / AWG 28 ... 14 fine-stranded: 0.34 mm² ... 2.5 mm² / AWG 22 ... 14	
Strip lengths	9 ... 10 mm / 0.37 in	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	6 x 96 x 94	
	Height from upper-edge of DIN 35 rail	
Weight	42 g	
<b>Standards and approvals:</b>		
Conformity marking	CE	
UL 508		
Shipbuilding		
<b>Accessories:</b>	see pages 226 ... 236	
(* Additional setting options via PC configuration software or smartphone app)		

Technical Data	
<b>Configuration:</b>	
Configuration	DIP switch, interface configuration software, interface configuration app
<b>Input:</b>	
Input signal	-20 ... +20mA, -10 ... +10V, 0 ... +30V *
Input resistance	≤ 200 Ω (I input) > 100 kΩ (U input)
Max. input signal	31.2 V (U <sub>IN</sub> ) 100 mA (I <sub>IN</sub> )
<b>Output:</b>	
Output signal	0 - 20mA, 4 - 20mA, 0 - 5V, 1 - 5V, 0 - 10V, 2 - 10V, 0 - 10mA, 2 - 10mA*
Load impedance	≤ 600 Ω (I output) ≥ 2 kΩ (U output)
Step response	≤ 8ms
<b>Output - Digital</b>	
Max. switching voltage	Supply voltage applied
Max. continuous current	500 mA (up to 60 °C) 100 mA (60 °C ... 70 °C)
<b>General specifications:</b>	
Nominal supply voltage V <sub>s</sub>	24V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 40 mA
Min. measuring span	1 V, 2 mA (configurable)
Max. Messspanne	30 V, 40 mA
Transmission error	≤ 0.1 % of upper range value
Temperature coefficient	≤ 0.01 % /K

### DIP Switch Adjustability

● = ON

857-401

Input Signal Start Value		DIP S1																	
1		2	3	4	5	6	7	V	mA	2	3	4	5	6	7	V	mA		
	Voltage							0	0							●	5.5	11	
●	Current	●						-10	-20	●						●	6	12	
			●					-9.5	-19		●					●	6.5	13	
			●	●				-9	-18	●	●					●	7	14	
				●				-8.5	-17			●				●	7.5	15	
				●	●			-8	-16		●	●				●	8	16	
				●	●			-7.5	-15		●	●				●	8.5	17	
			●	●	●			-7	-14	●	●	●				●	9	18	
				●				-6.5	-13				●			●	9.5	19	
				●				-6	-12	●			●			●	10	20	
				●	●			-5.5	-11		●	●				●	10.5		
				●	●			-5	-10	●	●					●	11		
				●	●			-4.5	-9			●	●			●	11.5		
				●	●			-4	-8	●		●	●			●	12		
				●	●			-3.5	-7		●	●	●			●	13		
				●	●			-3	-6	●	●	●	●			●	14		
				●		●		-2.5	-5				●	●		●	15		
				●		●		-2	-4	●				●		●	16		
				●		●		-1.5	-3		●				●		●	17	
				●		●		-1	-2	●	●					●	18		
				●		●		-0.5	-1			●		●		●	19		
				●		●		0	0	●		●		●		●	20		
				●		●		0.5	1		●	●				●	21		
				●		●		1	2	●	●					●	22		
				●		●		1.5	3			●	●			●	23		
				●		●		2	4	●			●	●		●	24		
				●		●		2.5	5		●		●	●		●	25		
				●		●		3	6	●	●		●	●		●	26		
				●		●		3.5	7			●	●	●		●	27		
				●		●		4	8	●		●	●	●		●	28		
				●		●		4.5	9		●	●	●	●		●	29		
				●		●		5	10	●	●	●	●	●		●	30		

Input Signal End Value																	
DIP S1			DIP S2			DIP S1			DIP S2								
8	9	10	1	2	3	V	mA	8	9	10	1	2	3	V	mA		
						10	20							●	5.5	11	
●						-10	-20	●						●	6	12	
	●					-9.5	-19		●					●	6.5	13	
●	●					-9	-18	●	●					●	7	14	
		●				-8.5	-17			●				●	7.5	15	
●	●					-8	-16	●	●					●	8	16	
		●				-7.5	-15			●				●	8.5	17	
●	●	●				-7	-14	●	●	●				●	9	18	
			●			-6.5	-13				●			●	9.5	19	
●			●			-6	-12	●			●			●	10	20	
			●			-5.5	-11		●	●				●	10.5		
●	●					-5	-10	●	●					●	11		
		●				-4.5	-9			●	●			●	11.5		
●	●					-4	-8	●		●	●			●	12		
		●				-3.5	-7		●	●	●			●	13		
●	●	●				-3	-6	●	●	●	●			●	14		
			●			-2.5	-5					●		●	15		
●			●			-2	-4	●				●		●	16		
			●			-1.5	-3		●				●		●	17	
●	●					-1	-2	●	●					●	18		
		●				-0.5	-1			●		●		●	19		
●	●					0	0	●		●		●		●	20		
		●				0.5	1		●	●				●	21		
●	●					1	2	●	●					●	22		
			●			1.5	3				●	●		●	23		
●			●			2	4	●			●	●		●	24		
			●			2.5	5		●		●	●		●	25		
●	●					3	6	●	●		●	●		●	26		
		●				3.5	7			●	●	●		●	27		
●	●					4	8	●		●	●	●		●	28		
		●				4.5	9		●	●	●	●		●	29		
●	●					5	10	●	●	●	●	●		●	30		

#### DIP Switch S2

Output Signal					Measuring Range Underflow		Measuring Range Overflow		Digital Output DO Signaling		
4	5	6	7	8					9	10	
					Lower limit of output range - 5 % *		Upper limit of output range + 2,5 % *				DO not active
●					Lower limit of output range		Upper limit of output range + 2,5 %		●		GND → U <sub>N</sub> (switching)
	●		●		Lower limit of output range		Upper limit of output range		●	●	U <sub>N</sub> → GND (switching)
●	●			●	Lower limit of output range		Upper limit of output range				
●		●		●	Lower limit of output range		Upper limit of output range				
●	●	●		●	Lower limit of output range		Upper limit of output range				

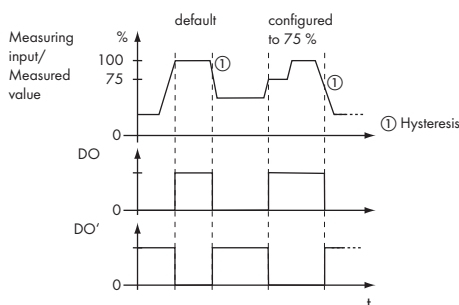
\*acc. to NAMUR NE 43

#### Digital Output DO/Signaling

The digital output (DO) signals error messages and can be configured as follows: 24 V → 0 V/0 V → 24 V.

In order to increase the switching current of the DO, the latter may be expanded by a relay. Thanks to the contour uniformity of Series 857, for example, a 857-304 Relay can be snapped in next to it. This output can be quickly and easily expanded to a switching current of 6A by simply using an adjacent jumper (859-402).

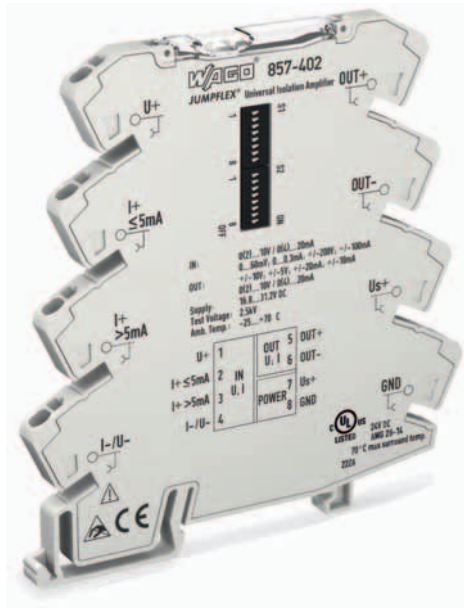
#### Switching Behavior, Digital Output (DO)



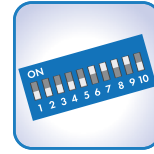
#### Default Settings

All DIP switches are in „OFF“ position for delivery. This is the position used to parameterize the device via PC configuration software.

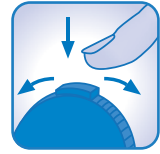
Input	
Input signal	Voltage
Start value	0 V
End value	10 V
Output	
Output signal	Current
Start value	0 mA
End value	20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA
<b>Digital output DO</b>	not active



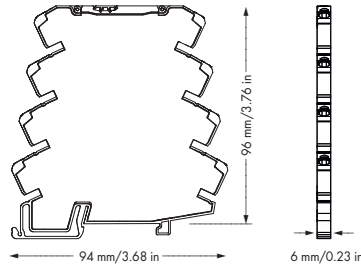
Configuration via:



DIP switch



Push/Slide Switch



U+	1	IN U; I	OUT	5	OUT+
I+	2		U; I	6	OUT-
I+	3	POWER		7	Us+
I-/U-	4			8	GND 3

**Short description:**

The universal 857-402 Isolation Amplifier converts unipolar and bipolar standard signals and amplifies, filters and electrically isolates analog standard signals.

**Characteristics:**

- Overload protection of current input using reversible fuse
- Zero/span adjustment across the entire measuring range (slide switch)
- Calibrated scale switching for all 456 signals
- Standard analog unipolar and bipolar signals, input/output
- Switchable max. operating frequency
- Clipping capability allows analog standard signal limitation to upper range values.
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

**Technical Data**

Configuration:	
Configuration	DIP switch, push/slide switch
Input:	
Input signal	<b>Voltage:</b> ± 60 mV, 0 ... 60 mV, ± 100 mV, 0 ... 100 mV, ± 150 mV, 0 ... 150 mV, ± 300 mV, 0 ... 300 mV, ± 500 mV, 0 ... 500 mV, ± 1 V, 0 ... 1 V, ± 5 V, 0 ... 5 V, 1 ... 5 V, ± 10 V, 0 ... 10 V, 2 ... 10 V, ± 100 V, 0 ... 100 V, ± 200 V, 0 ... 200 V <b>Current:</b> ± 0.3 mA, 0 ... 0.3 mA, ± 1 mA, 0 ... 1 mA, ± 5 mA, 0 ... 5 mA, ± 10 mA, 0 ... 10 mA, 2 ... 10 mA, ± 20 mA, 0 ... 20 mA, 4 ... 20 mA, ± 50 mA, 0 ... 50 mA, ± 100 mA, 0 ... 100 mA
Input resistance	approx. 1 MΩ (U input) ≤ 5 mA approx. 100 Ω; > 5 mA approx. 10 Ω (I input)
Output:	
Output signal	<b>Voltage:</b> ± 5 V, 0 ... 5 V, 1 ... 5 V, ± 10 V, 0 ... 10 V, 2 ... 10 V <b>Current:</b> ± 10 mA, 0 ... 10 mA, 2 ... 10 mA, ± 20 mA, 0 ... 20 mA, 4 ... 20 mA
Load impedance	≤ 600 Ω (I output) ≥ 1 kΩ (U output)

**Description**

Description	Item No.	Pack. Unit
<b>JUMPFLEX®</b> Signal Conditioner, for DIN 35 rail Universal Isolation Amplifier	<b>857-402</b>	1

**Technical Data****General specifications:**

Nominal supply voltage $V_S$	24V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 40 mA
Max. operating frequency	100 Hz / 5 kHz (switchable via DIP switch)
Response time ( $T_{10/90}$ )	< 3.5 ms / < 100 μs
Transmission error	≤ 0.08 % of upper range value
Temperature coefficient	≤ 0.01 % / K
Zero/span adjustment	Adjustable via push/slide switch

**Environmental requirements:**

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C

**Safety and protection:**

Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
------------------------------------	--------------------------

**Connection and type of mounting:**

Wire connection	CAGE CLAMP® S
Cross sections	solid: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14 fine-stranded: 0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 14
Strip lengths	9 ... 10 mm / 0.37 in

**Dimensions and weight:**

Dimensions (mm) W x H x L	6 x 96 x 94
Weight	Height from upper-edge of DIN 35 rail 54.3 g

**Standards and approvals:**

Conformity marking	CE
UL 508	Ⓢ
Shipbuilding	Ⓢ

**Accessories**

see pages 226 ... 236

## DIP Switch Adjustability

● = ON

857-402

DIP Switch S1

Input Signal Ranges						Zero/Span Adjustment		Max. Operating Frequency		
1	2	3	4	5	6	7	8			
								Default setting*	Inactive	5 kHz
				●		●		0 ... 60 mV	Active	100 Hz
				●	●			± 60 mV		
			●					0 ... 100 mV		
			●	●				± 100 mV		
			●	●	●			0 ... 150 mV		
			●	●	●			± 150 mV		
		●						0 ... 300 mV		
		●			●			± 300 mV		
		●		●				0 ... 500 mV		
		●		●	●			± 500 mV		
		●	●					0 ... 1 V		
		●	●		●			± 1 V		
		●	●	●				0 ... 5 V		
		●	●	●	●			± 5 V		
●								0 ... 10 V		
●					●			± 10 V		
●				●				0 ... 50 V		
●				●	●			± 50 V		
●		●						0 ... 100 V		
●		●		●				± 100 V		
●		●	●	●				0 ... 200 V		
●		●	●	●	●			± 200 V		

DIP Switch S1

Input Signal Ranges					
1	2	3	4	5	6
	●	●			
	●	●			●
	●	●		●	
	●	●		●	●
	●	●	●		
	●	●	●		●
	●	●	●	●	
	●	●	●	●	●
●					
●					●
●				●	
●				●	●
●			●		
●			●		●
●			●	●	
●		●			
●		●		●	
●		●	●		
●		●	●	●	
●		●	●	●	●

More information on measurement range setting is available in 857-402 instruction leaflet.

DIP Switch S2

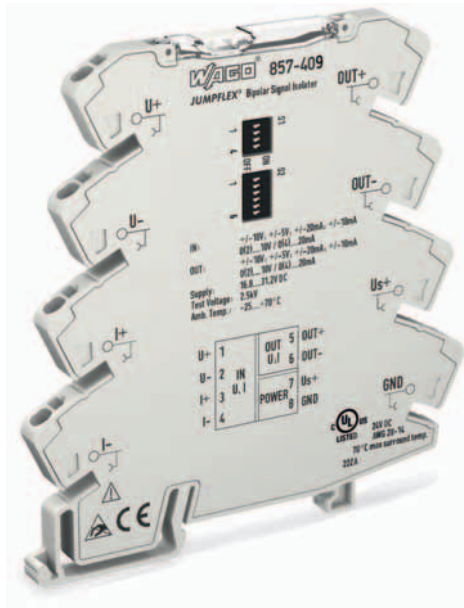
Output Signal Ranges					Reserve	Clipping		Rocker Switch Lock		
1	2	3	4	5	6	7	8			
								Default setting*	inactive (analog response)	switched off
		●				●		0 ... 10 V	active (limiting response)	switched on
		●		●				± 10 V		
		●	●					2 ... 10 V		
	●							0 ... 5 V		
	●			●				± 5 V		
	●			●				1 ... 5 V		
	●	●						0 ... 20 mA		
	●	●		●				± 20 mA		
	●	●	●					4 ... 20 mA		
●								0 ... 10 mA		
●				●				± 10 mA		
●			●					2 ... 10 mA		

\*Default setting

Input	± 10 V
Output	± 10 V
Max. operating frequency	5 kHz
*The input and output range DIP switches must be readjusted when changing the default setting.	

# 3 JUMPFLEX® Signal Conditioners

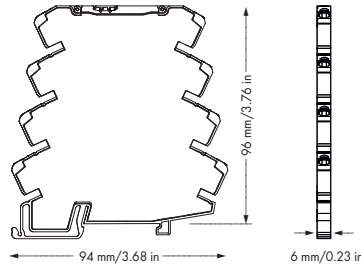
## Bipolar Isolation Amplifier



Configuration via:



DIP switch



U+	1	IN U; I	OUT	5	OUT+
U-	2		U; I	6	OUT-
I+	3	POWER		7	Us+
I-	4			8	GND

### Short description:

The 857-409 Bipolar Isolation Amplifier converts unipolar and bipolar standard signals and amplifies, filters and electrically isolates analog standard signals.

### Characteristics:

- Overload protection of current input using reversible fuse
- Zero/span adjustment across the entire measuring range
- Calibrated scale switching
- Standard analog unipolar and bipolar signals, input/output
- Switchable max. operating frequency
- Clipping capability allows analog standard signal limitation to upper range values.
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

### Technical Data

<b>Configuration:</b>	
Configuration	DIP switch
<b>Input:</b>	
Input signal	<b>Voltage:</b> ± 5V, 0 - 5V, 1 - 5V, ± 10V, 0 - 10V, 2 - 10V
	<b>Current:</b> ± 10mA, 0 - 10mA, 2 - 10mA, ± 20mA, 0 - 20mA, 4 - 20mA
Input resistance	approx. 1MΩ (U input) approx. 50Ω (I input)
<b>Output:</b>	
Output signal	<b>Voltage:</b> ± 5V, 0 - 5V, 1 - 5V, ± 10V, 0 - 10V, 2 - 10V,
	<b>Current:</b> ± 10mA, 0 - 10mA, 2 - 10mA, ± 20mA, 0 - 20mA, 4 - 20mA
Load impedance	≤ 600 Ω (I output) ≥ 2 kΩ (U output)
Overload capacity	32 V / 50 mA
Residual ripple	< 10mV eff
<b>General specifications:</b>	
Nominal supply voltage $V_s$	24V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 25 mA
Max. operating frequency	100 Hz / > 5 kHz (switchable via DIP switch)
Response time ( $T_{10/90}$ )	< 3.5ms / < 60μs
Transmission error	≤ 0.1 % of upper range value
Temperature coefficient	≤ 0.01% /K
Zero/span adjustment	± 5 % of upper range value (adjustable via zero/span potentiometer)

### Description

JUMPFLEX® Signal Conditioner, for DIN 35 rail  
Bipolar Isolation Amplifier

Item No.

857-409

Pack.  
Unit

1

### Technical Data

#### Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C

#### Safety and protection:

Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min
------------------------------------	-------------------------

#### Connection and type of mounting:

Wire connection	CAGE CLAMP® S
Cross sections	solid: 0.08 mm² ... 2.5 mm² / AWG 28 ... 14 fine-stranded: 0.34 mm² ... 2.5 mm² / AWG 22 ... 14
Strip lengths	9 ... 10 mm / 0.37 in

#### Dimensions and weight:

Dimensions (mm) W x H x L	6 x 96 x 94
	Height from upper-edge of DIN 35 rail
Weight	42 g

#### Standards and approvals:

Conformity marking	CE
UL 508	UL 508
Shipbuilding	CS

#### Accessories

see pages 226 ... 236

## DIP Switch Adjustability

● = ON

857-409

Dip Switch S1 (4-fold)

Dip Switch S2 (6-fold)

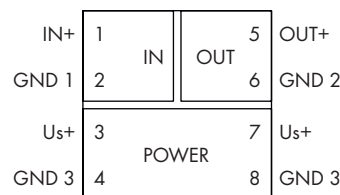
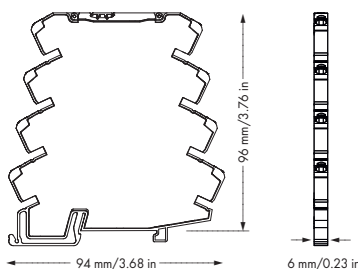
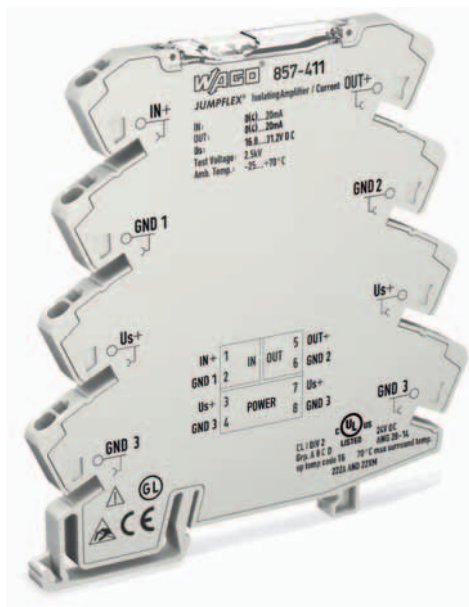
Input Signal				Output Signal					Max. Operating Frequency	
1	2	3	4	1	2	3	4	5	6	
●							●		●	± 20 mA 5 kHz
●	●					●	●			± 10 mA 100 Hz
●				●	●		●			± 10 V
●	●			●	●	●	●			± 5 V
										0 ... 20 mA
		●						●		4 ... 20 mA
	●					●				0 ... 10 mA
	●	●				●	●			2 ... 10 mA
				●	●					0 ... 10 V
		●		●	●			●		2 ... 10 V
	●			●	●	●				0 ... 5 V
	●	●		●	●	●		●		1 ... 5 V

## Default Settings

Input	± 10 V
Output	± 10 V
Max. Operating Frequency	5 kHz

# JUMPFLEX® Signal Conditioners

Isolation Amplifiers, Fixed Setting for Voltage or Current Signals



**Short description:**

The pre-configured isolation amplifiers convert, amplify, filter and electrically isolate standard analog signals.

**Characteristics:**

- Input/Output: current/voltage signal
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

Description	Input signal	Output signal	Item No.	Pack. Unit
<b>JUMPFLEX® Signal Conditioner, for DIN 35 rail</b>				
Isolation amplifier	0(4) ... 20 mA	0(4) ... 20 mA	<b>857-411</b>	1
Isolation amplifier	0(2) ... 10 V	0(2) ... 10 V	<b>857-412</b>	1
Isolation amplifier	0 ... 10 V	0 ... 20 mA	<b>857-413</b>	1
Isolation amplifier	0 ... 10 V	4 ... 20 mA	<b>857-414</b>	1
Isolation amplifier	0 ... 20 mA	0 ... 10 V	<b>857-415</b>	1
Isolation amplifier	4 ... 20 mA	0 ... 10 V	<b>857-416</b>	1

Technical Data	
<b>Input:</b>	
Input signal	<b>857-411:</b> 0(4) ... 20 mA <b>857-412:</b> 0(2) ... 10 V <b>857-413:</b> 0 ... 10 V <b>857-414:</b> 0 ... 10 V <b>857-415:</b> 0 ... 20 mA <b>857-416:</b> 4 ... 20 mA
Input resistance	≤ 50 Ω (I input) ≥ 100 kΩ (U input)
Overload capacity	30 V / 50 mA
<b>Output:</b>	
Output signal	<b>857-411:</b> 0(4) ... 20 mA <b>857-412:</b> 0(2) ... 10 V <b>857-413:</b> 0 ... 20 mA <b>857-414:</b> 4 ... 20 mA <b>857-415:</b> 0 ... 10 V <b>857-416:</b> 0 ... 10 V
Load impedance	≤ 600 Ω (I output) ≥ 2 kΩ (U output)
<b>General specifications:</b>	
Nominal supply voltage $V_s$	24V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 25 mA
Max. operating frequency	100 Hz
Response time ( $T_{10/90}$ )	< 3.5 ms
Transmission error	≤ 0.1 % of upper range value
Temperature coefficient	≤ 0.01 % /K

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
<b>Safety and protection:</b>	
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min
<b>Connection and type of mounting:</b>	
Wire connection	CAGE CLAMP® S
Cross sections	solid: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14 fine-stranded: 0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 14
Strip lengths	9 ... 10 mm / 0.37 in
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	6 x 96 x 94
Weight	Height from upper-edge of DIN 35 rail 49.2 g
<b>Standards and approvals:</b>	
Conformity marking	CE
UL 508	
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4
Shipbuilding	Ⓢ
<b>Accessories</b>	see pages 226 ... 236







## DIP Switch Adjustability

● = ON

857-420

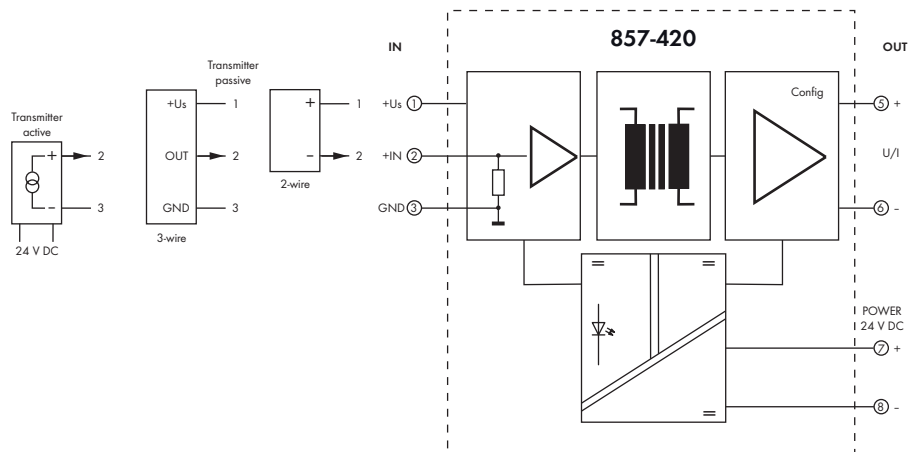
Dip Switch S1 (6-fold)

						Input Signal	Output Signal
1	2	3	4	5	6		
						n.c.	0 ... 20 mA
			●			n.c.	0 ... 20 mA
●	●					n.c.	0 ... 20 mA
●	●		●			n.c.	0 ... 20 mA
●	●	●				n.c.	0 ... 20 mA
●	●	●	●			n.c.	0 ... 20 mA
				●		n.c.	4 ... 20 mA
						n.c.	4 ... 20 mA
●	●			●		n.c.	4 ... 20 mA
●	●					n.c.	4 ... 20 mA
●	●	●		●		n.c.	4 ... 20 mA
●	●	●				n.c.	4 ... 20 mA

### Default Settings

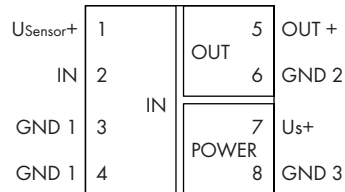
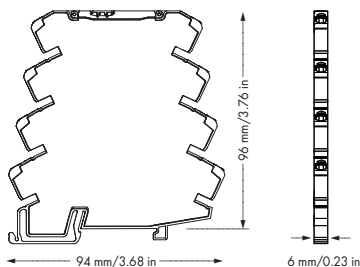
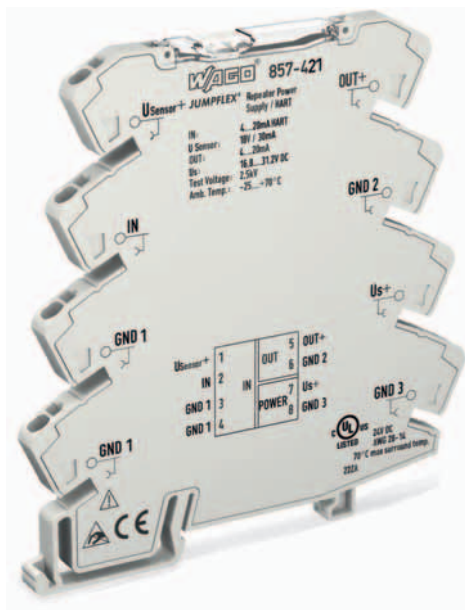
Input	0 ... 20 mA
Output	0 ... 20 mA
DIP 6	n.c.

### Connection assignment



# 3 JUMPFLEX® Signal Conditioners

## 184 Repeater Power Supply, HART



**Short description:**

The 857-421 HART Repeater Power Supply links SMART transmitters located in the field. It provides the power required and transmits the analog signals in an electrically isolated way.

**Characteristics:**

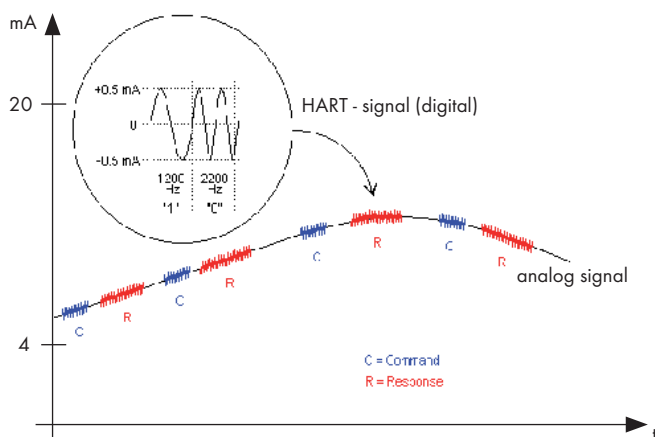
- HART communication
- Power supply to SMART transmitters
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

Technical Data	
<b>Input:</b>	
Input signal	4 ... 20 mA
Input resistance	≤ 50 Ω
Transmitter supply	V <sub>v</sub> = 18 V at 30 mA
Max. Eingangsstrom	Max. Speisestrom
<b>Output:</b>	
Output signal	4 ... 20 mA
Load impedance	230 - 600Ω
Offset	< 20 μA
Residual ripple	< 10mV eff
<b>General specifications:</b>	
Nominal supply voltage V <sub>s</sub>	24V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 45 mA
Max. operating frequency	100 Hz signal / ≥ 2.5 kHz HART
Response time (T <sub>10,90</sub> )	< 3.5 ms signal
Transmission error	≤ 0.1 % of the full scale value
Temperature coefficient	≤ 0.01 % /K

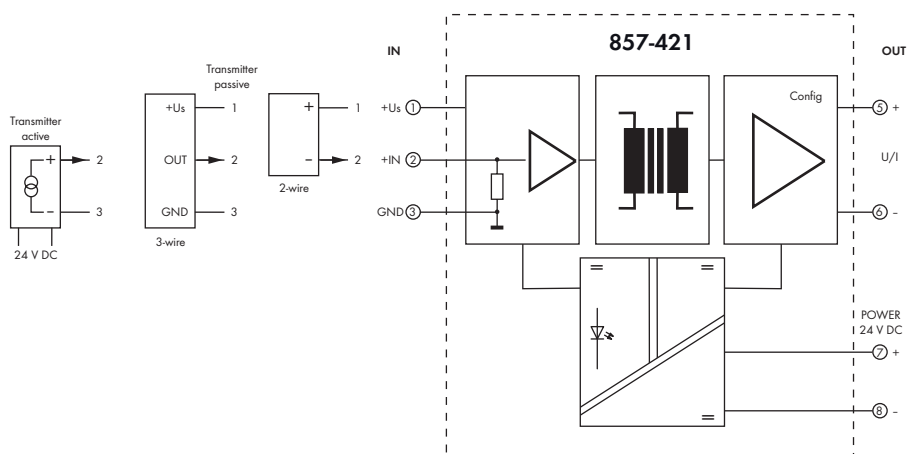
Description	Item No.	Pack. Unit
<b>JUMPFLEX® Signal Conditioner, for DIN 35 rail</b>	<b>857-421</b>	<b>1</b>
Repeater power supply, HART		
<b>Technical Data</b>		
<b>Environmental requirements:</b>		
Ambient operating temperature	-25 °C ... +70 °C	
Storage temperature	-40 °C ... +85 °C	
<b>Safety and protection:</b>		
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min	
<b>Connection and type of mounting:</b>		
Wire connection	CAGE CLAMP® S	
Cross sections	solid: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	
	fine-stranded: 0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 14	
Strip lengths	9 ... 10 mm / 0.37 in	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	6 x 96 x 94	
	Height from upper-edge of DIN 35 rail	
Weight	47.8 g	
<b>Standards and approvals:</b>		
Conformity marking	CE	
UL 508	Ⓢ	
Shipbuilding	Ⓢ	
<b>Accessories</b>	see pages 226 ... 236	

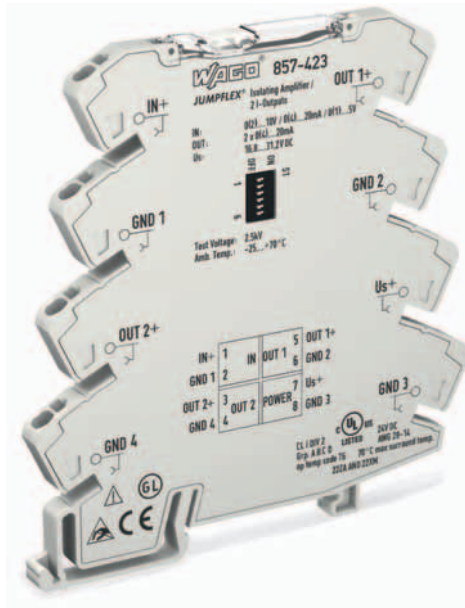
Simultaneous transmission of analog and digital signals

857-421



Connection assignment

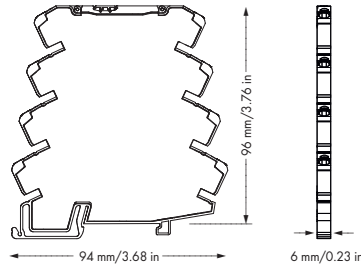




Configuration via:



DIP switch



IN+	1	IN	5	OUT 1+
GND 1	2		6	GND 2
OUT 2+	3	OUT 2	7	Us+
GND 4	4	POWER	8	GND 3

**Short description:**

The 857-423 Signal Splitter converts standard signals and amplifies, filters and electrically isolates analog standard signals.

**Characteristics:**

- Two configurable current outputs
- Calibrated scale switching
- Switchable max. operating frequency
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

**Technical Data****Configuration:**

Configuration DIP switch

**Input:**

Input signal 0 ... 20 mA, 4 ... 20 mA, 0... 5 V,  
0 ... 10 V, 2 ... 10 V, 1 ... 5 V  
(calibrated switchable)

Input resistance  $\leq 50 \Omega$  (In = mA)  
 $\geq 100 \text{ k}\Omega$  (In = V)

**Output:**

Output signal 2 x 0(4) ... 20 mA  
(calibrated switchable)

Load impedance 2 x 300 $\Omega$

**General specifications:**

Nominal supply voltage  $V_s$  24V DC  
Supply voltage range 16.8 V ... 31.2 V  
Current consumption at 24 V DC  $\leq 35 \text{ mA}$   
Max. operating frequency 100 Hz / 1 kHz  
(switchable via DIP switch)

Response time ( $T_{10/90}$ )  $< 3.5 \text{ ms} / < 300 \mu\text{s}$   
Transmission error  $\leq 0.1 \%$  of the full scale value  
Temperature coefficient  $\leq 0.01 \%$  /K

**Description**

**JUMPFLEX® Signal Conditioner, for DIN 35**  
Signal Splitter with 2 configurable Current Outputs

Item No. **857-423**Pack. Unit  
1**Technical Data****Environmental requirements:**

Ambient operating temperature -25 °C ... +70 °C  
Storage temperature -40 °C ... +85 °C

**Safety and protection:**

Test voltage (input/output/supply) 2.5 kV AC, 50 Hz, 1 min

**Connection and type of mounting:**

Wire connection CAGE CLAMP® S  
Cross sections solid:  
0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 28 ... 14  
fine-stranded:  
0.34 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 22 ... 14

Strip lengths 9 ... 10 mm / 0.37 in

**Dimensions and weight:**

Dimensions (mm) W x H x L 6 x 96 x 94  
Height from upper-edge of DIN 35 rail

Weight 40.6 g

**Standards and approvals:**

Conformity marking **CE**  
UL 508  
ANSI/ISA 12.12.01 Class I, Div. 2, Grp. ABCD, T4  
Shipbuilding (pending)

**Accessories**

see pages 226 ... 236

## DIP Switch Adjustability

● = ON

857-423

## Dip Switch S1 (6-fold)

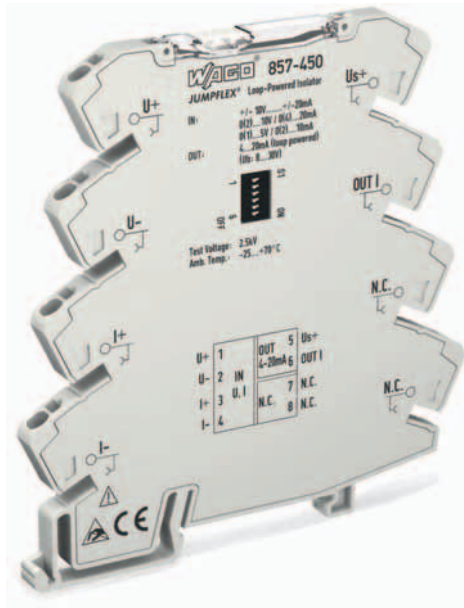
Input Signal			Max. Operating Frequency	Output Signal 1		Output Signal 2	
1	2	3	4	5	6		
●			0 ... 20 mA	1 kHz	0 ... 20 mA		0 ... 20 mA
●		●	4 ... 20 mA	100 Hz	4 ... 20 mA	●	4 ... 20 mA
	●		0 ... 10 V				
	●	●	2 ... 10 V				
			0 ... 5 V				
		●	1 ... 5 V				

## Default Settings

Input	0 ... 20 mA
Output 1	0 ... 20 mA
Output 2	0 ... 20 mA
Max. Operating Frequency	1 kHz

# 3 JUMPFLEX® Signal Conditioners

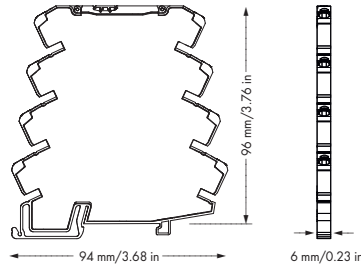
## Loop-Powered Isolation Amplifier



Configuration via:



DIP switch



U+	1	IN U, I	OUT 5	Us+
U-	2		4-20 mA	OUT 1
I+	3	N.C.	7	N.C.
I-	4		8	N.C.

### Short description:

The 857-450 Loop-Powered Isolation Amplifier converts analog, unipolar and bipolar, standard signals. It is also designed to amplify, filter and electrically isolate standard analog signals.

### Characteristics:

- No additional supply voltage required
- Zero/span adjustment
- Analog, unipolar and bipolar, standard signals at input
- Calibrated scale switching
- Switchable max. operating frequency
- Safe 2-way isolation with 2.5 kV test voltage to EN 61140

### Technical Data

#### Configuration:

Configuration DIP switch

#### Input:

Input signal

#### Current:

± 5 mA, 0 ... 5 mA,  
± 10 mA, 0 ... 10 mA, 2 ... 10 mA,  
± 20 mA, 0 ... 20 mA, 4 ... 20 mA

#### Voltage:

± 1 V, 0 ... 1 V,  
± 5 V, 0 ... 5 V, 1 ... 5 V,  
± 10 V, 0 ... 10 V, 2 ... 10 V,  
± 20 V, ± 2 V, 0 ... 2 V

Input resistance

approx. 1 MΩ (U input)  
approx. 50 Ω (I input)

#### Output:

Output signal

4 ... 20 mA

Load impedance

≤ 600 Ω

Overload capacity

30 V / 50 mA

#### General specifications:

Supply voltage

8 ... 30 V, power is derived from the output circuit

Max. operating frequency

100 Hz / 30 Hz  
(switchable via DIP switch)

Response time ( $T_{10/90}$ )

3.5 ms

Transmission error

≤ 0.1 % of upper range value

Temperature coefficient

≤ 0.01 % / K

Zero/span adjustment

± 5 % of upper range value

### Description

**JUMPFLEX® Signal Conditioner, for DIN 35 rail**  
Loop-Powered Isolation Amplifier

### Item No.

**857-450**

### Pack. Unit

1

### Technical Data

#### Environmental requirements:

Ambient operating temperature -25 °C ... +70 °C  
Storage temperature -40 °C ... +85 °C

#### Safety and protection:

Test voltage (input/output/supply) 2.5 kV AC, 50 Hz, 1 min.

#### Connection and type of mounting:

Wire connection CAGE CLAMP® S  
Cross sections solid:  
0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 28 ... 12  
fine-stranded:  
0.34 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 22 ... 14  
Strip lengths 9 ... 10 mm / 0.37 in

#### Dimensions and weight:

Dimensions (mm) W x H x L 6 x 96 x 94  
Height from upper-edge of DIN 35 rail 37 g

#### Standards and approvals:

Conformity marking CE  
UL 508  
Shipbuilding

#### Accessories

see pages 226 ... 236



### DIP Switch Adjustability

● = ON

857-450

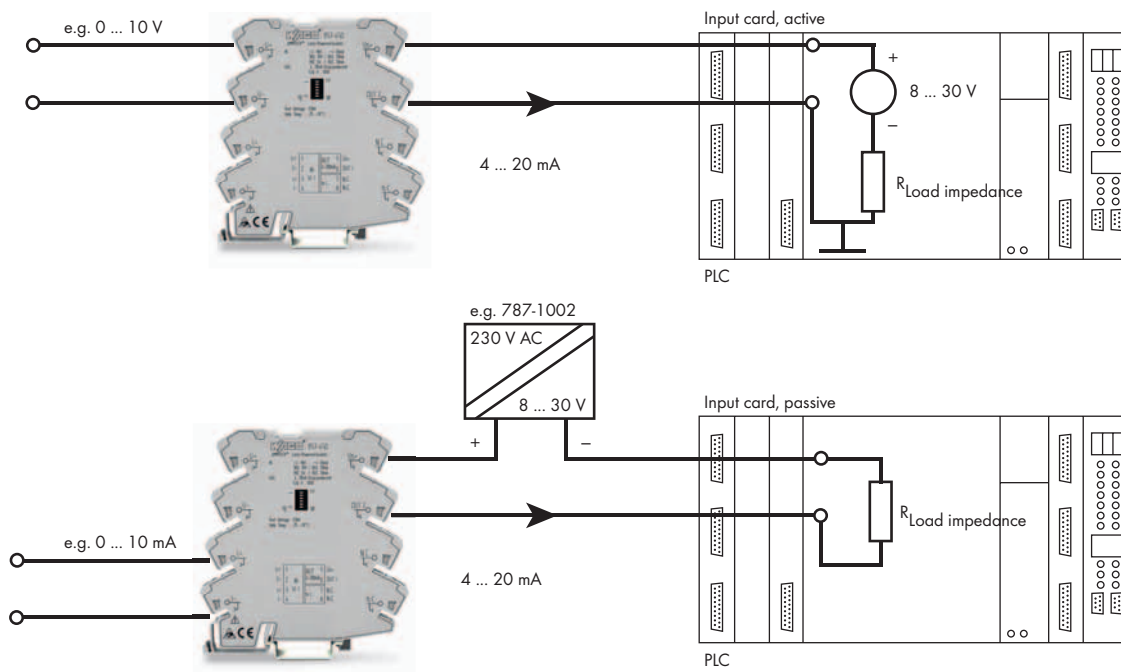
DIP switch (6 positions)

Input Signal					Output Signal	Max. Operating Frequency	
1	2	3	4	5		6	
					4 ... 20 mA		100 Hz
●		●	●			●	30 Hz
●		●	●	●			
●		●					
●		●		●			
●			●	●			
●				●			
	●	●	●				
	●	●	●	●			
	●		●				
	●		●	●			
	●			●			
		●	●				
		●	●	●			
		●					
		●		●			
			●				
			●	●			
				●			
				●			

#### Default setting

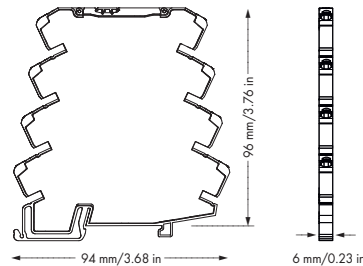
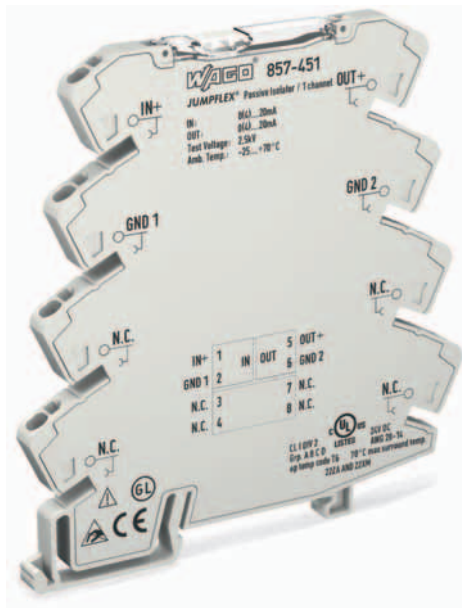
Input	4 ... 20 mA
Output	4 ... 20 mA
Max. operating frequency	100 Hz

### Wiring Material



**JUMPFLEX®** Signal Conditioners

Passive Isolator, 1 Channel



IN+	1	IN	5	OUT+
GND 1	2		6	GND 2
N.C.	3		7	N.C.
N.C.	4		8	N.C.

**Short description:**

The 1-channel passive isolator filters and electrically isolates 0(4)–20 mA analog standard signals, while drawing power for signal transmission from the input circuit. The connected sensor supplies the passive isolator with the required power, while powering the connected load.

**Characteristics:**

- No additional supply voltage required
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

**Technical Data****Input:**

Input signal	0(4) ... 20 mA
Response current	< 200 $\mu$ A
Voltage drop input	< 2.0 V at 20 mA (output)
Max. input voltage	< 20 V
Max. input signal	40mA

**Output:**

Output signal	0(4) ... 20 mA
Load impedance	$\leq$ 600 $\Omega$ (Temperature range restrictions may occur)

**General specifications:**

Max. operating frequency	100 Hz
Response time ( $T_{10/90}$ )	< 3.5 ms
Transmission error	$\leq$ 0.1 % of the full scale value
Load error	$\leq$ 0.05 % of upper range value per 100 $\Omega$ load
Temperature coefficient	$\leq$ 0.01 % /K

**Description**

**JUMPFLEX®** Signal Conditioner, for DIN 35 rail  
Passive Isolator, 1 Channel

Item No.

857-451

Pack.  
Unit

1

**Technical Data****Environmental requirements:**

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C

**Connection and type of mounting:**

Wire connection	CAGE CLAMP® S
Cross sections	solid: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14 fine-stranded: 0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 14
Strip lengths	9 ... 10 mm / 0.37 in

**Dimensions and weight:**

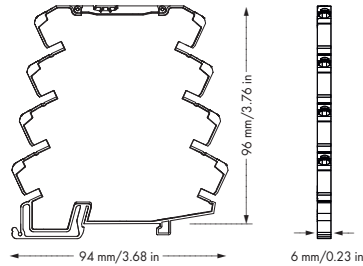
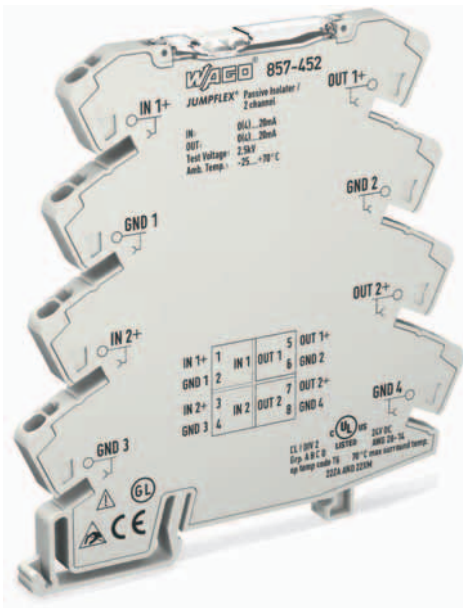
Dimensions (mm) W x H x L	6 x 96 x 94
Weight	Height from upper-edge of DIN 35 rail 33.8 g

**Standards and approvals:**

Conformity marking	CE
UL 508	
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4
Shipbuilding	Ⓢ

**Accessories**

see pages 226 ... 236

**Short description:**

The 2-channel passive isolator filters and electrically isolates 0(4)–20 mA analog standard signals, while drawing power for signal transmission from the input circuit. The connected sensor supplies the passive isolator with the required power, while powering the connected load.

**Characteristics:**

- No additional supply voltage required
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

**Technical Data****Input: \***

Input signal	0(4) ... 20 mA
Response current	< 200 µA
Voltage drop input	< 2.0 V at 20 mA (output)
Max. input voltage	< 20 V
Max. input signal	40mA

**Output: \***

Output signal	0(4) ... 20 mA
Load impedance	≤ 600 Ω
(Temperature range restrictions may occur)	

**General specifications:**

Max. operating frequency	100 Hz
Response time (T <sub>10/90</sub> )	< 3.5 ms
Transmission error	≤ 0.1 % of the full scale value
Load error	≤ 0.05 % of upper range value per 100 Ω load
Temperature coefficient	≤ 0.01 % /K

(\* per channel)

**Description**

Item No.

Pack. Unit

**JUMPFLEX® Signal Conditioner, for DIN 35 rail** **857-452**  
Passive Isolator, 2 Channels

1

**Technical Data****Environmental requirements:**

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C

**Connection and type of mounting:**

Wire connection	CAGE CLAMP® S
Cross sections	solid: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14 fine-stranded: 0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 14
Strip lengths	9 ... 10 mm / 0.37 in

**Dimensions and weight:**

Dimensions (mm) W x H x L	6 x 96 x 94
	Height from upper-edge of DIN 35 rail
Weight	37.8 g

**Standards and approvals:**

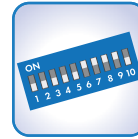
Conformity marking	CE
UL 508	
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4
Shipbuilding	Ⓢ

**Accessories**

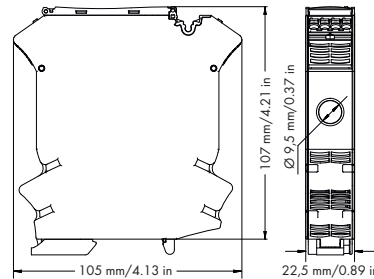
see pages 226 ... 236



## Configuration via:



DIP switch

Interface  
configuration  
softwareInterface  
configuration  
appConfiguration  
display

1.1	1.2	RELAY	OUTPUT	OUT+	4.1
1.2	1.1			OUT-	4.2
1.3	1.4		POWER	Us+	4.3
1.4	DO (GND)	DO		GND	4.4
INPUT CURRENT (AC/DC) →					
3.1	DO	JUMPER	JUMPER	Us+	6.1
3.2	GND	DO	POWER	GND	6.2

## Short description:

The 2857-550 Current Signal Conditioner measures AC/DC currents up to 100 A, while converting the measured current into an analog standard signal at the output.

## Features:

- Both digital signal output and relay with changeover contact react to configured measuring range limits (switching ON/OFF delay and threshold value switch function configurable with up to two threshold values).
- Clipping capability provides analog signal limitation to output end values.
- Adjustable software filter
- Input/Output response simulation via configuration display
- Safe 3-way isolation with 4 kV test voltage acc. to EN 61140

## Technical Data

<b>Configuration:</b>	
Configuration	DIP switch, interface configuration software, interface configuration app, configuration display
<b>Input:</b>	
Input signal	500 mA ... 100 A (AC) / -100 A ... 100 A (DC)
Response threshold	250 mA (AC) / 500 mA (DC)
Resolution	10 mA
Frequency range	15 Hz ... 1000 Hz
<b>Output:</b>	
Output signal	<b>Current:</b> ± 10 mA; 0 ... 10 mA; 2 ... 10 mA; ± 20 mA; 0 ... 20 mA; 4 ... 20 mA <b>Voltage:</b> ± 5 V; 0 ... 5 V; 1 ... 5 V; ± 10 V; 0 ... 10 V; 2 ... 10 V
Overcurrent	0% or +5% (e.g., 10.5 V / 24 mA)
Measuring range overflow/underflow	0% or +2.5%
Load impedance	<b>Current:</b> ≤ 600 Ω; <b>Voltage:</b> ≥ 1 kΩ
Measuring procedure	True RMS measurement (TRMS) or Arithmetic mean value
<b>Output - Digital:</b>	
Max. switching voltage	Supply voltage applied -0.3 V
Max. continuous current $I_{DC}$	100 mA (no internal restriction)
<b>Output - Relay:</b>	
Contact type	1 changeover contact (1 u)
Contact material	AgNi (gold-plated)
Max. switching voltage	250 VAC
Max. continuous current	
(terminal blocks in a row)	6 A (up to 60 °C), 3 A (60 °C ... 70 °C)
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	8 ms / 4 ms / 8 ms
<b>General specifications:</b>	
Nominal supply voltage $V_s$	24 VDC
Supply voltage range	16.8 V ... 31.2 V (-30 % ... +30 %)
Current consumption at 24 VDC	≤ 50 mA (+ $I_{DC}$ )

## Description

## Item No.

## Pack. Unit

<b>JUMPFLEX® Signal Conditioner, for DIN 35 rail</b>	<b>2857-550</b>	<b>1</b>
Current Signal Conditioner AC/DC 100 A		

## Technical Data

## General specifications:

Max. operating frequency	3.3 kHz
Response time	Signal cycle duration + 1 ms
Response time ( $T_{10/90}$ )	max. 60 ms
Filter ( $T_{10/90}$ )	Software filter: 600 ms
Linearity error	≤ 1 %
Measurement error	≤ 0.2 % (of the full scale value)
Temperature coefficient	≤ 0.01 %/K

## Environmental requirements:

Ambient operating temperature	-40 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C

## Safety and protection:

Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
Test voltage (measuring circuit - output)	4 kV AC, 50 Hz, 1 min.

## Connection and type of mounting:

Wire connection	CAGE CLAMP® S (picoMAX® 5.0)
Cross sections	solid/fine-stranded: 0.2 ... 2.5 mm <sup>2</sup> / AWG 24 ... 12
Strip length	9 ... 10 mm / 0.35 ... 0.39 in
Power cable feed-through	∅ 9.5 mm

## Dimensions and weight:

Dimensions (mm) W x H x L	22.5 x 107 x 105
	Height from upper-edge of DIN 35 rail
Weight	106 g

## Standards and approvals:

Conformity marking	CE
Standards/Specifications	DIN EN 61010-1:2010; DIN EN 60664-1:2008; Safe isolation acc. to DIN EN 61140:2002; IEC 61000-6-2; IEC 61000-6-4

## Accessories:

see pages 226 ... 236

## DIP Switch Adjustability

● = ON

2857-550

## DIP Switch S1

Measuring Method		Filter		Analog Output Inverted		Output Signal (Bipolar for Arithmetic Mean Value)				
1	2	3	4	5	6	Analog Output				
	True RMS		inactive		not inverted					(±) 0 ... 20 mA
●	Arithmetic mean value (bipolar output)	●	active	●	inverted		●			4 ... 20 mA
						●				(±) 0 ... 10 V
						●	●			2 ... 10 V
								●		(±) 0 ... 10 mA
							●	●		2 ... 10 mA
						●		●		(±) 0 ... 5 V
						●	●	●		1 ... 5 V

## DIP Switch S1

Measuring Range Underflow		Measuring Range Overflow		Overcurrent (Input Signal - End Value +20%)		Digital Output (DO)/ Relay	
7	8	9	10	9	10		
	Lower measuring range -5% *	Upper measuring range +2.5% *	Upper measuring range +5%			Off	
●	Lower measuring range	Upper measuring range +2.5%	Upper measuring range +5%	●		DO US+ switching - relay pulls in	
●	Lower measuring range	Upper measuring range	Lower measuring range		●	DO GND switching - relay drops out	
●	Lower measuring range -5 %	Upper measuring range +5%	Upper measuring range	●	●	Off	

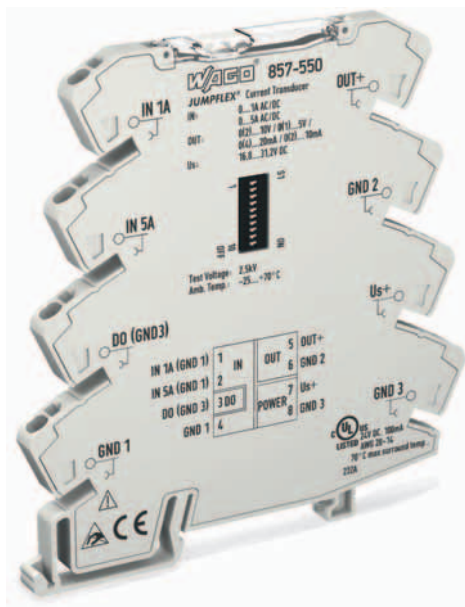
\*acc. to NAMUR NE 43

## DIP Switch S2

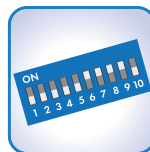
Lower Value				Upper value			
1	2	3	4	5	6	7	
A / % (RMS)			A / % (arithmetic mean value)	A / %			
Software configuration (0)			Software configuration (-100)	Software configuration (100)			
●			0	-100	●		100
	●		5	-75		●	90
●	●		8	-50	●	●	70
		●	10	-25			50
●		●	12	-10	●		30
	●	●	14	0		●	20
●	●	●	16	5	●	●	10
			●	18			
●			●	20			
	●		●	25			
●	●		●	30			
		●	●	35			
●		●	●	40			
	●	●	●	45			
●	●	●	●	50			

**JUMPFLEX®** Signal Conditioners

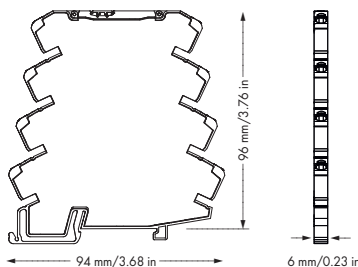
Current Signal Conditioner AC/DC 0 ... 1 A, 0 ... 5 A



Configuration via:



DIP switch

Interface  
configuration  
softwareInterface  
configuration  
app

IN 1A (GND 1)	1	IN	5	OUT+
IN 5A (GND 1)	2		6	GND 2
DO (GND 3)	3	DO	7	Us+
GND 1	4	POWER	8	GND 3

**Short description:**

The Current Signal Conditioner measures both 0–1 A and 0–5 A AC/DC currents, while converting the input signal to a standard analog signal at the output.

**Features:**

- PC configuration interface
- True RMS measurement or arithmetic mean value
- Digital switching output (configurable switching thresholds)
- Switchable filter function
- Switching between measuring ranges is calibrated
- Safe 3-way isolation with 2.5 kV test voltage acc. to EN 61140
- Extremely fast response times
- Measuring range overflow indication

**Technical Data****Configuration:**

Configuration: DIP switch, interface configuration software, interface configuration app

**Input:**

Input signal: 0 ... 1 A AC/DC; 0 ... 5 A AC/DC \*  
 Input resistance: 10 mΩ (5 A); 47 mΩ (1 A)  
 Frequency range: 16 Hz ... 400 Hz  
 Response threshold: < 0.5 % (of measuring range nominal)  
 Current carrying capacity: 2 x I<sub>N</sub> (continuous)

**Output:**

Output signal: **Voltage:** 0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V \*  
**Current:** 0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA \*  
 Load impedance: ≤ 600 Ω (I output) \*\*  
 ≥ 2 kΩ (U output)  
 \*\* Temperature range restrictions may occur.

Filter (T<sub>10-90</sub>): 260 ms (DC), 600 ms (AC 50 Hz)

**Output - Digital**

Max. switching voltage: Supply voltage applied  
 Max. continuous current: 500 mA (up to 60 °C)  
 100 mA (60 °C ... 70 °C)

**General specifications:**

Nominal supply voltage V<sub>S</sub>: 24 VDC  
 Supply voltage range: 16.8 V ... 31.2 V  
 Current consumption at 24 V DC: ≤ 40 mA  
 Measuring procedure: Arithmetic mean value \*  
 True RMS measurement (TRMS)  
 Response time: 1.5 ms + signal cycle duration  
 Max. response time: 60 ms  
 Min. measuring span: 2 mA ... 1 A; 4 mA ... 5 A

Description	Item No.	Pack. Unit
<b>JUMPFLEX®</b> Signal Conditioner, for DIN 35 rail	<b>857-550</b>	1
Current Signal Conditioner		
<b>Technical Data</b>		
<b>General specifications:</b>		
Transmission error	≤ 0.1 % typ. (≤ 0.4 % max.)	
Temperature coefficient	≤ 0.01 % /K	
Linearity error	< 0.5 % (of measuring range nominal)	
<b>Environmental requirements:</b>		
Ambient operating temperature	-25 °C ... +70 °C (at nominal current)	
Storage temperature	-40 °C ... +85 °C	
<b>Safety and protection:</b>		
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.	
<b>Connection and type of mounting:</b>		
Wire connection	CAGE CLAMP® S	
Cross sections	solid: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14 fine-stranded: 0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 14	
Strip lengths	9 ... 10 mm / 0.37 in	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	6 x 96 x 94	
Weight	Height from upper-edge of DIN 35 rail 50 g	
<b>Standards and approvals:</b>		
Conformity marking	CE	
UL 508		
Shipbuilding	Ⓢ	
Accessories	see pages 226 ... 236	
(* Additional setting options via PC configuration software or smartphone app)		

## DIP Switch Adjustability

● = ON

857-550

### DIP Switch S1

Input Signal		Measuring Method		Filter		Output Signal			
1		2		3		4	5	6	
	5 A		Mean square value		off				0 ... 20 mA
●	1 A	●	Arithmetic mean value	●	active		●		4 ... 20 mA
						●			0 ... 10 V
						●	●		2 ... 10 V
								●	0 ... 10 mA
							●	●	2 ... 10 mA
						●		●	0 ... 5 V
						●	●	●	1 ... 5 V

#### Filter

The filter function allows a low-pass filter to be switched on in order to mask or "smooth out" oscillating measured values (e.g., during trailing edge flows).

### DIP Switch S1

7	8	Measuring Range Underflow	Measuring Range Overflow	Overcurrent (Input Signal - End Value + 20%)	9	10	Digit Output DO Signaling
		Lower limit of measuring range -5 % <sup>*</sup>	Upper limit of measuring range +2.5 % <sup>*</sup>	Upper limit of measuring range +5 % <sup>*</sup>			DO not active
●		Lower limit of measuring range	Upper limit of measuring range +2.5 %	Upper limit of measuring range +5 %		●	DO U <sub>s</sub> + switching
	●	Lower limit of measuring range	Upper limit of measuring range	Lower limit of measuring range	●	●	DO GND switching
●	●	Lower limit of measuring range	Upper limit of measuring range	Upper limit of measuring range			

<sup>\*</sup>acc. to NAMUR NE 43

#### Digital Output DO/Signaling

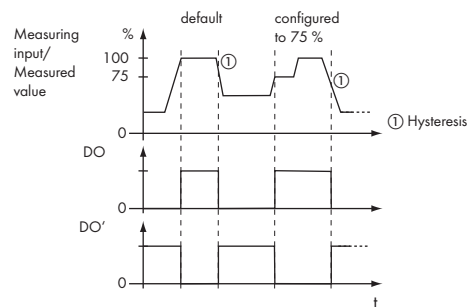
The digital output (DO) signals error messages and can be configured as follows: 24 V → 0 V/0 V → 24 V.

In order to increase the switching current of the DO, the latter may be expanded by a relay. Thanks to the contour uniformity of Series 857, for example, a 857-304 Relay can be snapped in next to it. This output can be quickly and easily expanded to a switching current of 6A by simply using an adjacent jumper (859-402).

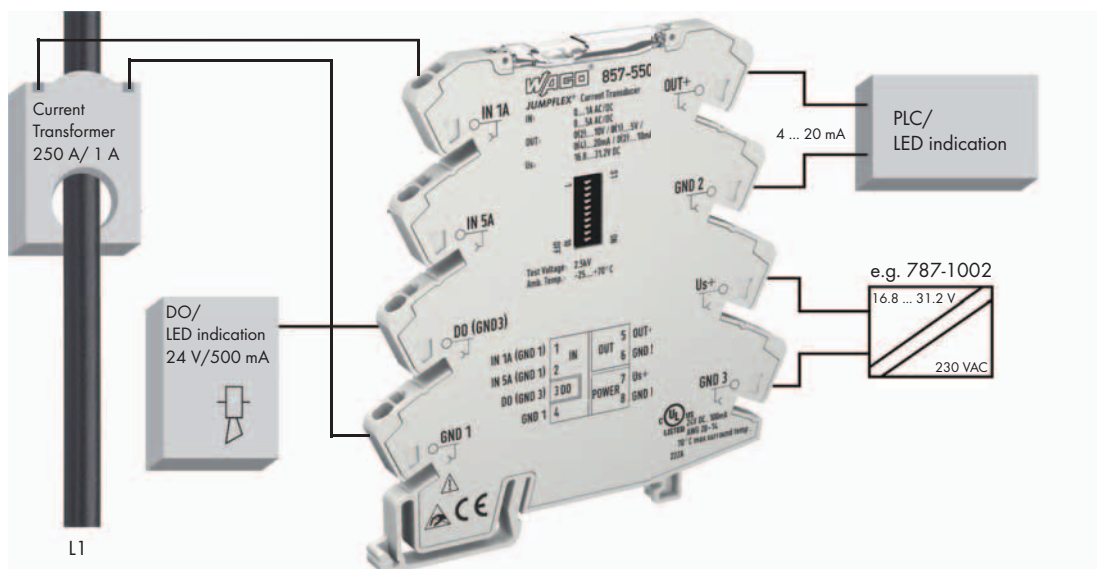
#### Default Setting

All DIP switches are in "OFF" position for delivery.	
<b>Input</b>	
Input Signal	0 ... 5 A
Measuring Method	Mean square value
Filter	not active
<b>Output</b>	
Output Signal	0 ... 20 mA
Measuring Range Underflow	0 mA
Measuring Range Overflow	20.5 mA
Overcurrent	21 mA
Digital Output DO	not active

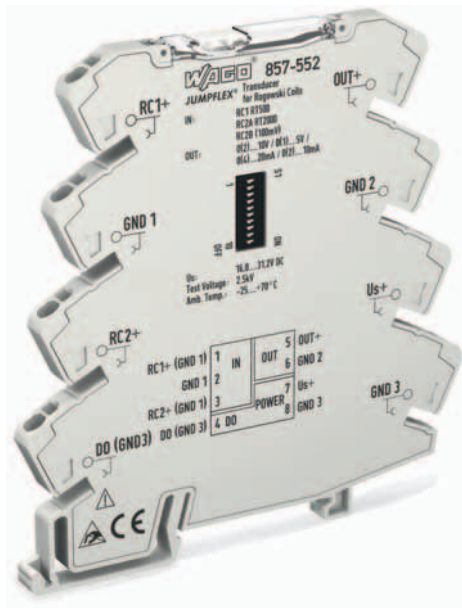
#### Switching Behavior, Digital Output (DO)



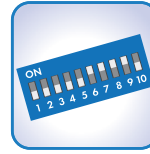
#### Application example:







## Configuration via:



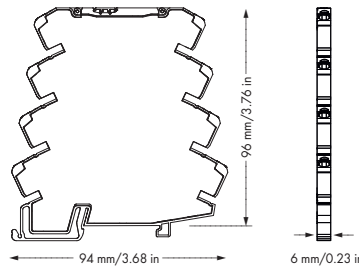
DIP switch



Interface configuration software



Interface configuration app



RC1+ (GND 1)	1	IN	5	OUT+
GND 1	2		6	GND 2
RC2+ (GND 1)	3		7	Us+
DO (GND 3)	4	DO	8	GND 3

## Short description:

The Rogowski Signal Conditioner records RMS values from alternating currents via a Rogowski coil, converting the input signal into a standard analog signal on the output side.

## Features:

- PC configuration interface
- Supports different types of Rogowski coils
- Digital switching output (configurable switching thresholds)
- True RMS measurement (TRMS)
- Configurable output signal
- Configuration via DIP switch
- Safe 3-way isolation with 2.5 kV test voltage acc. to EN 61140
- No current bar interruption during installation
- Measuring range overflow indication

## Technical Data

Configuration:	
Configuration	DIP switch, interface configuration software, interface configuration app
Input:	
Input signal	RC1 500 A: Sensitivity 10.05 mV * RC2A 2000 A: Sensitivity 40.2 mV * RC2B: Sensitivity 100 mV * 50/60 Hz sinusoidal and distorted sinusoidal signals (e.g. leading edge and sinusoidal signals)
Frequency range	16 Hz ... 1000 Hz
Response threshold	< 1 % (of measuring range nominal value)
Output:	
Output signal	<b>Voltage:</b> 0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V * <b>Current:</b> 0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA * 0 % or +5 % (e.g. 10.5 V/21 mA)
Overcurrent	0 % or +2.5 %
Measuring range overflow/underflow	0 % or +2.5 %
Load impedance	Current ≤ 600 Ω, Voltage ≥ 1000 Ω
Measuring procedure	True RMS (TRMS)
Filter (T <sub>10,90</sub> )	600 ms (50 Hz)
Output - Digital	
Max. switching voltage	Supply voltage applied
Max. continuous current	500 mA
General specifications:	
Nominal supply voltage V <sub>s</sub>	24 VDC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 40 mA
Resolution	500 A measuring range: 250 mA, 2000 A measuring range: 1000 mA
Measuring procedure	True RMS (TRMS)
Response time	1.5 ms + signal cycle duration
Max. operating frequency	< 2 kHz
Response time (T <sub>10,90</sub> )	max. 60 ms

## Description

Description	Item No.	Pack. Unit
JUMPFLEX® Signal Conditioner, for DIN 35 rail Rogowski Signal Conditioner	857-552	1
Technical Data		
General specifications:		
Linearity error	≤ 0,1 %	
Temperature coefficient	≤ 0.01 %/K	
Measurement error	< 1 %	
Line length	< 3 m (to the Rogowski coil)	
Environmental requirements:		
Ambient operating temperature	-25 °C ... +70 °C (at rated current)	
Storage temperature	-40 °C ... +85 °C	
Safety and protection:		
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.	
Connection and type of mounting:		
Wire connection	CAGE CLAMP® S	
Cross sections	solid: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14 fine-stranded: 0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 14	
Strip lengths	9 ... 10 mm / 0.37 in	
Dimensions and weight:		
Dimensions (mm) W x H x L	6 x 96 x 94	
Weight	Height from upper-edge of DIN 35 rail 36.2 g	
Standards and approvals:		
Conformity marking	CE	
Shipbuilding	@	
Accessories		
	see pages 226 ... 236	
	Rogowski Coils see Section 4	
(* Additional setting options via PC configuration software or smartphone app)		



### DIP Switch Adjustability

● = ON

857-552

#### DIP Switch S1

Input Signal		RC Configuration Input		Filter		Output Signal			
1		2		3		4	5	6	
	RC1 = RT500 from LEM		RC2 = RT2000 from LEM		off				0 ... 20 mA
●	RC2	●	RC2 = 100 mV eff. => 1 kA	●	active		●		4 ... 20 mA
						●			0 ... 10 V
						●	●		2 ... 10 V
								●	0 ... 10 mA
							●	●	2 ... 10 mA
						●		●	0 ... 5 V
						●	●	●	1 ... 5 V

#### Filter

The filter function allows a low-pass filter to be switched on in order to mask or "smooth out" oscillating measured values (e.g., during trailing edge flows).

#### DIP Switch S1

Measuring Range Underflow		Measuring Range Overflow		Overcurrent (Input Signal - End Value + 20%)		Digital Output DO Signaling		
7	8					9	10	
		Lower limit of measuring range +5 %*	Upper limit of measuring range +2.5 %*	Upper limit of measuring range +5 %*				DO not active
●		Lower limit of measuring range	Upper limit of measuring range +2.5 %	Upper limit of measuring range +5 %		●		DO U <sub>S</sub> + switching
	●	Lower limit of measuring range	Upper limit of measuring range	Lower limit of measuring range		●	●	DO GND switching
●	●	Lower limit of measuring range	Upper limit of measuring range	Upper limit of measuring range				

#### Digital Output DO/Signaling

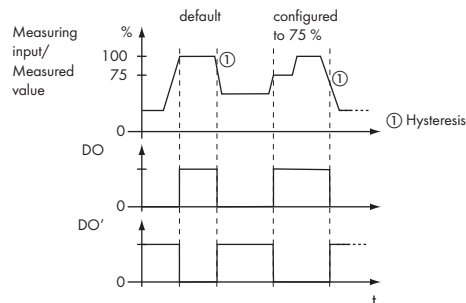
The digital output (DO) signals error messages and can be configured as follows: 24 V → 0 V/0 V → 24 V.

In order to increase the switching current of the DO, the latter may be expanded by a relay. Thanks to the contour uniformity of Series 857, for example, a 857-304 Relay can be snapped in next to it. This output can be quickly and easily expanded to a switching current of 6A by simply using an adjacent jumper (859-402).

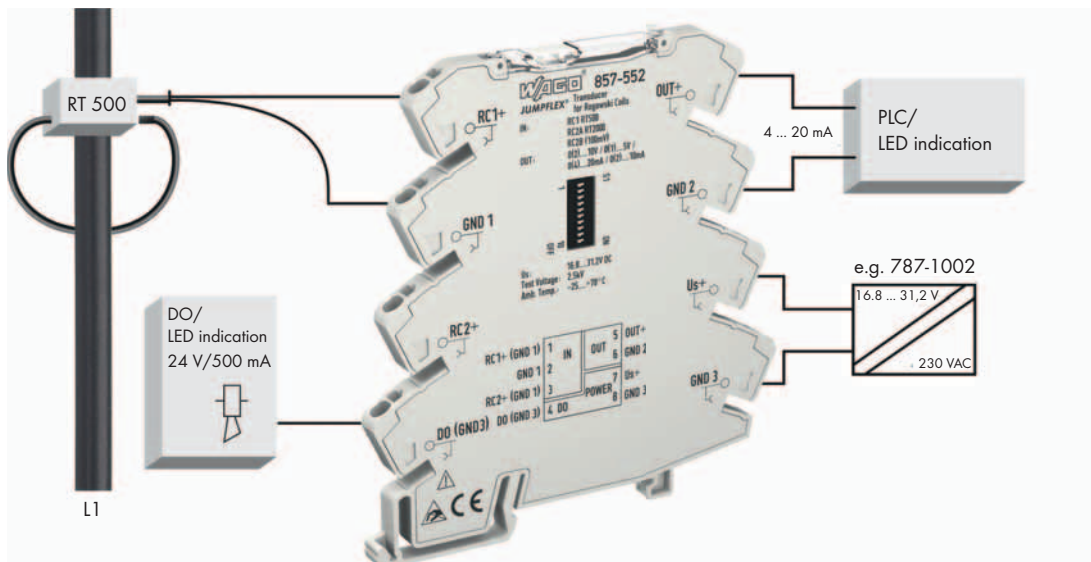
#### Default Setting

All DIP switches are in "OFF" position for delivery.	
<b>Input</b>	
Input Signal	RC1 500 A
Measuring Method	Mean square value
Filter	not active
<b>Output</b>	
Output Signal	0 ... 20 mA
Measuring Range Underflow	0 mA
Measuring Range Overflow	20.5 mA
Overcurrent	21 mA
Digital Output DO	not active

#### Switching Behavior, Digital Output (DO)

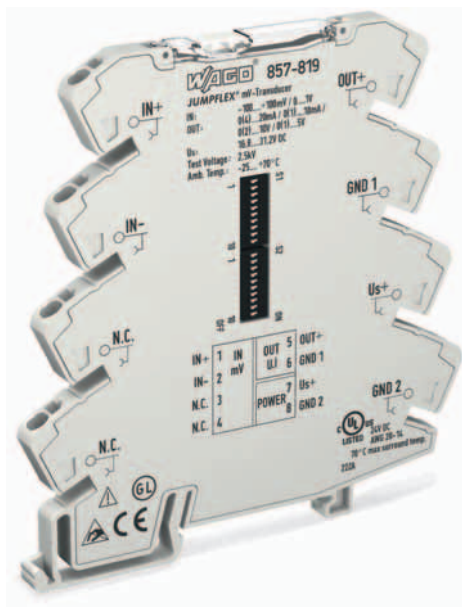


#### Application example:

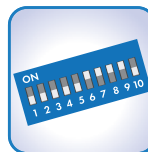


# 3 JUMPFLEX® Signal Conditioners

198 Millivolt Signal Conditioner from -100 mV ... +100 mV and 0 mV ... 1000 mV



Configuration via:



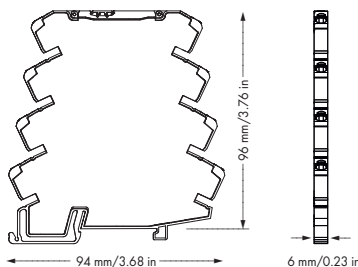
DIP switch



Interface configuration software



Interface configuration app



IN+	1	IN mV	OUT	5	OUT+
IN-	2		U,I	6	GND 1
N.C.	3	POWER		7	Us+
N.C.	4			8	GND 2

**Short description:**

The 857-819 Millivolt Signal Conditioner converts input millivolt signals into an analog standard signal on the output side.

**Characteristics:**

- PC configuration interface
- Calibrated scale switching
- Clipping capability allows analog standard signal limitation to upper range values
- Safe 3-way isolation with 2.5 kV test voltage to EN 61140

Technical Data	
<b>Configuration:</b>	
Configuration	DIP switch, interface configuration software, interface configuration app
<b>Input:</b>	
Input signal	-100 mV ... +100 mV, 0 mV ... 200 mV, 0 mV ... 1000 mV * (in 100 mV increments)
Input resistance	> 1MΩ
Max. input signal	31.2V
<b>Output:</b>	
Output signal	0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V *
Load impedance	≤ 600 Ω (I output) ≥ 2 kΩ (U output)
Step response	50ms
<b>General specifications:</b>	
Nominal supply voltage $V_s$	24V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 40 mA
Min. measuring span	10 mV (configurable)
Transmission error	≤ 0.1 % of upper range value
Temperature coefficient	≤ 0.01 %/K

Description	Item No.	Pack. Unit
<b>JUMPFLEX® Signal Conditioner, for DIN 35 rail</b>	<b>857-819</b>	<b>1</b>
Millivolt Signal Conditioner with Millivolt Input as well as Current and Voltage Output		
<b>Technical Data</b>		
<b>Environmental requirements:</b>		
Ambient operating temperature	-25 °C ... +70 °C	
Storage temperature	-40 °C ... +85 °C	
<b>Safety and protection:</b>		
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min	
<b>Connection and type of mounting:</b>		
Wire connection	CAGE CLAMP® S	
Cross sections	solid: 0.08 mm² ... 2.5 mm² / AWG 28 ... 14 fine-stranded: 0.34 mm² ... 2.5 mm² / AWG 22 ... 14	
Strip lengths	9 ... 10 mm / 0.37 in	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	6 x 96 x 94	
	Height from upper-edge of DIN 35 rail	
Weight	50 g	
<b>Standards and approvals:</b>		
Conformity marking	CE	
UL 508		
Shipbuilding		
<b>Accessories</b>	see pages 226 ... 236	
( * Additional setting options via PC configuration software or smartphone app)		

DIP Switch Adjustability

● = ON

857-819

Input Start value														Input End value																																																																																																											
DIP S1														DIP S1				DIP S2				DIP S1				DIP S2				DIP S1				DIP S2																																																																																							
1	2	3	4	5	6	7	mV	1	2	3	4	5	6	7	mV	1	2	3	4	mV	8	9	10	1	2	3	4	mV	8	9	10	1	2	3	4	mV	8	9	10	1	2	3	4	mV	8	9	10	1	2	3	4	mV	8	9	10	1	2	3	4																																																														
●							100	●							●											●								●								●								●								●								●								●								●								●								●								●								●							

DIP Switch S2

Output signal					Measuring Range Underflow		Measuring Range Overflow	
6	7	8	9	10				
			●		0 mA / 1,9 mA / 3,8 mA / 0 V / 0,95 V / 1,9 V)	Lower limit of output range - 5 % *	Upper limit of output range + 2,5 % *	(10,25 mA / 20,5 mA / 5,125 V / 10,25 V)
●					0 mA / 2 mA / 4 mA / 0 V / 1 V / 2 V)	Lower limit of output range	Upper limit of output range + 2,5 %	(10,25 mA / 20,5 mA / 5,125 V / 10,25 V)
●	●			●	0 mA / 2 mA / 4 mA / 0 V / 1 V / 2 V)	Lower limit of output range	Upper limit of output range	(10 mA / 20 mA / 5 V / 10 V)
●		●		●	0 mA / 2 mA / 4 mA / 0 V / 1 V / 2 V)	Lower limit of output range	Upper limit of output range	(10 mA / 20 mA / 5 V / 10 V)
●	●	●		●	0 mA / 2 mA / 4 mA / 0 V / 1 V / 2 V)	Lower limit of output range	Upper limit of output range	(10 mA / 20 mA / 5 V / 10 V)
●	●	●	●	●	0 mA / 2 mA / 4 mA / 0 V / 1 V / 2 V)	Lower limit of output range	Upper limit of output range	(10 mA / 20 mA / 5 V / 10 V)

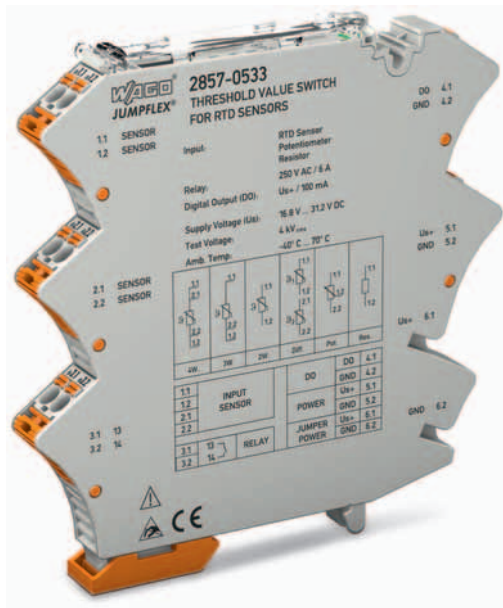
DIP Switch S2 (5) not connected

\* acc. to NAMUR NE 43

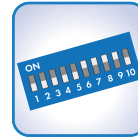
Default Settings

All DIP switches are in "OFF" position for delivery. This is the position used to parameterize the device via PC configuration software.

Input signal	0 ... 100 mV
Output signal	0 ... 20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA



## Configuration via:



DIP switch



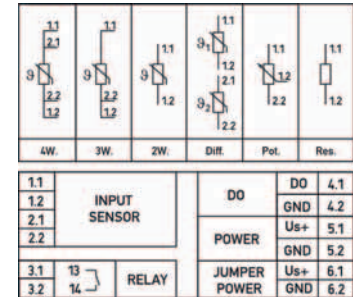
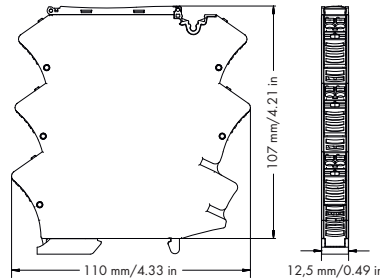
Interface configuration software



Interface configuration app



Configuration display



## Short description:

WAGO's RTD Threshold Value Switch for RTD sensors, potentiometers and resistors monitors and reports signals of up to two switching thresholds.

## Features:

- Both digital signal output and relay with make contact react to configured measuring range limits (switching ON/OFF delay and threshold value switch function configurable with up to two threshold values).
- Configurable RTD factor
- Adjustable software filter
- Input/Output response simulation via configuration display
- Safe 3-way isolation with 4 kV test voltage acc. to EN 61140

## Technical Data

## Configuration:

Configuration DIP switch, interface configuration software, interface configuration app, configuration display

## Input:

Input signal RTD sensors, potentiometers and resistors

Sensor types Pt100, Pt200, Pt500, Pt1000, Pt5000, Pt10000, Pt10 ... Pt20000 (expanded)

Sensor connection 2-, 3-, and 4-wire, Difference

Sensor supply current < 0.5 mA

Temperature range -200 °C ... +850 °C

Resistor input 0 ... 100 kΩ

## Output:

## Output - Digital:

Max. switching voltage Supply voltage applied -0.3 V

Max. continuous current  $I_{DO}$  100 mA (no internal restriction)

Number of switching thresholds 1 or 2

Configurable rise and fall delay time 0 ... 10 s (via DIP switch); 0 ... 60 s (expanded)

## Output - Relay:

Contact type 1 make contact (1 a)

Contact material AgNi (gold-plated)

Max. switching voltage 250 VAC

Max. continuous current 6 A (up to 60 °C), (terminal blocks in a row) 3 A (60 °C ... 70 °C)

Dielectric strength open contact

(AC, 1 min) 1 kV<sub>rms</sub>

Pull-in/drop-out/bounce time typ. 8 ms / 4 ms / 8 ms

Number of switching thresholds 1 or 2

Configurable rise and fall delay time 0 ... 10 s (via DIP switch); 0 ... 60 s (expanded)

## Description

## Item No.

## Pack. Unit

JUMPFLEX® Signal Conditioner, for DIN 35 rail 2857-533 1

RTD Threshold Value Switch

## Technical Data

## General specifications:

Nominal supply voltage  $V_S$  24 VDC  
 Supply voltage range 16.8 V ... 31.2 V (-30 % ... +30 %)  
 Current consumption at 24 VDC  $\leq 40$  mA +  $I_{DO}$   
 Measurement error  $\pm 1$  K  
 Temperature coefficient  $\leq 0.01$  %/K

## Environmental requirements:

Ambient operating temperature -40 °C ... +70 °C  
 Storage temperature -40 °C ... +85 °C

## Safety and protection:

Test voltage (input/output/supply) 4 kV AC, 50 Hz, 1 min.

## Connection and type of mounting:

Wire connection CAGE CLAMP® S (picoMAX® 5.0)  
 Cross sections solid/fine-stranded:

0.2 ... 2.5 mm<sup>2</sup> / AWG 24 ... 12

Strip length 9 ... 10 mm / 0.35 ... 0.39 in

## Dimensions and weight:

Dimensions (mm) W x H x L 12.5 x 107 x 110

Height from upper-edge of DIN 35 rail

Weight 86 g

## Standards and approvals:

Conformity marking CE  
 Standards/Specifications DIN EN 50178:1997 (Basic isolation);  
 DIN EN 61010-1:2010;  
 DIN EN 60664-1:2008; EN 61000-6-2;  
 EN 61000-6-4

## Accessories:

see pages 226 ... 236

## DIP Switch Adjustability

● = ON

2857-533

## DIP Switch S1

Sensor Type			Connection Technology		Hysteresis		Rise/Fall Delay Time Relay/ Digital Output (DO)			10	
1	2	3	4	5	6	T / K	7	8	9	t / s	Not assigned
						3				0	
●			●		●	5	●			1	
	●			●				●		2	
●	●		●	●			●	●		3	
		●							●	4	
●			●				●			5	
	●	●						●	●	8	
●	●	●					●	●	●	10	

## DIP Switch S2

Starting Value										End Value					
1	2	3	4	5	Temperature / °C	Resistance / Ω	Potentiometer Position	6	7	8	9	10	Temperature / °C	Resistance / Ω	Potentiometer Position
					0	OFF	OFF						100	OFF	OFF
●					OFF	10	0 %	●					OFF	10	0 %
	●				-200	15	5 %		●				-200	15	5 %
●	●				-150	22	10 %	●	●				-150	22	10 %
		●			-100	33	15 %			●			-100	33	15 %
●		●			-50	47	20 %	●		●			-50	47	20 %
	●	●			-10	68	25 %		●	●			-10	68	25 %
●	●	●			10	100	30 %	●	●	●			10	100	30 %
			●		20	120	35 %				●		20	120	35 %
●		●			30	150	40 %	●			●		30	150	40 %
	●	●			40	220	45 %		●		●		40	220	45 %
●	●		●		50	330	50 %	●	●		●		50	330	50 %
		●	●		60	470	55 %			●	●		60	470	55 %
●		●	●		70	560	60 %	●		●	●		70	560	60 %
	●	●	●		80	680	65 %		●	●	●		80	680	65 %
●	●	●	●		90	1000	70 %	●	●	●	●		90	1000	70 %
			●		100	1200	75 %					●	100	1200	75 %
●			●		150	1500	80 %	●				●	150	1500	80 %
	●		●		200	2200	85 %		●			●	200	2200	85 %
●	●		●		250	3300	90 %	●	●			●	250	3300	90 %
		●	●		300	4700	95 %			●		●	300	4700	95 %
●		●	●		350	5600	100 %	●		●		●	350	5600	100 %
	●	●	●		400	6800	OFF		●	●		●	400	6800	OFF
●	●	●	●		450	10000	OFF	●	●	●		●	450	10000	OFF
			●	●	500	12000	OFF				●	●	500	12000	OFF
●			●	●	550	15000	OFF	●			●	●	550	15000	OFF
	●		●	●	600	22000	OFF		●		●	●	600	22000	OFF
●	●		●	●	650	33000	OFF	●	●		●	●	650	33000	OFF
		●	●	●	700	47000	OFF			●	●	●	700	47000	OFF
●		●	●	●	750	56000	OFF	●		●	●	●	750	56000	OFF
	●	●	●	●	800	68000	OFF		●	●	●	●	800	68000	OFF
●	●	●	●	●	850	100000	OFF	●	●	●	●	●	850	100000	OFF

## Default Settings

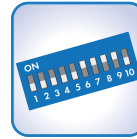
Sensor Type	Pt100
Connection Technology	2-wire
Starting Value	0 °C
End Value	100 °C
Hysteresis	3 K
Rise/Fall Delay Time Relay/Digital Output (DO)	0 s

**JUMPFLEX®** Signal Conditioners

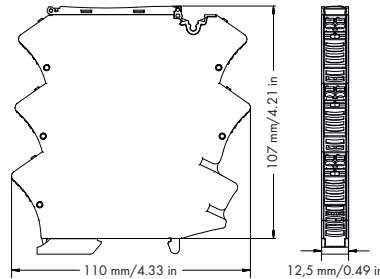
TC Threshold Value Switch



Configuration via:



DIP switch

Interface  
configuration  
softwareInterface  
configuration  
appConfiguration  
display

1.1	TC+	INPUT SENSOR	DO	DO	4.1
1.2	TC-			GND	4.2
2.1	11	RELAY	POWER	Us+	5.1
2.2	12			GND	5.2
3.1	11	RELAY	JUMPER POWER	Us+	6.1
3.2	12			GND	6.2

**Short description:**

WAGO's Thermocouple Threshold Value Switch for TC sensors monitors and reports signals of up to two switching thresholds.

**Features:**

- Both digital signal output and relay with changeover contact react to configured measuring range limits (switching ON/OFF delay and threshold value switch function configurable with up to two threshold values).
- Adjustable software filter
- Input/Output response simulation via configuration display
- Safe 3-way isolation with 4 kV test voltage acc. to EN 61140

**Technical Data****Configuration:**

Configuration	DIP switch, interface configuration software, interface configuration app, configuration display
---------------	--

**Input:**

Input signal	Thermocouples
Sensor types	Thermocouple's type J, K, E, R, N, S, T, B, S
Temperature range	Type J: -210 °C ... +1200 °C Type K: -200 °C ... +1372 °C
Cold junction compensation	On/Off (Default: On)
Cold junction error	3 K (type 2 K)

**Output:****Output – Digital:**

Max. switching voltage	Supply voltage applied -0.3 V
Max. continuous current $I_{DO}$	100 mA (no internal restriction)
Number of switching thresholds	1 or 2
Configurable rise and fall delay time	0 ... 10 s (via DIP switch); 0 ... 60 s (expanded)

**Output – Relay:**

Contact type	1 changeover contact (1 u)
Contact material	AgNi (gold-plated)
Max. switching voltage	250 VAC
Max. continuous current (terminal blocks in a row)	6 A (up to 60 °C), 3 A (60 °C ... 70 °C)
Dielectric strength open contact (AC, 1 min)	1 kV <sub>ms</sub>
Pull-in/drop-out/bounce time typ.	8 ms / 4 ms / 8 ms
Number of switching thresholds	1 or 2
Configurable rise and fall delay time	0 ... 10 s (via DIP switch); 0 ... 60 s (expanded)

**Description**

Item No.

Pack.  
Unit

<b>JUMPFLEX®</b> Signal Conditioner, for DIN 35 rail TC Threshold Value Switch	<b>2857-534</b>	1
---	-----------------	---

**Technical Data****General specifications:**

Nominal supply voltage $V_S$	24 VDC
Supply voltage range	16.8 V ... 31.2 V (-30 % ... +30 %)
Current consumption at 24 VDC	$\leq 40 \text{ mA} + I_{DO}$
Measurement error	$\pm 1 \text{ K}$
Temperature coefficient	$\leq 0.01 \text{ \%}/\text{K}$

**Environmental requirements:**

Ambient operating temperature	-40 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C

**Safety and protection:**

Test voltage (input/output/supply)	4 kV AC, 50 Hz, 1 min.
------------------------------------	------------------------

**Connection and type of mounting:**

Wire connection	CAGE CLAMP® S (picoMAX® 5.0)
Cross sections	solid/fine-stranded: 0.2 ... 2.5 mm <sup>2</sup> / AWG 24 ... 12
Strip length	9 ... 10 mm / 0.35 ... 0.39 in

**Dimensions and weight:**

Dimensions (mm) W x H x L	12.5 x 107 x 110
Weight	Height from upper-edge of DIN 35 rail 87 g

**Standards and approvals:**

Conformity marking	CE
Standards/Specifications	DIN EN 50178:1997 (Basic isolation); DIN EN 61010-1:2010; DIN EN 60664-1:2008; EN 61000-6-2; EN 61000-6-4

**Accessories:**

see pages 226 ... 236

### DIP Switch Adjustability

● = ON

2857-534

#### DIP Switch S1

Sensor Type Thermocouple				Cold Junction Compensation	Hysteresis	Rise/Fall Delay Time Relay/ Digital Output (DO)							
1	2	3	4	Type	5	6	T / K	7	8	9	t / s	10	Not assigned
				J	ON		3				0		
●				K	OFF	●	5	●			1		
	●			E					●		2		
●	●			R				●	●		3		
			●	N						●	4		
●		●		S				●		●	5		
	●	●		T					●	●	8		
●	●	●		B				●	●	●	10		
			●	C									

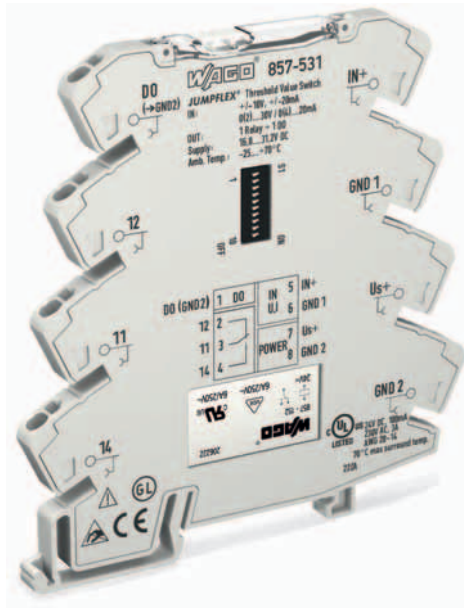
#### DIP Switch S2

Lower Value					Upper Value						
1	2	3	4	5	6	7	8	9	10		
Temperature / °C					Temperature / °C						
										0	100
●						●				OFF	OFF
	●						●			-200	-200
●	●					●	●			-150	-150
			●					●		-100	-100
●		●				●		●		-50	-50
	●	●					●	●		50	50
●	●	●				●	●	●		100	100
			●						●	150	150
●			●			●			●	200	200
	●		●				●		●	250	250
●	●		●			●	●		●	300	300
		●	●					●	●	350	350
●		●	●			●		●	●	400	400
	●	●	●				●	●	●	450	450
●	●	●	●			●	●	●	●	500	500
				●						550	550
●			●			●			●	600	600
	●		●				●		●	650	650
●	●		●			●	●		●	700	700
		●	●					●	●	750	750
●		●	●			●		●	●	800	800
	●	●	●				●	●	●	850	850
●	●	●	●			●	●	●	●	900	900
			●	●					●	950	950
●			●	●		●			●	1000	1000
	●		●	●			●		●	1050	1050
●	●		●	●		●	●		●	1100	1100
		●	●	●				●	●	1150	1150
●		●	●	●		●		●	●	1200	1200
	●	●	●	●			●	●	●	1300	1300
●	●	●	●	●		●	●	●	●	1400	1400

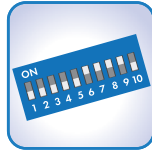
#### Default Settings

Cold Junction Compensation	ON
Sensor Type	Thermocouple of type J
Lower Value	0 °C
Upper Value	100 °C
Hysteresis	3 K
Rise/Fall Delay Time Relay/Digital Output (DO)	0 s





## Configuration via:



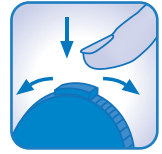
DIP switch



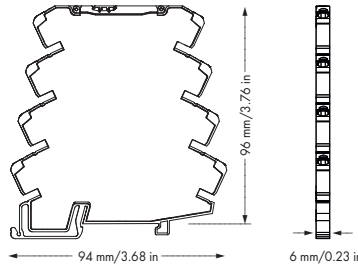
Interface configuration software



Interface configuration app



Push/Slide Switch



## Short description:

The threshold value switch for analog signals monitors analog standard signals and reports signals exceeding a preset threshold.

## Characteristics:

- PC configuration interface
- Digital switching output
- Changeover contact relay output
- Calibrated scale switching
- Threshold value configuration via DIP switches and teach-in function via push/slide switch
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

## Technical Data

## Configuration:

Configuration	DIP switch, push/slide switch, interface configuration software, interface configuration app
---------------	--

## Input:

Input signal	-10...+10V, -20...+20mA, 0...+30V *
Input resistance	≤ 200 Ω (I input) > 100 kΩ (U input)
Max. input signal	(31.2 V (U <sub>IN</sub> ), 100 mA (I <sub>IN</sub> ))

## Output:

## Output - Relay

Contact type	1 changeover contact
Max. switching voltage	250 V AC
Max. continuous current (terminal blocks in a row)	max. 6 A (to 60 °C), 2 A (60 to 70 °C)
Max. Switching power (resistive)	1250 VA AC
Anzahl der Schaltschwellen	1 or 2 (adjustable) *
Configurable rise and fall delay time	0 ... 10 s (via DIP switch), 0 ... 30 s *

## Output - Digital

Max. switching voltage	Supply voltage applied
Max. continuous current	500 mA (to 60 °C) 100 mA (60 to 70 °C)

## General specifications:

Response time	≤ 16ms
Nominal supply voltage V <sub>s</sub>	24V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 25 mA
Transmission error	≤ 0.1 % of upper range value
Temperature coefficient	≤ 0.01 %/K

## Description

**JUMPFLEX® Signal Conditioner, for DIN 35 rail**  
Threshold Value Switch with Analog Input,  
Changeover Relay Output and Digital Output

Item No.

857-531

Pack. Unit

1

## Technical Data

## Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C

## Safety and protection:

Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min
------------------------------------	-------------------------

## Connection and type of mounting:

Wire connection	CAGE CLAMP® S
Cross sections	solid: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14 fine-stranded: 0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 14
Strip lengths	9 ... 10 mm / 0.37 in

## Dimensions and weight:

Dimensions (mm) W x H x L	6 x 96 x 94
Weight	Height from upper-edge of DIN 35 rail 49 g

## Standards and approvals:

Conformity marking	CE
UL 508	
Shipbuilding	
Accessories	see pages 226 ... 236

(\* Additional setting options via PC configuration software or smartphone app)



### DIP Switch Adjustability

● = ON

857-531

DIP Switch S1

Input signal limits ± 0.25 V; ± 0.5 mA				Hysteresis	
1	2	3	4	5	
					±10 V
●				●	0 ... 10 V
	●				2 ... 10 V
●	●				0 ... 5 V
			●		1 ... 5 V
●		●			± 5 V
	●	●			0 ... 15 V
●	●	●			0 ... 30 V
●					± 20 mA
●	●				0 ... 20 mA
●		●			4 ... 20 mA
●	●				0 ... 10 mA
●			●		2 ... 10 mA
●	●		●		± 10 mA

DIP Switch S1

Configurable rise/fall delay time in sec.			Digital output DO Signaling	
6	7	8	9	10
				DO not active
●				● GND → U <sub>N</sub> (switching)
	●		●	● U <sub>N</sub> → GND (switching)
●	●			
		●		
●		●		
	●	●		
●	●	●		

#### Default Settings

All DIP switches are in „OFF“ position for delivery.

#### Input

Input range ± 10 V

Hysteresis 5 mV

#### Output

Configurable rise/fall delay time 0 s

Digital output DO not active

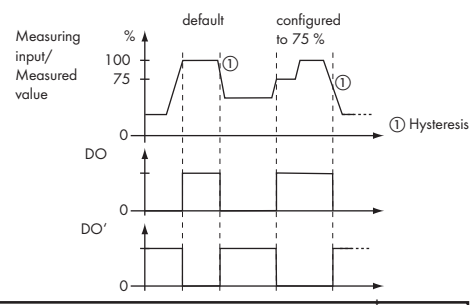
#### Push/Slide Switch Operation



#### Digital Output DO/Signaling

The digital output (DO) signals error messages and can be configured as follows: 24 V → 0 V/0 V → 24 V.

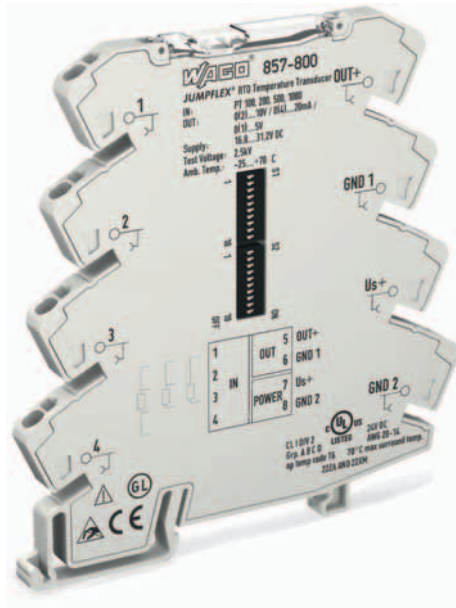
#### Switching Behavior, Digital Output (DO)



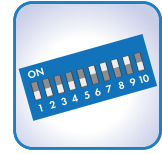
Switching Behavior	Configuration							
	Number of Switching Thresholds	Values for Switching T thresholds	Switching Threshold 1, Relay	Switching Threshold 2, Relay	Press for 1 sec. Yellow LED flashes	Red LED flashes briefly	No flashing LED	
1 	1	S1	„On“	-				
2 	1	S1	„Off“	-				
3 	2	S1 < S2	„On“	„Off“				
4 	2	S1 < S2	„Off“	„On“				
5 	2	S1 > S2	„On“	„Off“				
6 	2	S1 > S2	„Off“	„On“				
Leave param. mode without storing a value	-	-	-	-				

# JUMPFLEX® Signal Conditioners

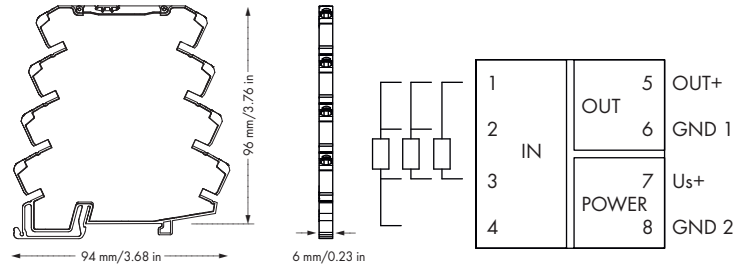
Temperature Signal Conditioner for Pt 00, Pt200, Pt500 and Pt1000 as well as Resistors 0 ... 1 kΩ; 0 ... 4.5 kΩ



Configuration via:



DIP switch



### Short description:

The 857-800 Temperature Signal Conditioner records Pt100, Pt200, Pt500 and Pt1000 sensors, as well as resistors up to 4.5 kΩ, converting the temperature signal into a standard analog signal on the output side.

### Characteristics:

- For Pt100, Pt200, Pt500 and Pt1000 sensors, as well as resistors up to 4.5 kΩ
- 2-, 3-, and 4-wire connection technology
- Calibrated scale switching
- Sensor's wire break/short circuit
- Measuring range underflow/overflow
- Clipping capability allows analog standard signal limitation to upper range values
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

### Technical Data

#### Configuration:

Configuration DIP switch

#### Input:

Input signal PT sensors and resistors  
 Sensor types Pt100, Pt200, Pt500, Pt1000  
 Sensor connection 2-wire, 3-wire, 4-wire (switchable)  
 Temperature range -200 °C ... +850 °C  
 Sensorspeisestrom < 0.5 mA  
 Resistor input 0 ... 1 kΩ , 0 ... 4.5 kΩ

#### Output:

Output signal 0 ... 20 mA, 4 ... 20 mA,  
 0 ... 10 V, 2 ... 10 V,  
 0 ... 5 V, 1 ... 5 V,  
 0 ... 10 mA, 2 ... 10 mA  
 Load impedance ≤ 600 Ω (Out = mA)  
 ≥ 2 kΩ (Out = V)  
 Step response 180 ms (360 ms at 3-wire)

#### General specifications:

Nominal supply voltage  $V_s$  24V DC  
 Supply voltage range 16.8 V ... 31.2 V  
 Current consumption at 24 V DC < 40 mA  
 Min. measuring span 50 K (50 Ω)  
 Transmission error ≤ 0.1 % at max. measuring span  
 Transmission error of set measuring span ((10 K / set measuring span [K]) + 0.1) %  
 Temperature coefficient ≤ 0.02 % /K

### Description

**JUMPFLEX® Signal Conditioner, for DIN 35 857-800**  
 Temperature Signal Conditioner for Pt 100, Pt 200, Pt 500 and  
 Pt 1000 as well as Resistors 0 ... 1 kΩ; 0 ... 4.5 kΩ

Item No.

857-800

Pack.  
Unit

1

### Technical Data

#### Environmental requirements:

Ambient operating temperature -25 °C ... +70 °C  
 Storage temperature -40 °C ... +85 °C

#### Safety and protection:

Test voltage (input/output/supply) 2.5 kV AC, 50 Hz, 1 min

#### Connection and type of mounting:

Wire connection CAGE CLAMP® S  
 Cross sections solid:  
 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 28 ... 14  
 fine-stranded:  
 0.34 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 22 ... 14  
 Strip lengths 9 ... 10 mm / 0.37 in

#### Dimensions and weight:

Dimensions (mm) W x H x L 6 x 96 x 94  
 Height from upper-edge of DIN 35 rail  
 Weight 42 g

#### Standards and approvals:

Conformity marking CE  
 UL 508  
 ANSI/ISA 12.12.01 Class I, Div. 2, Grp. ABCD, T4  
 Shipbuilding

#### Accessories

see pages 226 ... 236

## DIP Switch Adjustability

● = ON

857-800

## DIP Switch S1

Wire connection		Sensor type			Output signal					Measuring range underflow	Measuring range overflow	Wire break	Short circuit
1	2	3	4	5	6	7	8	9	10				
	2-wire			Pt100			0 ... 20 mA			Lower limit of output range - 5 % *	Upper limit of output range + 2,5 % *	Upper limit of output range + 5 % *	Lower limit of output range - 12,5 % *
●	3-wire	●		Pt200	●		4 ... 20 mA						
	4-wire		●	Pt500		●	0 ... 10 mA			Lower limit of output range	Upper limit of output range + 2,5 %	Upper limit of output range + 5 %	Lower limit of output range
		●	●	Pt1000	●	●	2 ... 10 mA	●					
			●	1 kΩ		●	0 ... 10 V			Lower limit of output range	Upper limit of output range	Upper limit of output range + 5 %	Upper limit of output range + 5 %
		●	●	4.5 kΩ	●	●	2 ... 10 V	●					
						●	0 ... 5 V			Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range
					●	●	1 ... 5 V	●	●				

\* acc. to NAMUR NE 43

## DIP Switch S2

Start temperature				End temperature																																
1	2	3	4	°C	°F	5	6	7	8	9	10	°C	°F	5	6	7	8	9	10	°C	°F	5	6	7	8	9	10	°C	°F							
														●	75	167					●	210	410					●	475	887						
●				-200	-328	●						0	32	●						●	80	176	●				●	220	428	●			●	500	932	
	●			-175	-283		●					5	41		●					●	85	185		●			●	230	446		●		●	525	997	
●	●			-150	-238	●	●					10	50	●	●					●	90	194	●	●			●	240	464	●	●		●	550	1022	
		●		-125	-193			●				15	59			●				●	95	203			●		●	250	482			●	575	1067		
●		●		-100	-148	●		●				20	68	●		●				●	100	212	●		●		●	260	500	●		●	●	600	1112	
	●	●		-90	-130		●	●				25	77		●	●				●	110	230		●	●		●	270	518		●	●	●	625	1157	
●	●	●		-80	-112	●	●	●				30	86	●	●	●				●	120	248	●	●	●		●	280	536	●	●	●	●	650	1202	
		●		-70	-94			●				35	95			●	●			●	130	266			●		●	290	554			●	●	675	1247	
●		●		-60	-76	●		●				40	104	●		●	●			●	140	284	●		●		●	300	572	●		●	●	700	1292	
	●	●		-50	-58		●	●				45	113		●	●	●			●	150	302		●	●		●	325	617		●	●	●	725	1337	
●	●	●		-40	-40	●	●	●				50	122	●	●	●	●			●	160	320	●	●	●		●	350	662	●	●	●	●	750	1382	
		●		-30	-22			●	●			55	131			●	●	●		●	170	338			●		●	375	707			●	●	775	1427	
●		●		-20	-4	●		●	●			60	140	●		●	●			●	180	356	●		●	●	●	400	752	●		●	●	●	800	1472
	●	●		-10	14		●	●	●			65	149		●	●	●			●	190	374		●	●	●	●	425	797		●	●	●	●	825	1517
●	●	●		0	32	●	●	●	●			70	158	●	●	●	●			●	200	392	●	●	●	●	●	450	842	●	●	●	●	●	850	1562

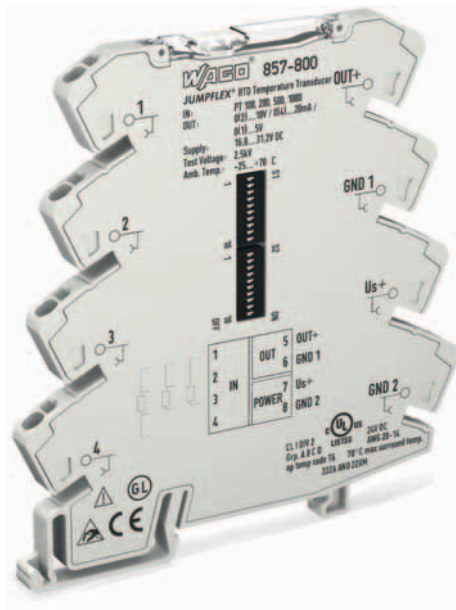
The minimum distance from the start temperature to the end temperature may not fall short of 50K degrees on the Celsius (C) scale or 122K degrees on the Fahrenheit (F) scale.

## Default Settings

All DIP switches are in „OFF“ position for delivery.	
Sensor connection	2-wire
Sensor type	Pt 100
Start temperature	0 °C
End temperature	100 °C
Output signal	0 ... 20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA
Wire break	21 mA
Short circuit	0 mA

# JUMPFLEX® Signal Conditioners

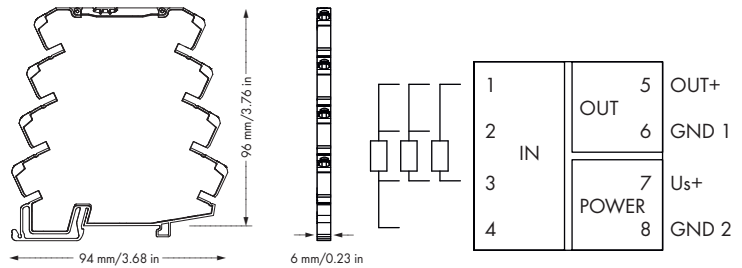
Temperature Signal Conditioner for Pt100, Pt200, Pt500 and Pt1000 \* as well as Resistors 0 ... 1 kΩ; 0 ... 4.5 kΩ



Configuration via:



DIP switch



**Short description:**

The 857-801 Temperature Signal Conditioner records Pt100, Pt200, Pt500 and Pt1000 sensors, as well as resistors up to 4.5 kΩ, converting the temperature signal into a standard analog signal on the output side..

**Characteristics:**

- PC configuration interface
- For Pt100, Pt200, Pt500 and Pt1000 sensors, as well as resistors up to 4.5 kΩ
- 2-, 3-, and 4-wire connection technology
- Calibrated scale switching
- Sensor's wire break/short circuit
- Measuring range underflow/overflow
- Clipping capability allows analog standard signal limitation to upper range values.
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

Technical Data	
<b>Configuration:</b>	
Configuration	DIP switch, interface configuration software, interface configuration app
<b>Input:</b>	
Input signal	PT sensors and resistors *
Sensor types	Pt100, Pt200, Pt500, Pt1000 *
Sensor connection	2-wire, 3-wire, 4-wire (switchable) *
Temperature range	-200 °C ... +850 °C
Sensorspeisestrom	< 0.5 mA
Resistor input	0 ... 1 kΩ , 0 ... 4.5 kΩ *
<b>Output:</b>	
Output signal	0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V, 2 ... 10 V, 0... 5 V, 1 ... 5 V, 0 ... 10 mA, 2 ... 10 mA *
Load impedance	≤ 600 Ω (Out = mA) ≥ 2 kΩ (Out = V)
Step response	180 ms (360 ms at 3-wire)
<b>General specifications:</b>	
Nominal supply voltage $V_s$	24V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	< 40 mA
Min. measuring span	50 K (50 Ω)
Transmission error	≤ 0.1 % at max. measuring span
Transmission error of set measuring span	((10 K / set measuring span [K]) + 0.1) %
Temperature coefficient	≤ 0.02 % /K

Description	Item No.	Pack. Unit
<b>JUMPFLEX® Signal Conditioner, for DIN 35</b>	<b>857-801</b>	<b>1</b>
Temperature Signal Conditioner for Pt 100, Pt 200, Pt 500 and Pt 1000 as well as Resistors *		
<b>Technical Data</b>		
<b>Environmental requirements:</b>		
Ambient operating temperature	-25 °C ... +70 °C	
Storage temperature	-40 °C ... +85 °C	
<b>Safety and protection:</b>		
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min	
<b>Connection and type of mounting:</b>		
Wire connection	CAGE CLAMP® S	
Cross sections	solid: 0.08 mm² ... 2.5 mm² / AWG 28 ... 14 fine-stranded: 0.34 mm² ... 2.5 mm² / AWG 22 ... 14	
Strip lengths	9 ... 10 mm / 0.37 in	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	6 x 96 x 94	
Weight	Height from upper-edge of DIN 35 rail 49.2 g	
<b>Standards and approvals:</b>		
Conformity marking	CE	
UL 508		
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4	
Shipbuilding		
<b>Accessories</b>	see pages 226 ... 236	
(* Additional setting options as well as output signal inversion via PC configuration software or smartphone app)		

## DIP Switch Adjustability

● = ON

857-801

### DIP Switch S1

Wire connection		Sensor type			Output signal					Measuring range underflow	Measuring range overflow	Wire break	Short circuit	
1	2	3	4	5	6	7	8	9	10					
●	2-wire			Pt100				0 ... 20 mA			Lower limit of output range - 5 % *	Upper limit of output range + 2,5 % *	Upper limit of output range + 5 % *	Lower limit of output range - 12,5 % *
●	3-wire	●		Pt200	●			4 ... 20 mA						
●	4-wire		●	Pt500		●		0 ... 10 mA	●		Lower limit of output range	Upper limit of output range + 2,5 %	Upper limit of output range + 5 %	Lower limit of output range
		●	●	Pt1000	●	●		2 ... 10 mA						
			●	1 kΩ			●	0 ... 10 V		●	Lower limit of output range	Upper limit of output range	Upper limit of output range + 5 %	Upper limit of output range + 5 %
			●	4.5 kΩ	●		●	2 ... 10 V						
						●	●	0 ... 5 V	●	●	Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range
						●	●	1 ... 5 V						

\* acc. to NAMUR NE 43

### DIP Switch S2

Start temperature				End temperature																											
1	2	3	4	°C	°F	5	6	7	8	9	10	°C	°F	5	6	7	8	9	10	°C	°F	5	6	7	8	9	10	°C	°F		
														●	75	167					●	210	410					●	●	475	887
●				-200	-328	●						0	32	●						●	80	176	●				●	●	500	932	
	●			-175	-283		●					5	41		●					●	85	185		●			●	●	525	997	
●	●			-150	-238	●	●					10	50	●	●					●	90	194	●	●			●	●	550	1022	
		●		-125	-193			●				15	59			●				●	95	203			●		●	●	575	1067	
●		●		-100	-148	●		●				20	68	●		●				●	100	212	●		●		●	●	600	1112	
	●	●		-90	-130		●	●				25	77		●	●				●	110	230		●	●		●	●	625	1157	
●	●	●		-80	-112	●	●	●				30	86	●	●	●				●	120	248	●	●	●		●	●	650	1202	
			●	-70	-94				●			35	95			●	●			●	130	266			●		●	●	675	1247	
●			●	-60	-76	●			●			40	104	●		●	●			●	140	284	●		●		●	●	700	1292	
	●		●	-50	-58		●		●			45	113		●	●	●			●	150	302		●	●		●	●	725	1337	
●	●		●	-40	-40	●	●					50	122	●	●	●	●			●	160	320	●	●	●		●	●	750	1382	
		●	●	-30	-22			●	●			55	131			●	●	●			●	170	338			●	●	●	775	1427	
●		●	●	-20	-4	●		●	●			60	140	●		●	●	●			●	180	356	●		●	●	●	800	1472	
	●	●	●	-10	14		●	●	●			65	149		●	●	●	●			●	190	374		●	●	●	●	825	1517	
●	●	●	●	0	32	●	●	●	●			70	158	●	●	●	●	●			●	200	392	●	●	●	●	●	850	1562	

The minimum distance from the start temperature to the end temperature may not fall short of 50K degrees on the Celsius (C) scale or 122K degrees on the Fahrenheit (F) scale.

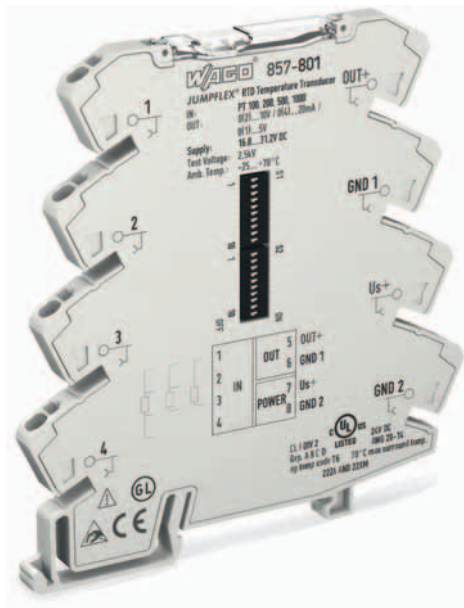
### Default Settings

All DIP switches are in „OFF“ position for delivery.  
This is the position used to parameterize the device via PC configuration software.

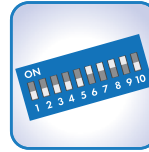
Sensor connection	2-wire
Sensor type	Pt 100
Start temperature	0 °C
End temperature	100 °C
Output signal	0 ... 20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA
Wire break	21 mA
Short circuit	0 mA

# JUMPFLEX® Signal Conditioners

Temperature Signal Conditioner for Thermocouples of Types J and K



Configuration via:



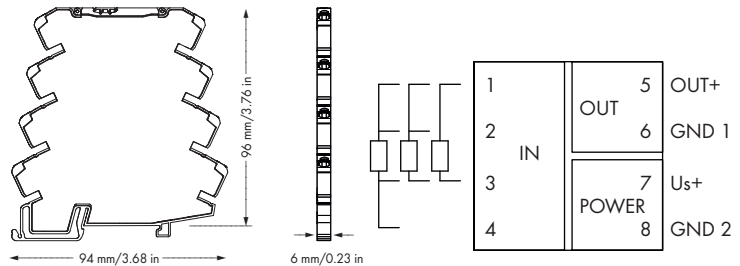
DIP switch



Interface configuration software



Interface configuration app



### Short description:

The 857-810 Thermocouple Temperature Signal Conditioner is suitable for the connection of type J and K thermocouples. On the output side, the thermocouple temperature signal conditioner converts the temperature signal into an analog standard signal.

### Characteristics:

- For thermocouples of type J and K
- Cold junction compensation (on/off)
- Calibrated scale switching
- Sensor's wire break
- Measuring range underflow/overflow
- Clipping capability allows analog standard signal limitation to upper range values
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

### Technical Data

#### Configuration:

Configuration DIP switch

#### Input:

Input signal Thermocouples  
 Sensor types Thermocouples of types J and K  
 Temperature range Type J: -150 °C ... +1200 °C  
 Type K: -150 °C ... +1350 °C

#### Output:

Output signal 0 ... 20 mA, 4 ... 20 mA,  
 0 ... 10 V, 2 ... 10 V,  
 0 ... 5 V, 1 ... 5 V,  
 0 ... 10 mA, 2 ... 10 mA  
 Load impedance  $\leq 600 \Omega$  (Out = mA)  
 $\geq 2 \text{ k}\Omega$  (Out = V)  
 Cold junction compensation on / off (default: on)  
 Cold junction error 3 K (typ. 2 K)  
 Step response 60 ms without cold junction compensation/  
 120 ms with cold junction compensation

#### General specifications:

Nominal supply voltage  $V_s$  24V DC  
 Supply voltage range 16.8 V ... 31.2 V  
 Current consumption at 24 V DC  $\leq 40 \text{ mA}$   
 Min. measuring span 100 K (configurable)  
 Transmission error  $\leq 0.1 \%$  at max. measuring span (Typ J, K)  
 Transmission error of set measuring span  
 (150 K / set measuring span [K]) %  
 Temperature coefficient  $\leq 0.04 \%$  /K

### Description

**JUMPFLEX® Signal Conditioner, for DIN 35 857-810**  
 Temperature Signal Conditioner for Thermocouples of Types J and K

Item No.

Pack. Unit

1

### Technical Data

#### Environmental requirements:

Ambient operating temperature -25 °C ... +70 °C  
 Storage temperature -40 °C ... +85 °C

#### Safety and protection:

Test voltage (input/output/supply) 2.5 kV AC, 50 Hz, 1 min

#### Connection and type of mounting:

Wire connection CAGE CLAMP® S  
 Cross sections solid:  
 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 24 ... 14  
 fine-stranded:  
 0.34 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 22 ... 14  
 Strip lengths 9 ... 10 mm / 0.37 in

#### Dimensions and weight:

Dimensions (mm) W x H x L 6 x 96 x 94  
 Height from upper-edge of DIN 35 rail  
 Weight 44.7 g

#### Standards and approvals:

Conformity marking CE  
 UL 508  
 ANSI/ISA 12.12.01 Class I, Div. 2, Grp. ABCD, T4  
 Shipbuilding

#### Accessories

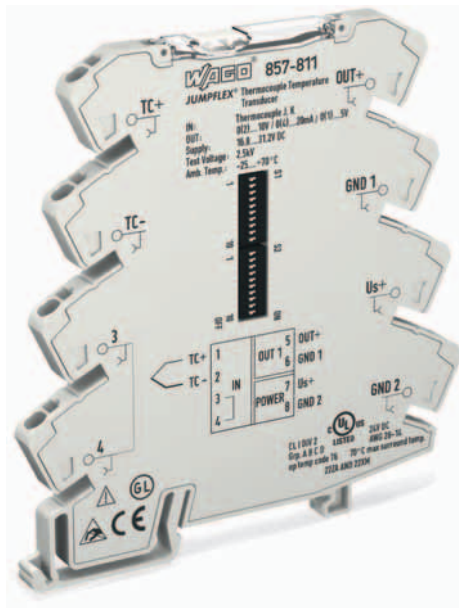
see pages 226 ... 236



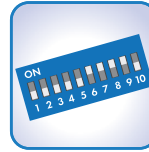


**JUMPFLEX® Signal Conditioners**

Temperature Signal Conditioner for Thermocouples of Types J and K \*



Configuration via:



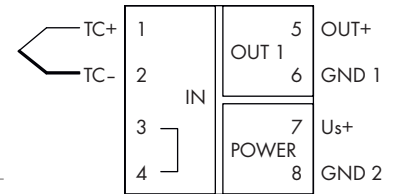
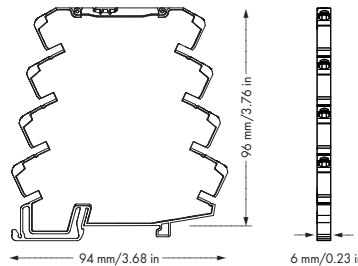
DIP switch



Interface configuration software



Interface configuration app

**Short description:**

The 857-811 Thermocouple Temperature Signal Conditioner is suitable for the connection of type J and K thermocouples. On the output side, the thermocouple temperature signal conditioner converts the temperature signal into an analog standard signal.

**Characteristics:**

- PC configuration interface
- For thermocouples of type J and K (E, R, N, S, T, B, C)
- Cold junction compensation (on/off)
- Calibrated scale switching
- Sensor's wire break
- Measuring range underflow/overflow
- Clipping capability allows analog standard signal limitation to upper range values
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

**Technical Data****Configuration:**

Configuration DIP switch, interface configuration software, interface configuration app

**Input:**

Input signal Thermocouples  
 Sensor types Thermocouples of types J and K \*  
 Temperature range Type J: -150 °C ... +1200 °C  
 Type K: -150 °C ... +1350 °C

**Output:**

Output signal 0 ... 10 mA, 2 ... 10 mA,  
 0 ... 20 mA, 4 ... 20 mA,  
 0... 5 V, 1 ... 5 V,  
 0 ... 10 V, 2 ... 10 V \*  
 Load impedance  $\leq 600 \Omega$  (Out = mA)  
 $\geq 2 k\Omega$  (Out = V)  
 Cold junction compensation on / off (default: on) \*  
 Cold junction error 3 K (typ. 2 K)  
 Step response 60 ms without cold junction compensation/  
 120 ms with cold junction compensation

**General specifications:**

Nominal supply voltage  $V_s$  24V DC  
 Supply voltage range 16.8 V ... 31.2 V  
 Current consumption at 24 V DC  $\leq 40$  mA  
 Min. measuring span 100 K (configurable)  
 Transmission error  $\leq 0.1$  % at max. measuring span (Typ J, K)  
 Transmission error of set measuring span  
 (150 K / set measuring span [K]) %  
 Temperature coefficient  $\leq 0.04$  % /K

**Description**

**JUMPFLEX® Signal Conditioner, for DIN 35 857-811**  
 Temperature Signal Conditioner for Thermocouples of Types J and K \*

**Item No.****Pack. Unit****Technical Data****Environmental requirements:**

Ambient operating temperature -25 °C ... +70 °C  
 Storage temperature -40 °C ... +85 °C

**Safety and protection:**

Test voltage (input/output/supply) 2.5 kV AC, 50 Hz, 1 min

**Connection and type of mounting:**

Wire connection CAGE CLAMP® S  
 Cross sections solid:  
 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 28 ... 14  
 fine-stranded:  
 0.34 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 22 ... 14  
 Strip lengths 9 ... 10 mm / 0.37 in

**Dimensions and weight:**

Dimensions (mm) W x H x L 6 x 96 x 94  
 Height from upper-edge of DIN 35 rail  
 Weight 49.2 g

**Standards and approvals:**

Conformity marking **CE**  
 UL 508  
 ANSI/ISA 12.12.01 Class I, Div. 2, Grp. ABCD, T4  
 Shipbuilding **Ⓢ**

**Accessories**

see pages 226 ... 236

(\* Additional setting options as well as output signal inversion via PC configuration software or smartphone app)



## DIP Switch Adjustability

● = ON

857-811

## DIP Switch S1

1	Cold junction compensation	Sensor type			Output signal				7	8	Measuring range underflow	Measuring range overflow	Wire break
		2	3	4	5	6	7	8					
●	on			J				0 ... 20 mA			Lower limit of output range - 5 % *	Upper limit of output range + 2,5 % *	Upper limit of output range + 5 % *
	off	●		K	●			4 ... 20 mA			Lower limit of output range	Upper limit of output range + 2,5 %	Upper limit of output range + 5 %
						●		0 ... 10 mA	●		Lower limit of output range	Upper limit of output range + 2,5 %	Upper limit of output range + 5 %
						●	●	2 ... 10 mA			Lower limit of output range	Upper limit of output range	Upper limit of output range + 5 %
							●	0 ... 10 V		●	Lower limit of output range	Upper limit of output range	Upper limit of output range + 5 %
							●	2 ... 10 V		●	Lower limit of output range	Upper limit of output range	Upper limit of output range + 5 %
							●	0 ... 5 V	●	●	Lower limit of output range	Upper limit of output range	Lower limit of output range
						●	●	1 ... 5 V	●	●	Lower limit of output range	Upper limit of output range	Lower limit of output range

DIP 9 and 10 n.c.

\* acc. to NAMUR NE 43

## DIP Switch S2

Start temperature						End temperature																																	
1	2	3	4	°C	°F	5	6	7	8	9	10	°C	°F	5	6	7	8	9	10	°C	°F	5	6	7	8	9	10	°C	°F	5	6	7	8	9	10	°C	°F		
														●						●	225	437							●	625	1157					●	●	1025	1877
●				-200	-328	●						0	32	●						●	250	482	●					●	650	1202	●				●	●	1050	1922	
	●			-175	-283		●					10	50		●						275	527		●				●	675	1247		●			●	●	1075	1967	
●	●			-150	-283	●	●					20	68	●	●					●	300	572	●	●				●	700	1292	●	●			●	●	1100	2012	
		●		-125	-193			●				30	86			●				●	325	617			●			●	725	1337			●		●	●	1125	2057	
●		●		-100	-148	●		●				40	104	●		●				●	350	662	●		●			●	750	1382	●		●		●	●	1150	2102	
	●	●		-90	-130		●	●				50	122		●	●				●	375	707		●	●			●	775	1427		●	●		●	●	1175	2147	
●	●	●		-80	-112	●	●	●				60	140	●	●	●				●	400	752	●	●	●			●	800	1472	●	●	●		●	●	1200	2192	
			●	-70	-94				●			70	158				●	●		●	425	797				●		●	825	1517			●	●	●	●	1225	2237	
●			●	-60	-76	●		●				80	176	●		●	●			●	450	842	●		●	●		●	850	1562	●		●	●	●	●	1250	2282	
	●	●	●	-50	-58		●	●	●			90	194		●	●	●			●	475	887		●	●	●		●	875	1607			●	●	●	●	1275	2327	
●	●	●	●	-40	-40		●	●	●			100	212	●	●	●	●			●	500	932	●	●	●	●		●	900	1652	●	●	●	●	●	●	1300	2372	
		●	●	-30	-22			●	●			125	257			●	●	●		●	525	977			●	●		●	925	1697			●	●	●	●	1325	2417	
●		●	●	-20	-4	●		●	●			150	302	●		●	●	●		●	550	1022	●		●	●		●	950	1742	●		●	●	●	●	1350	2462	
	●	●	●	-10	14			●	●			175	347		●	●	●	●		●	575	1067		●	●	●		●	975	1787			●	●	●	●	1375	2507	
●	●	●	●	0	32	●	●	●	●			200	392	●	●	●	●	●		●	600	1112	●	●	●	●		●	1000	1832	●	●	●	●	●	●	1400	2552	

The minimum distance from the start temperature to the end temperature may not fall short of 100K degrees on the Celsius (C) scale or 212K degrees on the Fahrenheit (F) scale.

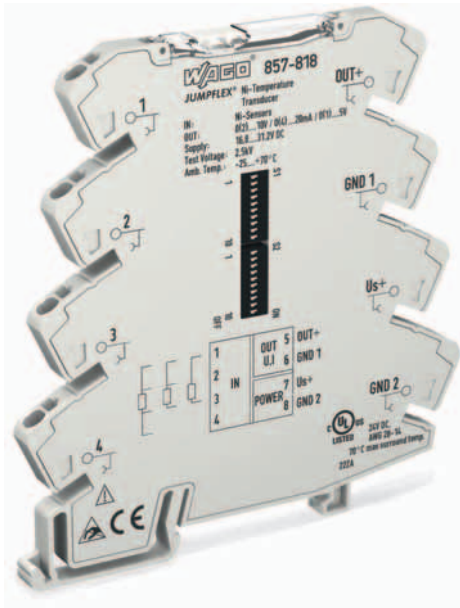
## Default Settings

All DIP switches are in „OFF“ position for delivery.  
This is the position used to parameterize the device via PC configuration software.

Cold junction compensation	on
Thermocouple	Type J
Start temperature	0 °C
End temperature	1000 °C
Output signal	0 ... 20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA
Wire break	21 mA

**3** JUMPFLEX® Signal Conditioners

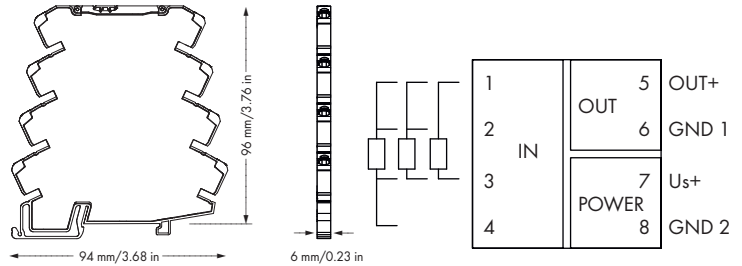
214 Ni Signal Conditioner for Ni 100, Ni 120, Ni 200, Ni 500, Ni 1000



Configuration via:



DIP switch



**Short description:**

The 857-818 Ni Signal Conditioner (Ni = nickel) records signals from Ni sensors featuring all standard characteristics. On the output side, the NI temperature signal conditioner converts the temperature signal into a standard analog signal.

**Characteristics:**

- For Ni100, Ni120, Ni200, Ni500 and Ni1000 sensors
- Calibrated scale switching
- Clipping capability allows analog standard signal limitation to upper range values
- Safe 3-way isolation with 2.5 kV test voltage to EN 61140

Technical Data	
<b>Configuration:</b>	
Configuration	DIP switch
<b>Input:</b>	
Input signal	Ni sensors
Max. input signal	± 31.2 V DC
Sensor types	Ni 100, Ni 120, Ni 200, Ni 500, Ni 1000
Sensor connection	2-wire, 3-wire, 4-wire (switchable)
<b>Output:</b>	
Output signal	0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA, 0... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V
Load impedance	≤ 600 Ω (I output) ≥ 2 kΩ (U output)
Step response	< 60 ms at 2- and 4-conductor measurement < 120 ms at 3-conductor measurement
<b>General specifications:</b>	
Nominal supply voltage $V_s$	24V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 40 mA
Transmission error	≤ 0.1 % of upper range value

Description	Item No.	Pack. Unit
<b>JUMPFLEX® Signal Conditioner, for DIN 35</b>	<b>857-818</b>	<b>1</b>
Ni Signal Conditioner for Ni100, Ni120, Ni200, Ni500, Ni1000 with Temperature Coefficients: 6178 ppm/K (DIN 43760) 5000 ppm/K; 6720 ppm/K; 6370 ppm/K		
<b>Technical Data</b>		
<b>Environmental requirements:</b>		
Ambient operating temperature	-25 °C ... +70 °C	
Storage temperature	-40 °C ... +85 °C	
<b>Safety and protection:</b>		
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.	
<b>Connection and type of mounting:</b>		
Wire connection	CAGE CLAMP® S	
Cross sections	solid: 0.08 mm² ... 2.5 mm² / AWG 28 ... 14 fine-stranded: 0.34 mm² ... 2.5 mm² / AWG 22 ... 14	
Strip lengths	9 ... 10 mm / 0.37 in	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	6 x 96 x 94	
Weight	Height from upper-edge of DIN 35 rail 50 g	
<b>Standards and approvals:</b>		
Conformity marking	CE	
UL 508		
Shipbuilding		
<b>Accessories</b>	see pages 226 ... 236	

## DIP Switch Adjustability

● = ON

857-818

## DIP Switch S1

Connection Technology		Temperature Coefficient			Sensor Type		
1	2	3	4	5	6	7	
	2-conductor			6178 ppm/K			Ni 100
●	3-conductor	●		5000 ppm/K	●		Ni 120
	4-conductor		●	6720 ppm/K		●	Ni 200
		●	●	Reserve	●	●	Ni 500
						●	Ni 1000

## DIP Switch S1

Start Temperature				End Temperature																		
8	9	10	°C	1	2	3	4	5	T / °C	1	2	3	4	5	T / °C	1	2	3	4	5	T / °C	
●			-60	●					0	●	●			●	100	●			●		●	200
	●		-50		●				10			●		●	110		●	●			●	210
●	●		-40	●	●				20	●		●		●	120	●	●	●			●	220
		●	-30			●			30		●	●		●	130					●	●	230
●		●	-20	●		●			40	●	●	●		●	140	●				●	●	240
	●	●	-10		●	●			50					●	150		●			●	●	250
●	●	●	0	●	●	●			60	●				●	160	●	●			●	●	260
							●		70		●			●	170			●	●	●	●	270
				●			●		80	●	●			●	180	●		●	●	●	●	280
					●		●		90			●		●	190		●	●	●	●	●	290
																●	●	●	●	●	●	300

## DIP Switch S2

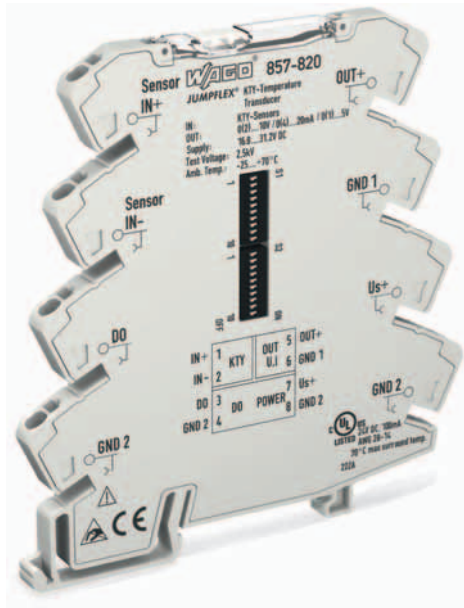
Output Signal					Measuring Range Underflow	Measuring Range Overflow	Wire Break	Short Circuit
6	7	8	9	10				
		0 ... 20 mA			Lower limit of output range -5 % **2	Upper limit of output range +2.5 %*2	Upper limit of output range 5 %*2	Lower limit of output range -12.5 % **2
●		4 ... 20 mA						
	●	0 ... 10 mA	●		Lower limit of output range	Upper limit of output range +2.5 %	Upper limit of output range 5 %	Lower limit of output range
●	●	2 ... 10 mA						
		0 ... 10 V		●	Lower limit of output range	Upper limit of output range	Upper limit of output range 5 %	Upper limit of output range 5 %
●	●	2 ... 10 V						
	●	0 ... 5 V	●	●	Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range
●	●	1 ... 5 V						

\* but not when lower limit of output range = 0V or 0mA

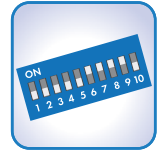
\*\*2 acc. to NAMUR NE 43

## Default Setting

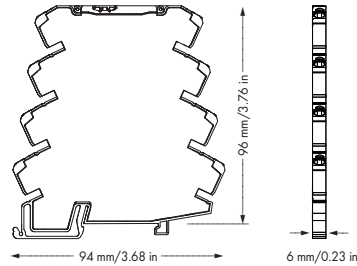
All DIP switches are in "OFF" position for delivery.	
Sensor connection	2-conductor
Sensor type	NI 100
Temperature coefficient	6178 ppm/K
Start temperature	0 °C
End temperature	100 °C
Output signal	0 ... 20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA
Wire break	21 mA
Short circuit	0 mA



Configuration via:



DIP switch



IN+	1	KTY	OUT	5	OUT+
IN-	2		U <sub>i</sub> I	6	GND 1
DO	3	DO	POWER	7	Us+
GND 2	4			8	GND 2

**Short description:**

The 857-820 KTY Signal Conditioner records signals from KTY sensors featuring all standard characteristics. On the output side, the KTY temperature signal conditioner converts the temperature signal into a standard analog signal.

**Characteristics:**

- Supports all standard KTY sensors
- Calibrated scale switching
- Clipping capability allows analog standard signal limitation to upper range values
- Safe 3-way isolation with 2.5 kV test voltage to EN 61140

**Technical Data****Configuration:**

Configuration DIP switch

**Input:**

Input signal KTY sensors  
 Max. input signal  $\pm 30$  V DC  
 Sensor types KTY81-110, KTY81-120, KTY81-150  
 KTY82-110, KTY82-120, KTY82-150,  
 KTY81-121, KTY82-121, KTY81-122,  
 KTY82-122, KTY81-210, KTY81-220,  
 KTY82-210, KTY82-220, KTY81-221,  
 KTY82-221, KTY81-222, KTY82-222,  
 KTY81-250, KTY82-250, KTY83-110,  
 KTY83-120, KTY83-150, KTY83-121,  
 KTY83-122, KTY83-151, KTY84-130,  
 KTY84-150, KTY84-151, KTY16, KTY19,  
 ST13, ST20

Sensor connection 2-conductor

**Output:**

Output signal 0 ... 10 mA, 2 ... 10 mA,  
 0 ... 20 mA, 4 ... 20 mA,  
 0... 5 V, 1 ... 5 V,  
 0 ... 10 V, 2 ... 10 V  
 Load impedance  $\leq 600 \Omega$  (I output)  
 $\geq 2 \text{ k}\Omega$  (U output)  
 Step response < 50 ms

**Output - Digital**

Max. switching voltage Supply voltage applied  
 Max. continuous current 500 mA (up to 60 °C)  
 100 mA (60 °C ... 70 °C)

**Description**

**JUMPFLEX® Signal Conditioner, for DIN 35** 857-820  
 KTY Signal Conditioner

Item No.

Pack. Unit

**Technical Data****General specifications:**

Nominal supply voltage  $V_s$  24V DC  
 Supply voltage range 16.8 V ... 31.2 V  
 Current consumption at 24 V DC  $\leq 40$  mA  
 Transmission error  $\leq 0.1$  % of upper range value

**Environmental requirements:**

Ambient operating temperature -25 °C ... +70 °C  
 Storage temperature -40 °C ... +85 °C

**Safety and protection:**

Test voltage (input/output/supply) 2.5 kV AC, 50 Hz, 1 min.

**Connection and type of mounting:**

Wire connection CAGE CLAMP® S  
 Cross sections solid:  
 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 28 ... 14  
 fine-stranded:  
 0.34 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 22 ... 14  
 Strip lengths 9 ... 10 mm / 0.37 in

**Dimensions and weight:**

Dimensions (mm) W x H x L 6 x 96 x 94  
 Height from upper-edge of DIN 35 rail  
 Weight 50 g

**Standards and approvals:**

Conformity marking CE  
 Ⓢ- UL 508  
 Shipbuilding Ⓢ

**Accessories**

see pages 226 ... 236

### DIP Switch Adjustability

● = ON

857-820

#### DIP Switch S1

Sensor Type			
1	2	3	4
●			
	●		
●	●		
		●	
●		●	
	●	●	
●	●	●	
			●
●			●
	●		●
●	●		●
		●	●
●		●	●
	●	●	●
●	●	●	●

#### DIP Switch S2

Start Temperature				End Temperature																		
1	2	3	°C	4	5	6	7	8	°C	4	5	6	7	8	°C	4	5	6	7	8	°C	
●			-55	●					0	●	●		●		100	●		●		●		200
	●		-50		●				10			●	●		110		●	●		●		210
●	●		-40	●	●				20	●		●	●		120	●	●	●		●		220
		●	-30			●			30		●	●	●		130					●	●	230
●		●	-20	●		●			40	●	●	●	●		140	●				●	●	240
	●	●	-10		●	●			50					●	150		●			●	●	250
●	●	●	0	●	●	●			60	●				●	160	●	●			●	●	260
							●		70		●			●	170				●	●	●	270
●				●		●			80	●	●			●	180	●				●	●	280
	●				●	●			90			●	●	●	190		●	●	●	●	●	290
																●	●	●	●	●	●	300

#### DIP Switch S1

Output Signal			9	10	Measuring Range Underflow	Measuring Range Overflow	Wire Break	Short Circuit
6	7	8						
		0 ... 20 mA			Lower limit of output range -5 % **2	Upper limit of output range +2.5 %*2	Upper limit of output range 5 %*2	Lower limit of output range -12.5 % **2
●		4 ... 20 mA						
	●	0 ... 10 mA	●		Lower limit of output range	Upper limit of output range +2.5 %	Upper limit of output range 5 %	Lower limit of output range
●	●	2 ... 10 mA						
		0 ... 10 V		●	Lower limit of output range	Upper limit of output range	Upper limit of output range 5 %	Upper limit of output range 5 %
●	●	2 ... 10 V						
	●	0 ... 5 V		●	Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range
●	●	1 ... 5 V		●				

\* but not when lower limit of output range = 0V or 0mA

\*\*2 acc. to NAMUR NE 43

#### Default Setting

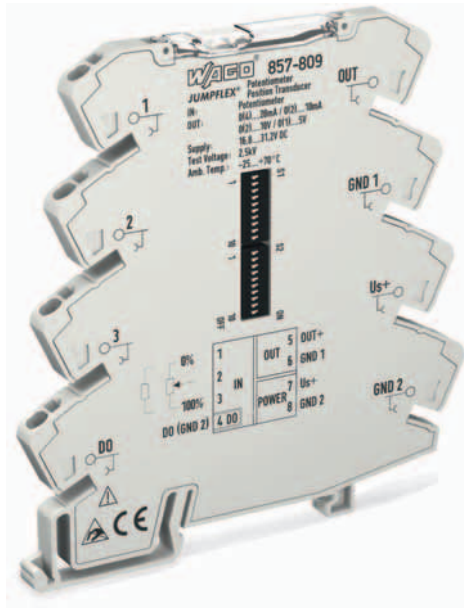
All DIP switches are in „OFF“ position for delivery.	
Sensor type	KTY81-110, KTY81-120, KTY82-110, KTY82-120
Start temperature	0 °C
End temperature	100 °C
Output signal	0 ... 20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA
Wire break	21 mA
Short circuit	0 mA
Digital output	not active

#### DIP Switch S2

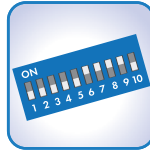
9	10	Digital Output DO Signaling
		DO not active
	●	DO U <sub>s</sub> + switching
●	●	DO GND switching

# 3 JUMPFLEX® Signal Conditioners

## Potentiometer Position Signal Conditioner



Configuration via:



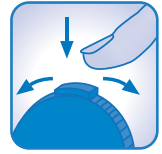
DIP switch



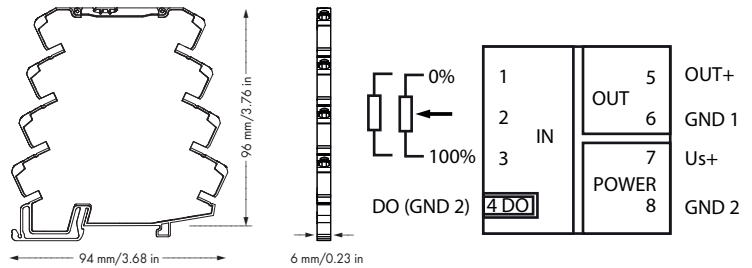
Interface configuration software



Interface configuration app



Push/Slide Switch



### Short description:

The 857-809 Potentiometer Position Signal Conditioner records resistance signals (e.g., from potentiometers), converting them into an analog standard signal. The device is supplied with 24VDC (nominal voltage). It is set via DIP switches or push and slide switch.

### Features:

- PC configuration interface
- Calibrated measurement range switching
- Automatic potentiometer identification
- Safe 3-way isolation with 2.5 kV test voltage to EN 61140

### Technical Data

#### Configuration:

Configuration	DIP switch, push/slide switch, interface configuration software, interface
---------------	--

#### Input:

Input signal	Potentiometers and resistors *
--------------	--------------------------------

#### Input range

Potentiometer	100 Ω ... 100 kΩ *
Resistors	10 Ω - 100 kΩ *
Max. potentiometer supply voltage	2.5V
Min. measuring range	100 Ω

#### Output:

Output signal	<b>Voltage:</b> 0 - 10 V, 2 - 10 V, 0 - 5 V, 1 - 5 V *
---------------	---

#### Current:

	0 - 20 mA, 4 - 20 mA, 0 - 10 mA, 2 - 10 mA *
--	---

Load impedance	≤ 600 Ω (I output) ≥ 2 kΩ (U output)
----------------	---

Step response	< 32 ms
---------------	---------

#### Output - Digital

Max. switching voltage	Supply voltage applied
Max. continuous current	100 mA

#### General specifications:

Nominal supply voltage $V_s$	24V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 40 mA
Transmission error	≤ 0.1 % of upper range value
Temperature coefficient	≤ 0.01 %/K

### Description

**JUMPFLEX® Signal Conditioner, for DIN 35 rail**  
Potentiometer Position Signal Conditioner

Item No.

**857-809**

Pack. Unit

1

### Technical Data

#### Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C

#### Safety and protection:

Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
------------------------------------	--------------------------

#### Connection and type of mounting:

Wire connection	CAGE CLAMP® S
Cross sections	solid: 0.08 mm <sup>2</sup> - 2.5 mm <sup>2</sup> / AWG 28 - 14 fine-stranded: 0.34 mm <sup>2</sup> - 2.5 mm <sup>2</sup> / AWG 22 - 14
Strip lengths	9 - 10 mm / 0.37 in

#### Dimensions and weight:

Dimensions (mm) W x H x L	6 x 96 x 94
Weight	Height from upper-edge of DIN 35 rail 49.2 g

#### Standards and approvals:

UL 508

Shipbuilding

#### Accessories

see pages 226 ... 236

(\* Additional setting options via PC configuration software or smartphone app)

### DIP Switch Adjustability

● = ON

857-809

#### DIP Switch S1 and S2

Input	
DIP S1	
1	
	Potentiometer
●	Resistor

Start Value						Resistor Ω
DIP S1						
2	3	4	5	6		
					0*	
●					0	
	●				10	
●	●				11	
		●			12	
●		●			13	
	●	●			15	
●	●	●			16	
			●		18	
●			●		20	
	●		●		22	
●	●		●		24	
		●	●		27	
●		●	●		30	
	●	●	●		33	
●	●	●	●		36	
				●	39	
●				●	43	
	●			●	47	
●	●			●	51	
		●		●	56	
●		●		●	62	
	●	●		●	68	
●	●	●		●	75	
			●	●	82	
●			●	●	91	
	●		●	●	40	
●	●		●	●	50	
		●	●	●	60	
●		●	●	●	70	
	●	●	●	●	80	
●	●	●	●	●	90	

End Value						Resistor Ω
DIP S1				DIP S2		
7	8	9	10	1		
					100000*	
●					0	
	●				10	
●	●				11	
		●			12	
●		●			13	
	●	●			15	
●	●	●			16	
			●		18	
●			●		20	
	●		●		22	
●	●		●		24	
		●	●		27	
●		●	●		30	
	●	●	●		33	
●	●	●	●		36	
				●	39	
●				●	43	
	●			●	47	
●	●			●	51	
		●		●	56	
●		●		●	62	
	●	●		●	68	
●	●	●		●	75	
			●	●	82	
●			●	●	91	
	●		●	●	40	
●	●		●	●	50	
		●	●	●	60	
●		●	●	●	70	
	●	●	●	●	80	
●	●	●	●	●	90	

\*Default setting

#### DIP Switch S2

Factor of Initial Value			Factor of End Value			Output		Output Signal Range	
2	3		4	5		6		7	8
		x1*				x1*	Current*		
●		x10	●			x10	Voltage	●	
	●	x100		●		x100			●
●	●	x1000	●	●		x1000		●	●

\*Default setting

9	10	Measuring Range Underflow	Measuring Range Overflow	Wire Break
		Upper limit of output range <sup>1</sup> +2.5 %	Lower limit of output range <sup>1</sup> -5 %	Upper limit of output range <sup>1</sup> +5 %
●		Upper limit of output range +2.5 %	Lower limit of output range	Upper limit of output range +5 %
	●	Upper limit of output range	Lower limit of output range	Upper limit of output range +5 %
●	●	Upper limit of output range	Lower limit of output range	Lower limit of output range

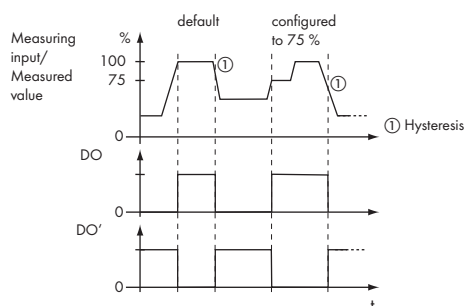
<sup>1</sup>acc. to NAMUR NE 45

#### Digital Output DO/Signaling

The digital output (DO) signals error messages and can be configured as follows: 24 V → 0 V/0 V → 24 V.

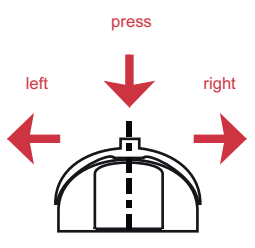
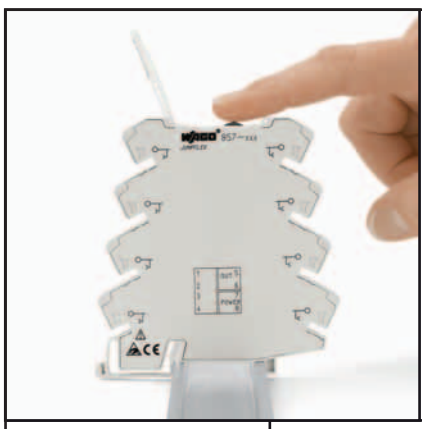
In order to increase the switching current of the DO, the latter may be expanded by a relay. Thanks to the contour uniformity of Series 857, for example, a 857-304 Relay can be snapped in next to it. This output can be quickly and easily expanded to a switching current of 6A by simply using an adjacent jumper (859-402).

#### Switching Behavior, Digital Output (DO)



Push/Slide Switch Operation:

857-809



Operating push/slide switch:

The following switching thresholds (SP1 and SP2) are set via push/slide switch. The switch is located under the front-side transparent cover and can be operated manually.

- Press PSS down until the yellow LED is flashing
- Set potentiometer to the minimum value
- Briefly push PSS to the left
- Red LED flashes briefly
- Set potentiometer to the maximum value
- Briefly push PSS to the right
- Red LED flashes briefly
- Briefly press PSS downward
- The yellow LED stops flashing

PSS = Push/slide switch

**Transmission function**

**Configuration instructions**

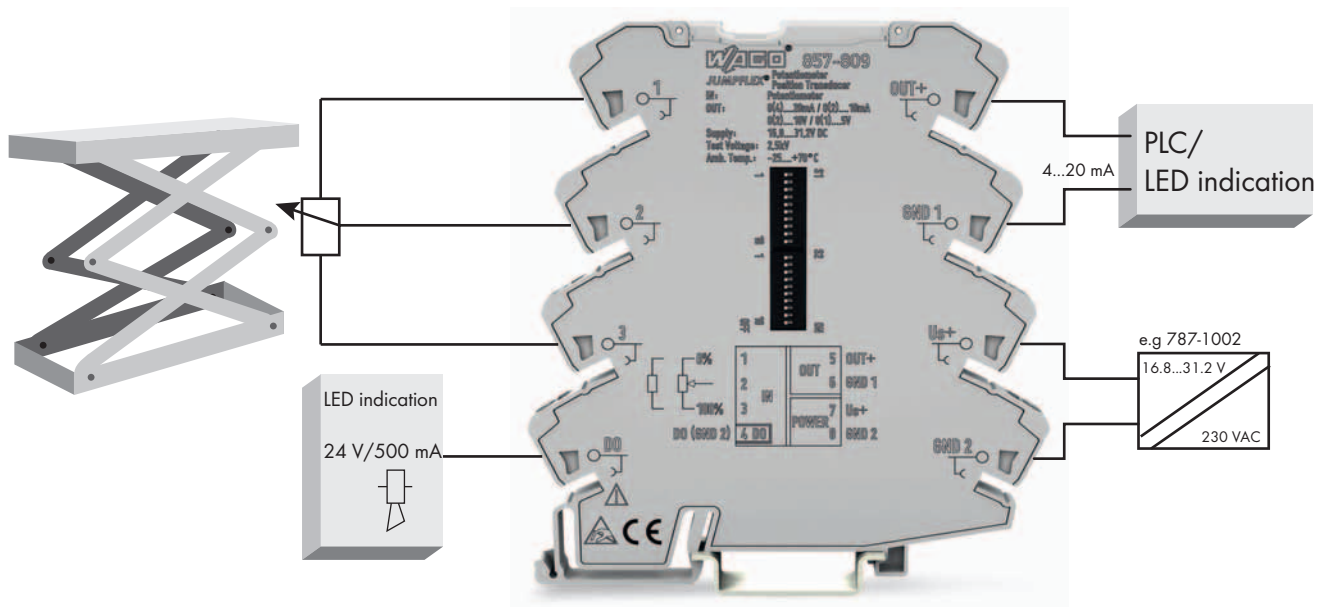
**Delete set switching points**

**Exit parameterization mode without saving value.**

SP = Switching points

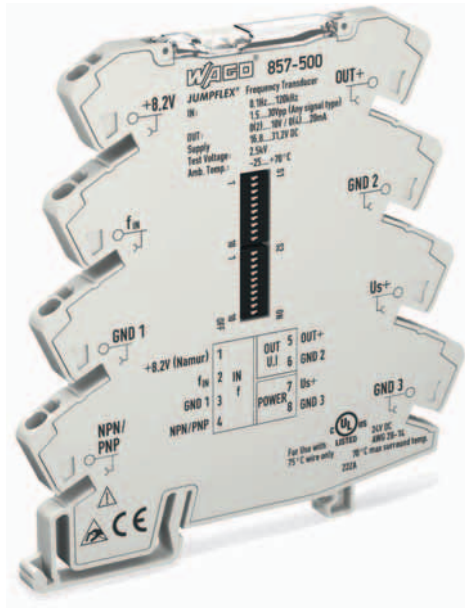


Application example:

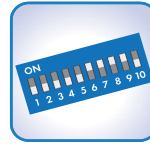


# 3 JUMPFLEX® Signal Conditioners

222 Frequency Signal Conditioner 0.1 Hz ... 120 kHz



Configuration via:



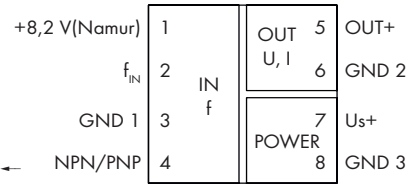
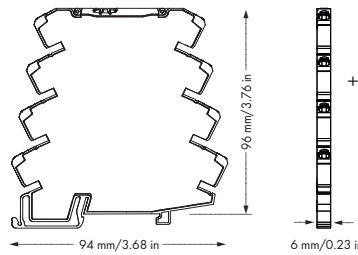
DIP switch



Interface configuration software



Interface configuration app



**Short description:**

The 857-500 Frequency Signal Conditioner collects 0.1 – 120kHz signals from NAMUR, NPN or PNP sensors and converts them into analog standard signals.

**Characteristics:**

- PC configuration interface
- Signal acquisition from NAMUR, NPN or PNP sensors
- Calibrated scale switching
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

Technical Data	
<b>Configuration:</b>	
Configuration	DIP switch, interface configuration software, interface configuration app
<b>Input:</b>	
Sensor types	-Frequency generators -NAMUR sensors -NPN/PNP transistor outputs without pull-up or pull-down resistor -mech. contact (dry contact)

Description	Item No.	Pack. Unit
<b>JUMPFLEX® Signal Conditioner, for DIN 35 rail</b>	<b>857-500</b>	<b>1</b>
Frequency Signal Conditioner		
<b>Technical Data</b>		
<b>Input for frequency generators or NPN/PNP transistor outputs with pull-up or pull-down resistor</b>		
Frequency range	0.1 Hz ... 120 kHz	
Signal level	1.5 V, 10 V, 20 V (switchable)	
Max. input signal	± DC 31.2 V	
Pulse length	≥ 1 μs	
Signal form	Any	
Coupling	AC/DC (AC above 10 Hz) (adjustable)	
Min. measuring span	10 Hz	
Input resistance	10 kΩ	
<b>Input for NAMUR sensors per DIN EN 50227</b>		
Sensor supply	DC 8.2 V	
Signal current (0)	≤ 1.2 mA	
Signal current (1)	≥ 2.1 mA	
Hysteresis	0.45 mA	
Input resistance	< 600 Ω	
Frequency range	0.1 Hz ... 1 kHz	
Pulse length	≥ 500 μs	
Min. measuring span	100 Hz	
Short-circuit current	≤ 14 mA	
Short-circuit monitoring	> 4.7 mA	
Wire break monitoring	< 0.2 mA	
<b>Input for NPN/PNP transistor outputs without pull-up or pull-down resistor or mech. contact (dry contact)</b>		
Frequency range	0.1 Hz ... 20 kHz	
Pulse length	≥ 25 μs	
Min. measuring span	10 Hz	
Open-circuit voltage	5VDC	
NPN_Residual voltage	< 1.5 V	
PNP Switching voltage	> 7.5 V + residual voltage $U_{CE sat}$	

Technical Data		General Specifications	
<b>Output:</b>		<b>Environmental requirements:</b>	
Output signal	<b>Voltage:</b> 0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V	Ambient operating temperature	-25 °C ... +70 °C
	<b>Current:</b> 0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA	Storage temperature	-40 °C ... +85 °C
Load impedance	≤ 600 Ω (I output) ≥ 2 kΩ (U output)	<b>Safety and protection:</b>	
Conversion time	Gate time measurement method (> 400 Hz): < 20 ms	Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
	Pulse time measurement method (< 400 Hz): < 200 μs + T <sub>Cycle duration</sub>	<b>Connection and type of mounting:</b>	
<b>General specifications:</b>		Wire connection	CAGE CLAMP® S
Nominal supply voltage V <sub>s</sub>	24V DC	Cross sections	solid: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Supply voltage range	16.8 V ... 31.2 V		fine-stranded: 0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 14
Current consumption at 24 V DC	≤ 40 mA	Strip lengths	9 ... 10 mm / 0.37 in
Transmission error	≤ 0.1 % of upper range value	<b>Dimensions and weight:</b>	
Temperature coefficient	≤ 0.01 % /K	Dimensions (mm) W x H x L	6 x 96 x 94
			Height from upper-edge of DIN 35 rail
		Weight	38.7 g
		<b>Standards and approvals:</b>	
		Conformity marking	CE
		UL 508	
		Shipbuilding	Ⓢ
		<b>Accessories</b>	see pages 226 ... 236
		<b>Refer to following pages for DIP Switch Table and Pin Assignments.</b>	

DIP Switch Adjustability

● = ON

857-500

DIP Switch S1

Source Input		Coupling	Operation with disturbed frequency signals for acceptable signal level (applies only to $f_{IN}$ input)	
1	2	3	4	5
			High	Low
	Frequency generator or NPN/PNP transistor outputs with pull-up or pull-down resistor	AC/DC	> 1.5 V	< 0.4 V
●	NAMUR	● AC (without DC), see Figure 1	> 10 V	< 8 V
	NPN/PNP transistor outputs without pull-up or pull-down resistor input Dry Contact		● > 20 V	< 16 V
			● ● > 1.5 V	< 0.4 V

DIP Switch S1

DIP Switch S2

Input Start Value					Frequency/Hz	Input End Value					Frequency/Hz
6	7	8	9	10		1	2	3	4	5	
●					0.1	●					0.1
	●				1		●				1
●	●				100	●	●				100
		●			200			●			200
●		●			300	●		●			300
	●	●			400		●	●			400
●	●	●			500	●	●	●			500
			●		600				●		600
●			●		700	●			●		700
	●		●		800		●		●		800
●	●		●		900	●	●		●		900
		●	●		1000			●	●		1000
●	●	●	●		2000	●		●	●		2000
	●	●	●		3000		●	●	●		3000
●	●	●	●		4000	●	●	●	●		4000
			●	●	5000				●	●	5000
●			●	●	6000	●			●	●	6000
	●		●	●	7000		●		●	●	7000
●	●		●	●	8000	●	●		●	●	8000
		●	●	●	9000			●	●	●	9000
●	●	●	●	●	10000	●		●	●	●	10000
	●	●	●	●	20000		●	●	●	●	20000
●	●	●	●	●	30000	●	●	●	●	●	30000
		●	●	●	40000				●	●	40000
●		●	●	●	50000	●			●	●	50000
	●	●	●	●	60000		●		●	●	60000
●	●	●	●	●	70000	●	●		●	●	70000
		●	●	●	80000			●	●	●	80000
●	●	●	●	●	90000	●		●	●	●	90000
	●	●	●	●	100000		●	●	●	●	100000
●	●	●	●	●	120000	●	●	●	●	●	120000

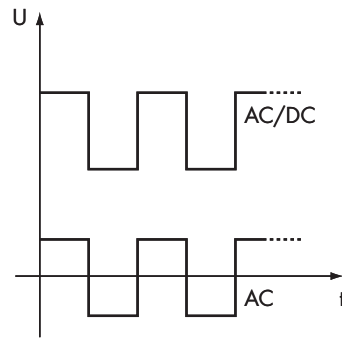


Figure 1: Coupling

Default Setting

Input:	
Input source	Frequency generator/transistor output with pull-up or pull-down resistor
Coupling	AC/DC
Signal level	> 1.5 V
Start value	100 Hz
End value	1000 Hz
Measuring technique	Gate time measurement method
Output:	
Output signal	Current
Start value	0 mA
End value	20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA

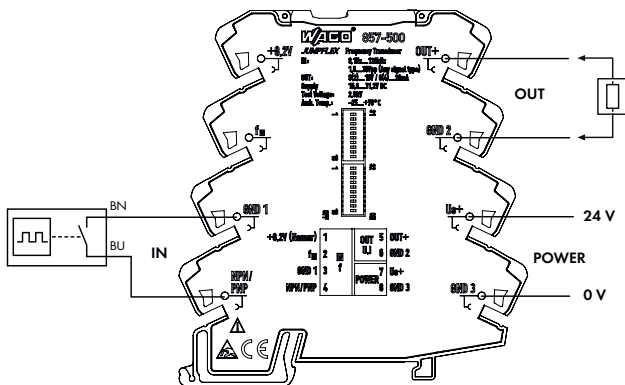
DIP Switch S2

Output Signal					Measuring Range Underflow	Measuring Range Overflow	Only for NAMUR Sensors	
6	7	8	9	10			Wire Break	Short Circuit
		0 ... 20 mA			Lower limit of output range* -5 %	Upper limit of output range* +2.5 %	Upper limit of output range* 5 %	Lower limit of output range* -12.5 %
	●	4 ... 20 mA			Lower limit of output range	Upper limit of output range +2.5 %	Upper limit of output range 5 %	Lower limit of output range
		0 ... 10 mA		●	Lower limit of output range	Upper limit of output range	Upper limit of output range 5 %	Upper limit of output range 5 %
	●	2 ... 10 mA			Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range
●		0 ... 10 V			Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range
●	●	2 ... 10 V		●	Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range
●		0 ... 5 V		●	Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range
●	●	1 ... 5 V		●	Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range

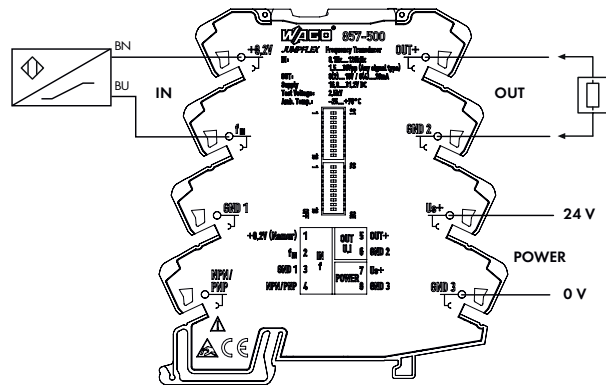
\*acc. to NAMUR NE 43

# 857-500, Wiring Material

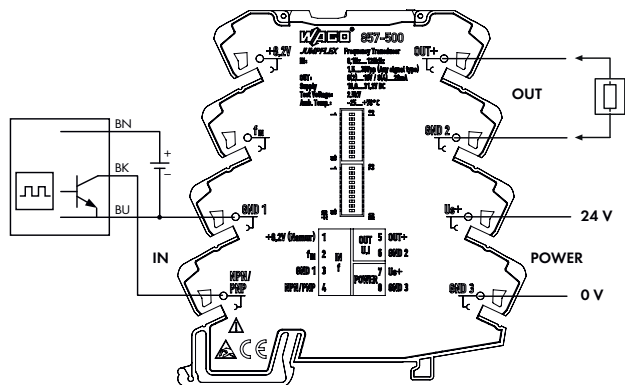
### 2-Conductor DC (Mechanical Contact)



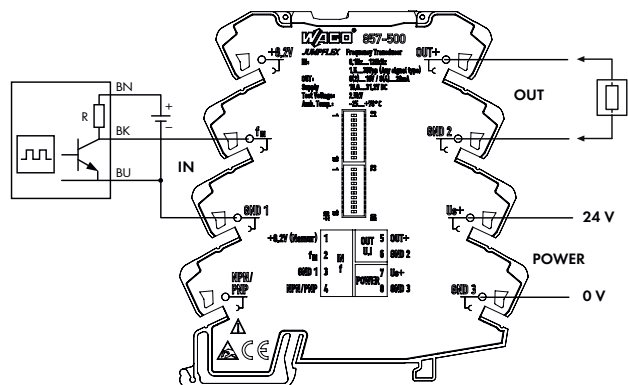
### 2-Conductor DC NAMUR Sensor



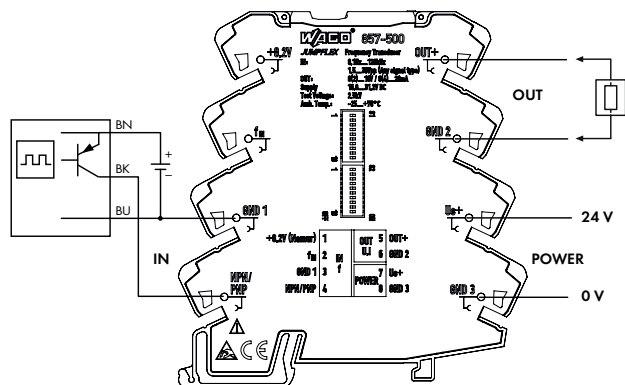
### NPN Transistor Output



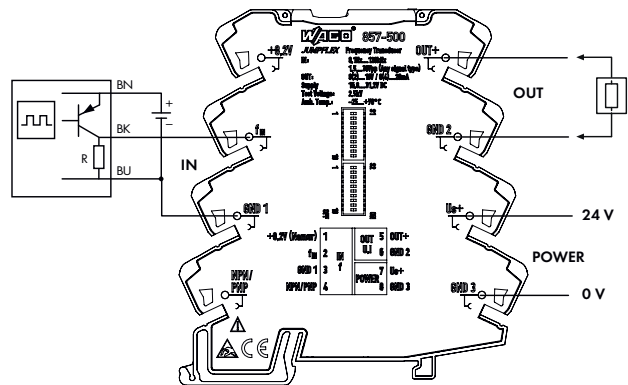
### NPN Transistor Output with Pull-Up Resistor



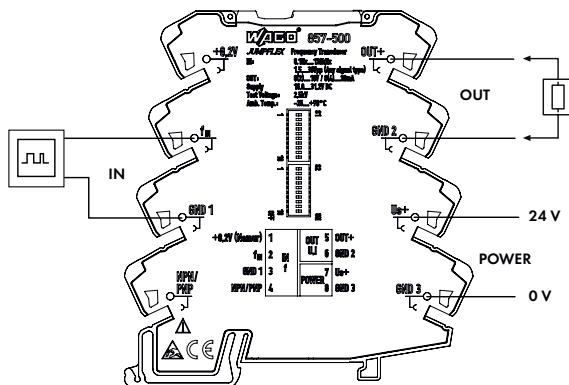
### PNP Transistor Output



### PNP Transistor Output with Pull-Down Resistor



### Frequency Generator



# 3 Interface Configuration Software



## Interface Configuration Software – DIP Switch Alternative

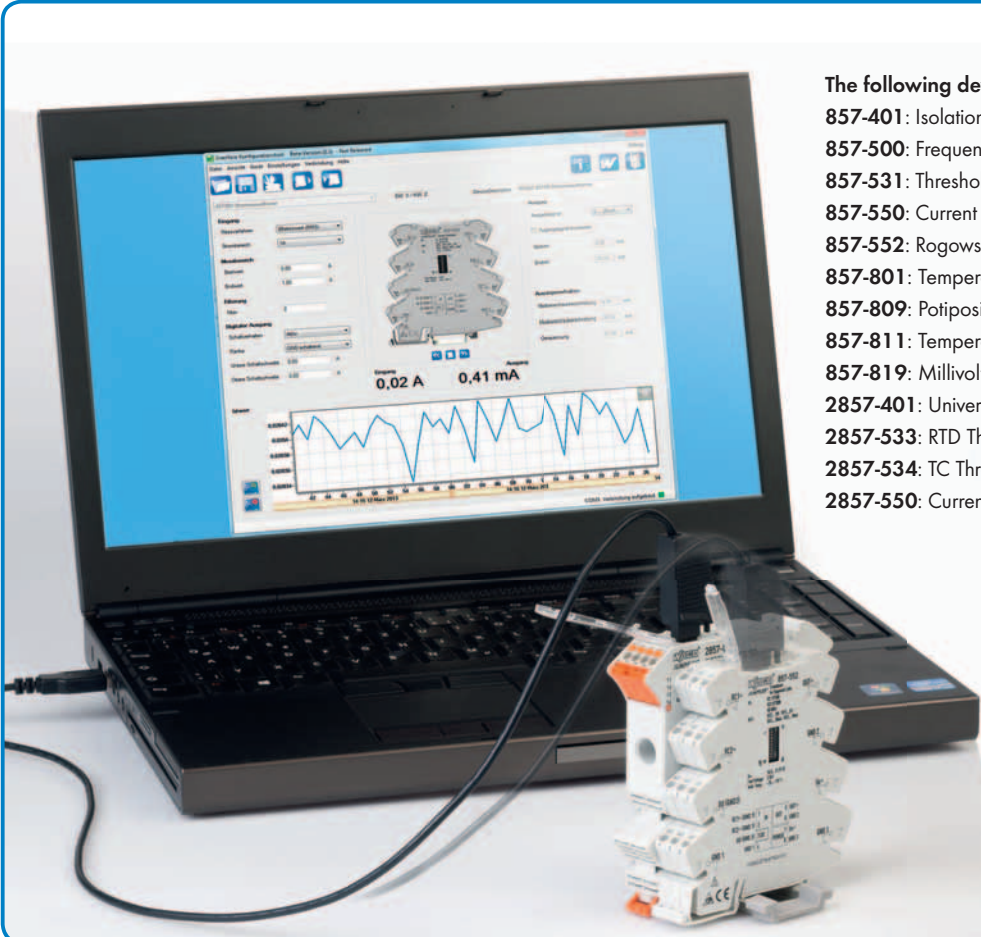
Software features:

- Automatic module recognition
- Visualization of process values
- Parameterization of the digital switch output (threshold functionality)
- Communication via 750-923 WAGO USB Service Cable or WAGO 750-921 Bluetooth® Adapter

### Description

#### Interface Configuration Software

Download: [www.wago.com](http://www.wago.com)



### The following devices are already supported:

- 857-401: Isolation Amplifier
- 857-500: Frequency Signal Conditioner
- 857-531: Threshold Value Switch
- 857-550: Current Signal Conditioner
- 857-552: Rogowski Signal Conditioner
- 857-801: Temperature Signal Conditioner for Pt Sensors
- 857-809: Potiposition Signal Conditioner
- 857-811: Temperature Signal Conditioner for TC Sensors
- 857-819: Millivolt Signal Conditioner
- 2857-401: Universal Isolation Amplifier
- 2857-533: RTD Threshold Value Switch
- 2857-534: TC Threshold Value Switch
- 2857-550: Current Signal Conditioner





### Interface Configuration App DIP Switch Alternative

WAGO's Interface Configuration App brings the power of a PC-based configuration software to mobile end-user devices. WAGO's 857 Series signal conditioner's input and output parameters can be configured via finger swipe on an Android-based smartphone or tablet. Furthermore, both configuration data and actual measured values can be easily displayed. WAGO's 750-921 Bluetooth® Adapter communicates between a smartphone and signal conditioner.

### Description

#### WAGO Interface Configuration App (Android)

Download from Google Play

#### Device Information



#### Input Parameter



#### Output Parameter



#### Digital Output



#### Actual Value



### The following devices are already supported:

- 857-401: Isolation Amplifier
- 857-500: Frequency Signal Conditioner
- 857-531: Threshold Value Switch
- 857-550: Current Signal Conditioner
- 857-552: Rogowski Signal Conditioner
- 857-801: Temperature Signal Conditioner for Pt Sensors
- 857-809: Potipotential Signal Conditioner
- 857-811: Temperature Signal Conditioner for TC Sensors
- 857-819: Millivolt Signal Conditioner

- 2857-401: Universal Isolation Amplifier
- 2857-533: RTD Threshold Value Switch
- 2857-534: TC Threshold Value Switch
- 2857-550: Current Signal Conditioner



Download from  
Google Play



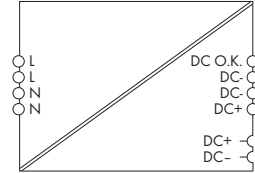


## Switched-Mode Power Supply in 2857 Series Housing

EPSITRON® Power for JUMPFLEX®



Similar to picture



- Primary switch mode power supply in 22.5 mm wide 2857 Series Housing, same profile as 2857 and 857 Series JUMPFLEX® Signal Conditioners
- Both 24 VDC and 0 V output voltage can be easily supplied to adjacent JUMPFLEX® modules via 859-4xx Jumpers
- Pluggable picoMAX® connection technology
- Natural convection cooling
- DC OK message as active signal output (24 VDC, 20 mA)
- Integrated redundancy diode enables easy fail-safe power supply via parallel connection of two power supplies
- Approvals for worldwide applications with JUMPFLEX® Modules (pending)

## Technical Data

## Input:

Nominal input voltage $V_{i, nom}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 90 ... 370 VDC
Frequency	47 Hz ... 63 Hz; 0 Hz
Input current $I_i$	< 0.2 A (230 VAC, nominal load); < 0.9 A (90 VAC, nominal load)
Power factor	> 0.6 (230 VAC, nominal load, acc. to EN 61000-3-2)
Discharge current	< 1 mA (230 VAC)
Inrush current	< 30 A (230 VAC), limited
Mains failure hold-up time	120 ms (230 VAC)

## Output:

Nominal output voltage $V_{o, nom}$	24 VDC (SELV)
Factory preset	24 VDC
Nominal load $P_{o, nom}$	24 W
Output current $I_o$	1 ADC
Deviation, dynamic load change	
10 ... 90 %	< ± 1 %
Adjustment accuracy	< 2 %
Residual ripple	< 100 mV (peak-peak) at 20 MHz
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	Green LED ( $V_o > 21.5$ V)

## Efficiency/Power losses:

Efficiency	86 % typ. (230 VAC, nominal load); 84 % typ. (110 VAC, nominal load)
Power loss $P_V$	< 1 W (230 VAC, no load); 4.3 W (230 VAC, nominal load)
Max. power loss $P_V$	4.6 W typ. (100 VAV / 24 VDC, 1 A)

## Fuse protection:

Internal fuse	2 AT
External fuse	Circuit breakers 6 A, B or C characteristic

## Environmental Requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Relative humidity	30 % ... 85 % (no condensation)
Derating	-2 %/K (> +60 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Description

Switched-mode power supply  
in 2857 Series housing, 24 VDC / 1 A

## Item No.

787-2852

Pack.  
Unit

1

## Technical Data

## Safety and protection:

Test voltage	4.2 kV DC (input - output)
Protection class	II
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	Varistor (input side); internal protective circuit, < 29 ... 31 VDC (output side in case of an error)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 60 VDC
Parallel operation	yes, for 2 devices of the same type
Series connection	yes, for 2 devices of the same type
MTBF	> 500,000 h (at 25 °C) Calculation acc. to IEC 61709

## Connection and type of mounting:

Wire connection	Input/Output/Signaling: CAGE CLAMP® S (picoMAX® 5.0)
Cross sections	Input/Output/Signaling: solid/fine-stranded: 0.2 ... 2.5 mm <sup>2</sup> / AWG 24 ... 10
Strip lengths	Input/Output/Signaling: 9 ... 10 mm / 0.35 ... 0.39 in
Type of mounting	DIN-rail mount (EN 60715)

## Dimensions and weight:

Dimensions (mm) W x H x L	22.5 x 110 x 118
Weight	Length from upper-edge of DIN 35 rail 195 g

## Standards and approvals:

Standards/Specifications	EN 61000-6-2, EN 61000-6-3, EN 60950-1, UL 60950 *, cULus 508 *, ANSI/ISA 12.12.01 (Class I Div 2) *, ATEX/IEC Ex *, GL * (* pending)
--------------------------	--





The WAGO USB Communication Cable connects a PC (notebook) to either the service interface of the 857 Series Signal Conditioners and Relay Modules (JUMPFLEX), or to WAGO-I/O-SYSTEM buscouplers/controllers.

**Notice:**

Using the WAGO 750-923 USB Communication Cable in combination with select programmable fieldbus controllers requires the specific firmware versions listed below (or greater): 750-841 as from firmware version 12750-872/0020-0000 as from firmware version 2

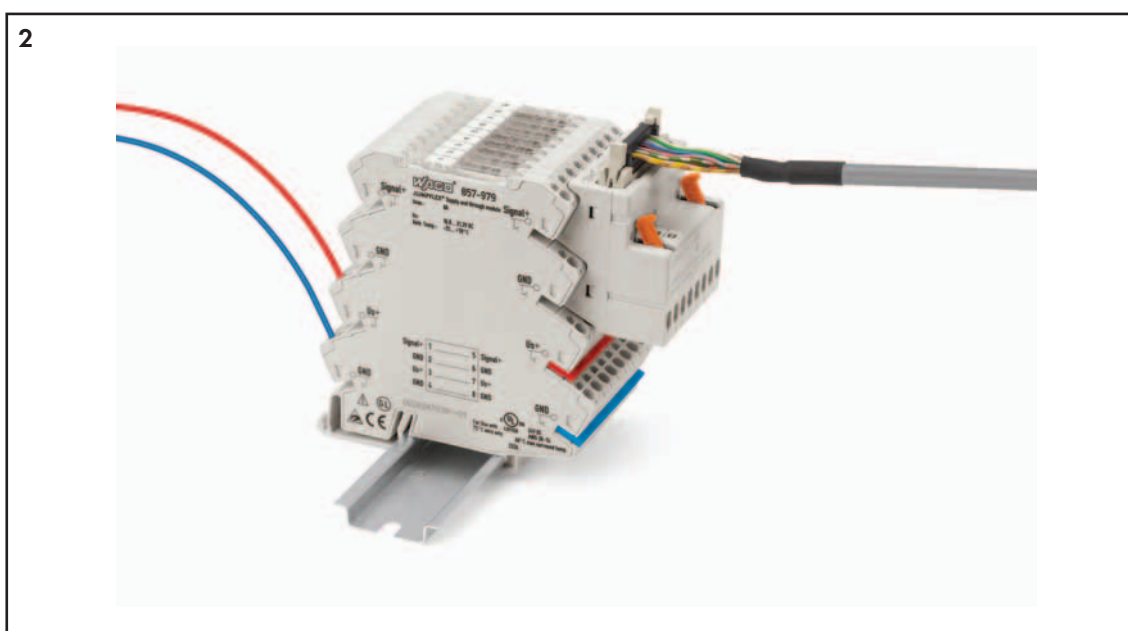
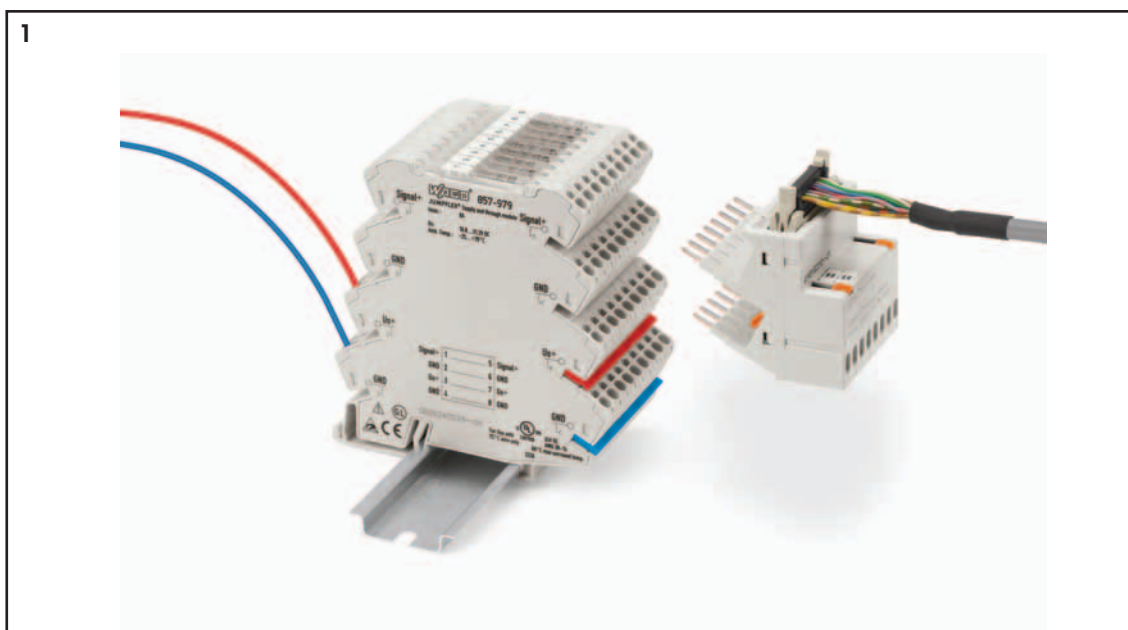
Description	Item No.	Pack. Unit	Technical Data
WAGO USB Communication Cable, length 2.5 m	750-923	1	USB specification 2.0 compatible/full-speed device
WAGO USB Communication Cable, length 5 m	750-923/000-001	1	Operating system Microsoft® Windows® 2000; Microsoft® Windows® XP Professional; Microsoft® Windows® Vista®; Microsoft® Windows® 7
			Operating temperature -25 °C ... +70 °C
			Interface USB Type A/m
			Length 2.5 m (750-923) 5 m (750-923/000-001)
			Connector dimensions (WxHxD) 15 x 50 x 19
			Test voltage 2.5 kV, 50 Hz, 1 min.
			EMC: CE - immunity to interference acc. to EN 61000-4-3, EN 61000-4-6
			EMC: CE - emission of interference acc. to EN 55022
			<b>Approvals</b>
			Conformity marking CE



**Application example:**

857-979

- Power supply for 8 JUMPFLEX® modules with plugged interface adapter
- WAGO interface adapter, 857-980
  - WAGO Interface Cable, 706-100/1602-200, 16-pole socket/open-ended
  - Push-in type jumper bar, 9-way, 859-409

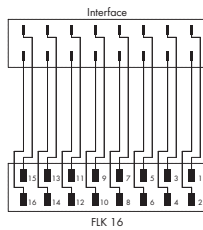
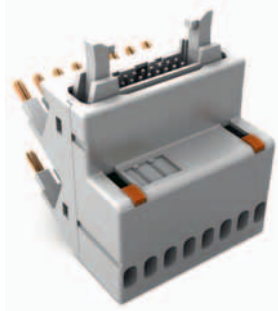


# 3 Interface Modules for System Wiring

## Interface Adapters, 857 Series

234

	<p>8-channel adapter with 16-pin ribbon cable connector Analog</p>	
--	--	--

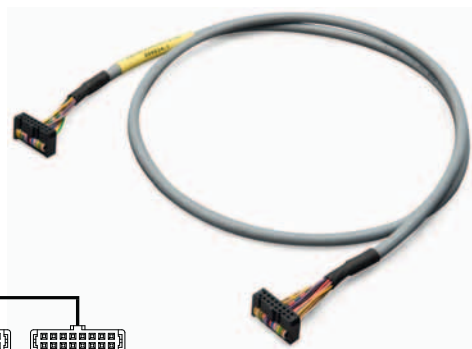


Description	Item No.	Pack. Unit
8-channel adapter for system wiring	857-980	1

Technical Data		
Connection type, signal level	16-pin ribbon cable connector acc. to DIN 41651	
Performance level	3	
Contact resistance	≤ 20mΩ	
Current carrying capacity	1A	
Test voltage	500 V / 50 Hz / 1 min.	
Overvoltage category	III	
Degree of pollution	2	

# WAGO Interface Cables

for Interface Adapters, 857 Series



The 16-pin WAGO Interface Cables transmit signals one-to-one from the 16-pole connector and are available in 1-, 2- and 3-meter lengths. Signal transmission from the 857-980 Interface Adapter is also possible.

**Suitable for system wiring when combined with the Interface Adapter (Item No. 857-980)**

Color coding acc. to DIN VDE 47100		HE 10	16-pole
		contact number	
white			1
brown			2
green			3
yellow			4
grey			5
pink			6
blue			7
red			8
black			9
violet			10
grey/pink			11
red/blue			12
white/green			13
brown/green			14
white/yellow			15
yellow/brown			16

Description	Item No.	Pack. Unit
WAGO Interface Cable 16/16, 1m long	706-753/301-100	1
WAGO Interface Cable 16/16, 2m long	706-753/301-200	1
WAGO Interface Cable 16/16, 3m long	706-753/301-300	1

Technical Data	
Ports	2 x 16-pole connector acc. to DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color coding	acc. to DIN VDE 47100
Current per channel	max. 1 A
Operating temperature	-25 °C ... +70 °C
Degree of protection	IP20
Length	1 m (706-753/301-100) 2 m (706-753/301-200) 3 m (706-753/301-300)

Description	Item No.	Pack. Unit
WAGO Interface Cable, 16-pole/ one free cable end, length 2 m	706-100/1602-200	1

Technical Data	
Ports	16-pole HE 10 connector/ one free cable end
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color coding	acc. to DIN VDE 47100
Current per channel	max. 1 A
Operating temperature	-25 °C ... +70 °C
Degree of protection	IP20
Length	2 m

# 3 Accessories, 857 Series

236

Push-in type jumper bar



Commoning



Comb-style jumper bar



Description		Item No.	Pack. Unit
Push-in type jumper bars, light gray, insulated, 18 A	2-way	859-402	200 (8x25)
	3-way	859-403	200 (8x25)
	4-way	859-404	200 (8x25)
	5-way	859-405	200 (8x25)
	6-way	859-406	100 (4x25)
	7-way	859-407	100 (4x25)
	8-way	859-408	100 (4x25)
	9-way	859-409	100 (4x25)
	10-way	859-410	100 (4x25)
	Item no. suffix for colored push-in type jumper bars	yellow	... /000-029
red		... /000-005	
blue		... /000-006	
Comb-style jumper bar, insulated	2-way	281-482	100

WMB Multi marking system



Marking



Description		Item No.	Pack. Unit
WMB Multi marking system	plain	793-501	5 cards
Marking software and printer/plotter see Section 11			
Marking	1 ... 10 (10x)	793-502	5 cards
	11 ... 20 (10x)	793-503	5 cards
	21 ... 30 (10x)	793-504	5 cards
	31 ... 40 (10x)	793-505	5 cards
	41 ... 50 (10x)	793-506	5 cards
	1 ... 50 (2x)	793-566	5 cards
10 strips with 10 markers, white with black printing			

Operating tool



WAGO Bluetooth® Adapter



WAGO USB service cable



Configuration



Description		Item No.	Pack. Unit
Operating tool, with partially insulated shaft	Type 2, blade (3.5 x 0.5) mm	210-720	1
WAGO USB service cable		750-923	1
WAGO Bluetooth® Adapter		750-921	1







**WAGO**

60-80 Hz E I  
855-0301/0800-1001

A	1
VA	10
KI.	1
Nr.	12R

c 90  
Fr.

# 4



**JUMPFLEX® Current and Voltage Signal Conditioners**

2857 Series  
857 Series

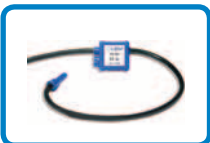
240 - 241  
242 - 247



**Current Transformers**

Plug-In Current Transformers with CAGE CLAMP® Connector, 855 Series  
Plug-In Current Transformers with picoMAX® Pluggable Connector, 855 Series  
Split-Core Current Transformers, 855 Series

248 - 249  
250 - 251  
252 - 253



**Rogowski Coils and Current Signal Conditioners**

Rogowski Coils, 855 Series  
Current Signal Conditioners, 789 Series

254 - 255  
256 - 259



**Current Sensor Modules**

Current Sensor Modules, 789 Series  
Accessories for 789 Series Current Sensor Modules

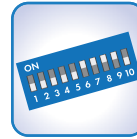
260 - 265  
266 - 267

# 4 JUMPFLEX® Signal Conditioners

## Current Signal Conditioner AC/DC 100 A



Configuration via:



DIP switch



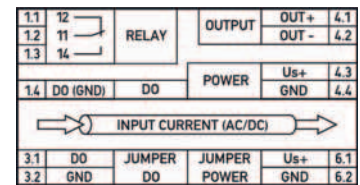
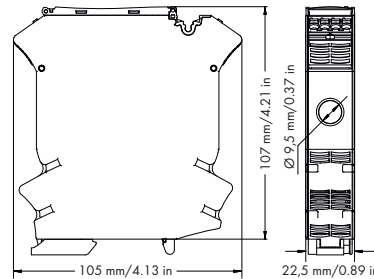
Interface configuration software



Interface configuration app



Configuration display



### Short description:

The 2857-550 Current Signal Conditioner measures AC/DC currents up to 100 A, while converting the measured current into an analog standard signal at the output.

### Features:

- Both digital signal output and relay with changeover contact react to configured measuring range limits (switching ON/OFF delay and threshold value switch function configurable with up to two threshold values).
- Clipping capability provides analog signal limitation to output end values.
- Adjustable software filter
- Input/Output response simulation via configuration display
- Safe 3-way isolation with 4 kV test voltage acc. to EN 61140

### Technical Data

Configuration:	
Configuration	DIP switch, interface configuration software, interface configuration app, configuration display
Input:	
Input signal	500 mA ... 100 A (AC) / -100 A ... 100 A (DC)
Response threshold	250 mA (AC) / 500 mA (DC)
Resolution	10 mA
Frequency range	15 Hz ... 1000 Hz
Output:	
Output signal	<b>Current:</b> ± 10 mA; 0 ... 10 mA; 2 ... 10 mA; ± 20 mA; 0 ... 20 mA; 4 ... 20 mA <b>Voltage:</b> ± 5 V; 0 ... 5 V; 1 ... 5 V; ± 10 V; 0 ... 10 V; 2 ... 10 V
Overcurrent	0% or +5% (e.g., 10.5 V / 24 mA)
Measuring range overflow/underflow	0% or +2.5%
Load impedance	<b>Current:</b> ≤ 600 Ω; <b>Voltage:</b> ≥ 1 kΩ
Measuring procedure	True RMS measurement (TRMS) or Arithmetic mean value
Output - Digital:	
Max. switching voltage	Supply voltage applied -0.3 V
Max. continuous current I <sub>DC</sub>	100 mA (no internal restriction)
Output - Relay:	
Contact type	1 changeover contact (1 u)
Contact material	AgNi (gold-plated)
Max. switching voltage	250 VAC
Max. continuous current (terminal blocks in a row)	6 A (up to 60 °C), 3 A (60 °C ... 70 °C)
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	8 ms / 4 ms / 8 ms
General specifications:	
Nominal supply voltage V <sub>s</sub>	24 VDC
Supply voltage range	16.8 V ... 31.2 V (-30 % ... +30 %)
Current consumption at 24 VDC	≤ 50 mA (+ I <sub>DC</sub> )

Description	Item No.	Pack. Unit
<b>JUMPFLEX® Signal Conditioner, for DIN 35 rail</b>	<b>2857-550</b>	<b>1</b>
Current Signal Conditioner AC/DC 100 A		
Technical Data		
General specifications:		
Max. operating frequency	3.3 kHz	
Response time	Signal cycle duration + 1 ms	
Response time (T <sub>10-90</sub> )	max. 60 ms	
Filter (T <sub>10-90</sub> )	Software filter: 600 ms	
Linearity error	≤ 1 %	
Measurement error	≤ 0.2 % (of the full scale value)	
Temperature coefficient	≤ 0.01 %/K	
Environmental requirements:		
Ambient operating temperature	-40 °C ... +70 °C	
Storage temperature	-40 °C ... +85 °C	
Safety and protection:		
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.	
Test voltage (measuring circuit - output)	4 kV AC, 50 Hz, 1 min.	
Connection and type of mounting:		
Wire connection	CAGE CLAMP® S (picoMAX® 5.0)	
Cross sections	solid/fine-stranded: 0.2 ... 2.5 mm <sup>2</sup> / AWG 24 ... 12	
Strip length	9 ... 10 mm / 0.35 ... 0.39 in	
Power cable feed-through	Ø 9.5 mm	
Dimensions and weight:		
Dimensions (mm) W x H x L	22.5 x 107 x 105	
	Height from upper-edge of DIN 35 rail	
Weight	106 g	
Standards and approvals:		
Conformity marking	CE	
Standards/Specifications	DIN EN 61010-1:2010; DIN EN 60664-1:2008; Safe isolation acc. to DIN EN 61140:2002; IEC 61000-6-2; IEC 61000-6-4	
Accessories:		
	see pages 226 ... 236	

## DIP Switch Adjustability

● = ON

2857-550

## DIP Switch S1

Measuring Method		Filter		Analog Output Inverted		Output Signal (Bipolar for Arithmetic Mean Value)				
1	2	3	4	5	6	Analog Output				
	True RMS		inactive		not inverted					(±) 0 ... 20 mA
●	Arithmetic mean value (bipolar output)	●	active	●	inverted		●			4 ... 20 mA
						●				(±) 0 ... 10 V
						●	●			2 ... 10 V
								●		(±) 0 ... 10 mA
							●	●		2 ... 10 mA
						●		●		(±) 0 ... 5 V
						●	●	●		1 ... 5 V

## DIP Switch S1

Measuring Range Underflow		Measuring Range Overflow		Overcurrent (Input Signal - End Value +20%)		Digital Output (DO)/ Relay	
7	8	9	10	9	10		
	Lower measuring range -5% *	Upper measuring range +2.5% *	Upper measuring range +5%			Off	
●	Lower measuring range	Upper measuring range +2.5%	Upper measuring range +5%	●		DO US+ switching - relay pulls in	
●	Lower measuring range	Upper measuring range	Lower measuring range		●	DO GND switching - relay drops out	
●	Lower measuring range -5 %	Upper measuring range +5%	Upper measuring range	●	●	Off	

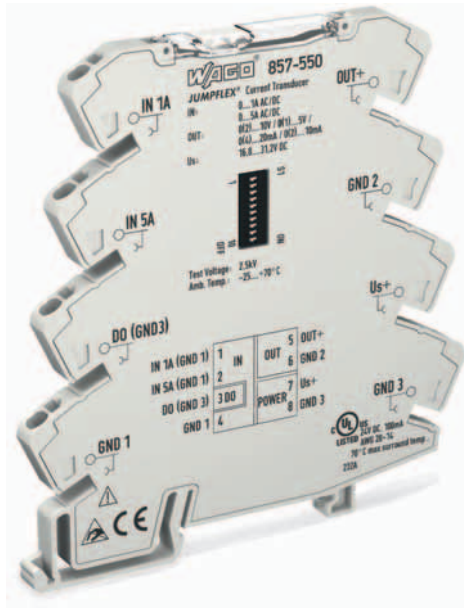
\* acc. to NAMUR NE 43

## DIP Switch S2

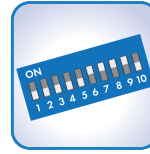
Lower Value				Upper value			
1	2	3	4	5	6	7	
A / % (RMS)			A / % (arithmetic mean value)	A / %			
			Software configuration (0)			Software configuration (100)	
●			0	●		100	
	●		5		●	90	
●	●		8	●	●	70	
		●	10			●	50
●	●		12	●		●	30
	●	●	14		●	●	20
●	●	●	16	●	●	●	10
			●				18
●			●				20
	●		●				25
●	●		●				30
		●	●				35
●	●	●	●				40
	●	●	●				45
●	●	●	●				50

**JUMPFLEX®** Signal Conditioners

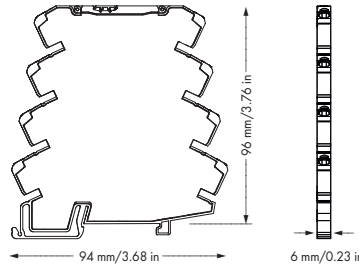
Current Signal Conditioner AC/DC 0 ... 1 A, 0 ... 5 A



Configuration via:



DIP switch

Interface  
configuration  
softwareInterface  
configuration  
app

IN 1A (GND 1)	1	IN	5	OUT+
IN 5A (GND 1)	2		6	GND 2
DO (GND 3)	3	DO	7	Us+
GND 1	4	POWER	8	GND 3

**Short description:**

The Current Signal Conditioner measures both 0–1 A and 0–5 A AC/DC currents, while converting the input signal to a standard analog signal at the output.

**Features:**

- PC configuration interface
- True RMS measurement or arithmetic mean value
- Digital switching output (configurable switching thresholds)
- Switchable filter function
- Switching between measuring ranges is calibrated
- Safe 3-way isolation with 2.5 kV test voltage acc. to EN 61140
- Extremely fast response times
- Measuring range overflow indication

**Technical Data****Configuration:**

Configuration	DIP switch, interface configuration software, interface configuration app
---------------	---

**Input:**

Input signal	0 ... 1 A AC/DC; 0 ... 5 A AC/DC *
Input resistance	10 mΩ (5 A); 47 mΩ (1 A)
Frequency range	16 Hz ... 400 Hz
Response threshold	< 0.5 % (of measuring range nominal)
Current carrying capacity	2 x I <sub>N</sub> (continuous)

**Output:**

Output signal	<b>Voltage:</b> 0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V *
	<b>Current:</b> 0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA *
Load impedance	≤ 600 Ω (I output) ** ≥ 2 kΩ (U output) ** Temperature range restrictions may occur.

Filter (T<sub>10-90</sub>) 260 ms (DC), 600 ms (AC 50 Hz)

**Output - Digital**

Max. switching voltage	Supply voltage applied
Max. continuous current	500 mA (up to 60 °C) 100 mA (60 °C ... 70 °C)

**General specifications:**

Nominal supply voltage V <sub>S</sub>	24 VDC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 40 mA
Measuring procedure	Arithmetic mean value * True RMS measurement (TRMS)
Response time	1.5 ms + signal cycle duration
Max. response time	60 ms
Min. measuring span	2 mA ... 1 A; 4 mA ... 5 A

**Description**

**JUMPFLEX®** Signal Conditioner, for DIN 35 rail  
Current Signal Conditioner

Item No.

857-550

Pack.  
Unit

1

**Technical Data****General specifications:**

Transmission error	≤ 0.1 % typ. (≤ 0.4 % max.)
Temperature coefficient	≤ 0.01 % /K
Linearity error	< 0.5 % (of measuring range nominal)

**Environmental requirements:**

Ambient operating temperature	-25 °C ... +70 °C (at nominal current)
Storage temperature	-40 °C ... +85 °C

**Safety and protection:**

Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
------------------------------------	--------------------------

**Connection and type of mounting:**

Wire connection	CAGE CLAMP® S
Cross sections	solid: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14 fine-stranded: 0.34 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 22 ... 14
Strip lengths	9 ... 10 mm / 0.37 in

**Dimensions and weight:**

Dimensions (mm) W x H x L	6 x 96 x 94
Weight	Height from upper-edge of DIN 35 rail 50 g

**Standards and approvals:**

Conformity marking	CE
UL 508	Ⓢ
Shipbuilding	Ⓢ
Accessories	see pages 226 ... 236

(\* Additional setting options via PC configuration software or smartphone app)



## DIP Switch Adjustability

● = ON

857-550

### DIP Switch S1

Input Signal		Measuring Method		Filter	Output Signal			
1		2		3	4	5	6	
	5 A		Mean square value	off				0 ... 20 mA
●	1 A	●	Arithmetic mean value	● active		●		4 ... 20 mA
					●			0 ... 10 V
					●	●		2 ... 10 V
							●	0 ... 10 mA
						●	●	2 ... 10 mA
					●		●	0 ... 5 V
					●	●	●	1 ... 5 V

#### Filter

The filter function allows a low-pass filter to be switched on in order to mask or "smooth out" oscillating measured values (e.g., during trailing edge flows).

### DIP Switch S1

7	8	Measuring Range Underflow	Measuring Range Overflow	Overcurrent (Input Signal - End Value + 20%)	9	10	Digit Output DO Signaling
		Lower limit of measuring range -5 % <sup>*</sup>	Upper limit of measuring range +2.5 % <sup>*</sup>	Upper limit of measuring range +5 % <sup>*</sup>			DO not active
●		Lower limit of measuring range	Upper limit of measuring range +2.5 %	Upper limit of measuring range +5 %		●	DO U <sub>s</sub> + switching
	●	Lower limit of measuring range	Upper limit of measuring range	Lower limit of measuring range	●	●	DO GND switching
●	●	Lower limit of measuring range	Upper limit of measuring range	Upper limit of measuring range			

<sup>\*</sup>acc. to NAMUR NE 43

#### Digital Output DO/Signaling

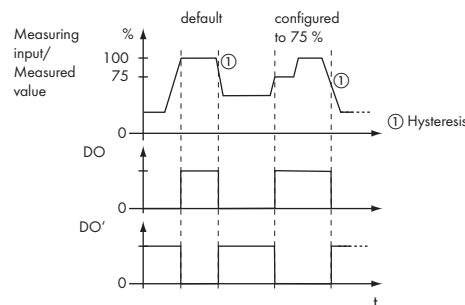
The digital output (DO) signals error messages and can be configured as follows: 24 V → 0 V/0 V → 24 V.

In order to increase the switching current of the DO, the latter may be expanded by a relay. Thanks to the contour uniformity of Series 857, for example, a 857-304 Relay can be snapped in next to it. This output can be quickly and easily expanded to a switching current of 6A by simply using an adjacent jumper (859-402).

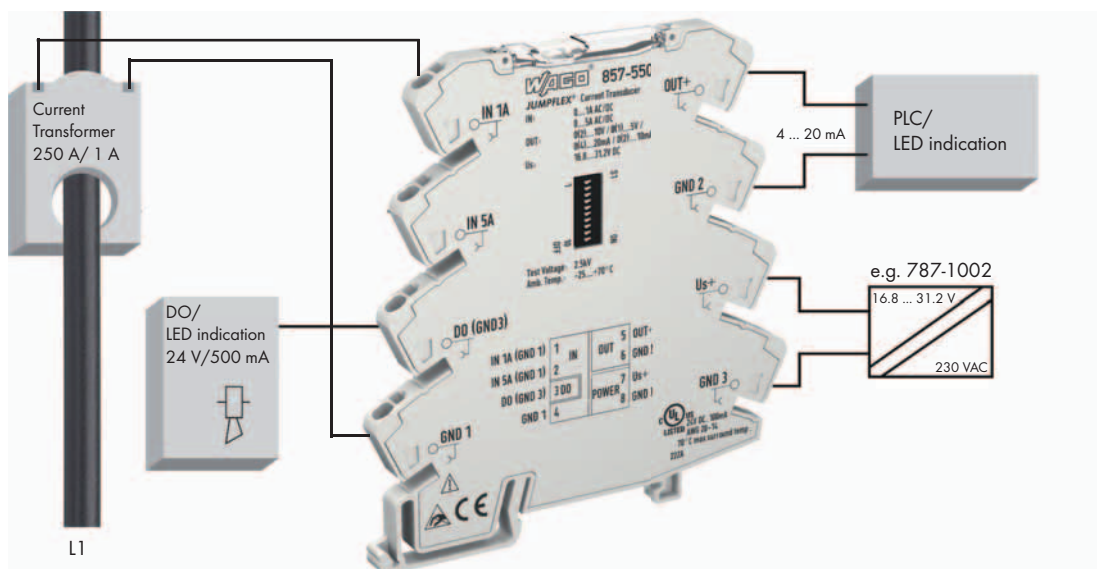
#### Default Setting

All DIP switches are in "OFF" position for delivery.	
<b>Input</b>	
Input Signal	0 ... 5 A
Measuring Method	Mean square value
Filter	not active
<b>Output</b>	
Output Signal	0 ... 20 mA
Measuring Range Underflow	0 mA
Measuring Range Overflow	20.5 mA
Overcurrent	21 mA
Digital Output DO	not active

#### Switching Behavior, Digital Output (DO)

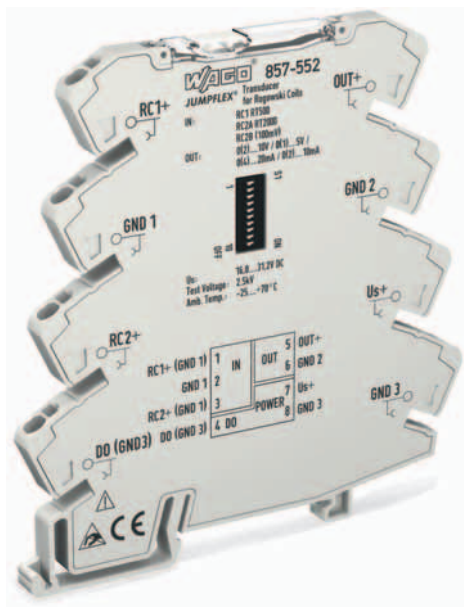


#### Application example:

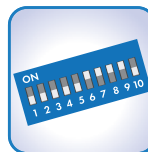


# 4 JUMPFLEX® Signal Conditioners

244 Rogowski Signal Conditioner



Configuration via:



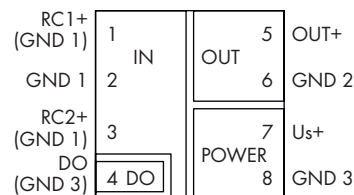
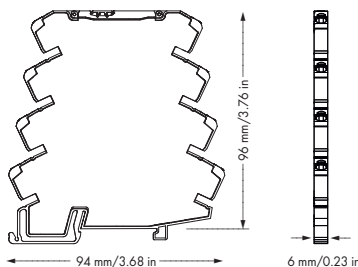
DIP switch



Interface configuration software



Interface configuration app



**Short description:**

The Rogowski Signal Conditioner records RMS values from alternating currents via a Rogowski coil, converting the input signal into a standard analog signal on the output side.

**Features:**

- PC configuration interface
- Supports different types of Rogowski coils
- Digital switching output (configurable switching thresholds)
- True RMS measurement (TRMS)
- Configurable output signal
- Configuration via DIP switch
- Safe 3-way isolation with 2.5 kV test voltage acc. to EN 61140
- No current bar interruption during installation
- Measuring range overflow indication

Technical Data	
<b>Configuration:</b>	
Configuration	DIP switch, interface configuration software, interface configuration app
<b>Input:</b>	
Input signal	RC1 500 A: Sensitivity 10.05 mV * RC2A 2000 A: Sensitivity 40.2 mV * RC2B: Sensitivity 100 mV * 50/60 Hz sinusoidal and distorted sinusoidal signals (e.g. leading edge and
Frequency range	16 Hz ... 1000 Hz
Response threshold	< 1 % (of measuring range nominal value)
<b>Output:</b>	
Output signal	<b>Voltage:</b> 0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V * <b>Current:</b> 0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA * 0 % or +5 % (e.g. 10.5 V/21 mA)
Overcurrent	0 % or +2.5 %
Measuring range overflow/underflow	0 % or +2.5 %
Load impedance	Current ≤ 600 Ω, Voltage ≥ 1000 Ω
Measuring procedure	True RMS (TRMS)
Filter (T <sub>10,90</sub> )	600 ms (50 Hz)
<b>Output - Digital</b>	
Max. switching voltage	Supply voltage applied
Max. continuous current	500 mA
<b>General specifications:</b>	
Nominal supply voltage V <sub>s</sub>	24 VDC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 40 mA
Resolution	500 A measuring range: 250 mA, 2000 A measuring range: 1000 mA
Measuring procedure	True RMS (TRMS)
Response time	1.5 ms + signal cycle duration
Max. operating frequency	< 2 kHz
Response time (T <sub>10,90</sub> )	max. 60 ms

Description	Item No.	Pack. Unit
JUMPFLEX® Signal Conditioner, for DIN 35 rail Rogowski Signal Conditioner	857-552	1
<b>Technical Data</b>		
<b>General specifications:</b>		
Linearity error	≤ 0,1 %	
Temperature coefficient	≤ 0.01 %/K	
Measurement error	< 1 %	
Line length	< 3 m (to the Rogowski coil)	
<b>Environmental requirements:</b>		
Ambient operating temperature	-25 °C ... +70 °C (at rated current)	
Storage temperature	-40 °C ... +85 °C	
<b>Safety and protection:</b>		
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.	
<b>Connection and type of mounting:</b>		
Wire connection	CAGE CLAMP® S	
Cross sections	solid: 0.08 mm² ... 2.5 mm² / AWG 28 ... 14 fine-stranded: 0.34 mm² ... 2.5 mm² / AWG 22 ... 14	
Strip lengths	9 ... 10 mm / 0.37 in	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	6 x 96 x 94	
Weight	Height from upper-edge of DIN 35 rail 36.2 g	
<b>Standards and approvals:</b>		
Conformity marking	CE	
Shipbuilding	@	
<b>Accessories</b>		
	see pages 226 ... 236	
	Rogowski Coils see Section 4	
(* Additional setting options via PC configuration software or smartphone app)		



## DIP Switch Adjustability

● = ON

857-552

### DIP Switch S1

Input Signal		RC Configuration Input		Filter		Output Signal		
1		2		3		4	5	6
	RC1 = RT500 from LEM		RC2 = RT2000 from LEM		off			0 ... 20 mA
●	RC2	●	RC2 = 100 mV eff. => 1 kA	●	active		●	4 ... 20 mA
						●		0 ... 10 V
						●	●	2 ... 10 V
								0 ... 10 mA
							●	2 ... 10 mA
						●		0 ... 5 V
						●	●	1 ... 5 V

### Filter

The filter function allows a low-pass filter to be switched on in order to mask or "smooth out" oscillating measured values (e.g., during trailing edge flows).

### DIP Switch S1

Measuring Range Underflow		Measuring Range Overflow		Overcurrent (Input Signal - End Value + 20%)		Digital Output DO Signaling		
7	8					9	10	
		Lower limit of measuring range +5 %	Upper limit of measuring range +2.5 %	Upper limit of measuring range +5 %				DO not active
●		Lower limit of measuring range	Upper limit of measuring range +2.5 %	Upper limit of measuring range +5 %		●		DO U <sub>S</sub> + switching
	●	Lower limit of measuring range	Upper limit of measuring range	Lower limit of measuring range		●	●	DO GND switching
●	●	Lower limit of measuring range	Upper limit of measuring range	Upper limit of measuring range				

### Digital Output DO/Signaling

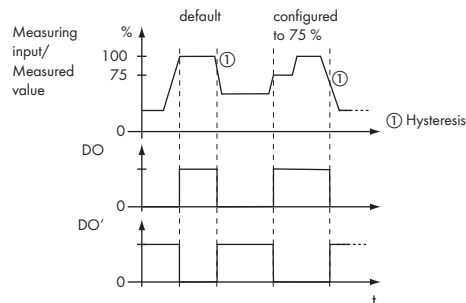
The digital output (DO) signals error messages and can be configured as follows: 24 V → 0 V/0 V → 24 V.

In order to increase the switching current of the DO, the latter may be expanded by a relay. Thanks to the contour uniformity of Series 857, for example, a 857-304 Relay can be snapped in next to it. This output can be quickly and easily expanded to a switching current of 6A by simply using an adjacent jumper (859-402).

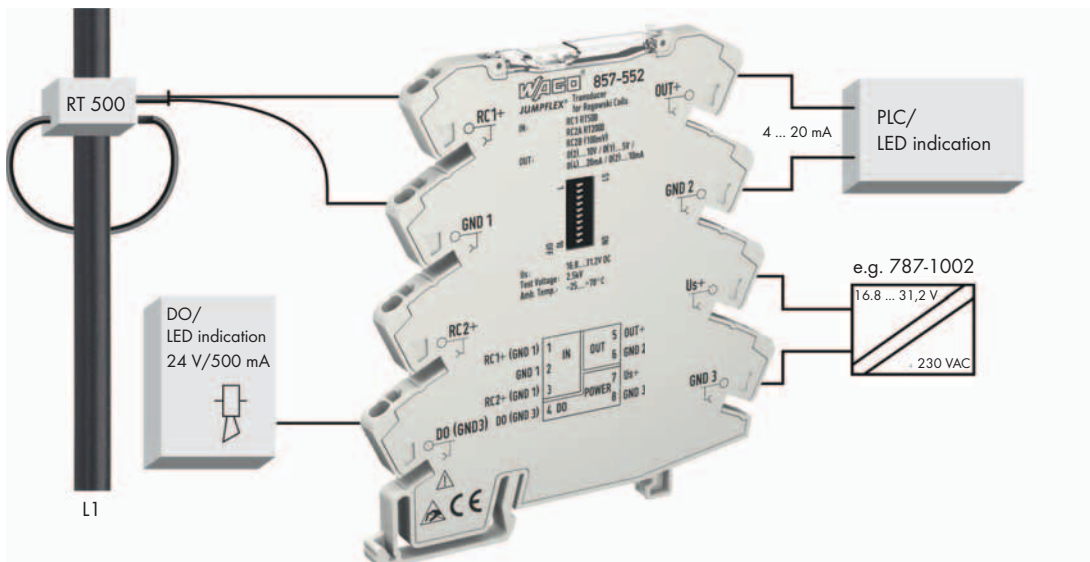
### Default Setting

All DIP switches are in "OFF" position for delivery.	
<b>Input</b>	
Input Signal	RC1 500 A
Measuring Method	Mean square value
Filter	not active
<b>Output</b>	
Output Signal	0 ... 20 mA
Measuring Range Underflow	0 mA
Measuring Range Overflow	20.5 mA
Overcurrent	21 mA
Digital Output DO	not active

### Switching Behavior, Digital Output (DO)

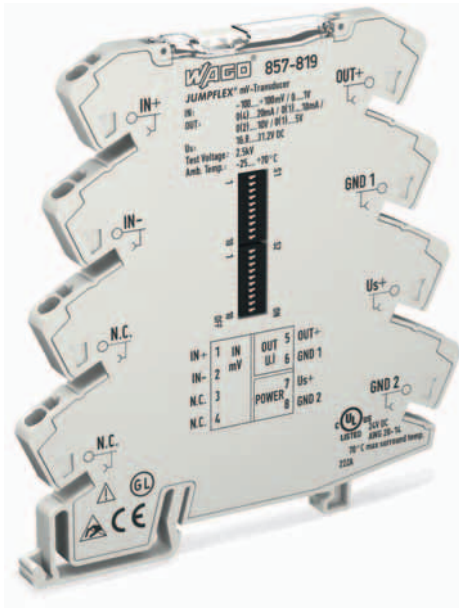


### Application example:

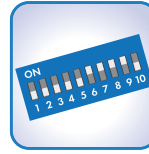


# 4 JUMPFLEX® Signal Conditioners

246 Millivolt Signal Conditioner from -100 mV ... +100 mV and 0 mV ... 1000 mV



Configuration via:



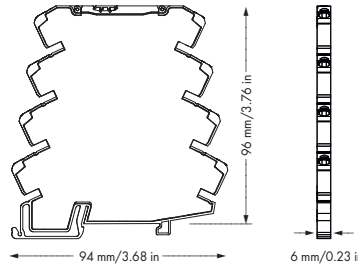
DIP switch



Interface configuration software



Interface configuration app



IN+	1	IN mV	OUT	5	OUT+
IN-	2		U,I	6	GND 1
N.C.	3	POWER		7	Us+
N.C.	4			8	GND 2

**Short description:**

The 857-819 Millivolt Signal Conditioner converts input millivolt signals into an analog standard signal on the output side.

**Characteristics:**

- PC configuration interface
- Calibrated scale switching
- Clipping capability allows analog standard signal limitation to upper range values
- Safe 3-way isolation with 2.5 kV test voltage to EN 61140

Technical Data	
<b>Configuration:</b>	
Configuration	DIP switch, interface configuration software, interface configuration app
<b>Input:</b>	
Input signal	-100 mV ... +100 mV, 0 mV ... 200 mV, 0 mV ... 1000 mV * (in 100 mV increments)
Input resistance	> 1MΩ
Max. input signal	31.2V
<b>Output:</b>	
Output signal	0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V *
Load impedance	≤ 600 Ω (I output) ≥ 2 kΩ (U output)
Step response	50ms
<b>General specifications:</b>	
Nominal supply voltage $V_s$	24V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 40 mA
Min. measuring span	10 mV (configurable)
Transmission error	≤ 0.1 % of upper range value
Temperature coefficient	≤ 0.01 %/K

Description	Item No.	Pack. Unit
<b>JUMPFLEX® Signal Conditioner, for DIN 35 rail</b>	<b>857-819</b>	<b>1</b>
Millivolt Signal Conditioner with Millivolt Input as well as Current and Voltage Output		
<b>Technical Data</b>		
<b>Environmental requirements:</b>		
Ambient operating temperature	-25 °C ... +70 °C	
Storage temperature	-40 °C ... +85 °C	
<b>Safety and protection:</b>		
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min	
<b>Connection and type of mounting:</b>		
Wire connection	CAGE CLAMP® S	
Cross sections	solid: 0.08 mm² ... 2.5 mm² / AWG 28 ... 14	
	fine-stranded: 0.34 mm² ... 2.5 mm² / AWG 22 ... 14	
Strip lengths	9 ... 10 mm / 0.37 in	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	6 x 96 x 94	
	Height from upper-edge of DIN 35 rail	
Weight	50 g	
<b>Standards and approvals:</b>		
Conformity marking	CE	
UL 508		
Shipbuilding	CS	
<b>Accessories</b>	see pages 226 ... 236	
( * Additional setting options via PC configuration software or smartphone app)		



# 4 Plug-In Current Transformers

with CAGE CLAMP® connector

248

	<b>Plug-In Current Transformers</b> Secondary rated current: 1 A	<b>Plug-In Current Transformers</b> Secondary rated current: 5 A
--	---	---

### Short description:

The 855 Series Plug-In Current Transformers are inductive, single-conductor current transformers. Based on the principle of measurement, current transformers of this type are used exclusively in AC networks.

### Features:

- Screwless CAGE CLAMP® connection technology
- Several mounting options available
- Vibration- and shock-resistant
- High mechanical retention forces
- High current-carrying capacity
- Continuous overload of 120 % the nominal primary current
- Low-voltage current transformer for max. operating voltages up to 1.2 kV
- Can be used in 690 V power networks
- UL Recognized Components



Description	I <sub>pN</sub>	I <sub>sN</sub>	S <sub>N</sub>	G	Item No.	Pack. Unit	I <sub>pN</sub>	I <sub>sN</sub>	S <sub>N</sub>	G	Item No.	Pack. Unit
Plug-in current transformer	50 A	1 A	1.25	3	855-301/050-103	1	50 A	5 A	1.25	3	855-305/050-103	1
	60 A	1 A	1.25	1	855-301/060-101	1	60 A	5 A	1.25	1	855-305/060-101	1
	75 A	1 A	2.5VA	1	855-301/075-201	1	75 A	5 A	2.5VA	1	855-305/075-201	1
	100 A	1 A	2.5VA	1	855-301/100-201	1	100 A	5 A	2.5VA	1	855-305/100-201	1
	150 A	1 A	5VA	1	855-301/150-501	1	150 A	5 A	5VA	1	855-305/150-501	1
	200 A	1 A	5VA	1	855-301/200-501	1	200 A	5 A	5VA	1	855-305/200-501	1
I <sub>pN</sub> = Primary rated current	250 A	1 A	5VA	1	855-301/250-501	1	250 A	5 A	5VA	1	855-305/250-501	1
I <sub>sN</sub> = Secondary rated current	400 A	1 A	10VA	1	855-301/400-1001	1	400 A	5 A	10VA	1	855-305/400-1001	1
S <sub>N</sub> = Rated power	600 A	1 A	10VA	1	855-301/600-1001	1	600 A	5 A	10VA	1	855-305/600-1001	1
G = Accuracy class	400 A	1 A	5VA	1	855-401/400-501	1	400 A	5 A	5VA	1	855-405/400-501	1
	1000 A	1 A	10VA	1	855-501/1000-1001	1	1000 A	5 A	10VA	1	855-505/1000-1001	1

### Technical Data

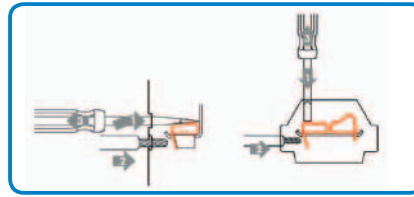
Input:		
Rated continuous thermal current I <sub>cth</sub>	1.2 x I <sub>N</sub>	1.2 x I <sub>N</sub>
Rated short-time thermal current I <sub>th</sub>	60 x I <sub>N</sub> (max.100 kA), 1 s	60 x I <sub>N</sub> (max.100 kA), 1 s
Max. operating voltage V <sub>m</sub>	1.2 kV	1.2 kV
Rated frequency	50 Hz ... 60 Hz	50 Hz ... 60 Hz
Overcurrent limiting factor	FS5 or FS10 (type-dependent, see type plate inscription)	FS5 or FS10 (type-dependent, see type plate inscription)
<b>Environmental requirements:</b>		
Ambient operating temperature	-5 °C ... +50 °C	-5 °C ... +50 °C
Storage temperature	-25 °C ... +70 °C	-25 °C ... +70 °C
Max. operating altitude	1000 m	1000 m
<b>Safety and protection:</b>		
Test voltage	6 kV <sub>rms</sub> AC / 50 Hz / 1 min	6 kV <sub>rms</sub> AC / 50 Hz / 1 min
Insulation class	E	E
<b>Connection and type of mounting:</b>		
Connection technology (1)	CAGE CLAMP®	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 4 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 4 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	9 ... 10 mm / 0.37 in	9 ... 10 mm / 0.37 in
<b>Standards and approvals:</b>		
Conformity marking	CE	CE
Standards/Specifications	EN 61869-2:2012	EN 61869-2:2012
UL (Recognized Components)	E356480	E356480

Accessories	Item No.	Pack. Unit
Carrier rail adapter for plug-in current transformers (for 855-3xx/xxx-xxxx and 855-4xx/xxx-xxxx)	855-9900	1
Quick-mount kit	855-9910	1
Operating tool, with partially insulated shaft, type 2, blade (3.5 x 0.5) mm	210-720	1
Connector assembly for current transformer	2007-8873	1

855 Series

Connection / Connection Assignment

Implementation of the primary winding is designated with "K-P1" and "L-P2." Connections for the secondary winding are designated with the corresponding lower case letters "k-S1" and "l-S2."

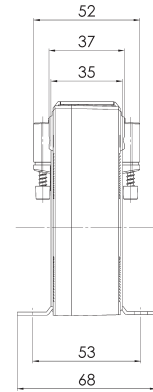
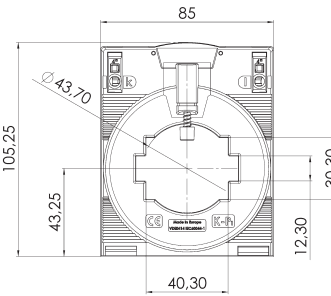
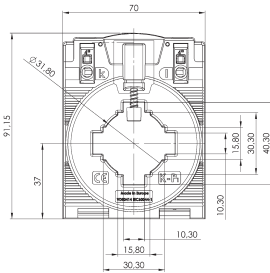
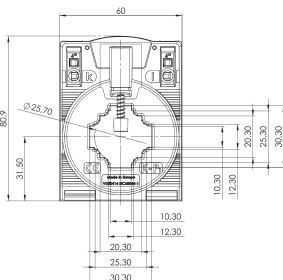


Dimensions:

Item No.  
855-3xx/xxxx-xxxx

Item No.  
855-4xx/xxxx-xxxx

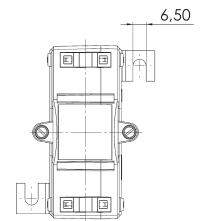
Item No.  
855-5xx/xxxx-xxxx



Current bar 1: 30 x 10 mm  
Current bar 2: 25 x 12 mm  
Current bar 3: 20 x 20 mm  
Round cable: 26 mm

Current bar 1: 40 x 10 mm  
Current bar 2: 30 x 15 mm  
Round cable: 32 mm

Current bar 1: 50 x 12 mm  
Current bar 2: 40 x 30 mm  
Round cable: 44 mm



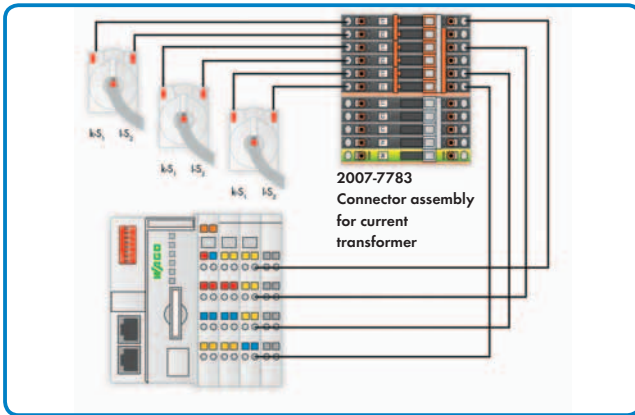
Width: 60 mm  
Overall height: 80.5 mm  
Overall depth: 52 mm

Width: 70 mm  
Overall height: 91 mm  
Overall depth: 52 mm

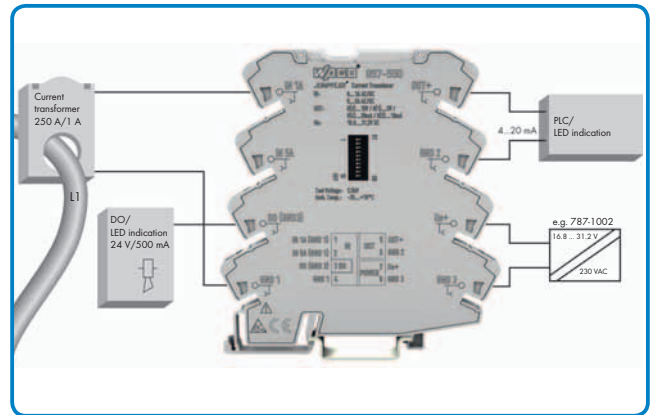
Width: 85 mm  
Overall height: 105.25 mm  
Overall depth: 52 mm

Application examples:

750 Series (3-Phase Power Measurement Module)



857 Series (JUMPFLEX® Current Transducer)



Mounting Options



Mounting on round cable

Mounting on copper current bar

Mounting on carrier rail with carrier rail adapter

Mounting on mounting plate

Quick-mount installation for conductors

Note:

\* The carrier rail adapter is only suitable for 855-3xx/xxxx-xxxx and 855-4xx/xxxx-xxxx transformers.

# 4 Plug-In Current Transformers, 855 Series

with **picoMAX®** pluggable connector

	<b>Primary rated current: 35 A</b> <b>Secondary rated current: 1 A</b>	<b>Primary rated current: 64 A</b> <b>Secondary rated current: 1 A</b>
--	---	---

**Short description:**

The 855 Series Plug-In Current Transformers are inductive, single-conductor current transformers. Due to the measurement principle used, these current transformers are exclusively designed for AC network applications.

**Features:**

- First current transformer featuring **picoMAX®** connection technology
- Also suitable for space-restricted applications
- Simple assembly permits 17.5 mm phase spacing, allowing perfect adjustment to any circuit breaker.
- Easy mounting on DIN rails or panels via carrier rail adapter
- Converts currents from 64 A or 35 A to 1 A
- Accuracy class 1



Description	I <sub>pN</sub>	I <sub>sN</sub>	S <sub>N</sub>	G	Item No.	Pack. Unit	I <sub>pN</sub>	I <sub>sN</sub>	S <sub>N</sub>	G	Item No.	Pack. Unit
Plug-in current transformer	35 A	1 A	0.2VA	1	855-2701/035-001	15	64 A	1 A	0.2VA	1	855-2701/064-001	15
I <sub>pN</sub> = Primary rated current												
I <sub>sN</sub> = Secondary rated current												
S <sub>N</sub> = Rated power												
G = Accuracy class												

Technical Data												
<b>Input:</b>												
Rated continuous thermal current I <sub>cth</sub>	100 %					100 %						
Rated short-time thermal current I <sub>th</sub>	60 x I <sub>pr</sub> / 1 s					60 x I <sub>pr</sub> / 1 s						
Rated surge current I <sub>dyn</sub>	2.5 x I <sub>th</sub>					2.5 x I <sub>th</sub>						
Max. operating voltage V <sub>m</sub>	0.72/3/- kV					0.72/3/- kV						
Rated frequency f <sub>R</sub>	50 Hz ... 60 Hz					50 Hz ... 60 Hz						
<b>Environmental requirements:</b>												
Ambient operating temperature	-10 °C ... +55 °C					-10 °C ... +55 °C						
Storage temperature	-20 °C ... +70 °C					-20 °C ... +70 °C						
Rel. humidity	5 % ... 85 % (non-condensing)					5 % ... 85 % (non-condensing)						
Max. operating altitude	2000 m					2000 m						
<b>Safety and protection:</b>												
Degree of protection	IP20					IP20						
Insulation class	E (120 °C)					E (120 °C)						
Housing material	PA 6.6					PA 6.6						
Flammability rating	V2 (UL94)					V2 (UL94)						
<b>Connection and type of mounting:</b>												
Power cable feed-through	Ø 7.5 mm					Ø 7.5 mm						
Wire connection	CAGE CLAMP® S (picoMAX® 3.5, 2091-1122)					CAGE CLAMP® S (picoMAX® 3.5, 2091-1122)						
Cross sections	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> / 24 ... 14					0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> / 24 ... 14						
Strip lengths	8 ... 9 mm / 0.31 ... 0.35 in					8 ... 9 mm / 0.31 ... 0.35 in						
<b>Standards and approvals:</b>												
Conformity marking	CE					CE						
Standards/Specifications	EN 61869-2:2012					EN 61869-2:2012						

Accessories	Item No.	Pack. Unit
Carrier rail adapter for plug-in current transformer	855-9927	1
Connector assembly for current transformer	2007-8873	1
Operating tool, with partially insulated shaft, type 2, blade (3.5 x 0.5) mm	210-720	1



855 Series

Termination



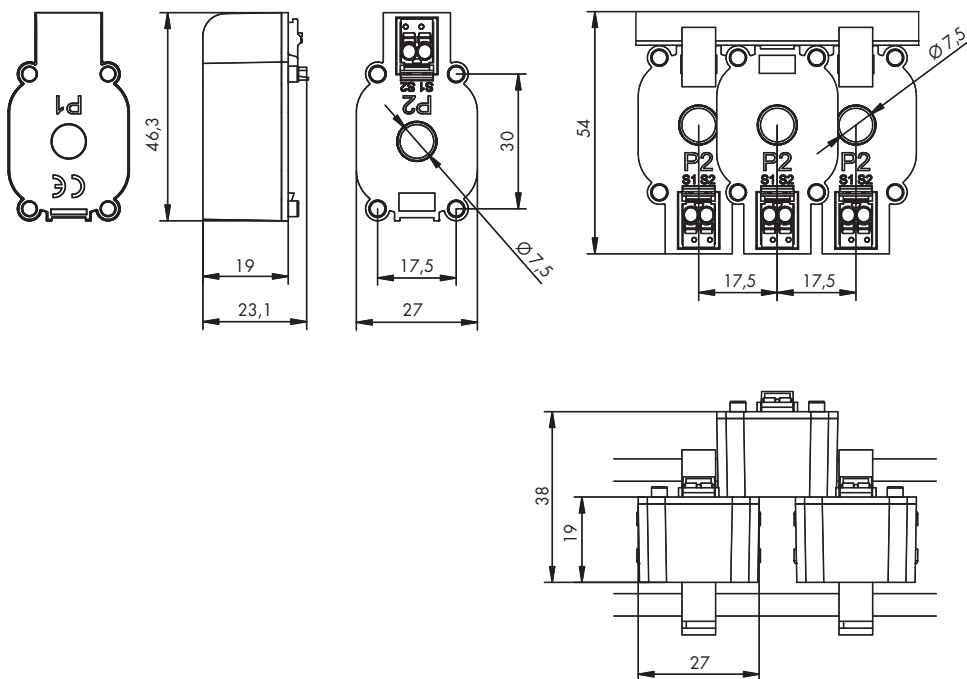
Mounting



Application



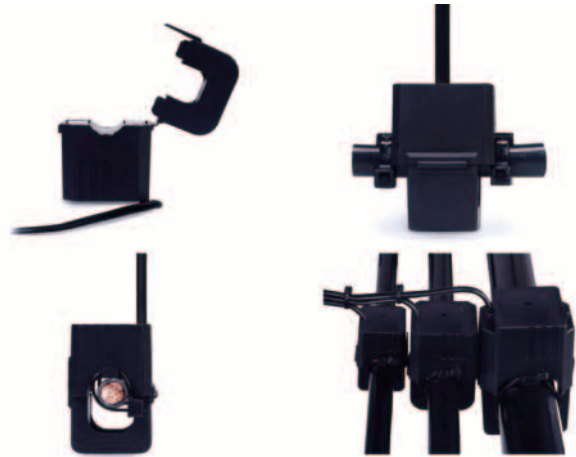
Dimensions





# 4 Split-Core Current Transformers

252



### Short description:

WAGO's compact split-core current transformers are ideal for retrofit applications in existing systems. They are particularly suited for applications in which the current path may not be disrupted. The transformer's accuracy permits extremely precise current measurements. The split-core current transformers are capable of supplying the specified rated power at the end of the secondary cable. All transformers are supplied with color-coded cables. Two UV-resistant cable ties for reliable and easy mounting are also included.

### Features:

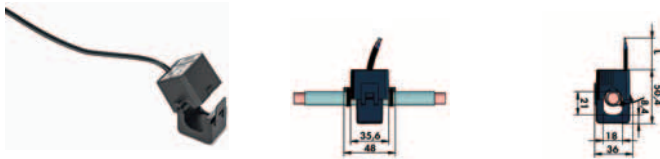
- Current ratios from 60 A up to 1000 A (primary side) and 1 A or 5 A (secondary side)
- No interruption of the measuring cable
- Ideal for use in very confined spaces
- Superfast mounting
- For use around insulated cables up to Ø 42 mm
- Compact and hinged
- Color-coded connecting cables up to 5 m

### Technical Data

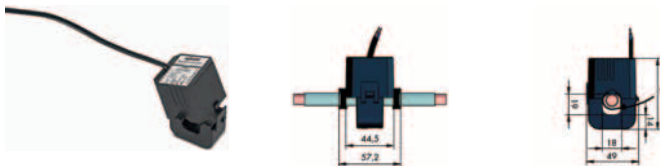
Input:	
Rated continuous thermal current $I_{cth}$	100 %
Rated short-time thermal current $I_{th}$	$60 \times I_{pr} / 1 \text{ s}$
Rated surge current $I_{dyn}$	$2.5 \times I_{th}$
Rated frequency $f_R$	50 Hz ... 60 Hz
Max. operating voltage $V_m$	0.72/3/- kV
Connection:	
Conductor size	0.5 mm <sup>2</sup> , fine-stranded (855-xxx1/...) 1.5 mm <sup>2</sup> , fine-stranded (855-xxx5/...)
Conductor identification	brown = S1, blue = S2 (855-xxx1/...) black = S1, red = S2 (855-xxx5/...)

### Technical Data

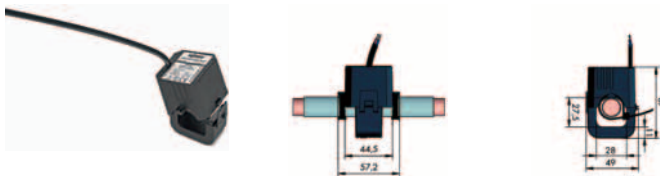
Environmental Requirements:	
Ambient operating temperature	-10 °C ... +55 °C
Storage temperature	-10 °C ... +40 °C (855-5xxx/1000-000)
Relative humidity	5 % ... 85 % (non-condensing)
Max. operating altitude	2000 m
Safety and protection:	
Degree of protection	IP20
Insulation class	E (120 °C)
Housing material	PA 6.6
Flammability rating	V2 (UL94)
Standards and approvals:	
Conformity marking	CE
Standards/Specifications	EN 61869-2:2012



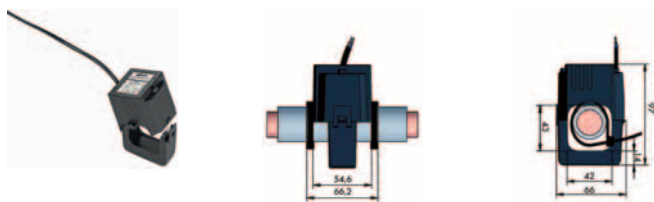
Power Cable Feed-Through	Primary Rated Current	Secondary Rated Current	Rated Power	Accuracy Class	Cable Length	Item No.	Pack. Unit
Ø 18 mm	60 A	1 A	0.2VA	3	3 m	855-3001/060-003	1
	100 A	1 A	0.2VA	3	3 m	855-3001/100-003	1
	200 A	1 A	0.2VA	1	3 m	855-3001/200-001	1
	250 A	1 A	0.2VA	1	3 m	855-3001/250-001	1



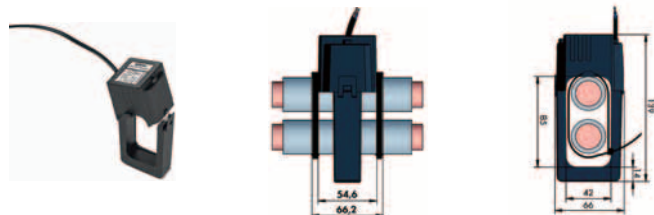
Power Cable Feed-Through	Primary Rated Current	Secondary Rated Current	Rated Power	Accuracy Class	Cable Length	Item No.	Pack. Unit
Ø 18 mm	100 A	1 A	0.2VA	1	3 m	855-4001/100-001	1
	150 A	1 A	0.2VA	1	3 m	855-4001/150-001	1
	150 A	5 A	1VA	1	0.5 m	855-4005/150-101	1
	200 A	1 A	0.2VA	0.5	3 m	855-4001/200-001	1



Power Cable Feed-Through	Primary Rated Current	Secondary Rated Current	Rated Power	Accuracy Class	Cable Length	Item No.	Pack. Unit
Ø 28 mm	200 A	1 A	0.2VA	1	3 m	855-4101/200-001	1
	250 A	1 A	0.2VA	1	3 m	855-4101/250-001	1
	250 A	5 A	1VA	1	0.5 m	855-4105/250-101	1
	400 A	1 A	0.2VA	1	3 m	855-4101/400-001	1
	400 A	5 A	1VA	1	0.5 m	855-4105/400-101	1



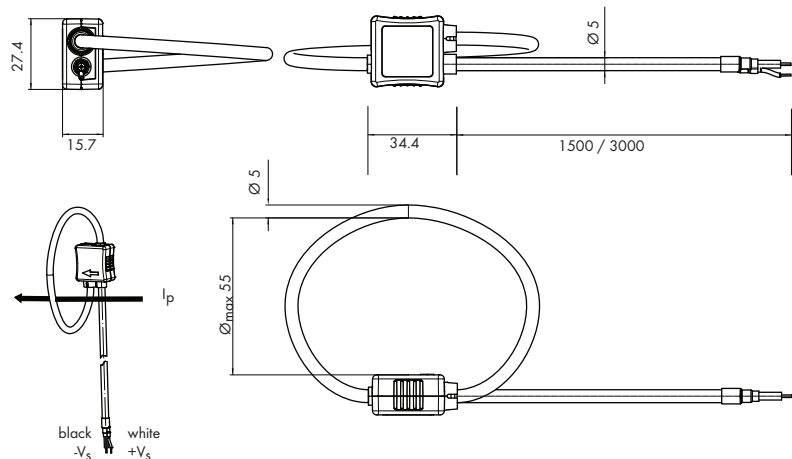
Power Cable Feed-Through	Primary Rated Current	Secondary Rated Current	Rated Power	Accuracy Class	Cable Length	Item No.	Pack. Unit
Ø 42 mm	250 A	1 A	0.5VA	1	5 m	855-5001/250-001	1
	400 A	1 A	0.5VA	0.5	5 m	855-5001/400-000	1
	400 A	5 A	0.5VA	1	3 m	855-5005/400-001	1
	600 A	1 A	0.5VA	0.5	5 m	855-5001/600-000	1
	600 A	5 A	0.5VA	0.5	3 m	855-5005/600-000	1
	1000 A	1 A	0.5VA	0.5	5 m	855-5001/1000-000	1
	1000 A	5 A	0.5VA	0.5	3 m	855-5005/1000-000	1



Power Cable Feed-Through	Primary Rated Current	Secondary Rated Current	Rated Power	Accuracy Class	Cable Length	Item No.	Pack. Unit
Ø Ø 42 mm x 48	1000 A	1 A	0.5VA	0.5	5 m	855-5101/1000-000	1
	1000 A	5 A	0.5VA	0.5	3 m	855-5105/1000-000	1

# 4 Rogowski Coils RT 500

254



Output voltage (open output, no load)

- dynamic	$V_{out} = M \times dI_p/dt$
- sinusoidal signal	$V_{out} = 2 \times \pi \times M \times f \times I_p \text{ AC}$
	Example: $V_{out} = 2 \times \pi \times 0.064 \mu\text{H} \times 50 \text{ Hz} \times 500 \text{ A} = 10.05 \text{ mV}$

### Short description:

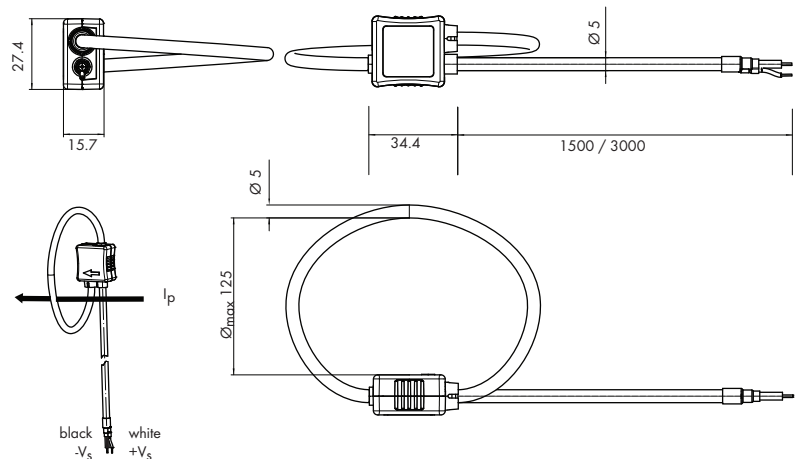
The Rogowski coil is a closed-air coil with non-magnetic split core, placed around a conductor or a current bar. The magnetic field produced by the AC current flowing through the conductor induces an output voltage in the coil. This measurement procedure provides galvanic isolation between the primary circuit (power) and secondary circuit (measurement). Easy placement of the Rogowski coils allows existing systems to be retrofitted without time-consuming installation or process interruption. The Rogowski coil can be used together with the 789-652 Signal Conditioner or the 857-552 Rogowski Signal Conditioner.

### Features:

- Split-core style coil for easy installation
- $\varnothing 55$  mm coil aperture for non-contact measurement
- 1.5 m or 3 m output cable
- Insulated plastic case to UL 94-V0

Description	Item No.	Pack. Unit
Rogowski coil RT 500, 1.5 m output cable	855-9100/500-000	3
Rogowski coil RT 500, 3 m output cable	855-9300/500-000	3
<b>Approvals</b>		
Conformity marking	CE	
Standards/Specifications	IEC 61010-1:2001 (2nd edition), IEC 61010-2-032:2002, IEC 61010-031:2002 + A1:2008	
<b>Technical Data</b>		
<b>Electrical data</b>		
Primary rated current $I_{pN}$	500 A <sub>rms</sub>	
Coil inductance ( $\pm 5\%$ )	125 $\mu\text{H}$	
Coil resistance	40 $\Omega$	
	(at 20 °C ambient operating temperature, typ.)	
Transfer ratio M	0.064 $\mu\text{H}$ (WAGO provides uncalibrated coils with 5% tolerance)	
Output signal	Example shown above 10.05 mV at $I_{pN} = 500 \text{ A}$ , sinusoidal, 50 Hz (open output, no load)	
Max. operating frequency	700 kHz (open output, no load)	

Technical Data	
<b>Accuracy and dynamic performance:</b>	
Linearity error	none
Temperature coefficient	30 ppm/K, related to transfer ratio M
Positioning error	855-9100/500-000: max. 0.65 % 855-9300/500-000: max. 0.80 % (considering a primary conductor of at least $\varnothing 15$ mm perpendicular to the coil)
<b>Safety and protection:</b>	
Nominal isolation voltage	300 V <sub>rms</sub> (between primary conductor and ground)
Voltage for isolation test	3.5 kV <sub>rms</sub> AC / 50 Hz / 1 min
Impulse withstand voltage (1.2/50 $\mu\text{s}$ )	6.5 kV
Adjacent contacts	6 mm / 6 mm
Comparative Tracking Index (CTI, group I)	600 V (plastic parts)
Degree of protection	IP2X
<b>General specifications:</b>	
Cable length	855-9100/500-000: 1.5 m 855-9300/500-000: 3 m
Ambient operating temperature	-10 °C ... +65 °C
Storage temperature	-25 °C ... +70 °C
Weight	85 g



Output voltage (open output, no load)

- dynamic	$V_{out} = M \times dI_p/dt$
- sinusoidal signal	$V_{out} = 2 \times \pi \times M \times f \times I_p \text{ AC}$
	Example: $V_{out} = 2 \times \pi \times 0.064 \mu\text{H} \times 50 \text{ Hz} \times 2000 \text{ A} = 40.2 \text{ mV}$

#### Short description:

The Rogowski coil is a closed-air coil with non-magnetic split core, placed around a conductor or a current bar.

The magnetic field produced by the AC current flowing through the conductor induces an output voltage in the coil.

This measurement procedure provides galvanic isolation between the primary circuit (power) and secondary circuit (measurement).

Easy placement of the Rogowski coils allows existing systems to be retrofitted without time-consuming installation or process interruption.

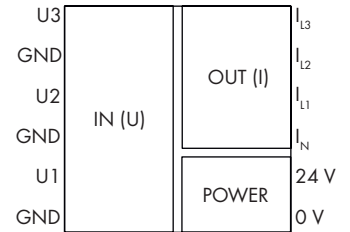
The Rogowski coil can be used together with the 857-552 Rogowski Signal Conditioner.

#### Features:

- Split-core style coil for easy installation
- Ø 125 mm coil aperture for non-contact measurement
- 1.5 m or 3 m output cable
- Insulated plastic case to UL 94-V0

Description	Item No.	Pack. Unit
Rogowski coil RT 2000, 1.5 m output cable	855-9100/2000-000	3
Rogowski coil RT 2000, 3 m output cable	855-9300/2000-000	3
<b>Approvals</b>		
Conformity marking	CE	
Standards/Specifications	IEC 61010-1:2001 (2nd edition), IEC 61010-2-032:2002, IEC 61010-031:2002 + A1:2008	
<b>Technical Data</b>		
<b>Electrical data</b>		
Primary rated current $I_{pN}$	2000 A <sub>rms</sub>	
Coil inductance ( $\pm 5\%$ )	190 $\mu\text{H}$	
Coil resistance	60 $\Omega$	
	(at 20 °C ambient operating temperature, typ.)	
Transfer ratio M	0.064 $\mu\text{H}$ (WAGO provides uncalibrated coils with 5% tolerance)	
Output signal	Example shown above 40.2 mV at $I_{pN} = 2000 \text{ A}$ , sinusoidal, 50 Hz (open output, no load)	
Max. operating frequency	500 kHz (open output, no load)	

Technical Data	
<b>Accuracy and dynamic performance:</b>	
Linearity error	none
Temperature coefficient	30 ppm/K, related to transfer ratio M
Positioning error	855-9100/2000-000: max. 0.65 % 855-9300/2000-000: max. 0.80 % (considering a primary conductor of at least Ø 15 mm perpendicular to the coil)
<b>Safety and protection:</b>	
Nominal isolation voltage	300 V <sub>rms</sub> (between primary conductor and ground)
Voltage for isolation test	3.5 kV <sub>rms</sub> AC / 50 Hz / 1 min
Impulse withstand voltage (1.2/50 $\mu\text{s}$ )	6.5 kV
Adjacent contacts	6 mm / 6 mm
Comparative Tracking Index (CTI, group I)	600 V (plastic parts)
Degree of protection	IP2X
<b>General specifications:</b>	
Cable length	855-9100/2000-000: 1.5 m 855-9300/2000-000: 3 m
Ambient operating temperature	-10 °C ... +65 °C
Storage temperature	-25 °C ... +70 °C
Weight	90 g

**Short description:**

The Rogowski Current Signal Conditioner acquires 5–500A alternating currents in a three-phase system.

The magnetic field produced around each conductor is sensed via three non-contact Rogowski coils and provided as a proportional voltage signal to the signal conditioner. The current signal conditioner adjusts the phase of each of the three voltage signals, converting them into 100mA alternating current signals. These are then transmitted to the 750-493/000-002 3-Phase Power Measurement Module.

The 750-493/000-002 3-Phase Power Measurement Module within the WAGO-I/O-SYSTEM measures electrical data (e.g., voltages, currents, effective power and energy consumption) in a three-phase supply network. Thus, the user is always able to determine the load condition (imbalance, capacitive components), to optimize consumption and protect machines or systems from damage and breakdowns. Easy installation of Rogowski coils also allows existing systems to be retrofitted without process interruption.

Description	Item No.	Pack. Unit
Signal Conditioner for RT 500 Rogowski Coils	789-652	1
<b>Accessories</b>		
Rogowski Coil RT 500, 1.5 m output cable	855-9100/500-000	3
Rogowski Coil RT 500, 3 m output cable	855-9300/500-000	3
3-Phase Power Measurement Module (480V/1A)	750-494	1
<b>Technical Data</b>		
<b>Input:</b>		
Input signal	3 x RT500 (500 A)	
Sensitivity	10.05 mV	
	50 Hz sinus	
<b>Outputs:</b>		
Output signal	3 x 100 mA AC	
Rated output current	100 mA AC (for direct connection to 750-493/000-002 Phase Power Measurement Module)	
Overcurrent	750 A (max. 150 mA per output)	

Technical Data	
<b>General specifications:</b>	
Supply voltage range	16.8 ... 32 V
Max. power consumption	4000 mW
Operational indication	LED, green
Degree of protection	IP20
Phase error	< 1°
Max. operating frequency	300 Hz (phase accuracy at 50 Hz only)
Linearity	≤ 0.1 %
Temperature coefficient	≤ 0.1 %/K
Transmission error	< 1.1 %
Response threshold	2 A
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
<b>Safety and protection:</b>	
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
<b>Connection and type of mounting:</b>	
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Strip lengths	5 ... 6 mm / 0.22 in
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	70 x 55 x 90
Weight	128.4 g
<b>Standards and approvals:</b>	
Conformity marking	CE
UL 508	(pending)

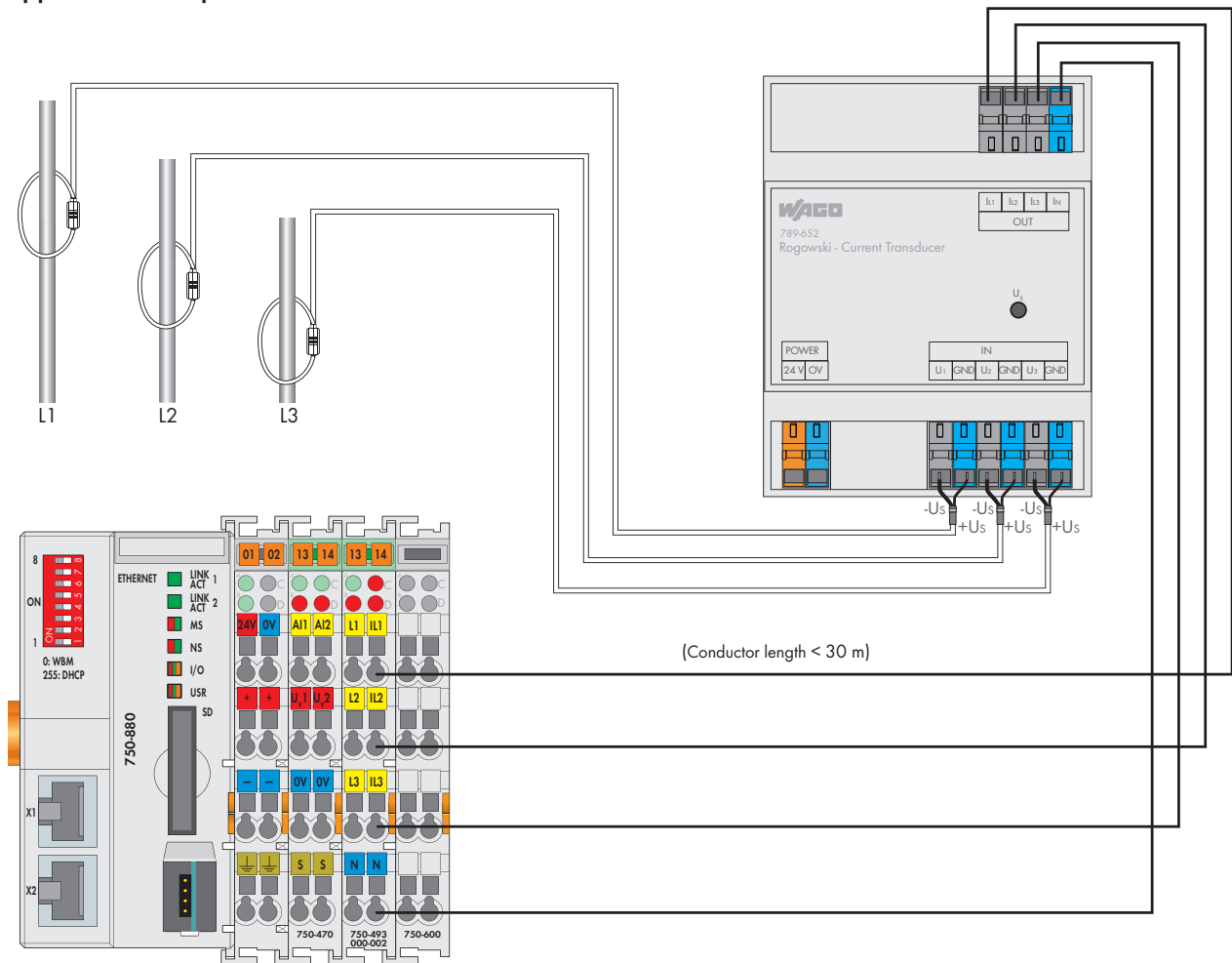
Recommended conductor sizes and lengths:

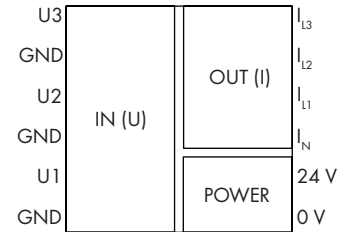
789-652

Conductor size in mm <sup>2</sup>	Conductor length in m							
	1	2	3	5	10	15	20	25
0.14	0.26	0.51	0.77	1.28	2.55	3.83	5.10	6.38
0.34	0.11	0.21	0.32	0.53	1.05	1.58	2.10	2.63
0.5	0.07	0.14	0.21	0.36	0.71	1.07	1.43	1.79
0.75	0.05	0.10	0.14	0.24	0.48	0.71	0.95	1.19
1	0.04	0.07	0.11	0.18	0.36	0.54	0.71	0.89
1.25	0.03	0.06	0.09	0.14	0.29	0.43	0.57	0.71
1.5	0.02	0.05	0.07	0.12	0.24	0.36	0.48	0.60
2.5	0.01	0.03	0.04	0.07	0.14	0.21	0.29	0.36

Conductor resistance in Ω (total value for both outgoing and return conductors)  
 Recommendation: Select the conductor size so that the conductor resistance is ≤ 0.3 Ω.

Application example:



**Short description:**

The Rogowski Current Signal Conditioner acquires 5–2000A alternating currents in a three-phase system.

The magnetic field produced around each conductor is sensed via three non-contact Rogowski coils and provided as a proportional voltage signal to the signal conditioner. The current signal conditioner adjusts the phase of each of the three voltage signals, converting them into 100mA alternating current signals. These are then transmitted to the 750-494 3-Phase Power Measurement Module.

The 750-494 3-Phase Power Measurement Module within the WAGO-I/O-SYSTEM measures electrical data (e.g., voltages, currents, effective power and energy consumption) in a three-phase supply network. Thus, the user is always able to determine the load condition (imbalance, capacitive components), to optimize consumption and protect machines or systems from damage and breakdowns. Easy installation of Rogowski coils also allows existing systems to be retrofitted without process interruption.

Description	Item No.	Pack. Unit
Signal Conditioner for RT 2000 Rogowski Coils	789-654	1
<b>Accessories</b>		
Rogowski Coil RT 2000, 1.5 m output cable	855-9100/2000-000	3
Rogowski Coil RT 2000, 3 m output cable	855-9300/2000-000	3
3-Phase Power Measurement Module (480V/1A)	750-494	1
<b>Technical Data</b>		
<b>Input:</b>		
Input signal	3 x RT 2000 (2000 A)	
Sensitivity	42.2 mV	
	50 Hz sinus	
<b>Outputs</b>		
Output signal	3 x 100 mA AC	
Rated output current	100 mA AC (for direct connection to 750-494 Phase Power Measurement Module)	
Overcurrent	3000 A (max. 150 mA per output)	

Technical Data	
<b>General specifications:</b>	
Supply voltage range	16.8 ... 32 V
Max. power consumption	4000 mW
Operational indication	LED, green
Degree of protection	IP20
Phase error	< 1°
Max. operating frequency	300 Hz (phase accuracy at 50 Hz only)
Linearity	≤ 0.1 %
Temperature coefficient	≤ 0.1 %/K
Transmission error	< 1.1 %
Response threshold	2 A
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
<b>Safety and protection:</b>	
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
<b>Connection and type of mounting:</b>	
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Strip lengths	5 ... 6 mm / 0.22 in
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	70 x 55 x 90
Weight	128.3 g
<b>Standards and approvals:</b>	
Conformity marking	CE
UL 508	(pending)



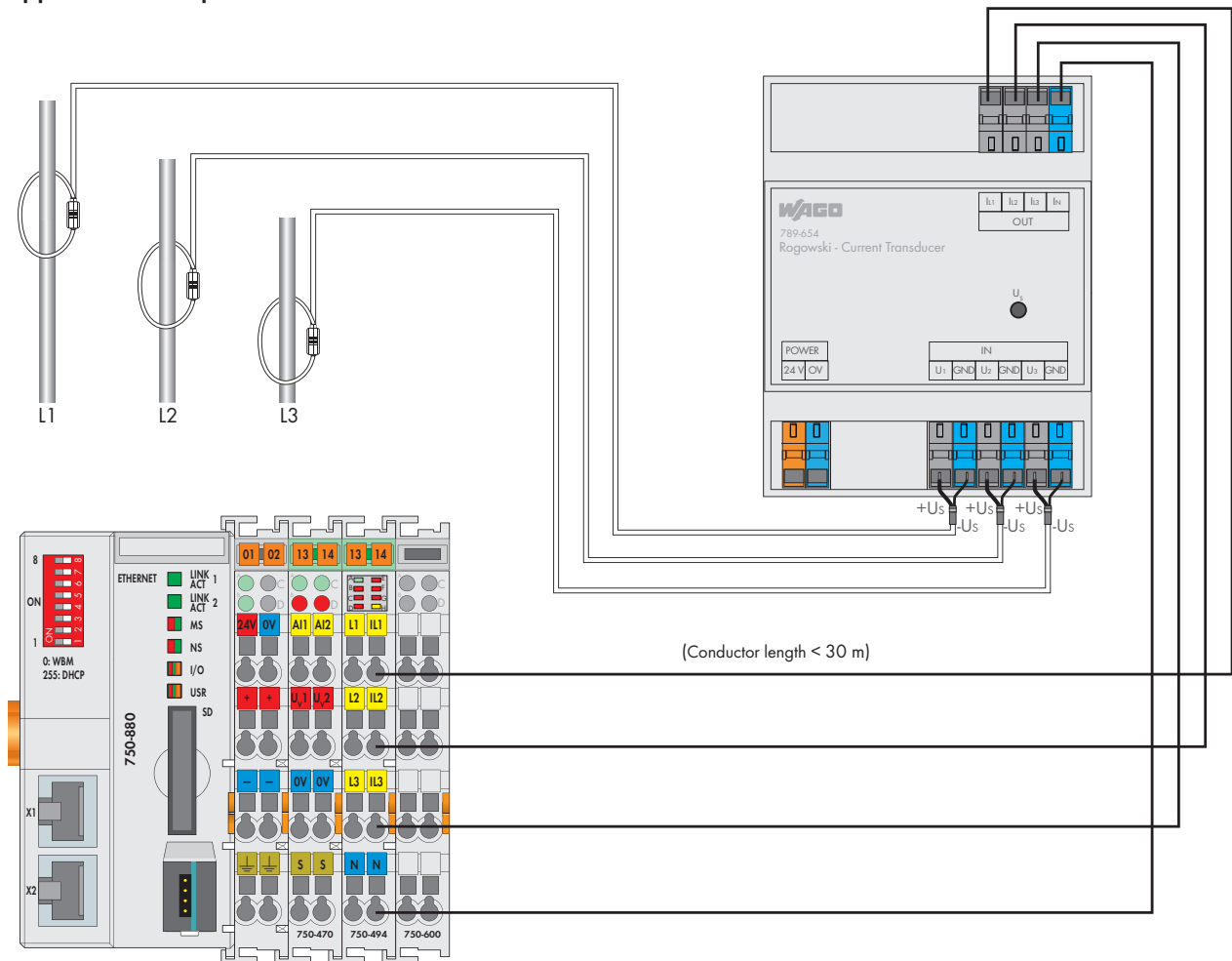
Recommended conductor sizes and lengths:

789-654

Conductor size in mm <sup>2</sup>	Conductor length in m							
	1	2	3	5	10	15	20	25
0.14	0.26	0.51	0.77	1.28	2.55	3.83	5.10	6.38
0.34	0.11	0.21	0.32	0.53	1.05	1.58	2.10	2.63
0.5	0.07	0.14	0.21	0.36	0.71	1.07	1.43	1.79
0.75	0.05	0.10	0.14	0.24	0.48	0.71	0.95	1.19
1	0.04	0.07	0.11	0.18	0.36	0.54	0.71	0.89
1.25	0.03	0.06	0.09	0.14	0.29	0.43	0.57	0.71
1.5	0.02	0.05	0.07	0.12	0.24	0.36	0.48	0.60
2.5	0.01	0.03	0.04	0.07	0.14	0.21	0.29	0.36

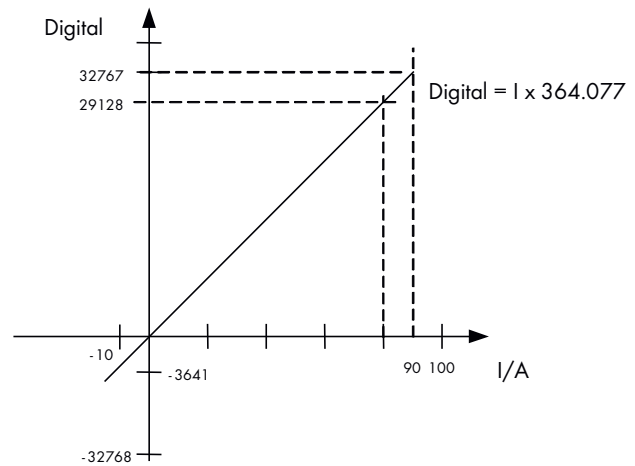
Conductor resistance in Ω (total value for both outgoing and return conductors)  
 Recommendation: Select the conductor size so that the conductor resistance is ≤ 0.3 Ω.

Application example:



# Current Sensor with Bus Connection in DIN-Rail Mountable Enclosure

Measuring range 0 ... 80 A DC



### Short description:

Intelligent current sensor for monitoring solar plants or inverters for DC measurements within a large current measuring range.

Description	Item No.	Pack. Unit
Current sensor with bus connection	789-620	1
<b>Accessories</b>		
Accessories for data and auxiliary power supply		
RJ-45 interface module	289-965	1
RJ-45 interface module with shield (screen) clamping saddle	289-966	1
ETHERNET RJ-45 connector, IP20	750-975	1
<b>Approvals</b>		
Conformity marking	CE	
Standards/Specifications	DIN EN 50178; EN 61000-6-2 ; EN 61000-6-4	
<b>General Specifications</b>		
Dimensions (mm) W x H x L	35 x 55 x 90 Height from upper-edge of DIN 35 rail	
Ambient operating temperature	-20 °C ... +70 °C	
Storage temperature	-40 °C ... +85 °C	

Technical Data	
<b>Electrical data:</b>	
Measuring range	0 ... 80 A DC
Voltage supply	12 - 34V
Max. current consumption	≤ 8 mA at 24 V
Transmission error	≤ 0.5 % of upper range value (at room temperature)
Temperature coefficient	0.01 % /K
Time frame for polling by master	< 30 ms
Hot plugging	possible
Terminating resistor	150 Ω (can be activated via DIP switch 1)
Status indication	Green: power Red: measured current < -3 A or > 83 A
<b>Mechanical data:</b>	
Power cable feed-through	15 mm
Degree of protection	IP20
<b>Communication:</b>	
Interface	RS-485
Transmission channels	Half duplex 8-bit data, 1 stop bit
Protocols	MODBUS over serial line
Connector	RJ-45
Addressing	1 ... 32
Max. length of bus line	≤ 1200m
Baud rate	19,200 baud
Parity	Even

789-620

RJ-45-Connector Pin Assignment:

Pin	Function
1	Ub
2	
3	n.c.
4	A (Data+)
5	B (Data-)
6	n.c.
7	GND
8	

Communication Description:

MODBUS Function	Read Holding Registers (0x03)
Address of Measured Value	0x0004
Data Type Measurement	Integer

Error Numbers:

id	Description
01	Illegal Function
03	Illegal Data
101	Overflow (Current > +83 A)
102	Underflow (Current < -3 A)

DIP Switch Adjustability

● = ON

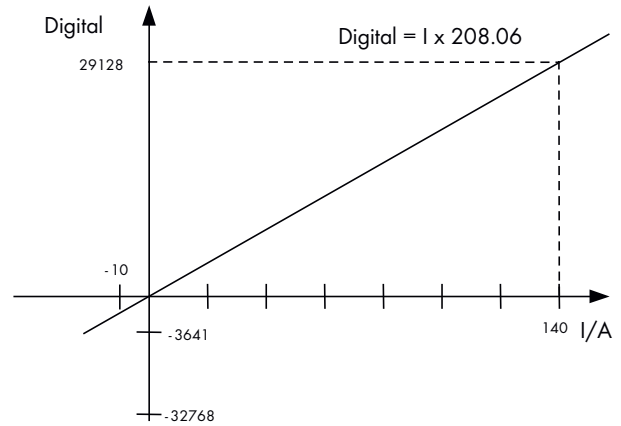
Address	DIP Switch					
	2	3	4	5	6	
1						
2					●	
3				●		
4				●	●	
5			●			
6			●		●	
7			●	●		
8			●	●	●	
9		●				
10		●			●	
11		●		●		
12		●		●	●	
13		●	●			
14		●	●		●	
15		●	●	●		
16		●	●	●	●	
17	●					
18	●				●	
19	●			●		
20	●			●	●	
21	●		●			
22	●		●		●	
23	●		●	●		
24	●		●	●	●	
25	●	●				
26	●	●			●	
27	●	●		●		
28	●	●		●	●	
29	●	●	●			
30	●	●	●		●	
31	●	●	●	●		
32	●	●	●	●	●	

Terminating resistor	DIP Switch 1
-	
150 Ohm	●

NOTICE:  
Only set the MODBUS address in the OFF state.

## Current Sensor with Bus Connection in DIN-Rail Mountable Enclosure

Measuring range: 0 ... 140 A DC



### Short description:

Intelligent current sensor for monitoring solar plants or inverters for DC measurements within a large current measuring range.

Description	Item No.	Pack. Unit
Current sensor with bus connection	789-621	1
<b>Accessories</b>		
Accessories for data and auxiliary power supply		
RJ-45 interface module	289-965	1
RJ-45 interface module with shield (screen) clamping saddle	289-966	1
ETHERNET RJ-45 connector, IP20	750-975	1
<b>Approvals</b>		
Conformity marking	CE	
Standards/Specifications	DIN EN 50178; EN 61000-6-2 ; EN 61000-6-4	
<b>General Specifications</b>		
Dimensions (mm) W x H x L	35 x 55 x 90	
Ambient operating temperature	-20 °C ... +70 °C	
Storage temperature	-40 °C ... +85 °C	

Technical Data	
<b>Electrical data:</b>	
Measuring range	0 - 140A DC
Voltage supply	12 - 34V
Max. current consumption	≤ 8 mA at 24 V
Transmission error	0 - 80A: ≤ 0.5% of upper range value (at room temperature); 80 - 140A: ≤ 1% of upper range value (at room temperature)
Temperature coefficient	≤ 0.05% /K (at ambient operating temperature: -20 °C ... +60 °C); ≤ 0.1% /K (at ambient operating temperature: +60 °C ... +70 °C)
Time frame for polling by master	< 30 ms
Hot plugging	possible
Terminating resistor	150Ω (can be activated via DIP switch 1)
Status indication	Green: power; Red: measured current < -3A or > 143A
<b>Mechanical data:</b>	
Power cable feed-through	15 mm
Degree of protection	IP20
<b>Communication:</b>	
Interface	RS-485
Transmission channels	Half duplex, 8-bit data, 1 stop bit
Protocols	MODBUS RTU Slave over serial line
Connector	RJ-45
Addressing	1 ... 32
Max. length of bus line	≤ 1200m
Baud rate	19200 baud
Parity	Even

789-621

RJ-45-Connector Pin Assignment:

Pin	Function
1	Ub
2	
3	n.c.
4	A (Data+)
5	B (Data-)
6	n.c.
7	GND
8	

Communication Description:

MODBUS Function	Read Holding Registers (0x03)
Address of Measured Value	0x0004
Data Type Measurement	Integer

Error Numbers:

id	Description
01	Illegal Function
03	Illegal Data
101	Overflow (Current > +83 A)
102	Underflow (Current < -3 A)

DIP Switch Adjustability

● = ON

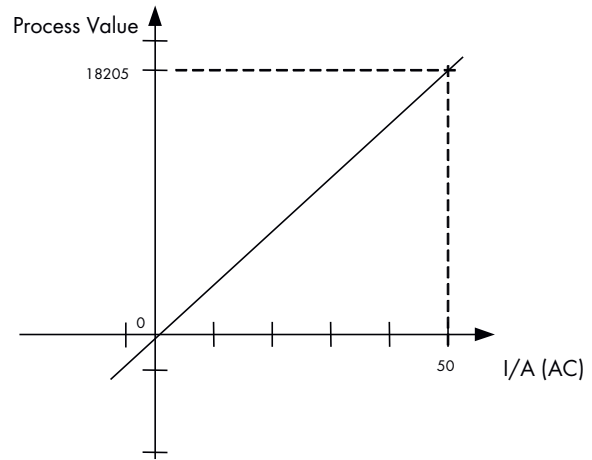
Adress	DIP Switch					
	2	3	4	5	6	
1						
2						●
3					●	
4					●	●
5				●		
6				●		●
7				●	●	
8				●	●	●
9		●				
10		●				●
11		●			●	
12		●			●	●
13		●	●			
14		●	●			●
15		●	●	●		
16		●	●	●	●	●
17	●					
18	●					●
19	●				●	
20	●				●	●
21	●			●		
22	●			●		●
23	●			●	●	
24	●			●	●	●
25	●	●				
26	●	●				●
27	●	●			●	
28	●	●			●	●
29	●	●	●			
30	●	●	●			●
31	●	●	●	●		
32	●	●	●	●	●	●

Terminating resistor	DIP Switch 1
-	
150 Ohm	●

NOTICE:  
Only set the MODBUS address in the OFF state.

## Current Sensor with Bus Connection in DIN-Rail Mountable Enclosure

Measuring range: 0 ... 50 A<sub>rms</sub> AC<sub>eff.</sub>



### Short description:

Intelligent DIN 35-rail mount current sensor for monitoring AC currents.

Description	Item No.	Pack. Unit
Current sensor with bus connection	789-622	1
<b>Accessories</b>		
<b>Accessories for data and auxiliary power supply</b>		
RJ-45 interface module	289-965	1
RJ-45 interface module with shield (screen) clamping saddle	289-966	1
ETHERNET RJ-45 connector, IP20	750-975	1
<b>Approvals</b>		
Conformity marking	CE	
Standards/Specifications	DIN EN 50178; EN 61000-6-2 ; EN 61000-6-4	
<b>General Specifications</b>		
Dimensions (mm) W x H x L	35 x 55 x 90	
	Height from upper-edge of DIN 35 rail	
Ambient operating temperature	-20 °C ... +70 °C	
Storage temperature	-40 °C ... +85 °C	

Technical Data	
<b>Electrical data:</b>	
Measuring range	0 - 50 A AC <sub>eff.</sub>
Voltage supply	12 - 34 V
Max. current consumption	≤ 8 mA at 24 V
Transmission error	typ. 1%, max. 3% of upper range value (at room temperature)
Temperature coefficient	≤ 0.01% /K
Time frame for polling by master	< 30 ms
Hot plugging	possible
Terminating resistor	150 Ω (can be activated via DIP switch 1)
Status indication	Green: Power Red: Measured current > 55 A <sub>eff.</sub>
<b>Mechanical data:</b>	
Power cable feed-through	15 mm
Degree of protection	IP20
<b>Communication:</b>	
Interface	RS-485
Transmission channels	Half duplex, 8-bit data, 1 stop bit
Protocols	MODBUS RTU slave over serial line
Connector	RJ-45
Addressing	1 - 32
Max. length of bus line	≤ 1200 m
Baud rate	19200 baud
Parity	Even

789-622

## RJ-45-Connector Pin Assignment:

Pin	Function
1	Ub
2	
3	n.c.
4	A (Data+)
5	B (Data-)
6	n.c.
7	GND
8	

## Communication Description:

MODBUS Function	Read Holding Registers (0x03)
Address of Measured Value	0x0004
Data Type Measurement	Integer

## Error Numbers:

id	Description
01	Illegal Function
03	Illegal Data
101	Overflow (Current > +83 A)
102	Underflow (Current < -3 A)

## DIP Switch Adjustability

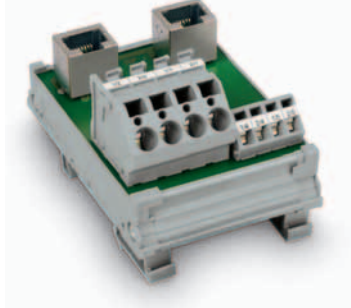
● = ON

Adress	DIP Switch					Terminating resistor	DIP Switch 1
	2	3	4	5	6		
1						-	
2						150 Ohm	●
3				●			
4				●	●		
5			●				
6			●				●
7			●	●			
8			●	●	●		
9		●					
10		●					●
11		●		●			
12		●		●	●		
13		●	●				
14		●	●				●
15		●	●	●			
16		●	●	●	●		●
17	●						
18	●						●
19	●			●			
20	●			●	●		
21	●		●				
22	●		●				●
23	●		●	●			
24	●		●	●	●		●
25	●	●					
26	●	●					●
27	●	●		●			
28	●	●		●	●		●
29	●	●	●				
30	●	●	●				●
31	●	●	●	●			
32	●	●	●	●	●		●

**NOTICE:**  
Only set the MODBUS address in the OFF state.



	<p><b>RJ-45 interface module for current sensor modules Mounting carrier for DIN 35 rail</b></p>	<p><b>RJ-45 interface module for current sensor modules with shield clamping saddle Mounting carrier for DIN 35 rail</b></p>
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Compatible on the field side with the 789-620, 789-621 and 789-622 Current Sensors.

Required terminal assignment:

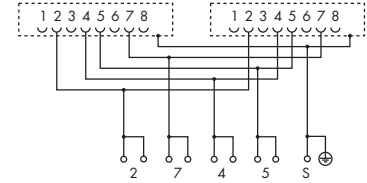
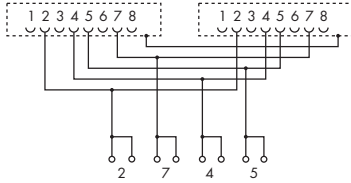
2: + Supply

7: - Supply

4: D+

5: D-

For 289-966, direct shield connection to the carrier rail via shield grounding foot.



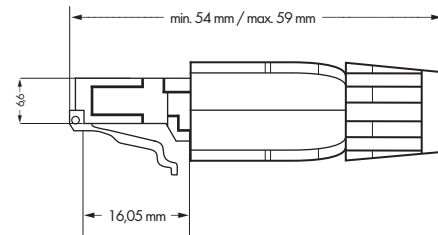
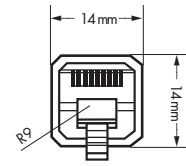
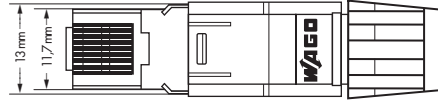
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>RJ-45 interface module</b>	<b>289-965</b>	<b>1</b>	<b>289-966</b>	<b>1</b>

**Technical Data**

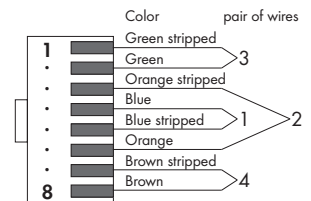
Connecting cable	assembled RJ-45 cable (recommended: UTP)	assembled, shielded RJ-45 cable (recommended: UTP, STP)
Connector	RJ-45, shielded	RJ-45, shielded
Min. mating cycles	500	500
Current load	≤ 1.5 A	≤ 1.5 A
Insulation resistance	> 500 MΩ	> 500 MΩ
Dielectric strength contact-contact	0.5 kV <sub>rms</sub>	0.5 kV <sub>rms</sub>
Contact resistance typ.	< 20 mΩ	< 20 mΩ
WAGO shield (screen) clamping saddle		790-124 (included)
Ambient operating temperature	-20°C ... +85°C	-20°C ... +85°C
Dimensions (mm) W x H x L,	40 x 58 x 85	40 x 69 x 85
Wire connection	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
	Clamping units 4, 5:	Clamping units 4, 5:
	CAGE CLAMP® (WAGO 236 Series)	CAGE CLAMP® (WAGO 236 Series)
Cross sections	Clamping units 2, 7:	Clamping units 2, 7:
	CAGE CLAMP® (WAGO 745 Series)	CAGE CLAMP® (WAGO 745 Series)
	Clamping units 4, 5:	Clamping units 4, 5:
Strip lengths	0.08 mm² ... 2.5 mm² / AWG 28 ... 12 (THHN, THWN)	0.08 mm² ... 2.5 mm² / AWG 28 ... 12 (THHN, THWN)
	Clamping units 2, 7:	Clamping units 2, 7:
	0.2 mm² ... 6 mm² / AWG 24 ... 10	0.2 mm² ... 6 mm² / AWG 24 ... 10
	Clamping units 4, 5: 5 ... 6 mm / 0.22 in	Clamping units 4, 5: 5 ... 6 mm / 0.22 in
	Clamping units 2, 7: 11 ... 12 mm / 0.45 in	Clamping units 2, 7: 11 ... 12 mm / 0.45 in

## ETHERNET RJ-45 Connector, IP20

ETHERNET 10/100 Mbps/s; for field assembly



## Pin assignment TIA-568A



## Versatile RJ-45 connector for industrial, office and building wiring.

The compact RJ-45 uses IDC technology for easy field assembly – connection is made without tools.

The connector is compliant with all required standards. Large conductor cross sections can also be connected.

The connector satisfies Category 5e.

Description	Item No.	Pack. Unit
ETHERNET RJ-45 connector, IP20	750-975	1
<b>Technical Data</b>		
<b>General Specifications</b>		
No. of Poles	8	
Contact material	Bronze (CuSn6)	
Contact plating	> 1.2 µm gold over 1.2 µm nickel	
Insulation material	Connector, polycarbonate (UL-94-V0)	
Housing material	Plastic, gray, (UL94-V0)	
Mating cycles	min. > 1000	
Wire connection	IDC (Insulation Displacement Contact),	
IDC surface treatment	Tin-plated, approx. 5 µm	
Cross sections	solid: 0.13 mm <sup>2</sup> ... 0.24 mm <sup>2</sup> / AWG 26/1 ... 23/1 stranded: 0.14 mm <sup>2</sup> ... 0.36 mm <sup>2</sup> / AWG 26/7 ... 22/7	
Admissible insulation Ø	≤ 1.6 mm	
Cable jacket Ø	4.5 mm ... 8.0 mm	
Wire strain relief	With plastic ribs	
Cable strain relief	> 50N	
Shield contacting	Large surface >180° (on cable shield)	
Shield material	Brass (CuZn), hot-dip tinned 3 µm	
Ambient operating temperature	-20 °C ... +70 °C	
Storage temperature	-40 °C ... +70 °C	
Degree of protection	IP20	

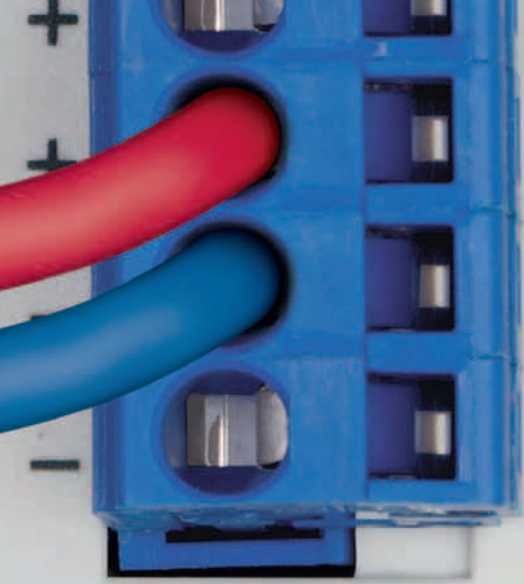
## Technical Data

## Electrical data:

Contact resistance	(wire - IDC) < 1 mΩ; (strand - IDC) < 5 mΩ
Connector shield	< 20 mΩ
Insulation resistance	(100 V) > 500 MΩ
Dielectric strength	(contact-contact) > 1000 V, 1 min.; (shield-contact) > 1500 V, 1 min.
Nominal current	1.75 A / 20 °C
Standards/specifications	- Basic standard: IEC 60603-7 RJ-45 Category 5 - CD ISO/IEC 11801: 2002 - EN 50173: 2002 - EIA/TIA 568A: 2002

## Approvals

Shipbuilding	siehe Übersicht Zulassungen Kapitel 1
UL 508	



ADJ.



23-28.5V

— INTERFACE —

24V  
(200mA)  
GND  
Rx  
Tx



Alarm



Charge/  
Bat. Mode



DC OK

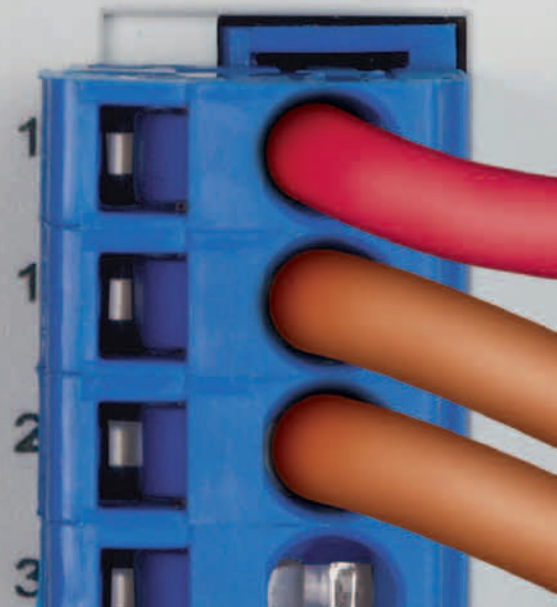


Input  
(200mA)

Alarm

Bat. Mode

Bat. Charge



**5**



**EPSITRON® PRO Power**

Switched-Mode Power Supplies, 1-Phase, 787 Series  
Switched-Mode Power Supplies, 3-Phase, 787 Series

270 - 278  
279 - 286



**EPSITRON® CLASSIC Power**

Switched-Mode Power Supplies, 1-Phase, 787 Series

287 - 301



**EPSITRON® ECO Power**

Switched-Mode Power Supplies, 1-Phase, 787 Series  
Switched-Mode Power Supplies, 3-Phase, 787 Series

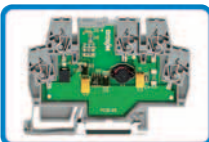
302 - 306  
307 - 309



**EPSITRON® COMPACT Power**

Switched-Mode Power Supplies, 1-Phase, 787 Series

310 - 317



**DC/DC Converters**

Rail-Mounted Terminal Blocks with DC/DC Converters, 859 Series  
EPSITRON® COMPACT Power - DC/DC Converters, 787 Series  
Rail-Mounted Modules - DC/DC Converters, 288, 289 Series

318 - 319  
320  
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**EPSITRON® - UPS, Battery Modules and Buffer Modules**

EPSITRON® UPS Charger and Controller, 787 Series  
EPSITRON® Lead-Acid (AGM) Battery Modules, 787 Series  
EPSITRON® Capacitive Buffer Modules, 787 Series  
Back-Up Capacitor Module, 288 Series

324 - 326  
327 - 330  
331 - 332  
333



**EPSITRON® Redundancy Modules**

787 Series

334 - 337



**EPSITRON® Electronic Circuit Breakers**

787 Series

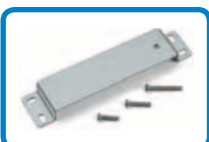
338 - 351



**Constant Voltage Sources and Power Supplies**

Rail-Mounted Modules - Constant Voltage Sources, 288, 289 Series  
Rail-Mounted Modules - Power Supplies, 288 Series

352 - 353  
354 - 357



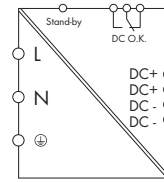
**Accessories, 787 Series**

EPSITRON® Communication Cable, Wall Mount Adapter, Carrier Rail Adapter

358 - 361

# 5 Switched-Mode Power Supply, 1-Phase

EPSITRON® PRO Power



- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

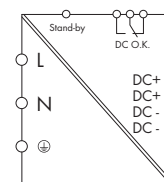
Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 12 V DC / 6 A	787-819	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC
Input voltage derating	-5 % / V AC < 95 VAC
Frequency	50 Hz ... 60 Hz
Input current $I_i$	0.51 A at 230 VAC and 6 ADC
Discharge current	1 mA typ.
Inrush current	< 30 A (peak)
Mains failure hold-up time	70 ms typ. at 230 VAC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	12 VDC (SELV)
Output voltage range	11 ... 18 VDC adjustable
Output current $I_o$	6 A at 12 V DC
PowerBoost	12 ADC (for 4 s); 9 ADC (for 8 s)
TopBoost	21 ADC (for 25 ms)
Factory preset	12 VDC
Adjustment accuracy	1%
Residual ripple	< 70 mV (peak-to-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	TopBoost / PowerBoost / Constant current
Operational indication	LED green (DC O.K.), LED red (error)
Signaling	Relay contact DC O.K. (changeover contact)
<b>Efficiency / power losses:</b>	
Efficiency	83 % typ.
Power loss $P_V$	0.5 W (stand-by) / 3.0 W (no load) / 9.4 W (rated load)
<b>Fuse protection:</b>	
Internal fuse	T 2 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (> +50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage pri.-sec./ pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 25 VDC
Parallel operation	yes
Series connection	yes
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output: WAGO 231 Series Signalling: WAGO 733 Series
Cross sections	Input/Output: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Signalling: 0.08 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> / AWG 28 ... 20
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 in Signalling: 5 ... 6 mm / 0.22 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	40 x 163 x 163 (incl. female connector) Length from upper-edge of DIN 35 rail
Weight	800 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508

## Switched-Mode Power Supply, 1-Phase

EPSITRON® PRO Power



- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

## Technical Data

## Input:

Nominal input voltage $V_i$ nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC
Input voltage derating	-5 % / V AC < 95 VAC
Frequency	50 Hz ... 60 Hz
Input current $I_i$	0.97 A at 230 VAC and 10 ADC
Discharge current	1 mA typ.
Inrush current	< 30 A (peak)
Mains failure hold-up time	35 ms typ. at 230 VAC

## Output:

Nominal output voltage $V_o$ nom	12 VDC (SELV)
Output voltage range	11 ... 18 VDC adjustable
Output current $I_o$	10 A at 12 V DC
PowerBoost	20 ADC (for 4 s); 15 ADC (for 8 s)
TopBoost	60 ADC (for 25 ms); 40 ADC at $V_{IN} < 110$ VAC (for 25 ms)
Factory preset	12 VDC
Adjustment accuracy	1%
Residual ripple	< 70 mV (peak-to-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	TopBoost / PowerBoost / Constant current
Operational indication	LED green (DC O.K.), LED red (error)
Signaling	Relay contact DC O.K. (changeover contact)

## Efficiency / power losses:

Efficiency	87.8 % typ.
Power loss $P_V$	0.5 W (stand-by) / 5.0 W (no load) / 14.6 W (rated load)

## Fuse protection:

Internal fuse	T 4 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

## Description

Switched-Mode Power Supply,  
12 V DC / 10 A

## Item No.

787-821

Pack.  
Unit

1

## Technical Data

## Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (> +50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Test voltage pri.-sec./ pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 25 VDC
Parallel operation	yes
Series connection	yes

## Connection and type of mounting:

Wire connection	Input/Output: WAGO 231 Series Signalling: WAGO 733 Series
Cross sections	Input/Output: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Signalling: 0.08 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> / AWG 28 ... 20
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 in Signalling: 5 ... 6 mm / 0.22 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions

## Dimensions and weight:

Dimensions (mm) W x H x L	57 x 163 x 163 (incl. female connector) Length from upper-edge of DIN 35 rail
Weight	1295 g

## Standards and approvals:

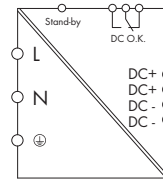
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508
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# 5 Switched-Mode Power Supply, 1-Phase

EPSITRON® PRO Power

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- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

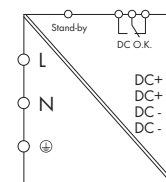
Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 12 V DC / 15 A	787-831	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC
Input voltage derating	-1.5 % / V AC < 110 VAC
Frequency	50 Hz ... 60 Hz
Input current $I_i$	0.9 A at 230 VAC and 15 ADC
Discharge current	1 mA typ.
Inrush current	< 8 A (active inrush current limitation)
Mains failure hold-up time	30 ms typ. at 230 VAC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	12 VDC (SELV)
Output voltage range	11 ... 18 VDC adjustable
Output current $I_o$	15 A at 12 VDC
PowerBoost	30 ADC (for 4 s); 22.5 ADC (for 8 s)
TopBoost	55 ADC (for 25 ms)
Factory preset	12 VDC
Adjustment accuracy	1%
Residual ripple	< 70 mV (peak-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	TopBoost / PowerBoost / Constant current
Operational indication	LED green (DC O.K.), LED red (error)
Signaling	Relay contact DC O.K. (changeover contact)
<b>Efficiency / power losses:</b>	
Efficiency	87 % typ.
Power loss $P_V$	0.8 W (stand-by) / 4.6 W (no load) / 23.4 W (rated load)
<b>Fuse protection:</b>	
Internal fuse	T 6.3 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (> +50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage pri.-sec./ pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 25 VDC
Parallel operation	yes
Series connection	yes
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output: WAGO 231 Series Signalling: WAGO 733 Series
Cross sections	Input/Output: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Signalling: 0.08 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> / AWG 28 ... 20
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 in Signalling: 5 ... 6 mm / 0.22 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	57 x 163 x 179 (incl. female connector) Length from upper-edge of DIN 35 rail
Weight	1480 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508

## Switched-Mode Power Supply, 1-Phase

EPSITRON® PRO Power



- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

## Technical Data

## Input:

Nominal input voltage $V_i$ nom	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC
Input voltage derating	-5 % / V AC < 95 VAC
Frequency	50 Hz ... 60 Hz
Input current $I_i$	0.51 A at 230 VAC and 3 ADC
Discharge current	1 mA typ.
Inrush current	< 30 A (peak)
Mains failure hold-up time	70 ms typ. at 230 VAC

## Output:

Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	22 ... 29.5 VDC adjustable
Output current $I_o$	3 A at 24 VDC
PowerBoost	6 ADC (for 4 s); 4.5A DC(for 8 s)
TopBoost	14 A DC (for 25 ms)
Factory preset	24 VDC
Adjustment accuracy	1%
Residual ripple	< 70 mV (peak-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	TopBoost / PowerBoost / Constant current
Operational indication	LED green (DC O.K.), LED red (error)
Signaling	Relay contact DC O.K. (changeover contact)

## Efficiency / power losses:

Efficiency	87.8 % typ.
Power loss $P_V$	0.5 W (stand-by) / 3.0 W (no load) / 8.8 W (rated load)

## Fuse protection:

Internal fuse	T 2 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

## Description

Switched-Mode Power Supply,  
24 V DC / 3 A

## Item No.

787-818

Pack.  
Unit

1

## Technical Data

## Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (> +50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Test voltage pri.-sec./ pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 35 VDC
Parallel operation	yes
Series connection	yes

## Connection and type of mounting:

Wire connection	Input/Output: WAGO 231 Series Signalling: WAGO 733 Series
Cross sections	Input/Output: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Signalling: 0.08 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> / AWG 28 ... 20
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 in Signalling: 5 ... 6 mm / 0.22 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions

## Dimensions and weight:

Dimensions (mm) W x H x L	40 x 163 x 163 (incl. female connector) Length from upper-edge of DIN 35 rail
Weight	960 g

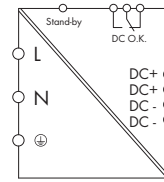
## Standards and approvals:

Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508
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# 5 Switched-Mode Power Supply, 1-Phase

EPSITRON® PRO Power



- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

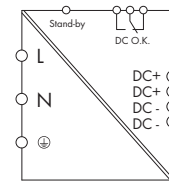
Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 24 V DC / 5 A	787-822	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC
Frequency	44 Hz ... 66 Hz
Input current $I_i$	0.97 A at 230 VAC and 5 ADC
Discharge current	1 mA typ.
Inrush current	< 15 A
Mains failure hold-up time	35 ms typ. at 230 VAC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	22... 29.5 VDC adjustable
Output current $I_o$	5 A at 24 VDC
PowerBoost	10 ADC (for 4 sec.); 7.5 ADC (for another 2 sec.)
TopBoost	21 ADC (for 25 ms)
Factory preset	24 VDC
Adjustment accuracy	1%
Residual ripple	< 70 mV (peak-to-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	LED green (DC O.K.), LED red (error)
Signaling	Relay contact DC O.K. (changeover contact)
<b>Efficiency / power losses:</b>	
Efficiency	87.8 % typ.
Power loss $P_V$	0.5 W (stand-by) / 5.0 W (no load) / 14.6 W (rated load)
<b>Fuse protection:</b>	
Internal fuse	T 4 A / 250 V
External fuse	C10 or B16 circuit breakers
	An external DC fuse is required for the DC input voltage
	Transient overvoltage protection: Varistor

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-2.5 % / K (> 55 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage pri.-sec./ pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 35 VDC
Parallel operation	yes
Series connection	yes
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output: WAGO 231 Series Signalling: WAGO 733 Series
Cross sections	Input/Output: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Signalling: 0.08 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> / AWG 28 ... 20
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 in Signalling: 5 ... 6 mm / 0.22 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	57 x 163 x 163
	Height from upper-edge of DIN 35 rail
Weight	1268 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508

## Switched-Mode Power Supply, 1-Phase

EPSITRON® PRO Power



- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

## Technical Data

## Input:

Nominal input voltage $V_i$ nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC
Frequency	44 Hz ... 66 Hz
Input current $I_i$	1.2 A at 230 VAC and 10 ADC
Discharge current	1 mA typ.
Inrush current	$\leq I_e$ (active inrush current limitation)
Mains failure hold-up time	24 ms typ. at 230 VAC

## Output:

Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	22... 29.5 VDC adjustable
Output current $I_o$	10 A at 24 V DC
PowerBoost	20 ADC (for 4 sec.); 15 ADC (for another 2 sec.)
TopBoost	60 ADC (for 25 ms)
Factory preset	24 VDC
Adjustment accuracy	1%
Residual ripple	< 70 mV (peak-to-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	LED green (DC O.K.), LED red (error)
Signaling	Relay contact DC O.K. (changeover contact)

## Efficiency / power losses:

Efficiency	91.8 % typ.
Power loss $P_V$	0.8 W (stand-by) / 3.5 W (no load) / 19.7 W (rated load)

## Fuse protection:

Internal fuse	T 6.3 A / 250 V
External fuse	C10 or B16 circuit breakers
	An external DC fuse is required for the DC input voltage
	Transient overvoltage protection: Varistor

## Description

Switched-Mode Power Supply,  
24 V DC / 10 A

Item No.

787-832

Pack.  
Unit

1

## Technical Data

## Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (> 50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Test voltage pri.-sec./ pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 35 VDC
Parallel operation	yes
Series connection	yes

## Connection and type of mounting:

Wire connection	Input/Output: WAGO 231 Series Signalling: WAGO 733 Series
Cross sections	Input/Output: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Signalling: 0.08 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> / AWG 28 ... 20
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 in Signalling: 5 ... 6 mm / 0.22 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions

## Dimensions and weight:

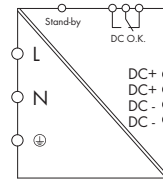
Dimensions (mm) W x H x L	57 x 163 x 179
Weight	Height from upper-edge of DIN 35 rail 1485 g

## Standards and approvals:

Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508
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# 5 Switched-Mode Power Supply, 1-Phase

EPSITRON® PRO Power



- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

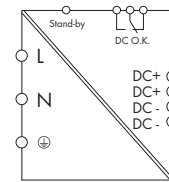
Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 24 V DC / 20 A	787-834	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC
Input voltage derating	-1.5 % / V AC < 110 VAC
Frequency	50 Hz ... 60 Hz
Input current $I_i$	2.3 A at 230 VAC and 20 ADC
Discharge current	1 mA typ.
Inrush current	< 8 A (active inrush current limitation)
Mains failure hold-up time	25 ms typ. at 230 VAC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	22 ... 29.5 VDC adjustable
Output current $I_o$	20 A at 24 V DC
PowerBoost	30 ADC (for 4 s); 25 ADC (for 8 s)
TopBoost	80 ADC (for 25 ms)
Factory preset	24 VDC
Adjustment accuracy	1%
Residual ripple	< 70 mV (peak-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	TopBoost / PowerBoost / Constant current
Operational indication	LED green (DC O.K.), LED red (error)
Signaling	Relay contact DC O.K. (changeover contact)
<b>Efficiency / power losses:</b>	
Efficiency	91 % typ.
Power loss $P_V$	0.8 W (stand-by) / 4.8 W (no load) / 50.2 W (rated load)
<b>Fuse protection:</b>	
Internal fuse	T 10 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, characteristic: B or C
	An external DC fuse is required for the DC input voltage

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (> +50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage pri.-sec./ pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 35 VDC
Parallel operation	yes
Series connection	yes
<b>Connection and type of mounting:</b>	
Wire connection	Input: WAGO 231 Series Output: WAGO 831 Series Signalling: WAGO 733 Series
Cross sections	Input: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Output: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Signalling: 0.08 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> / AWG 28 ... 20
Strip lengths	Input: 8 ... 9 mm / 0.33 in Output: 13 ... 15 mm / 0.55 in Signalling: 5 ... 6 mm / 0.22 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	97 x 171 x 187 (incl. female connector) Length from upper-edge of DIN 35 rail
Weight	2300 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508

## Switched-Mode Power Supply, 1-Phase

EPSITRON® PRO Power



- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

## Technical Data

## Input:

Nominal input voltage $V_i$ nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC
Input voltage derating	-1.5 % / V AC < 110 VAC
Frequency	50 Hz ... 60 Hz
Input current $I_i$	1.2 A at 230 VAC and 5 ADC
Discharge current	1 mA typ.
Inrush current	< 8 A (active inrush current limitation)
Mains failure hold-up time	20 ms typ. at 230 VAC

## Output:

Nominal output voltage $V_o$ nom	48 VDC (SELV)
Output voltage range	33 ... 52 VDC adjustable
Output current $I_o$	5 A at 48 V DC
PowerBoost	10 ADC (for 4 s); 7.5 ADC (for 8 s)
TopBoost	30 ADC (for 25 ms)
Factory preset	48 VDC
Adjustment accuracy	1%
Residual ripple	< 70 mV (peak-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	TopBoost / PowerBoost / Constant current
Operational indication	LED green (DC O.K.), LED red (error)
Signaling	Relay contact DC O.K. (changeover contact)

## Efficiency / power losses:

Efficiency	91 % typ.
Power loss $P_V$	0.8 W (stand-by) / 7.4 W (no load) / 21.6 W (rated load)

## Fuse protection:

Internal fuse	T 6.3 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

## Description

Switched-Mode Power Supply,  
48 V DC / 5 A

## Item No.

787-833

## Pack. Unit

1

## Technical Data

## Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (> +50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Test voltage pri.-sec./ pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 63 VDC
Parallel operation	yes
Series connection	yes

## Connection and type of mounting:

Wire connection	Input/Output: WAGO 231 Series Signalling: WAGO 733 Series
Cross sections	Input/Output: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Signalling: 0.08 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> / AWG 28 ... 20
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 in Signalling: 5 ... 6 mm / 0.22 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions

## Dimensions and weight:

Dimensions (mm) W x H x L	57 x 163 x 179 (incl. female connector) Length from upper-edge of DIN 35 rail
Weight	1475 g

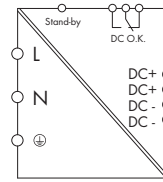
## Standards and approvals:

Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508
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# 5 Switched-Mode Power Supply, 1-Phase

EPSITRON® PRO Power

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- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

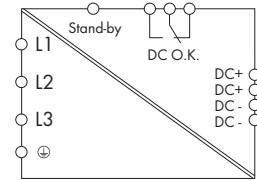
Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 48 V DC / 10 A	787-835	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC
Input voltage derating	-1.5 % / V AC < 110 VAC
Frequency	50 Hz ... 60 Hz
Input current $I_i$	2.3 A at 230 VAC and 10 ADC
Discharge current	1 mA typ.
Inrush current	< 8 A (active inrush current limitation)
Mains failure hold-up time	20 ms typ. at 230 VAC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	48 VDC (SELV)
Output voltage range	33 ... 52 VDC adjustable
Output current $I_o$	10 A at 48 V DC
PowerBoost	17.5 ADC (for 4 s); 15 ADC (for 8 s)
TopBoost	60 ADC (for 25 ms)
Factory preset	48 VDC
Adjustment accuracy	1%
Residual ripple	< 70 mV (peak-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	TopBoost / PowerBoost / Constant current
Operational indication	LED green (DC O.K.), LED red (error)
Signaling	Relay contact DC O.K. (changeover contact)
<b>Efficiency / power losses:</b>	
Efficiency	91 % typ.
Power loss $P_V$	0.8 W (stand-by) / 4.8 W (no load) / 43.2 W (rated load)
<b>Fuse protection:</b>	
Internal fuse	T 10 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, characteristic: B or C
	An external DC fuse is required for the DC input voltage

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (> +50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage pri.-sec./ pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 63 VDC
Parallel operation	yes
Series connection	yes
<b>Connection and type of mounting:</b>	
Wire connection	Input: WAGO 231 Series Output: WAGO 831 Series Signalling: WAGO 733 Series
Cross sections	Input: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Output: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Signalling: 0.08 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> / AWG 28 ... 20
Strip lengths	Input: 8 ... 9 mm / 0.33 in Output: 13 ... 15 mm / 0.55 in Signalling: 5 ... 6 mm / 0.22 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	97 x 171 x 187 (incl. female connector) Length from upper-edge of DIN 35 rail
Weight	2460 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508

## Switched-Mode Power Supply, 3-Phase

EPSITRON® PRO Power



- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

## Technical Data

## Input:

Nominal input voltage $V_i$ nom	3 x (2x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC
Frequency	50 - 60 Hz
Input current $I_i$	3 x 0.6 A at 340 VAC and 10 ADC
Discharge current	1 mA typ.
Inrush current	< 30 A
Mains failure hold-up time	22 ms typ. at 3 x 400 VAC

## Output:

Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	22.8 ... 28.8 VDC adjustable
Output current $I_o$	10 A at 24 V DC
PowerBoost	20 ADC (for 4 s); 15 ADC (for 16 s)
TopBoost	70 ADC (for 50 ms)
Factory preset	24 VDC
Adjustment accuracy	1%
Residual ripple	< 70 mV (peak-to-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	LED green (DC O.K.), LED red (error)

## Efficiency / power losses:

Efficiency	91.7 % typ.
Power loss $P_V$	7.9 W (stand-by) / 19.9 W (rated load)

## Fuse protection:

Internal fuse	3 x T 1.6 A / 250 V
External fuse	3 x circuit breakers 6 A, 10 A, 16 A, characteristic: B or C; or motor circuit breakers, setpoint: 1.6 A, setting range: 1.6 ... 2.5 A
	An external DC fuse is required for the DC input voltage

## Description

Switched-Mode Power Supply,  
24 V DC / 10 A

## Item No.

787-840

## Pack. Unit

1

## Technical Data

## Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (> 50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Test voltage pri.-sec. / pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 acc. to EN 60529
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 35 VDC
Parallel operation	yes
Series connection	yes

## Connection and type of mounting:

Wire connection	Input/Output: WAGO 231 Series
Cross sections	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions

## Dimensions and weight:

Dimensions (mm) W x H x L	57 x 163 x 179
Weight	Height from upper-edge of DIN 35 rail 1000 g

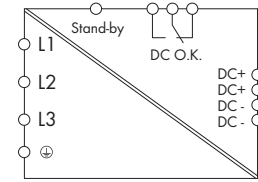
## Standards and approvals:

Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508
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# 5 Switched-Mode Power Supply, 3-Phase

EPSITRON® PRO Power



- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 24 V DC / 20 A	787-842	1

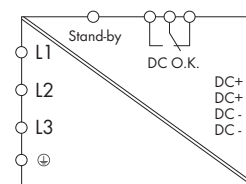
Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	3x (2x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC
Frequency	50 - 60 Hz
Input current $I_i$	3 x 1.0 A at 340 VAC and 20 ADC
Discharge current	1 mA typ.
Inrush current	< 30 A
Mains failure hold-up time	13 ms typ. at 3 x 400 VAC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	22.8 ... 28.8 VDC adjustable
Output current $I_o$	20 A at 24 VDC
PowerBoost	40 ADC (for 4 s); 30 ADC (for 16 s)
TopBoost	80 ADC (for 50 ms)
Factory preset	24 VDC
Adjustment accuracy	1%
Residual ripple	< 70 mV (peak-to-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	LED green (DC O.K.), LED red (error)
<b>Efficiency / power losses:</b>	
Efficiency	92.9 % typ.
Power loss $P_V$	8.3 W (stand-by) / 34.1 W (rated load)
<b>Fuse protection:</b>	
Internal fuse	3 x T 2.5 A / 250 V
External fuse	3 x circuit breakers 6 A, 10 A, 16 A, characteristic: B or C; or motor circuit breakers, setpoint: 2.5 A, setting range: 2.5 ... 4.0 A An external DC fuse is required for the DC input voltage

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (> 50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage pri.-sec./ pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 acc. to EN 60529
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 35 VDC
Parallel operation	yes
Series connection	yes
<b>Connection and type of mounting:</b>	
Wire connection	Input: WAGO 231 Series Output: WAGO 831 Series
Cross sections	Input: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Output: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8
Strip lengths	Input: 8 ... 9 mm / 0.33 in Output: 13 ... 15 mm / 0.55 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	77 x 171 x 179
Weight	Height from upper-edge of DIN 35 rail 1300 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508



## Switched-Mode Power Supply, 3-Phase

EPSITRON® PRO Power



- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

## Technical Data

## Input:

Nominal input voltage $V_i$ nom	3x (2x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC
Frequency	50 - 60 Hz
Input current $I_i$	3 x 2.0 A at 340 VAC and 40 ADC
Discharge current	1 mA typ.
Inrush current	< 30 A
Mains failure hold-up time	15 ms typ. at 3 x 400 VAC

## Output:

Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	22.8 ... 28.8 VDC adjustable
Output current $I_o$	40 A at 24 VDC
PowerBoost	60 ADC (for 4 s); 50 ADC (for 16 s)
TopBoost	100 ADC (for 50 ms)
Factory preset	24 VDC
Adjustment accuracy	1%
Residual ripple	< 70 mV (peak-to-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	LED green (DC O.K.), LED red (error)

## Efficiency / power losses:

Efficiency	93.6 % typ.
Power loss $P_V$	7.0 W (stand-by) / 61.5 W (rated load)

## Fuse protection:

Internal fuse	3 x T 3.2 A / 250 V
External fuse	3 x circuit breakers 6 A, 10 A, 16 A, characteristic: B or C; or motor circuit breakers, setpoint: 3.2 A, setting range: 2.5 ... 4.0 A An external DC fuse is required for the DC input voltage

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 24 V DC / 40 A	787-844	1
Switched-Mode Power Supply, 24 V DC / 40 A, with lateral DIN-rail support	787-844/000-002	1

## Technical Data

## Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-5 % / K ( 45 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Test voltage pri.-sec./ pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 acc. to EN 60529
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 35 VDC
Parallel operation	yes
Series connection	yes

## Connection and type of mounting:

Wire connection	Input: WAGO 231 Series Output: WAGO 831 Series
Cross sections	Input: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Output: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8
Strip lengths	Input: 8 ... 9 mm / 0.33 in Output: 13 ... 15 mm / 0.55 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions

## Dimensions and weight:

Dimensions (mm) W x H x L	128 x 171 x 205
Weight	Height from upper-edge of DIN 35 rail 2500 g

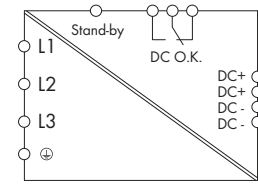
## Standards and approvals:

Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508
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# 5 Switched-Mode Power Supply, 3-Phase

EPSITRON® PRO Power

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- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

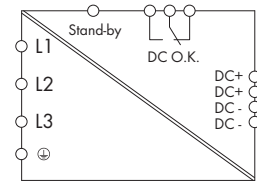
Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 48 V DC / 10 A	787-845	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	3 x (2x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC
Frequency	50 Hz ... 60 Hz
Input current $I_i$	3 x 1.1 A at 340 VAC and 10 ADC
Discharge current	1 mA typ.
Inrush current	< 30 A (peak)
Mains failure hold-up time	12 ms typ. at 3 x 400 VAC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	48 VDC (SELV)
Output voltage range	39 ... 53 VDC adjustable
Output current $I_o$	10 A at 48 VDC
PowerBoost	15 ADC (for 4 s); 12.5 ADC (for 16 s)
TopBoost	55 ADC (for 50 ms)
Factory preset	48 VDC
Adjustment accuracy	1 %
Residual ripple	< 70 mV (peak-to-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	TopBoost / PowerBoost / Constant current
Operational indication	LED green (DC O.K.), LED red (error)
<b>Efficiency / power losses:</b>	
Efficiency	93 % typ.
Power loss $P_V$	0.8 W (stand-by) / 8.2 W (no load) / 38 W (rated load)
<b>Fuse protection:</b>	
Internal fuse	3 x T 3.2 A / 250 V
External fuse	3 x circuit breakers 6 A, 10 A, 16 A, characteristic: B or C; or motor circuit breakers, setpoint: 2.5 A, setting range: 2.5 ... 4.0 A An external DC fuse is required for the DC input voltage

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (> +50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage pri.-sec. / pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 63 VDC
Parallel operation	yes
Series connection	yes
<b>Connection and type of mounting:</b>	
Wire connection	Input: WAGO 231 Series Output: WAGO 831 Series Signalling: WAGO 733 Series
Cross sections	Input: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Output: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Signalling: 0.08 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> / AWG 28 ... 20
Strip lengths	Input: 8 ... 9 mm / 0.33 in Output: 13 ... 15 mm / 0.55 in Signalling: 5 ... 6 mm / 0.22 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	77 x 171 x 179 (incl. female connector) Length from upper-edge of DIN 35 rail
Weight	1900 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508

## Switched-Mode Power Supply, 3-Phase

EPSITRON® PRO Power



- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

## Technical Data

## Input:

Nominal input voltage $V_i$ nom	3 x (2x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC
Frequency	50 Hz ... 60 Hz
Input current $I_i$	3 x 2.0 A at 340 VAC and 20 ADC
Discharge current	1 mA typ.
Inrush current	< 30 A (peak)
Mains failure hold-up time	15 ms typ. at 3 x 400 VAC

## Output:

Nominal output voltage $V_o$ nom	48 VDC (SELV)
Output voltage range	39 ... 53 VDC adjustable
Output current $I_o$	20 A at 48 VDC
PowerBoost	30 ADC (for 4 s); 25 ADC (for 16 s)
TopBoost	80 ADC (for 25 ms)
Factory preset	48 VDC
Adjustment accuracy	1%
Residual ripple	< 70 mV (peak-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	TopBoost / PowerBoost / Constant current
Operational indication	LED green (DC O.K.), LED red (error)

## Efficiency / power losses:

Efficiency	94.4 % typ.
Power loss $P_v$	0.8 W (stand-by) / 5.2 W (no load) / 59.2 W (rated load)

## Fuse protection:

Internal fuse	3 x T 3.2 A / 250 V
External fuse	3 x circuit breakers 6 A, 10 A, 16 A, characteristic: B or C; or motor circuit breakers, setpoint: 3.2 A, setting range: 2.5 ... 4.0 A An external DC fuse is required for the DC input voltage

## Description

Switched-Mode Power Supply,  
48 V DC / 20 A

## Item No.

787-847

## Pack. Unit

1

## Technical Data

## Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-5 % / K (> +45 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Test voltage pri.-sec. / pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 63 VDC
Parallel operation	yes
Series connection	yes

## Connection and type of mounting:

Wire connection	Input: WAGO 231 Series Output: WAGO 831 Series Signalising: WAGO 733 Series
Cross sections	Input: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Output: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Signalising: 0.08 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> / AWG 28 ... 20
Strip lengths	Input: 8 ... 9 mm / 0.33 in Output: 13 ... 15 mm / 0.55 in Signalising: 5 ... 6 mm / 0.22 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions

## Dimensions and weight:

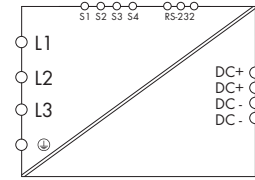
Dimensions (mm) W x H x L	128 x 171 x 205 (incl. female connector) Length from upper-edge of DIN 35 rail
Weight	3270 g

## Standards and approvals:

Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508
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# 5 Switched-Mode Power Supply, 3-Phase

EPSITRON® PRO Power



- Primary switch mode power supply unit with PowerBoost and TopBoost
- LineMonitor for parameter setting and monitoring
- RS-232 serial interface
- 4 signal outputs
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

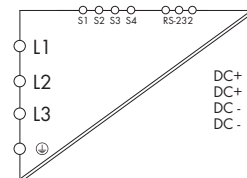
Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 24 V DC / 10 A	787-850	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	3x (2x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC
Frequency	50 - 60 Hz
Input current $I_i$	3 x 0.6 A at 340 VAC and 10 ADC
Discharge current	1 mA typ.
Inrush current	< 30 A
Mains failure hold-up time	22 ms typ. at 3 x 400 VAC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	22.8 ... 28.8 VDC adjustable
Output current $I_o$	10 A at 24 VDC
PowerBoost	20 ADC (for 4 s); 15 ADC (for 16 s)
TopBoost	70 ADC (for 50 ms)
Factory preset	24 VDC
Adjustment accuracy	1%
Residual ripple	< 70 mV (peak-to-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	adjustable (constant current / fuse mode)
Operational indication	LED green (DC O.K.), LED yellow (warning), LED red (error)
Signaling	LED, LCD, 4 x signal output 24 V DC, 25 mA
LineMonitor, parameter setting	via LCD and RS-232 serial interface
<b>Efficiency / power losses:</b>	
Efficiency	91.7 % typ.
Power loss $P_v$	7.8 W (stand-by) / 19.9 W (rated load)
<b>Fuse protection:</b>	
Internal fuse	3 x T 1.6 A / 250 V
External fuse	3 x circuit breakers 6 A, 10 A, 16 A, characteristic: B or C; or motor circuit breakers, setpoint: 1.6 A, setting range: 1.6 ... 2.5 A
An external DC fuse is required for the DC input voltage	

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (> 50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage pri.-sec. / pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 acc. to EN 60529
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 35 VDC
Parallel operation	yes
Series connection	yes
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output: WAGO 231 Series
	Signalling: WAGO 733 Series
Cross sections	Input/Output: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
	Signalling: 0.08 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> / AWG 28 ... 20
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 in
	Signalling: 5 ... 6 mm / 0.22 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	57 x 163 x 179
	Height from upper-edge of DIN 35 rail
Weight	1000 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508

## Switched-Mode Power Supply, 3-Phase

EPSITRON® PRO Power



- Primary switch mode power supply unit with PowerBoost and TopBoost
- LineMonitor for parameter setting and monitoring
- RS-232 serial interface
- 4 signal outputs
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

## Technical Data

## Input:

Nominal input voltage $V_i$ nom	3x (2x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC
Frequency	50 - 60 Hz
Input current $I_i$	3 x 1.0 A at 340 VAC and 20 ADC
Discharge current	1mA typ.
Inrush current	< 30 A
Mains failure hold-up time	13 ms typ. at 3 x 400 VAC

## Output:

Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	22.8 ... 28.8 VDC adjustable
Output current $I_o$	20 A at 24 VDC
PowerBoost	40 ADC (for 4 s); 30 ADC (for 16 s)
TopBoost	80 ADC (for 50 ms)
Factory preset	24 VDC
Adjustment accuracy	1%
Residual ripple	< 70 mV (peak-to-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	adjustable (constant current / fuse mode)
Operational indication	LED green (DC O.K.), LED yellow (warning), LED red (error)

Signaling LED, LCD, 4 x signal output 24 V DC, 25 mA

LineMonitor, parameter setting via LCD and RS-232 serial interface

## Efficiency / power losses:

Efficiency	92.9 % typ.
Power loss $P_v$	8.3 W (stand-by) / 34.1 W (rated load)

## Fuse protection:

Internal fuse	3 x T 2.5 A / 250 V
External fuse	3 x circuit breakers 6 A, 10 A, 16 A, characteristic: B or C; or motor circuit breakers, setpoint: 2.5 A, setting range: 2.5 ... 4.0 A
	An external DC fuse is required for the DC input voltage

## Description

Switched-Mode Power Supply, 24 V DC / 20 A

## Item No.

787-852

## Pack. Unit

1

## Technical Data

## Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (> 50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Test voltage pri.-sec./ pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 acc. to EN 60529
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 35 VDC
Parallel operation	yes
Series connection	yes

## Connection and type of mounting:

Wire connection	Input: WAGO 231 Series Output: WAGO 831 Series Signalling: WAGO 733 Series
Cross sections	Input: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Output: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Signalling: 0.08 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> / AWG 28 ... 20
Strip lengths	Input: 8 ... 9 mm / 0.33 in Output: 13 ... 15 mm / 0.55 in Signalling: 5 ... 6 mm / 0.22 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions

## Dimensions and weight:

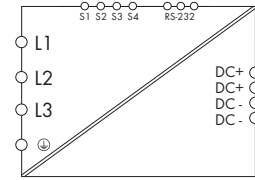
Dimensions (mm) W x H x L	77 x 171 x 179
	Height from upper-edge of DIN 35 rail
Weight	1300 g

## Standards and approvals:

Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508
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# 5 Switched-Mode Power Supply, 3-Phase

EPSITRON® PRO Power



- Primary switch mode power supply unit with PowerBoost and TopBoost
- LineMonitor for parameter setting and monitoring
- RS-232 serial interface
- 4 signal outputs
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 24 V DC / 40 A	787-854	1

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +55 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-5 % / K (> 45 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage pri.-sec./ pri.-gr. / sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 acc. to EN 60529
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 35 VDC
Parallel operation	yes
Series connection	yes
<b>Connection and type of mounting:</b>	
Wire connection	Input: WAGO 231 Series Output: WAGO 831 Series Signalising: WAGO 733 Series
Cross sections	Input: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Output: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Signalising: 0.08 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> / AWG 28 ... 20
Strip lengths	Input: 8 ... 9 mm / 0.33 in Output: 13 ... 15 mm / 0.55 in Signalising: 5 ... 6 mm / 0.22 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	128 x 171 x 205 Height from upper-edge of DIN 35 rail
Weight	2300 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	3x (2x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC
Frequency	50 - 60 Hz
Input current $I_i$	3 x 2.0 A at 340 VAC
Discharge current	1 mA typ.
Inrush current	< 30 A
Mains failure hold-up time	15 ms typ. at 3 x 400 VAC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	22.8 ... 28.8 VDC adjustable
Output current $I_o$	40 A at 24 VDC
PowerBoost	60 ADC (for 4 s); 50 ADC (for 16 s)
TopBoost	100 ADC (for 50 ms)
Factory preset	24 VDC
Adjustment accuracy	1%
Residual ripple	< 70 mV (peak-to-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	adjustable (constant current / fuse mode)
Operational indication	LED green (DC O.K.), LED yellow (warning), LED red (error)
Signaling	LED, LCD, 4 x signal output 24 V DC, 25 mA
LineMonitor, parameter setting	via LCD and RS-232 serial interface
<b>Efficiency / power losses:</b>	
Efficiency	93.6 % typ.
Power loss $P_v$	7.0 W (stand-by) / 61.5 W (rated load)
<b>Fuse protection:</b>	
Internal fuse	3 x T 3.2 A / 250 V
External fuse	3 x circuit breakers 6 A, 10 A, 16 A, characteristic: B or C; or motor circuit breakers, setpoint: 3.2 A, setting range: 2.5 ... 4.0 A An external DC fuse is required for the DC input voltage



## Switched-Mode Power Supply, 1-Phase

EPSITRON® CLASSIC Power



Similar to picture



- Primary switch mode power supply unit
- Protection class II
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Bounce-free switching signal (DC OK)
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

## Technical Data

## Input:

Nominal input voltage $V_{i, nom}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 V ... 372 VDC
Input voltage derating	-2.5 % (< 95 VAC)
Frequency	47 Hz ... 63 Hz; 0 Hz
Input current $I_i$	0.22 A (240 VAC); 0.45 A (100 VAC)
Inrush current	< 30 A
Mains failure hold-up time	120 ms (230 VAC); 15 ms (100 VAC)

## Output:

Nominal output voltage $V_{o, nom}$	12 VDC (SELV)
Output voltage range	11.5 ... 14.5 VDC adjustable
Output current $I_o$	2 A at 12 VDC (2.1 A up to 40 °C)
Factory preset	12 VDC
Adjustment accuracy	< 1 %
Residual ripple	25 mV (peak-to-peak) typ.
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	Green LED ( $V_o$ )
Signaling	1 x active signal output 12 VDC, 40 mA

## Efficiency/Power losses:

Efficiency	82 % typ.
Power loss $P_V$	< 0.7 W (230 VAC, no load); 5.3 W (230 VAC, nominal load)
Max. power loss $P_V$	5.7 W typ. (100 VAC / 12 VDC, 2 A)

## Fuse protection:

Internal fuse	T 2 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, B or C characteristic; An external DC fuse is required for the DC input voltage

## Description

Switched-mode power supply,  
12 VDC / 2 A

## Item No.

787-1601

Pack.  
Unit

1

## Technical Data

## Environmental Requirements:

Ambient operating temperature	-25 °C ... +70 °C; Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +85 °C
Relative humidity	30 % ... 85 % (no condensation permissible)
Derating	-3 %/K (> 50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Test voltage pri. - sec.	4.2 kV DC
Protection class	II
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	Varistor (input side); internal protective circuit, < 35 VDC (output side in case of an error)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 25 VDC
Parallel operation	yes
Series connection	yes
MTBF	> 500,000 h (acc. to IEC 61709)

## Connection and type of mounting:

Wire connection	Input/Output/Signaling: WAGO 721 Series
Cross sections	Input/Output/Signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 in
Type of mounting	DIN-rail mount (EN 60715)

## Dimensions and weight:

Dimensions (mm) W x H x L	22.5 x 90 x 107.5
Weight	Length from upper-edge of DIN 35 rail 128 g

## Standards and approvals:

Standards/Specifications	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL * (* pending)
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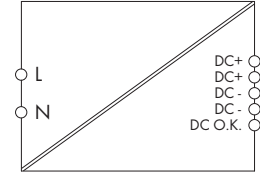


# 5 Switched-Mode Power Supply, 1-Phase

EPSITRON® CLASSIC Power



Similar to picture



- Primary switch mode power supply unit
- Protection class II
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Bounce-free switching signal (DC OK)
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

Description	Item No.	Pack. Unit
Switched-mode power supply, 12 VDC / 4 A	787-1611	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i\text{nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 V ... 372 VDC
Input voltage derating	-2.5 % (< 95 VAC)
Frequency	47 Hz ... 63 Hz; 0 Hz
Input current $I_i$	0.41 A (240 VAC); 0.83 A (100 VAC)
Inrush current	< 30 A
Mains failure hold-up time	120 ms (230 VAC); 15 ms (100 VAC)
<b>Output:</b>	
Nominal output voltage $V_{o\text{nom}}$	12 VDC (SELV)
Output voltage range	11.5 ... 14.5 VDC adjustable
Output current $I_o$	4 A at 12 VDC (4.2 A up to 40 °C)
Factory preset	12 VDC
Adjustment accuracy	< 1 %
Residual ripple	30 mV (peak-to-peak) typ.
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	Green LED ( $V_o$ )
Signaling	1 x active signal output 12 VDC, 40 mA
<b>Efficiency/Power losses:</b>	
Efficiency	86 % typ.
Power loss $P_V$	< 1 W (230 VAC, no load); 8 W (230 VAC, nominal load)
Max. power loss $P_V$	9.1 W typ. (100 VAC / 12 VDC, 4 A)
<b>Fuse protection:</b>	
Internal fuse	T 4 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, B or C characteristic; An external DC fuse is required for the DC input voltage

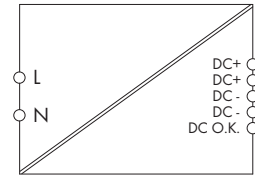
Technical Data	
<b>Environmental Requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C; Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +85 °C
Relative humidity	30 % ... 85 % (no condensation permissible)
Derating	-3 %/K (> 50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage pri. - sec.	4.2 kV DC
Protection class	II
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	Varistor (input side); internal protective circuit, < 35 VDC (output side in case of an error)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 25 VDC
Parallel operation	yes
Series connection	yes
MTBF	> 500,000 h (acc. to IEC 61709)
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output/Signaling: WAGO 721 Series
Cross sections	Input/Output/Signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 in
Type of mounting	DIN-rail mount (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	45 x 90 x 107.5 Length from upper-edge of DIN 35 rail
Weight	210 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL * (* pending)

## Switched-Mode Power Supply, 1-Phase

EPSITRON® CLASSIC Power



Similar to picture



- Primary switch mode power supply unit
- Protection class II
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Bounce-free switching signal (DC OK)
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

## Technical Data

## Input:

Nominal input voltage $V_{i\text{nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 V ... 372 VDC
Input voltage derating	-2.5 % (< 95 VAC)
Frequency	47 Hz ... 63 Hz; 0 Hz
Input current $I_i$	0.7 A (240 VAC); 1.5 A (100 VAC)
Inrush current	< 30 A
Mains failure hold-up time	100 ms (230 VAC); 15 ms (100 VAC)

## Output:

Nominal output voltage $V_{o\text{nom}}$	12 VDC (SELV)
Output voltage range	11.5 ... 14.5 VDC adjustable
Output current $I_o$	7 A at 12 VDC (7.5 A up to 40 °C)
Factory preset	12 VDC
Adjustment accuracy	< 1 %
Residual ripple	50 mV (peak-to-peak) typ.
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	Green LED ( $V_o$ )
Signaling	1 x active signal output 12 VDC, 40 mA

## Efficiency/Power losses:

Efficiency	85 % typ.
Power loss $P_V$	< 0.6 W (230 VAC, no load); 15.2 W (230 VAC, nominal load)
Max. power loss $P_V$	16.4 W typ. (100 VAC / 12 VDC, 7 A)

## Fuse protection:

Internal fuse	T 4 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, B or C characteristic; An external DC fuse is required for the DC input voltage

## Description

Switched-mode power supply,  
12 VDC / 7 A

## Item No.

787-1621

Pack.  
Unit

1

## Technical Data

## Environmental Requirements:

Ambient operating temperature	-25 °C ... +70 °C; Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +85 °C
Relative humidity	30 % ... 85 % (no condensation permissible)
Derating	-3 %/K (> 50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Test voltage pri. - sec.	4.2 kV DC
Protection class	II
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	Varistor (input side); internal protective circuit, < 32 VDC (output side in case of an error)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 25 VDC
Parallel operation	yes
Series connection	yes
MTBF	> 500,000 h (acc. to IEC 61709)

## Connection and type of mounting:

Wire connection	Input/Output/Signaling: WAGO 721 Series
Cross sections	Input/Output/Signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 in
Type of mounting	DIN-rail mount (EN 60715)

## Dimensions and weight:

Dimensions (mm) W x H x L	52 x 90 x 119
Weight	Length from upper-edge of DIN 35 rail 384 g

## Standards and approvals:

Standards/Specifications	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL * (* pending)
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Similar to picture



- Primary switch mode power supply unit
- Suitable for protection class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Integrated TopBoost, enabling secondary-side protection via wire breakers
- DC OK contact
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

Description	Item No.	Pack. Unit
Switched-mode power supply, 12 VDC / 15 A	787-1631	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i\text{nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 V ... 372 VDC
Input voltage derating	-2.5 % (< 100 VAC)
Frequency	47 Hz ... 63 Hz; 0 Hz
Input current $I_i$	0.95 A (240 VAC); 2.07 A (100 VAC)
Discharge current	< 1 mA
Inrush current	< 30 A
Mains failure hold-up time	28 ms (230 VAC); 28 ms (100 VAC)
<b>Output:</b>	
Nominal output voltage $V_{o\text{nom}}$	12 VDC (SELV)
Output voltage range	11.5 ... 14.5 VDC adjustable
Output current $I_o$	15 A at 12 VDC
Factory preset	12 VDC
Adjustment accuracy	< 1 %
Residual ripple	35 mV (peak-to-peak) typ.
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	Green LED ( $V_o$ )
Signaling	DC O.K. contact; (Make contact, max. 30 V AC/DC, 1 A)
<b>Efficiency/Power losses:</b>	
Efficiency	90 % typ.
Power loss $P_V$	4.4 W (230 VAC, no load); 21.8 W (230 VAC, nominal load)
Max. power loss $P_V$	24.7 W typ. (100 VAC / 12 VDC, 15 A)
<b>Fuse protection:</b>	
Internal fuse	T 6.3 A / 250 V
External fuse	Circuit breakers 10 A, 16 A, B or C characteristic; An external DC fuse is required for the DC input voltage

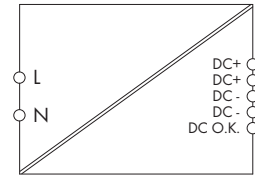
Technical Data	
<b>Environmental Requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C; Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +85 °C
Relative humidity	30 % ... 85 % (no condensation permissible)
Derating	-5 %/K (>60 °C, 196 ... 264 VAC); -2.5 %/K (>50 °C, 85 ... 195 VAC)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage PRI-SEC/PRI-GND/SEC-GND	4.2 kV DC kV / 2.2 kV DC kV / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	Varistor (input side); internal protective circuit, < 20 VDC (output side in case of an error)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 25 VDC
Parallel operation	yes
Series connection	yes
MTBF	> 500,000 h (acc. to IEC 61709)
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output/Signaling: WAGO 721 Series
Cross sections	Input/Output/Signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 in
Type of mounting	DIN-rail mount (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	55 x 127 x 172 Length from upper-edge of DIN 35 rail
Weight	930 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950-1, EN 61204-3, UL 60950-1, UL 508, GL * (* pending)

## Switched-Mode Power Supply, 1-Phase

EPSITRON® CLASSIC Power



Similar to picture



- Primary switch mode power supply unit
- Protection class II
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Bounce-free switching signal (DC OK)
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

## Technical Data

## Input:

Nominal input voltage $V_{i\text{nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 V ... 372 VDC
Input voltage derating	-2.5 % (< 95 VAC)
Frequency	47 Hz ... 63 Hz; 0 Hz
Input current $I_i$	0.2 A (240 VAC); 0.43 A (100 VAC)
Inrush current	< 30 A
Mains failure hold-up time	120 ms (230 VAC); 20 ms (100 VAC)

## Output:

Nominal output voltage $V_{o\text{nom}}$	24 VDC (SELV)
Output voltage range	23 ... 28.5 VDC adjustable
Output current $I_o$	1 A at 24 VDC (1.2 A up to 40 °C)
Factory preset	24 VDC
Adjustment accuracy	< 1 %
Residual ripple	20 mV (peak-to-peak) typ.
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	Green LED ( $V_o$ )
Signaling	1 x active signal output 24 VDC, 20 mA

## Efficiency/Power losses:

Efficiency	86 % typ.
Power loss $P_V$	< 1 W (230 VAC, no load); 3.9 W (230 VAC, nominal load)
Max. power loss $P_V$	4.2 W typ. (100 VAC / 24 VDC, 1 A)

## Fuse protection:

Internal fuse	T 2 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, B or C characteristic; An external DC fuse is required for the DC input voltage

Description	Item No.	Pack. Unit
Switched-mode power supply, 24 VDC/ 1 A	787-1602	1

## Technical Data

## Environmental Requirements:

Ambient operating temperature	-25 °C ... +70 °C; Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +85 °C
Relative humidity	30 % ... 85 % (no condensation permissible)
Derating	-3 %/K (> 50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Test voltage pri. - sec.	4.2 kV DC
Protection class	II
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	Varistor (input side); internal protective circuit, < 39 VDC (output side in case of an error)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 35 VDC
Parallel operation	yes
Series connection	yes
MTBF	> 500,000 h (acc. to IEC 61709)

## Connection and type of mounting:

Wire connection	Input/Output/Signaling: WAGO 721 Series
Cross sections	Input/Output/Signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 in
Type of mounting	DIN-rail mount (EN 60715)

## Dimensions and weight:

Dimensions (mm) W x H x L	22.5 x 90 x 107.5
Weight	Length from upper-edge of DIN 35 rail 128 g

## Standards and approvals:

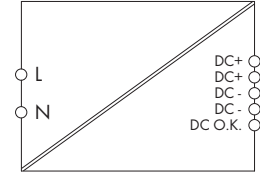
Standards/Specifications	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL * (* pending)
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# 5 Switched-Mode Power Supply, 1-Phase

EPSITRON® CLASSIC Power



Similar to picture



- Primary switch mode power supply unit
- Protection class II
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Bounce-free switching signal (DC OK)
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

Description	Item No.	Pack. Unit
Switched-mode power supply, 24 VDC / 2 A	787-1606	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i\text{nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 V ... 372 VDC
Input voltage derating	-2.5 % (< 95 VAC)
Frequency	47 Hz ... 63 Hz; 0 Hz
Input current $I_i$	0.37 A (240 VAC); 0.73 A (100 VAC)
Inrush current	< 30 A
Mains failure hold-up time	120 ms (230 VAC); 20 ms (100 VAC)
<b>Output:</b>	
Nominal output voltage $V_{o\text{nom}}$	24 VDC (SELV)
Output voltage range	23 ... 28.5 VDC adjustable
Output current $I_o$	2 A at 24 VDC (2.2 A up to 40 °C)
Factory preset	24 VDC
Adjustment accuracy	< 1 %
Residual ripple	20 mV (peak-to-peak) typ.
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	Green LED ( $V_o$ )
Signaling	1 x active signal output 24 VDC, 20 mA
<b>Efficiency/Power losses:</b>	
Efficiency	89 % typ.
Power loss $P_V$	< 1 W (230 VAC, no load); 6 W (230 VAC, nominal load)
Max. power loss $P_V$	6.6 W typ. (100 VAC / 24 VDC, 2 A)
<b>Fuse protection:</b>	
Internal fuse	T 4 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, B or C characteristic; An external DC fuse is required for the DC input voltage

Technical Data	
<b>Environmental Requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C; Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +85 °C
Relative humidity	30 % ... 85 % (no condensation permissible)
Derating	-3 %/K (> 50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage pri. - sec.	4.2 kV DC
Protection class	II
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	Varistor (input side); internal protective circuit, < 37 VDC (output side in case of an error)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 35 VDC
Parallel operation	yes
Series connection	yes
MTBF	> 500,000 h (acc. to IEC 61709)
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output/Signaling: WAGO 721 Series
Cross sections	Input/Output/Signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 in
Type of mounting	DIN-rail mount (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	45 x 90 x 107.5 Length from upper-edge of DIN 35 rail
Weight	210 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL * (* pending)

## Switched-Mode Power Supply, 1-Phase

EPSITRON® CLASSIC Power



Similar to picture



- Primary switch mode power supply unit
- Protection class II
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Bounce-free switching signal (DC OK)
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i\text{nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 V ... 372 VDC
Input voltage derating	-2.5 % (< 95 VAC)
Frequency	47 Hz ... 63 Hz; 0 Hz
Input current $I_i$	0.66 A (240 VAC); 1.52 A (100 VAC)
Inrush current	< 30 A
Mains failure hold-up time	80 ms (230 VAC); 15 ms (100 VAC)
<b>Output:</b>	
Nominal output voltage $V_{o\text{nom}}$	24 VDC (SELV)
Output voltage range	23 ... 28.5 VDC adjustable
Output current $I_o$	4 A at 24 VDC (4.2 A up to 40 °C)
Factory preset	24 VDC
Adjustment accuracy	< 1 %
Residual ripple	20 mV (peak-to-peak) typ.
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	Green LED ( $V_o$ )
Signaling	1 x active signal output 24 VDC, 20 mA
<b>Efficiency/Power losses:</b>	
Efficiency	89 % typ.
Power loss $P_V$	< 1 W (230 VAC, no load); 12.4 W (230 VAC, nominal load)
Max. power loss $P_V$	15 W typ. (100 VAC / 24 VDC, 4 A)
<b>Fuse protection:</b>	
Internal fuse	T 4 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, B or C characteristic; An external DC fuse is required for the DC input voltage

Description	Item No.	Pack. Unit
Switched-mode power supply, 24 VDC / 4 A	787-1616	1
Technical Data		
<b>Environmental Requirements:</b>		
Ambient operating temperature	-25 °C ... +70 °C;	
	Device start at -40 °C (type-tested)	
Storage temperature	-25 °C ... +85 °C	
Relative humidity	30 % ... 85 % (no condensation permissible)	
Derating	-3 %/K (> 50 °C)	
Degree of pollution	2 (acc. to EN 50178)	
Climatic category	3K3 (acc. to EN 60721)	
<b>Safety and protection:</b>		
Test voltage pri. - sec.	4.2 kV DC	
Protection class	II	
Degree of protection	IP20 (acc. to EN 60529)	
Overvoltage protection	Varistor (input side); internal protective circuit, < 40 VDC (output side in case of an error)	
Short circuit protection	yes	
No-load proof	yes	
Feedback voltage	max. 35 VDC	
Parallel operation	yes	
Series connection	yes	
MTBF	> 500,000 h (acc. to IEC 61709)	
<b>Connection and type of mounting:</b>		
Wire connection	Input/Output/Signaling: WAGO 721 Series	
Cross sections	Input/Output/Signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Strip lengths	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 in	
Type of mounting	DIN-rail mount (EN 60715)	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	52 x 90 x 119	
	Length from upper-edge of DIN 35 rail	
Weight	384 g	
<b>Standards and approvals:</b>		
Standards/Specifications	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL * (* pending)	

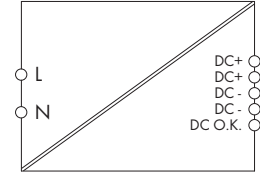


# 5 Switched-Mode Power Supply, 1-Phase

EPSTRON® CLASSIC Power



Similar to picture



- Primary switch mode power supply unit
- Protection class II
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Limited Power Source (LPS) acc. to NEC Class 2
- Bounce-free switching signal (DC OK)
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

Description	Item No.	Pack. Unit
Switched-mode power supply, 24 VDC / 3.8 A LPS	787-1616/000-1000	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i\text{nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 V ... 372 VDC
Input voltage derating	-2.5 % (< 95 VAC)
Frequency	47 Hz ... 63 Hz; 0 Hz
Input current $I_i$	0.7 A (240 VAC); 1.8 A (100 VAC)
Inrush current	< 30 A
Mains failure hold-up time	80 ms (230 VAC); 15 ms (100 VAC)
<b>Output:</b>	
Nominal output voltage $V_{o\text{nom}}$	24 VDC (SELV)
Output voltage range	23 ... 28.5 VDC adjustable
Output current $I_o$	3.8 A at 24 VDC
Factory preset	24 VDC
Adjustment accuracy	< 1 %
Residual ripple	20 mV (peak-to-peak) typ.
Current limitation	3.8 A (3.2 A at $V_o > 25$ VDC), LPS acc. to NEC Class 2
Overload behavior	Constant current
Operational indication	Green LED ( $V_o$ )
Signaling	1 x active signal output 24 VDC, 20 mA
<b>Efficiency/Power losses:</b>	
Efficiency	87 % typ.
Power loss $P_V$	2.8 W (230 VAC, no load); 14 W (230 VAC, nominal load)
Max. power loss $P_V$	< 20 W (100 VAC / 91 W)
<b>Fuse protection:</b>	
Internal fuse	T 4 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, B or C characteristic; An external DC fuse is required for the DC input voltage

Technical Data	
<b>Environmental Requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C; Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +85 °C
Relative humidity	30 % ... 85 % (no condensation permissible)
Derating	-3 %/K (> 50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage pri. - sec.	4.2 kV DC
Protection class	II
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	Varistor (input side); internal protective circuit, < 40 VDC (output side in case of an error)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 35 VDC
Parallel operation	yes
Series connection	yes
MTBF	> 500,000 h (acc. to IEC 61709)
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output/Signaling: WAGO 721 Series
Cross sections	Input/Output/Signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 in
Type of mounting	DIN-rail mount (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	52 x 90 x 119 Length from upper-edge of DIN 35 rail
Weight	384 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, UL 1310, GL * (* pending)



## Switched-Mode Power Supply, 1-Phase

EPSITRON® CLASSIC Power



Similar to picture



- Primary switch mode power supply unit
- Suitable for protection class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Integrated TopBoost, enabling secondary-side protection via wire breakers
- DC OK contact
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

## Technical Data

## Input:

Nominal input voltage $V_{i, \text{nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 V ... 372 VDC
Input voltage derating	-2.5 % (< 97 VAC)
Frequency	47 Hz ... 63 Hz; 0 Hz
Input current $I_i$	1.2 A (240 VAC); 2.25 A (100 VAC)
Discharge current	< 1 mA
Inrush current	< 30 A
Mains failure hold-up time	80 ms (230 VAC); 10 ms (100 VAC)

## Output:

Nominal output voltage $V_{o, \text{nom}}$	24 VDC (SELV)
Output voltage range	23 ... 28.5 VDC adjustable
Output current $I_o$	5 A at 24 VDC
Factory preset	24 VDC
Adjustment accuracy	< 1 %
Residual ripple	30 mV (peak-to-peak) typ.
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	Green LED ( $V_o$ )
Signaling	DC O.K. contact; (Make contact, max. 30 V AC/DC, 1 A)

## Efficiency/Power losses:

Efficiency	89 % typ.
Power loss $P_V$	1.2 W (230 VAC, no load); 14.6 W (230 VAC, nominal load)
Max. power loss $P_V$	19.4 W typ. (100 VAC / 24 VDC, 5 A)

## Fuse protection:

Internal fuse	T 4 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, B or C characteristic; An external DC fuse is required for the DC input voltage

## Description

Switched-mode power supply,  
24 VDC / 5 A

## Item No.

787-1622

Pack.  
Unit

1

## Technical Data

## Environmental Requirements:

Ambient operating temperature	-25 °C ... +70 °C; Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +85 °C
Relative humidity	30 % ... 85 % (no condensation permissible)
Derating	-5 %/K (>60 °C, 196 ... 264 VAC); -2.5 %/K (>50 °C, 85 ... 195 VAC)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Test voltage PRI-SEC/PRI-GND/SEC-GND	4.2 kV DC kV / 2.2 kV DC kV / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	Varistor (input side); internal protective circuit, < 41 VDC (output side in case of an error)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 35 VDC
Parallel operation	yes
Series connection	yes
MTBF	> 500,000 h (acc. to IEC 61709)

## Connection and type of mounting:

Wire connection	Input/Output/Signaling: WAGO 721 Series
Cross sections	Input/Output/Signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 in
Type of mounting	DIN-rail mount [EN 60715]

## Dimensions and weight:

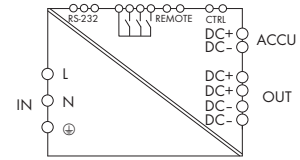
Dimensions (mm) W x H x L	42 x 127 x 137.5
Weight	Length from upper-edge of DIN 35 rail 590 g

## Standards and approvals:

Standards/Specifications	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL * (* pending)
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# Switched-Mode Power Supply with Integrated UPS Charger and Controller

## EP SITRON®



- Primary switch mode power supply with integrated charger and controller for uninterruptible power supply (UPS)
- Battery control technology for smooth charging and predictive maintenance applications
- Potential-free contacts provide function monitoring
- Buffer time can be set on-site via rotary switch
- Parameter setting and monitoring via RS-232 interface
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

### Technical Data

#### Input:

Nominal input voltage $V_i$ nom	100 ... 240 VAC; 110 ... 370 VDC
Input voltage range	85 ... 264 VAC
Frequency	45 ... 65 Hz; 0 Hz
Input current $I_i$	1,1 A at 230 VAC and 5 ADC
Discharge current	1 mA typ.
Inrush current	< 30 A

#### Output:

Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	23.0 ... 28.5 VDC (mains operation)
	18.5 ... 27.5 VDC (battery operation)
Output current $I_o$	5 A
Adjustment accuracy	1 %
Residual ripple	< 100 mV (peak-peak)
Current limitation	1.1 x $I_o$ ; TopBoost approx. 24 A
Buffer time	0.5 ... 20 min, IPC mode or constant (adjustable)
Switch-on threshold (adjustable)	22 VDC (pre-configured), 20 ... 25.5 VDC (configurable via software)
Final load voltage	26 ... 29.5 VDC temperature-controlled (fixed or adjustable)
Charging current	0.3 A ... 0.6 A
Recommended battery modules	787-876, 787-871, 787-872, 787-873
Operational indication	Green LED (DC OK), yellow LED (battery mode), red LED (warning/fault)
Signaling	3 x 24 VDC signal output, 25 mA and 1 x 30 VDC isolated relay contact, 1 A
Remote input	to switch off buffer operation
LineMonitor, parameter setting	via RS-232 serial interface
<b>Efficiency / power losses:</b>	
Efficiency	89 % typ.
Power loss $P_V$	5.2 W (battery operation, 24 VDC, 5 A) / 17 W (mains operation, 230 VAC/24 VDC, 5 A)
<b>Fuse protection:</b>	
Internal fuse	T 4 A / 250 V (input side)
External fuse	Circuit breakers 6 A, 10 A, 16 A, characteristic: B or C; An external DC fuse is required for the DC input voltage

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, with Integrated UPS Charger and Controller, 24VDC / 5A	787-1675	1

### Technical Data

#### Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C;
	Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +85 °C
Derating	-3 % / K (> +50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

#### Safety and protection:

Test voltage	
pri.-sec./pri.-gr./sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	I
Reverse voltage protection	yes
Degree of protection	IP20 (acc. to EN 60529)
Feedback voltage	max. 35 VDC
Parallel operation	yes, max. 3 battery modules for buffer time extension

#### Connection and type of mounting:

Wire connection	Input/Output/Signals: WAGO 721 Series Interface: WAGO 733 Series
Cross sections	Input/Output/Signals: 0 .5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 10 Interface: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output/Signals: 13 ... 15 mm / 0.55 in Interface: 8 ... 9 mm / 0.33 in
Line length	≤ 3 m (Output, Battery Control)
Type of mounting	DIN-rail mount (EN 60715)

#### Dimensions and weight:

Dimensions (mm) W x H x L	60 x 127 x 135.5
	Length from upper-edge of DIN 35 rail
Weight	885 g

#### Standards and approvals:

Standards/Specifications	EN 60950, UL 60950, UL 508, EN 61204-3, GL * (* pending)
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## Switched-Mode Power Supply, 1-Phase

EPSITRON® CLASSIC Power



Similar to picture



- Primary switch mode power supply unit
- Suitable for protection class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Integrated TopBoost, enabling secondary-side protection via wire breakers
- DC OK contact
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

## Technical Data

## Input:

Nominal input voltage $V_{i, nom}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 V ... 372 VDC
Input voltage derating	-2.5 % (< 100 VAC)
Frequency	47 Hz ... 63 Hz; 0 Hz
Input current $I_i$	1.25 A (240 VAC); 2.74 A (100 VAC)
Discharge current	< 1 mA
Inrush current	< 30 A
Mains failure hold-up time	17 ms (230 VAC); 15 ms (100 VAC)

## Output:

Nominal output voltage $V_{o, nom}$	24 VDC (SELV)
Output voltage range	23 ... 28.5 VDC adjustable
Output current $I_o$	10 A at 24 VDC
Factory preset	24 VDC
Adjustment accuracy	< 1 %
Residual ripple	50 mV (peak-to-peak) typ.
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	Green LED ( $V_o$ )
Signaling	DC O.K. contact; (Make contact, max. 30 V AC/DC, 1 A)

## Efficiency/Power losses:

Efficiency	91 % typ.
Power loss $P_V$	6.6 W (230 VAC, no load); 24.4 W (230 VAC, nominal load)
Max. power loss $P_V$	31.3 W typ. (100 VAC / 24 VDC, 10 A)

## Fuse protection:

Internal fuse	T 6.3 A / 250 V
External fuse	Circuit breakers 10 A, 16 A, B or C characteristic; An external DC fuse is required for the DC input voltage

## Description

Switched-mode power supply,  
24 VDC / 10 A

## Item No.

787-1632

Pack.  
Unit

1

## Technical Data

## Environmental Requirements:

Ambient operating temperature	-25 °C ... +70 °C; Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +85 °C
Relative humidity	30 % ... 85 % (no condensation permissible)
Derating	-5 %/K (>60 °C, 196 ... 264 VAC); -2.5 %/K (>50 °C, 85 ... 195 VAC)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Test voltage PRI-SEC/PRI-GND/SEC-GND	4.2 kV DC kV / 2.2 kV DC kV / 0.7 kV DC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	Varistor (input side); internal protective circuit, < 40 VDC (output side in case of an error)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 35 VDC
Parallel operation	yes
Series connection	yes
MTBF	> 500,000 h (acc. to IEC 61709)

## Connection and type of mounting:

Wire connection	Input/Output/Signaling: WAGO 721 Series
Cross sections	Input/Output/Signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 in
Type of mounting	DIN-rail mount (EN 60715)

## Dimensions and weight:

Dimensions (mm) W x H x L	55 x 127 x 172
Weight	Length from upper-edge of DIN 35 rail 930 g

## Standards and approvals:

Standards/Specifications	EN 60950-1, EN 61204-3, UL 60950-1, UL 508, GL * (* pending)
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# 5 Switched-Mode Power Supply, 1-Phase

EPSITRON® CLASSIC Power

298



Similar to picture



- Primary switch mode power supply unit
- Suitable for protection class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Integrated TopBoost, enabling secondary-side protection via wire breakers
- DC OK contact
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

Description	Item No.	Pack. Unit
Switched-mode power supply, 24 VDC / 20 A	787-1634	1
<b>Technical Data</b>		
<b>Environmental Requirements:</b>		
Ambient operating temperature	-25 °C ... +70 °C;	
	Device start at -40 °C (type-tested)	
Storage temperature	-25 °C ... +85 °C	
Relative humidity	30 % ... 85 % (no condensation permissible)	
Derating	-5 %/K (>60 °C, 196 ... 264 VAC);	
	-2.5 %/K (>50 °C, 85 ... 195 VAC)	
Degree of pollution	2 (acc. to EN 50178)	
Climatic category	3K3 (acc. to EN 60721)	
<b>Safety and protection:</b>		
Test voltage PRI-SEC/PRI-GND/SEC-GND	4.2 kV DC kV / 2.2 kV DC kV / 0.7 kV DC	
Protection class	Prepared for class I equipment	
Degree of protection	IP20 (acc. to EN 60529)	
Overvoltage protection	Varistor (input side);	
	internal protective circuit,	
	< 40 VDC (output side in case of an error)	
Short circuit protection	yes	
No-load proof	yes	
Feedback voltage	max. 35 VDC	
Parallel operation	yes	
Series connection	yes	
MTBF	> 500,000 h (acc. to IEC 61709)	
<b>Connection and type of mounting:</b>		
Wire connection	Input/Signaling: WAGO 721 Series	
	Output: WAGO 831 Series	
Cross sections	Input/Signaling:	
	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
	Output: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8	
Strip lengths	Input/Signaling:	
	8 ... 9 mm / 0.31 ... 0.35 in	
	Output: 13 ... 15 mm / 0.51 ... 0.59 in	
Type of mounting	DIN-rail mount (EN 60715)	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	95 x 127 x 170	
	Length from upper-edge of DIN 35 rail	
Weight	1600 g	
<b>Standards and approvals:</b>		
Standards/Specifications	EN 60950-1, EN 61204-3,	
	UL 60950-1, UL 508, GL *	
	(* pending)	

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i, nom}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 V ... 372 VDC
Input voltage derating	-1.8 % (< 105 VAC)
Frequency	47 Hz ... 63 Hz; 0 Hz
Input current $I_i$	2.23 A (240 VAC);
	5.56 A (100 VAC)
Discharge current	< 1 mA
Inrush current	< 30 A
Mains failure hold-up time	20 ms (230 VAC);
	20 ms (100 VAC)
<b>Output:</b>	
Nominal output voltage $V_{o, nom}$	24 VDC (SELV)
Output voltage range	23 ... 28.5 VDC adjustable
Output current $I_o$	20 A at 24 VDC
Factory preset	24 VDC
Adjustment accuracy	< 1 %
Residual ripple	70 mV (peak-to-peak) typ.
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	Green LED ( $V_o$ )
Signaling	DC O.K. contact;
	(Make contact, max. 30 V AC/DC, 1 A)
<b>Efficiency/Power losses:</b>	
Efficiency	92 % typ.
Power loss $P_V$	7.0 W (230 VAC, no load);
	40.8 W (230 VAC, nominal load)
Max. power loss $P_V$	68.3 W typ. (100 VAC / 24 VDC, 20 A)
<b>Fuse protection:</b>	
Internal fuse	T 10 A / 250 V
External fuse	Circuit breakers 10 A, 16 A,
	B or C characteristic;
	An external DC fuse is required for the DC
	input voltage

## Switched-Mode Power Supply, 1-Phase

EPSITRON® CLASSIC Power



Similar to picture



- Primary switch mode power supply unit
- Protection class II
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Bounce-free switching signal (DC OK)
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

## Technical Data

## Input:

Nominal input voltage $V_{i\text{nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 V ... 372 VDC
Input voltage derating	-2.5 % (< 95 VAC)
Frequency	47 Hz ... 63 Hz; 0 Hz
Input current $I_i$	0.9 A (240 VAC); 1.78 A (100 VAC)
Inrush current	< 30 A
Mains failure hold-up time	80 ms (230 VAC); 15 ms (100 VAC)

## Output:

Nominal output voltage $V_{o\text{nom}}$	48 VDC (SELV)
Output voltage range	40 ... 56 VDC adjustable
Output current $I_o$	2 A at 48 VDC (2.1 A up to 40 °C)
Factory preset	48 VDC
Adjustment accuracy	< 1 %
Residual ripple	20 mV (peak-to-peak) typ.
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	Green LED ( $V_o$ )
Signaling	1 x active signal output 48 VDC, 10 mA

## Efficiency/Power losses:

Efficiency	86 % typ.
Power loss $P_V$	< 1 W (230 VAC, no load); 16.2 W (230 VAC, nominal load)
Max. power loss $P_V$	19.8 W typ. (100 VAC / 48 VDC, 2 A)

## Fuse protection:

Internal fuse	T 4 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, B or C characteristic; An external DC fuse is required for the DC input voltage

Description	Item No.	Pack. Unit
Switched-mode power supply, 48 VDC / 2 A	787-1623	1

## Technical Data

## Environmental Requirements:

Ambient operating temperature	-25 °C ... +70 °C; Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +85 °C
Relative humidity	30 % ... 85 % (no condensation permissible)
Derating	-3 %/K (> 50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Test voltage pri. - sec.	4.2 kV DC
Protection class	II
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	Varistor (input side); internal protective circuit, < 60 VDC (output side in case of an error)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 63 VDC
Parallel operation	yes
Series connection	yes
MTBF	> 500,000 h (acc. to IEC 61709)

## Connection and type of mounting:

Wire connection	Input/Output/Signaling: WAGO 721 Series
Cross sections	Input/Output/Signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 in
Type of mounting	DIN-rail mount (EN 60715)

## Dimensions and weight:

Dimensions (mm) W x H x L	52 x 90 x 119 Length from upper-edge of DIN 35 rail
Weight	385 g

## Standards and approvals:

Standards/Specifications	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL * (* pending)
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# 5 Switched-Mode Power Supply, 1-Phase

EPSITRON® CLASSIC Power



Similar to picture



- Primary switch mode power supply unit
- Suitable for protection class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Integrated TopBoost, enabling secondary-side protection via wire breakers
- DC OK contact
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

Description	Item No.	Pack. Unit
Switched-mode power supply, 48 VDC / 5 A	787-1633	1
<b>Technical Data</b>		
<b>Environmental Requirements:</b>		
Ambient operating temperature	-25 °C ... +70 °C;	
	Device start at -40 °C (type-tested)	
Storage temperature	-25 °C ... +85 °C	
Relative humidity	30 % ... 85 % (no condensation permissible)	
Derating	-5 %/K (>60° C, 196 ... 264 VAC); -2.5 %/K (>50° C, 85 ... 195 VAC)	
Degree of pollution	2 (acc. to EN 50178)	
Climatic category	3K3 (acc. to EN 60721)	
<b>Safety and protection:</b>		
Test voltage PRI-SEC/PRI-GND/SEC-GND	4.2 kV DC kV / 2.2 kV DC kV / 0.7 kV DC	
Protection class	Prepared for class I equipment	
Degree of protection	IP20 (acc. to EN 60529)	
Oversvoltage protection	Varistor (input side); internal protective circuit, < 60 VDC (output side in case of an error)	
Short circuit protection	yes	
No-load proof	yes	
Feedback voltage	max. 63 VDC	
Parallel operation	yes	
Series connection	yes	
MTBF	> 500,000 h (acc. to IEC 61709)	
<b>Connection and type of mounting:</b>		
Wire connection	Input/Output/Signaling: WAGO 721 Series	
Cross sections	Input/Output/Signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Strip lengths	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 in	
Type of mounting	DIN-rail mount (EN 60715)	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	55 x 127 x 172	
	Length from upper-edge of DIN 35 rail	
Weight	930 g	
<b>Standards and approvals:</b>		
Standards/Specifications	EN 60950-1, EN 61204-3, UL 60950-1, UL 508, GL * (* pending)	

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i\text{nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 V ... 372 VDC
Input voltage derating	-2.5 % (< 100 VAC)
Frequency	47 Hz ... 63 Hz; 0 Hz
Input current $I_i$	1.19 A (240 VAC); 2.68 A (100 VAC)
Discharge current	< 1 mA
Inrush current	< 30 A
Mains failure hold-up time	21 ms (230 VAC); 21 ms (100 VAC)
<b>Output:</b>	
Nominal output voltage $V_{o\text{nom}}$	48 VDC (SELV)
Output voltage range	40 ... 56 VDC adjustable
Output current $I_o$	5 A at 48 VDC
Factory preset	48 VDC
Adjustment accuracy	< 1 %
Residual ripple	30 mV (peak-to-peak) typ.
Current limitation	1.11.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	Green LED ( $V_o$ )
Signaling	DC O.K. contact; (Make contact, max. 30 V AC/DC, 1 A)
<b>Efficiency/Power losses:</b>	
Efficiency	92 % typ.
Power loss $P_V$	7 W (230 VAC, no load); 40.8 W (230 VAC, nominal load)
Max. power loss $P_V$	26.5 W typ. (100 VAC / 48 VDC, 5 A)
<b>Fuse protection:</b>	
Internal fuse	T 6.3 A / 250 V
External fuse	Circuit breakers 10 A, 16 A, B or C characteristic; An external DC fuse is required for the DC input voltage

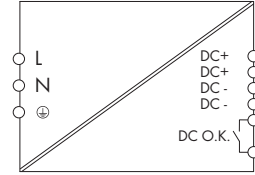


## Switched-Mode Power Supply, 1-Phase

EPSITRON® CLASSIC Power



Similar to picture



- Primary switch mode power supply unit
- Suitable for protection class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Integrated TopBoost, enabling secondary-side protection via wire breakers
- DC OK contact
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i, nom}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 V ... 372 VDC
Input voltage derating	-2.5 % (< 100 VAC)
Frequency	47 Hz ... 63 Hz; 0 Hz
Input current $I_i$	2.22 A (240 VAC); 5.15 A (100 VAC)
Discharge current	< 1 mA
Inrush current	< 30 A
Mains failure hold-up time	20 ms (230 VAC); 20 ms (100 VAC)
<b>Output:</b>	
Nominal output voltage $V_{o, nom}$	48 VDC (SELV)
Output voltage range	40 ... 56 VDC adjustable
Output current $I_o$	10 A at 48 VDC
Factory preset	48 VDC
Adjustment accuracy	< 1 %
Residual ripple	80 mV (peak-to-peak) typ.
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	Green LED ( $V_o$ )
Signaling	DC O.K. contact; (Make contact, max. 30 V AC/DC, 1 A)
<b>Efficiency/Power losses:</b>	
Efficiency	93 % typ.
Power loss $P_V$	11.7 W (230 VAC, no load); 36.3 W (230 VAC, nominal load)
Max. power loss $P_V$	64.9 W typ. (100 VAC / 48 VDC, 10 A)
<b>Fuse protection:</b>	
Internal fuse	T 10 A / 250 V
External fuse	Circuit breakers 10 A, 16 A, B or C characteristic; An external DC fuse is required for the DC input voltage

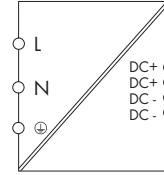
Description	Item No.	Pack. Unit
Switched-mode power supply, 48 VDC / 10 A	787-1635	1
<b>Technical Data</b>		
<b>Environmental Requirements:</b>		
Ambient operating temperature	-25 °C ... +70 °C;	
	Device start at -40 °C (type-tested)	
Storage temperature	-25 °C ... +85 °C	
Relative humidity	30 % ... 85 % (no condensation permissible)	
Derating	-5 %/K (>60 °C, 196 ... 264 VAC); -2.5 %/K (>50 °C, 85 ... 195 VAC)	
Degree of pollution	2 (acc. to EN 50178)	
Climatic category	3K3 (acc. to EN 60721)	
<b>Safety and protection:</b>		
Test voltage PRI-SEC/PRI-GND/SEC-GND	4.2 kV DC kV / 2.2 kV DC kV / 0.7 kV DC	
Protection class	Prepared for class I equipment	
Degree of protection	IP20 (acc. to EN 60529)	
Overvoltage protection	Varistor (input side); internal protective circuit, < 60 VDC (output side in case of an error)	
Short circuit protection	yes	
No-load proof	yes	
Feedback voltage	max. 63 VDC	
Parallel operation	yes	
Series connection	yes	
MTBF	> 500,000 h (acc. to IEC 61709)	
<b>Connection and type of mounting:</b>		
Wire connection	Input/Signaling: WAGO 721 Series Output: WAGO 831 Series	
Cross sections	Input/Signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Output: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8	
Strip lengths	Input/Signaling: 8 ... 9 mm / 0.31 ... 0.35 in Output: 13 ... 15 mm / 0.51 ... 0.59 in	
Type of mounting	DIN-rail mount (EN 60715)	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	95 x 127 x 170	
	Length from upper-edge of DIN 35 rail	
Weight	1600 g	
<b>Standards and approvals:</b>		
Standards/Specifications	EN 60950-1, EN 61204-3, UL 60950-1, UL 508, GL *	
	(* pending)	



# 5 Switched-Mode Power Supply, 1-Phase

EPSITRON® ECO Power

302



- Primary switch mode power supply unit
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Parallel operation, series connection possible
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

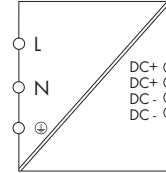
Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 24 VDC / 2.5 A	787-712	1

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-10 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	95 % (no condensation)
Derating	-3.3 % / K (> 55 °C at 230 VAC)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage pri.-sec./ pri.-gr. / sec.-gr.	3 kV AC / 1.5 kV AC / 0.5 kV AC
Protection class	Prepared for class I equipment
Degree of protection	IP20 acc. to EN 60529
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	28 VDC
Parallel operation	yes
Series connection	yes
MTBF	480000 h (acc. IEC 61709)
<b>Connection and type of mounting:</b>	
Wire connection	CAGE CLAMP® (WAGO 745 Series)
Cross sections	0.08 ... 4 mm <sup>2</sup> / AWG 28 ... 12 (THHN, THWN)
Strip lengths	8 ... 9 mm / 0.33 in
Type of mounting	DIN-rail mount (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	50 x 92 x 136
	Height from upper-edge of DIN 35 rail
Weight	596 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, EN 61000-6-2, EN 61000-6-3, UL 60950, UL 508, ANSI/ISA 12.12.01 (Class I Div.2), ATEX, IEC Ex

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 130 ... 373 VDC
Frequency	47 - 63 Hz
Input current $I_i$	0.7 A typ. at 230 VAC; 1.2 A at 115 VAC
Discharge current	< 1 mA
Inrush current	< 30 A
Mains failure hold-up time	> 20 ms at 230 VAC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	22 ... 28 VDC adjustable
Output current $I_o$	2.5 A at 24 V DC
Factory preset	24 VDC
Adjustment accuracy	1%
Residual ripple	< 100 mV (peak-to-peak) to 20 MHz
Overload behavior	Constant power (in overload range: 1.15 ... 1.4 x $I_o$ ); shutdown and automatic restart in the event of a short circuit
Operational indication	LED green (24 V DC o.k.), LED red (overload)
<b>Efficiency / power losses:</b>	
Efficiency	82 % typ.
Power loss $P_V$	8.3 W (at 230 VAC and 2.5 ADC)
Max. power loss $P_V$	11.5 W (at 110 VAC and 2.75 ADC)
<b>Fuse protection:</b>	
Internal fuse	F 2.5 A / 250 V
External fuse	Circuit breakers 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

## Switched-Mode Power Supply, 1-Phase

EPSITRON® ECO Power



- Primary switch mode power supply unit
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Parallel operation, series connection possible
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

## Technical Data

Input:	
Nominal input voltage $V_i$ nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 130 ... 373 VDC
Frequency	47 - 63 Hz
Input current $I_i$	1.0 A typ. at 230 VAC; 2.0 A at 115 VAC
Discharge current	< 3.5mA
Inrush current	< 30 A
Mains failure hold-up time	> 20 ms at 230 VAC
Output:	
Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	22 ... 28 VDC adjustable
Output current $I_o$	5 A at 24 V DC
Factory preset	24 VDC
Adjustment accuracy	1%
Residual ripple	< 100 mV (peak-to-peak) to 20 MHz
Overload behavior	Constant power (in overload range: 1.15 ... 1.4 x $I_o$ ); shutdown and automatic restart in the event of a short circuit
Operational indication	LED green (24 V DC o.k.), LED red (overload)
Efficiency / power losses:	
Efficiency	82 % typ.
Power loss $P_V$	19.5 W (at 230 VAC and 5 ADC)
Max. power loss $P_V$	23.5 W (at 110 VAC and 5.5 ADC)
Fuse protection:	
Internal fuse	F 3.15 A / 250 V
External fuse	Circuit breakers 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 24 VDC / 5 A	787-722	1

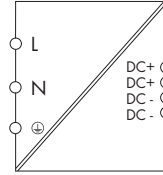
## Technical Data

Environmental requirements:	
Ambient operating temperature	-10 °C ... +60 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	95 % (no condensation)
Derating	-5.33 % / K (> 45 °C at 230 VAC)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
Safety and protection:	
Test voltage pri.-sec./ pri.-gr. / sec.-gr.	3 kV AC / 1.5 kV AC / 0.5 kV AC
Protection class	Prepared for class I equipment
Degree of protection	IP20 acc. to EN 60529
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	28 VDC
Parallel operation	yes
Series connection	yes
MTBF	480000 h (acc. IEC 61709)
Connection and type of mounting:	
Wire connection	CAGE CLAMP® (WAGO 745 Series)
Cross sections	0.08 mm² ... 4 mm² / AWG 28 ... 12 (THHN, THWN)
Strip lengths	8 ... 9 mm / 0.33 in
Type of mounting	DIN-rail mount (EN 60715)
Dimensions and weight:	
Dimensions (mm) W x H x L	75 x 92 x 136
Weight	Height from upper-edge of DIN 35 rail 850 g
Standards and approvals:	
Standards/Specifications	EN 60950, EN 61000-6-2, EN 61000-6-3, UL 60950, UL 508, ANSI/ISA 12.12.01 (Class I Div.2), ATEX, IEC Ex

# 5 Switched-Mode Power Supply, 1-Phase

EPSITRON® ECO Power

304



- Primary switch mode power supply unit
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Parallel operation, series connection possible
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

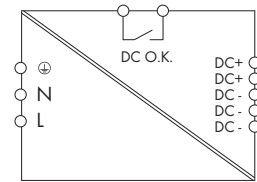
Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 24 VDC / 10 A	787-732	1

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-10 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	95 % (no condensation)
Derating	-2.33 % / K (> 55 °C at 230 VAC)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage pri.-sec./ pri.-gr. / sec.-gr.	3 kV AC / 1.5 kV AC / 0.5 kV AC
Protection class	Prepared for class I equipment
Degree of protection	IP20 acc. to EN 60529
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	28 VDC
Parallel operation	yes
Series connection	yes
MTBF	480000 h (acc. IEC 61709)
<b>Connection and type of mounting:</b>	
Wire connection	CAGE CLAMP® (WAGO 745 Series)
Cross sections	0.08 mm² ... 4 mm² / AWG 28 ... 12 (THHN, THWN)
Strip lengths	8 ... 9 mm / 0.33 in
Type of mounting	DIN-rail mount (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	110 x 92 x 136
Weight	Height from upper-edge of DIN 35 rail 1200 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, EN 61000-6-2, EN 61000-6-3, UL 60950, UL 508, ANSI/ISA 12.12.01 (Class I Div.2), ATEX, IEC Ex

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 130 ... 373 VDC
Frequency	47 Hz ... 63 Hz
Input current $I_i$	1.5 A typ. at 230 VAC; 3.0 A at 115 VAC
Discharge current	< 3.5mA
Inrush current	< 30 A
Mains failure hold-up time	> 20 ms at 230 VAC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	22 ... 28 VDC adjustable
Output current $I_o$	10 A at 24 V DC
Factory preset	24 VDC
Adjustment accuracy	1%
Residual ripple	< 100 mV (peak-to-peak) to 20 MHz
Overload behavior	Constant power (in overload range: 1.15 ... 1.4 x $I_o$ ); shutdown and automatic restart in the event of a short circuit
Operational indication	LED green (24 V DC o.k.), LED red (overload)
<b>Efficiency / power losses:</b>	
Efficiency	82 % typ.
Power loss $P_V$	37.5 W (at 230 VAC and 10 ADC)
Max. power loss $P_V$	53 W (at 110 VAC and 11 ADC)
<b>Fuse protection:</b>	
Internal fuse	F 5 A / 250 V
External fuse	Circuit breakers 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

## Switched-Mode Power Supply, 1-Phase

EPSITRON® ECO Power



- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Fast and tool-free termination via lever-actuated terminal blocks
- Bounce-free switching contact (DC OK)
- Parallel operation
- Electrically isolated output voltage (SELV) acc. to EN / UL 60950-1

## Technical Data

## Input:

Nominal input voltage $V_{i\text{nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 130 ... 373 VDC
Frequency	47 Hz ... 63 Hz
Input current $I_i$	3 A typ. at 230 VAC; 6.0 A at 115 VAC
Discharge current	1.7 mA
Inrush current	< 30 A
Mains failure hold-up time	> 20 ms at 230 VAC

## Output:

Nominal output voltage $V_{o\text{nom}}$	24 VDC (SELV)
Output voltage range	22 ... 28 VDC adjustable
Output current $I_o$	20 A at 24 VDC
Factory preset	24 VDC
Adjustment accuracy	1 %
Residual ripple	< 100 mV (peak-peak)
Overload behavior	Constant power (in overload range: 1.15 ... 1.4 x $I_o$ ); shutdown and automatic restart in the event of a short circuit
Operational indication	LED green (24 V DC o.k.), LED red (overload)

## Efficiency/Power losses:

Efficiency	90 % typ.
Power loss $P_v$	65 W (230 VAC / nominal load)
Max. power loss $P_v$	107 W typ. (110 VAC / 24 VDC, 23 A)

## Fuse protection:

Internal fuse	16 AT / 250 V
External fuse	Circuit breakers 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

## Description

Switched-mode power supply,  
24 VDC / 20 A

## Item No.

787-734

Pack.  
Unit

1

## Technical Data

## Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	95 % (no condensation)
Derating	see instruction manual
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Test voltage	
PRI-SEC/PRI-GND/SEC-GND	3 kV AC / 1.5 kV AC / 0.5 kV AC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	29 VDC
Parallel operation	yes
Series connection	yes
MTBF	> 250000 h

## Connection and type of mounting:

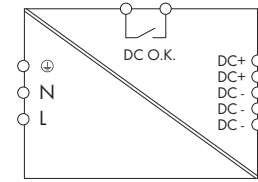
Wire connection	Input/Signalising: WAGO 2706 Series Output: WAGO 2716 Series
Cross sections	Input/Signalising: 0.5 mm <sup>2</sup> ... 6 mm <sup>2</sup> / AWG 20 ... 10 Output: 1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> / AWG 16 ... 6
Strip lengths	Input/Signalising: 11 ... 12 mm / 0.45 in Output: 12 ... 13 mm / 0.47 in
Type of mounting	DIN-rail mount (EN 60715)

## Dimensions and weight:

Dimensions (mm) W x H x L	115 x 136 x 144
Weight	Length from upper-edge of DIN 35 rail 2120 g

## Standards and approvals:

Standards/Specifications	EN 60950 (SELV), EN 61000-6-2, EN 61000-6-3 UL 60950, UL 508* (* pending)
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- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Fast and tool-free termination via lever-actuated terminal blocks
- Bounce-free switching contact (DC OK)
- Parallel operation
- Electrically isolated output voltage (SELV) acc. to EN / UL 60950-1

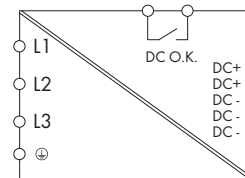
Description	Item No.	Pack. Unit
Switched-mode power supply, 24 VDC / 40 A	787-736	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i\text{nom}}$	100 ... 240 VAC
Input voltage range	90 ... 264 VAC; 130 ... 373 VDC
Frequency	47 Hz ... 63 Hz
Input current $I_i$	< 6 A at 230 VAC; < 12 A at 115 VAC
Discharge current	< 3.5 mA
Inrush current	< 30 A at 230 VAC; < 25 A at 115 VAC
Mains failure hold-up time	> 17 ms at AC 230 V / nominal load
Power factor	> 0.94 at 230 VAC > 0.98 at 115 VAC
<b>Output:</b>	
Nominal output voltage $V_{o\text{nom}}$	24 VDC (SELV)
Output voltage range	22 ... 28 VDC adjustable
Output current $I_o$	40 A at 24 VDC
Factory preset	24 VDC
Adjustment accuracy	1 %
Residual ripple	< 100 mV (peak-peak)
Overload behavior	Constant power (in overload range: 1.15 ... 1.4 x $I_o$ ); shutdown and automatic restart in the event of a short circuit
Operational indication	LED green (24 V DC o.k.), LED red (overload)
Signaling	Contact DC o.k.; make contact (max. 31.2 V / 20 mA)
<b>Efficiency/Power losses:</b>	
Efficiency	90 % typ.
Power loss $P_V$	107 W at AC 230 V / nominal load
<b>Fuse protection:</b>	
Internal fuse	T 20 A / 250 V
External fuse	Circuit breakers 13 A, 16 A, 20 A, characteristic: B or C An external DC fuse is required for the DC input voltage

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Rel. humidity	95 % (no condensation)
Derating	-2.66 % / K (> 55 °C); -2 % / V ( $V_i < 100$ VAC)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage PRI-SEC/PRI-GND/ SEC-GND/SEC-DC OK	3 kV AC / 1.5 kV AC / 0.5 kV AC / 0.5 kV AC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via varistor at primary circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	29 VDC
Parallel operation	yes
Series connection	yes
MTBF	> 250000 h
<b>Connection and type of mounting:</b>	
Wire connection	Input/Signalising: WAGO 2706 Series Output: WAGO 2716 Series
Cross sections	Input/Signalising: 0.5 mm <sup>2</sup> ... 6 mm <sup>2</sup> / AWG 20 ... 10 Output: 1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> / AWG 16 ... 6
Strip lengths	Input/Signalising: 11 ... 12 mm / 0.43 ... 0.47 in Output: 12 ... 13 mm / 0.47 ... 0.51 in
Type of mounting	DIN-rail mount (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	170 x 136 x 150
Weight	Length from upper-edge of DIN 35 rail 3500 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950 (SELV)*, EN 61000-6-2*, EN 61000-6-3*, UL 60950*, UL 508* (* pending)

## Switched-Mode Power Supply, 3-Phase

EPSITRON® ECO Power



- Suitable for protection class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Fast and tool-free termination via lever-actuated terminal blocks
- DC O.K. contact
- Parallel operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

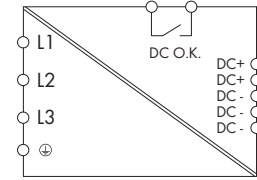
Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i, nom}$	3 x (2 x) 400 V ... 500 VAC
Input voltage range	325 V ... 575 VAC; 460 V ... 800 VDC
Frequency	47 Hz ... 63 Hz
Input current $I_i$	3 x 0.4 A at 400 VAC and 6.25 ADC
Power factor	≥ 0.6
Discharge current	< 3.5 mA
Inrush current	< 25 A
Mains failure hold-up time	> 17 ms at 3x 400 VAC
<b>Output:</b>	
Nominal output voltage $V_{o, nom}$	24 VDC (SELV)
Output voltage range	22 ... 28 VDC adjustable
Output current $I_o$	6.25 A at 24 VDC
Factory preset	24 VDC
Adjustment accuracy	1 %
Residual ripple	< 80 mV (peak-to-peak)
Overload behavior	Constant power (in overload range: 1.15 ... 1.4 x $I_o$ ); shutdown and automatic restart in the event of a short circuit
Operational indication	Green LED ( $V_o$ ) Red LED (overload)
Signaling	DC O.K. contact; Make contact (max. 31.2 V / 20 mA)
<b>Efficiency/Power losses:</b>	
Efficiency	87 % typ.
Power loss $P_V$	18.5 W
Max. power loss $P_V$	20 W
<b>Fuse protection:</b>	
Internal fuse	3 x T 2 A / 250 V
External fuse	3 x circuit breakers 10 A, 16 A, B or C characteristic, or motor circuit breakers
	External DC fuse required for DC input voltage
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Rel. humidity	95% (no condensation permissible)

Description	Item No.	Pack. Unit
Switched-mode power supply, 24 VDC / 6.25 A	787-738	1
<b>Technical Data</b>		
<b>Environmental requirements:</b>		
Derating	-2.5 % / K (> +50 °C; 400 VAC)	
Degree of pollution	2 (acc. to EN 50178)	
Climatic category	3K3 (acc. to EN 60721)	
<b>Safety and protection:</b>		
Test voltage PRI-SEC/PRI-GND/ SEC-GND/SEC-DC OK	3 kV AC / 1.5 kV AC / 0.5 kV AC / 0.5 kV AC	
Protection class	Prepared for class I equipment	
Degree of protection	IP20 (acc. to EN 60529)	
Oversvoltage protection	yes	
Short circuit protection	yes	
No-load proof	yes	
Feedback voltage	30 V	
Parallel operation	yes	
Series connection	yes	
MTBF	> 250000 h	
<b>Connection and type of mounting:</b>		
Wire connection	Input/Output: WAGO 2706 Series Signaling: WAGO 2091 Series	
Cross sections	Input/Output: 0.5 mm <sup>2</sup> ... 6 mm <sup>2</sup> / AWG 20 ... 10 Signaling: 0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> / AWG 24 ... 14	
Strip lengths	Input/Output: 11 ... 12 mm / 0.43 ... 0.47 in Signaling: 8 ... 9 mm / 0.31 ... 0.35 in	
Type of mounting	DIN-rail mount (EN 60715)	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	50 x 130 x 92 Length from upper-edge of DIN 35 rail	
Weight	3500 g	
<b>Standards and approvals:</b>		
Standards/Specifications	EN 60950, EN 61204-3, UL 60950*, UL 508* (* pending)	



# 5 Switched-Mode Power Supply, 3-Phase

EPSITRON® ECO Power



- Suitable for protection class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Fast and tool-free termination via lever-actuated terminal blocks
- DC O.K. contact
- Parallel operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

Description	Item No.	Pack. Unit
Switched-mode power supply, 24 VDC / 10 A	787-740	1

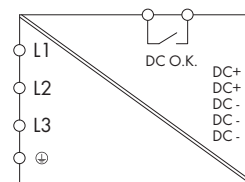
Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i\text{nom}}$	3 x (2 x) 400 V ... 500 VAC
Input voltage range	325 V ... 575 VAC; 460 V ... 800 VDC
Frequency	47 Hz ... 63 Hz
Input current $I_i$	3 x 0.6 A at 400 VAC and 10 ADC
Power factor	$\geq 0.6$
Discharge current	$< 3.5$ mA
Inrush current	$< 25$ A
Mains failure hold-up time	$> 17$ ms at 3x 400 VAC
<b>Output:</b>	
Nominal output voltage $V_{o\text{nom}}$	24 VDC (SELV)
Output voltage range	22 ... 28 VDC adjustable
Output current $I_o$	10 A at 24 VDC
Factory preset	24 VDC
Adjustment accuracy	1 %
Residual ripple	$< 80$ mV (peak-to-peak)
Overload behavior	Constant power (in overload range: 1.15 ... 1.4 x $I_o$ ); shutdown and automatic restart in the event of a short circuit
Operational indication	Green LED ( $V_o$ )
Signaling	Red LED (overload) DC O.K. contact; Make contact (max. 31.2 V / 20 mA)
<b>Efficiency/Power losses:</b>	
Efficiency	89 % typ.
Power loss $P_V$	32.5 W
Max. power loss $P_V$	36 W
<b>Fuse protection:</b>	
Internal fuse	3 x T 2 A / 250 V
External fuse	3 x circuit breakers 10 A, 16 A, B or C characteristic, or motor circuit breakers
	External DC fuse required for DC input voltage
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Rel. humidity	95% (no condensation permissible)

Technical Data	
<b>Environmental requirements:</b>	
Derating	-1.25 % / K ( $> +50$ °C; 400 VAC)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Test voltage PRI-SEC/PRI-GND/ SEC-GND/SEC-DC OK	3 kV AC / 1.5 kV AC / 0.5 kV AC / 0.5 kV AC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	yes
Short circuit protection	yes
No-load proof	yes
Feedback voltage	30 V
Parallel operation	yes
Series connection	yes
MTBF	$> 250000$ h
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output: WAGO 2706 Series Signaling: WAGO 2091 Series
Cross sections	Input/Output: 0.5 mm <sup>2</sup> ... 6 mm <sup>2</sup> / AWG 20 ... 10 Signaling: 0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> / AWG 24 ... 14
Strip lengths	Input/Output: 11 ... 12 mm / 0.43 ... 0.47 in Signaling: 8 ... 9 mm / 0.31 ... 0.35 in
Type of mounting	DIN-rail mount (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	65 x 130 x 130 Length from upper-edge of DIN 35 rail
Weight	2120 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950*, UL 508* (* pending)



## Switched-Mode Power Supply, 3-Phase

EPSITRON® ECO Power



- Suitable for protection class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Fast and tool-free termination via lever-actuated terminal blocks
- DC O.K. contact
- Parallel operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

## Technical Data

## Input:

Nominal input voltage $V_{i, nom}$	3 x (2 x) 400 V ... 500 VAC
Input voltage range	325 V ... 575 VAC; 460 V ... 800 VDC
Frequency	47 Hz ... 63 Hz
Input current $I_i$	3 x 2.05 A at 400 VAC and 20 ADC
Power factor	≥ 0.6
Discharge current	< 3.5 mA
Inrush current	< 30 A
Mains failure hold-up time	> 17 ms at 3x 400 VAC

## Output:

Nominal output voltage $V_{o, nom}$	24 VDC (SELV)
Output voltage range	22 ... 28 VDC adjustable
Output current $I_o$	20 A at 24 VDC
Factory preset	24 VDC
Adjustment accuracy	1 %
Residual ripple	< 80 mV (peak-to-peak)
Overload behavior	Constant power (in overload range: 1.15 ... 1.4 x $I_o$ ); shutdown and automatic restart in the event of a short circuit
Operational indication	Green LED ( $V_o$ ), Red LED (overload)
Signaling	DC O.K. contact; Make contact (max. 31.2 V / 20 mA)

## Efficiency/Power losses:

Efficiency	90 % typ.
Power loss $P_V$	50 W
Max. power loss $P_V$	55 W

## Fuse protection:

Internal fuse	3 x T 5 A / 250 V
External fuse	3 x circuit breakers 10 A, 16 A, B or C characteristic, or motor circuit breakers
	External DC fuse required for DC input voltage

## Environmental Requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Rel. humidity	95% (no condensation permissible)

## Description

Switched-mode power supply,  
24 VDC / 20 A

## Item No.

787-742

Pack.  
Unit

1

## Technical Data

## Environmental Requirements:

Derating	-2 % / K (> +50 °C; 400 VAC)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Test voltage PRI-SEC/PRI-GND/ SEC-GND/SEC-DC OK	3 kV AC / 1.5 kV AC / 0.5 kV AC / 0.5 kV AC
Protection class	Prepared for class I equipment
Degree of protection	IP20 (acc. to EN 60529)
Oversvoltage protection	yes
Short circuit protection	yes
No-load proof	yes
Feedback voltage	30 V
Parallel operation	yes
Series connection	yes
MTBF	> 250000 h

## Connection and type of mounting:

Wire connection	Input/Output: WAGO 2706 Series Signaling: WAGO 2091 Series
Cross sections	Input/Output: 0.5 mm <sup>2</sup> ... 6 mm <sup>2</sup> / AWG 20 ... 10 Signaling: 0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> / AWG 24 ... 14
Strip lengths	Input/Output: 11 ... 12 mm / 0.43 ... 0.47 in Signaling: 8 ... 9 mm / 0.31 ... 0.35 in
Type of mounting	DIN-rail mount (EN 60715)

## Dimensions and weight:

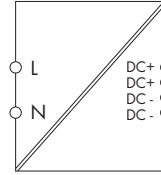
Dimensions (mm) W x H x L	110 x 130 x 151 Length from upper-edge of DIN 35 rail
Weight	1930 g

## Standards and approvals:

Standards/Specifications	EN 60950, EN 61204-3, UL 60950*, UL 508* (* pending)
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# 5 Switched-Mode Power Supply, 1-Phase

EPSITRON® COMPACT Power



- Primary switch mode power supply unit
- Prepared for protection class II equipment
- Natural convection cooling when horizontally mounted
- Stepped profile, ideal for distribution boards or distribution boxes
- Parallel operation, series connection possible
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

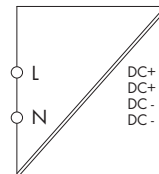
Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 5 VDC / 5.5A	787-1020	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i\text{nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 373 VDC
Frequency	44 Hz ... 66 Hz; 0 Hz
Input current $I_i$	0.6 A at 110 VAC; 0.3 A at 230 VAC
Discharge current	1 mA typ.
Inrush current	< 30 A, NTC
Mains failure hold-up time	> 10 ms at 110 VAC; > 80 ms at 230 VAC
<b>Output:</b>	
Nominal output voltage $V_{o\text{nom}}$	5 VDC, SELV
Output voltage range	4.5 ... 8.5 VDC adjustable
Factory preset	5 VDC
Output current $I_o$	5.5 A at 5 VDC; max. 3.5 A in any mounting position
Adjustment accuracy	< 2 %
Residual ripple	< 100 mV (peak-to-peak) at 20 MHz
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	LED green ( $V_o$ )
<b>Efficiency/Power Losses:</b>	
Efficiency	75 % typ.
Power loss $P_v$	2.4 W (230 VAC, no load) 9.4 W (230 VAC, nominal load)
Max. power loss $P_v$	9,9 W typ. (264 VAC; 5 VDC, 5,5 A)
<b>Fuse Protection:</b>	
Internal fuse	T 2 A / 250 V
External fuse	Circuit breakers 6 A, 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

Technical Data	
<b>Environmental Requirements:</b>	
Ambient operating temperature	-25 °C ... +60 °C (UL: -25 °C ... +55 °C); Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +80 °C
Relative humidity	5 % ... 96 % (no condensation)
Derating	-3 % / K (> 45 °C)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Enclosure	Plastic, light gray, Flammability class V0 acc. to UL94
Test voltage PRI-SEC	4.2 kV DC
Protection class	Prepared for class II equipment
Degree of protection	IP20 acc. to EN 60529
Overvoltage protection	< 16 VDC (in the event of a fault)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 10 VDC
Parallel operation	yes
Series connection	yes
MTBF	> 500000 h
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output: WAGO 740 Series
Cross sections	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output: 6 ... 7 mm / 0.24 ... 0.28 in
Type of mounting	DIN-rail mount (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	72 x 89 x 59
Weight	Length: 55 mm, from upper-edge of DIN 240 g
<b>Standards and Specifications:</b>	
Standards/specifications	EN 60950-1, EN 61204-3, UL 60950-1, UL 508, GL * (* pending)

## Switched-Mode Power Supply, 1-Phase

EPSITRON® COMPACT Power



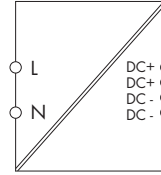
- Primary switch mode power supply unit
- Prepared for class II equipment
- Natural convection cooling when horizontally mounted
- Stage profile, ideal for distribution boards or distribution boxes
- Parallel operation, series connection possible
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 373 VDC
Input voltage derating	< 100 VAC: $I_a$ max. 1.5 A
Frequency	44 ... 66 Hz; 0 Hz
Input current $I_i$	0.6 A at 110 VAC / 0.4 A at 230 VAC
Discharge current	1 mA typ.
Inrush current	< 30 A, NTC
Mains failure hold-up time	> 10 ms at 110 VAC / > 80 ms at 230 VAC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	12 VDC (SELV)
Output voltage range	10.8 ... 18 VDC adjustable
Output current $I_o$	2 A at 12 VDC 0.75 A at 18 VDC max. 1.4 A (12 VDC) in any mounting position
Factory preset	12 VDC
Adjustment accuracy	2%
Residual ripple	< 150 mV (peak-to-peak) at 20 MHz
Current limitation	$1.1 \times I_o$ typ.
Overload behavior	Constant current
Operational indication	LED green ( $V_o$ )
<b>Efficiency / power losses:</b>	
Efficiency	80 % typ.
Power loss $P_V$	2.6 W (230 VAC/no load), 6.0 W (230 VAC/rated load)
Max. power loss $P_V$	6 W typ. (100 VAC / 12 VDC, 2 A)
<b>Fuse protection:</b>	
Internal fuse	T 2 A / 250 V
External fuse	Circuit breakers 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 12 VDC / 2A	787-1001	1
<b>Technical Data</b>		
<b>Environmental requirements:</b>		
Ambient operating temperature	-25 °C ... +60 °C (UL: -25 °C ... +55 °C); Device start at -40 °C (type-tested)	
Storage temperature	-25 °C ... +80 °C	
Rel. humidity	5 % ... 96 % (no condensation)	
Derating	-3 % / K (> 45 °C)	
Degree of pollution	2 (acc. to EN 50178)	
Climatic category	3K3 (acc. to EN 60721)	
<b>Safety and protection:</b>		
Enclosure	Plastic, light gray, Flammability class V0 acc. to UL94	
Test voltage pri. - sec.	4.2 kV DC	
Protection class	Prepared for class II equipment	
Degree of protection	IP20 (acc. to EN 60529)	
Overvoltage protection	< 30 VDC (in the event of a fault)	
Short circuit protection	yes	
No-load proof	yes	
Feedback voltage	max. 20 VDC	
Parallel operation	yes	
Series connection	yes	
MTBF	500000 h	
<b>Connection and type of mounting:</b>		
Wire connection	Input/Output: WAGO 740 Series	
Cross sections	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Strip lengths	Input/Output: 6 ... 7 mm / 0.24 ... 0.28 in	
Type of mounting	DIN-rail mount (EN 60715)	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	54 x 89 x 59 Length: 55 mm, from upper-edge of DIN 35 rail	
Weight	180 g	
<b>Standards and approvals:</b>		
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508, GL	

# 5 Switched-Mode Power Supply, 1-Phase

EPSITRON® COMPACT Power



- Primary switch mode power supply unit
- Prepared for class II equipment
- Natural convection cooling when horizontally mounted
- Stage profile, ideal for distribution boards or distribution boxes
- Parallel operation, series connection possible
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

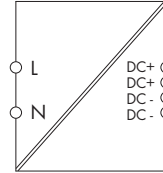
Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 12 VDC / 4A	787-1011	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 373 VDC
Input voltage derating	< 100 VAC: $I_a$ max. 3.5 A
Frequency	44 ... 66 Hz; 0 Hz
Input current $I_i$	0.9 A at 110 VAC / 0.5 A at 230 VAC
Discharge current	1 mA typ.
Inrush current	< 30 A, NTC
Mains failure hold-up time	> 10 ms at 110 VAC / > 80 ms at 230 VAC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	12 VDC (SELV)
Output voltage range	10.5 ... 15.5 VDC adjustable
Output current $I_o$	4 A at 12 VDC max. 2.4 A in any mounting position
Factory preset	12 VDC
Adjustment accuracy	2%
Residual ripple	< 100 mV (peak-to-peak) at 20 MHz
Current limitation	$1.1 \times I_o$ typ.
Overload behavior	Constant current
Operational indication	LED green ( $V_o$ )
<b>Efficiency / power losses:</b>	
Efficiency	85 % typ.
Power loss $P_V$	2.2 W (230 VAC/no load), 8.5 W (230 VAC/rated load)
Max. power loss $P_V$	9 W typ. (100 VAC / 12 VDC, 4 A)
<b>Fuse protection:</b>	
Internal fuse	T 2 A / 250 V
External fuse	Circuit breakers 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +60 °C (UL: -25 °C ... +55 °C); Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +80 °C
Rel. humidity	5 % ... 96 % (no condensation)
Derating	-3 % / K (> 45 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Enclosure	Plastic, light gray, Flammability class V0 acc. to UL94
Test voltage pri. - sec.	4.2 kV DC
Protection class	Prepared for class II equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	< 30 VDC (in the event of a fault)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 20 VDC
Parallel operation	yes
Series connection	yes
MTBF	500000 h
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output: WAGO 740 Series
Cross sections	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output: 6 ... 7 mm / 0.24 ... 0.28 in
Type of mounting	DIN-rail mount (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	72 x 89 x 59 Length: 55 mm, from upper-edge of DIN 35 rail
Weight	255 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508, GL

## Switched-Mode Power Supply, 1-Phase

EPSITRON® COMPACT Power



- Primary switch mode power supply unit
- Prepared for class II equipment
- Natural convection cooling when horizontally mounted
- Stage profile, ideal for distribution boards or distribution boxes
- Parallel operation, series connection possible
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

## Technical Data

## Input:

Nominal input voltage $V_i$ nom	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 373 VDC
Input voltage derating	max. 6 A (< 100 VAC) / 5.5 A (< 90 VAC)
Frequency	44 ... 66 Hz; 0 Hz
Input current $I_i$	1.6 A at 110 VAC / 0.9 A at 230 VAC
Discharge current	1 mA typ.
Inrush current	< 30 A, NTC
Mains failure hold-up time	> 15 ms at 110 VAC / > 100 ms at 230 VAC

## Output:

Nominal output voltage $V_o$ nom	12 VDC (SELV)
Output voltage range	10.5 ... 15.5 VDC adjustable
Output current $I_o$	6.5 A at 12 VDC max. 3.9 A (12 VDC) in any mounting position
Factory preset	12 VDC
Adjustment accuracy	2%
Residual ripple	< 100 mV (peak-to-peak) at 20 MHz
Current limitation	$1.1 \times I_o$ typ.
Overload behavior	Constant current
Operational indication	LED green ( $V_o$ )

## Efficiency / power losses:

Efficiency	87 % typ.
Power loss $P_V$	< 1 W (no load) / 15 W (rated load)
Max. power loss $P_V$	15 W typ. (100 VAC / 12 VDC, 6.5 A)

## Fuse protection:

Internal fuse	T 4 A / 250 V
External fuse	Circuit breakers 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

## Description

Switched-Mode Power Supply,  
12 VDC / 6.5A

## Item No.

787-1021

Pack.  
Unit

1

## Technical Data

## Environmental requirements:

Ambient operating temperature	-25 °C ... +60 °C (UL: -25 °C ... +55 °C); Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +85 °C
Rel. humidity	5 % ... 96 % (no condensation)
Derating	-3 % / K (> 45 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Enclosure	Plastic, light gray, Flammability class V0 acc. to UL94
Test voltage pri. - sec.	4.2 kV DC
Protection class	Prepared for class II equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	< 30 VDC (in the event of a fault)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 20 VDC
Parallel operation	yes
Series connection	yes
MTBF	500000 h

## Connection and type of mounting:

Wire connection	Input/Output: WAGO 740 Series
Cross sections	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output: 6 ... 7 mm / 0.24 ... 0.28 in
Type of mounting	DIN-rail mount (EN 60715)

## Dimensions and weight:

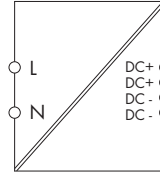
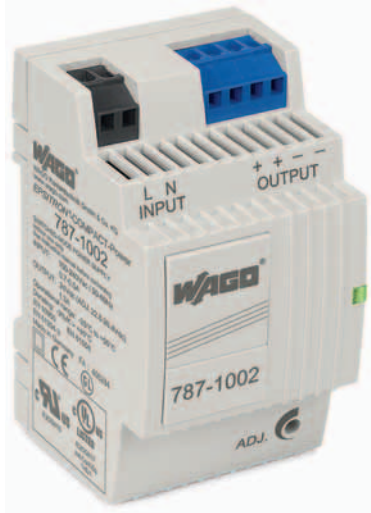
Dimensions (mm) W x H x L	90 x 89 x 59 Length: 55 mm, from upper-edge of DIN 35 rail
Weight	300 g

## Standards and approvals:

Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508, GL
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# 5 Switched-Mode Power Supply, 1-Phase

EPSITRON® COMPACT Power



- Primary switch mode power supply unit
- Prepared for class II equipment
- Natural convection cooling when horizontally mounted
- Stage profile, ideal for distribution boards or distribution boxes
- Parallel operation, series connection possible
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 24 VDC / 1.3A	787-1002	1

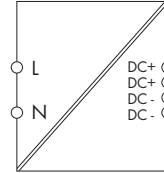
Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 373 VDC
Input voltage derating	< 100 VAC: $I_a$ max. 1 A
Frequency	44 ... 66 Hz; 0H z
Input current $I_i$	0.7 A at 110 VAC / 0.5 A at 230 VAC
Discharge current	1 mA typ.
Inrush current	< 30 A, NTC
Mains failure hold-up time	> 10 ms at 110 VAC / > 80 ms at 230 VAC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	22.8 ... 26.4 VDC adjustable
Output current $I_o$	1.3 A at 24 VDC max. 0.9 A in any mounting position
Factory preset	24 VDC
Adjustment accuracy	2%
Residual ripple	< 100 mV (peak-to-peak) at 20 MHz
Current limitation	$1.1 \times I_o$ typ.
Overload behavior	Constant current
Operational indication	LED green ( $V_o$ )
<b>Efficiency / power losses:</b>	
Efficiency	82 % typ.
Power loss $P_V$	2.6 W (230 VAC/no load), 7.0 W (230 VAC/rated load)
Max. power loss $P_V$	7.3 W typ. (100 VAC / 24 VDC, 1.3 A)
<b>Fuse protection:</b>	
Internal fuse	T 2 A / 250 V
External fuse	Circuit breakers 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +60 °C (UL: -25 °C ... +55 °C); Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +80 °C
Rel. humidity	5 % ... 96 % (no condensation)
Derating	-3 % / K (> 45 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Enclosure	Plastic, light gray, Flammability class V0 acc. to UL94
Test voltage pri. - sec.	4.2 kV DC
Protection class	Prepared for class II equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	< 40 VDC (in the event of a fault)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 30 VDC
Parallel operation	yes
Series connection	yes
MTBF	500000 h
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output: WAGO 740 Series
Cross sections	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output: 6 ... 7 mm / 0.24 ... 0.28 in
Type of mounting	DIN-rail mount (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	54 x 89 x 59 Length: 55 mm, from upper-edge of DIN 35 rail
Weight	180 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508, GL



## Switched-Mode Power Supply, 1-Phase

EPSITRON® COMPACT Power



- Primary switch mode power supply unit
- Prepared for class II equipment
- Natural convection cooling when horizontally mounted
- Stage profile, ideal for distribution boards or distribution boxes
- Parallel operation, series connection possible
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

## Technical Data

## Input:

Nominal input voltage $V_i$ nom	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 373 VDC
Input voltage derating	< 100 VAC: $I_a$ max. 2.0 A
	< 90 VAC: $I_a$ max. 1.8 A
Frequency	44 ... 66 Hz; 0 Hz
Input current $I_i$	1.4 A at 110 VAC / 0.6 A at 230 VAC
Discharge current	1 mA typ.
Inrush current	< 30 A, NTC
Mains failure hold-up time	> 10 ms at 110 VAC / > 80 ms at 230 VAC

## Output:

Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	22.8 ... 26.4 VDC adjustable
Output current $I_o$	2.5 A at 24 VDC
	max. 1.6 A in any mounting position
Factory preset	24 VDC
Adjustment accuracy	2%
Residual ripple	< 100 mV (peak-to-peak) at 20 MHz
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	LED green ( $V_o$ )

## Efficiency / power losses:

Efficiency	88 % typ.
Power loss $P_v$	2.2 W (230 VAC/no load), 8.5 W (230 VAC/rated load)
Max. power loss $P_v$	10.5 W typ. (100 VAC / 24 VDC, 2.5 A)

## Fuse protection:

Internal fuse	T 2 A / 250 V
External fuse	Circuit breakers 10 A, 16 A, characteristic: B or C
	An external DC fuse is required for the DC input voltage

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 24 VDC / 2.5A	787-1012	1

## Technical Data

## Environmental requirements:

Ambient operating temperature	-25 °C ... +60 °C (UL: -25 °C ... +55 °C); Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +80 °C
Rel. humidity	5 % ... 96 % (no condensation)
Derating	-3 % / K (> 45 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Enclosure	Plastic, light gray, Flammability class V0 acc. to UL94
Test voltage pri. - sec.	4.2 kV DC
Protection class	Prepared for class II equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	< 40 VDC (in the event of a fault)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 30 VDC
Parallel operation	yes
Series connection	yes
MTBF	> 500000 h

## Connection and type of mounting:

Wire connection	Input/Output: WAGO 740 Series
Cross sections	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output: 6 ... 7 mm / 0.24 ... 0.28 in
Type of mounting	DIN-rail mount (EN 60715)

## Dimensions and weight:

Dimensions (mm) W x H x L	72 x 89 x 59
	Length: 55 mm, from upper-edge of DIN 35 rail
Weight	255 g

## Standards and approvals:

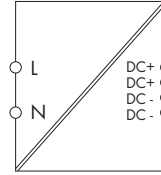
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508, GL
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# 5 Switched-Mode Power Supply, 1-Phase

EPSITRON® COMPACT Power

316



- Primary switch mode power supply unit
- Prepared for class II equipment
- Natural convection cooling when horizontally mounted
- Stage profile, ideal for distribution boards or distribution boxes
- Parallel operation, series connection possible
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

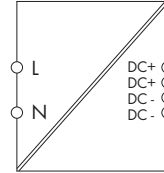
Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 24 VDC / 4A	787-1022	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 373 VDC
Input voltage derating	on request
Frequency	44 ... 66 Hz; 0 Hz
Input current $I_i$	1.6 A at 110 VAC / 0.9 A at 230 VAC
Discharge current	1 mA typ.
Inrush current	< 30 A, NTC
Mains failure hold-up time	> 15 ms at 110 VAC / > 100 ms at 230 VAC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	22.8 ... 26.4 VDC adjustable
Output current $I_o$	4 A at 24 VDC max. 2.4 A in any mounting position
Factory preset	24 VDC
Adjustment accuracy	2 %
Residual ripple	< 100 mV (peak-to-peak) at 20 MHz
Current limitation	$1.1 \times I_o$ typ.
Overload behavior	Constant current
Operational indication	LED green ( $V_o$ )
<b>Efficiency / power losses:</b>	
Efficiency	88 % typ.
Power loss $P_V$	0.8 W (230 VAC/no load), 13.1 W (230 VAC/rated load)
Max. power loss $P_V$	14.8 W typ. (264 VAC / 24 VDC, 4 A)
<b>Fuse protection:</b>	
Internal fuse	T 4 A / 250 V
External fuse	Circuit breakers 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +60 °C (UL: -25 °C ... +55 °C); Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +80 °C
Rel. humidity	5 % ... 96 % (no condensation)
Derating	-3 % / K (> 45 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
<b>Safety and protection:</b>	
Enclosure	Plastic, light gray, Flammability class V0 acc. to UL94
Test voltage pri. - sec.	4.2 kV DC
Protection class	Prepared for class II equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	< 40 VDC (in the event of a fault)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 30 VDC
Parallel operation	yes
Series connection	yes
MTBF	500000 h
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output: WAGO 740 Series
Cross sections	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output: 6 ... 7 mm / 0.24 ... 0.28 in
Type of mounting	DIN-rail mount (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	90 x 89 x 59 Length: 55 mm, from upper-edge of DIN 35 rail
Weight	310 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508, GL

## Switched-Mode Power Supply, 1-Phase

EPSITRON® COMPACT Power



- Primary switch mode power supply unit
- Prepared for class II equipment
- Natural convection cooling when horizontally mounted
- Stage profile, ideal for distribution boards or distribution boxes
- At reduced output current, any type of mounting positions are possible (e.g., horizontal, overhead mounting).
- Electrically isolated output voltage (SELV) acc. to EN / UL 60950-1

## Technical Data

## Input:

Nominal input voltage $V_{i, \text{nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 373 VDC
Input voltage derating	max. 2 A (< 100 VAC)
Frequency	44 Hz ... 66 Hz; 0 Hz
Input current $I_i$	0.9 A at 110 VAC / 0.5 A at 230 VAC
Discharge current	1 mA typ.
Inrush current	< 30 A, NTC
Mains failure hold-up time	> 10 ms at 110 VAC / > 130 ms at 230 VAC

## Output:

Nominal output voltage $V_{o, \text{nom}}$	18 VDC
Output voltage range	15 ... 28 VDC adjustable
Output current $I_o$	2.4 A at 18 VDC 2.0 A at 24 VDC in horizontal mounting position
Factory preset	18 VDC
Adjustment accuracy	2 %
Residual ripple	< 100 mV (peak-to-peak) at 20 MHz
Current limitation	$1.1 \times I_o$ typ.
Overload behavior	Constant current
Operational indication	LED green ( $V_o$ )

## Efficiency/Power losses:

Efficiency	84 % typ.
Power loss $P_V$	2.6 W (230 VAC / no load) 8.1 W (230 VAC / nominal load)
Max. power loss $P_V$	8.2 W (100 VAC / 18 VDC, 2.4 A)

## Fuse protection:

Internal fuse	T 2 A / 250 V
External fuse	Circuit breakers 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

Description	Item No.	Pack. Unit
Switched-mode power supply, 15 ... 28 VDC / 2 A	787-1017	1

## Technical Data

## Environmental requirements:

Ambient operating temperature	-25 °C ... +60 °C (UL: -25 °C ... +55 °C); Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +80 °C
Rel. humidity	5 % ... 96 % (no condensation)
Derating	-3 % / K (> 45 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Enclosure	Plastic, light gray, Flammability class V0 acc. to UL94
Test voltage pri. - sec.	4.2 kV DC
Protection class	Prepared for class II equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	< 40 VDC (in the event of a fault)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 25 VDC
Parallel operation	yes
Series connection	yes
MTBF	500000 h

## Connection and type of mounting:

Wire connection	Input/Output: WAGO 740 Series
Cross sections	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output: 6 ... 7 mm / 0.24 ... 0.28 in
Type of mounting	DIN-rail mount (EN 60715)

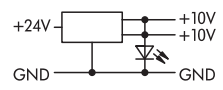
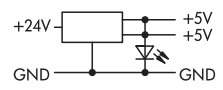
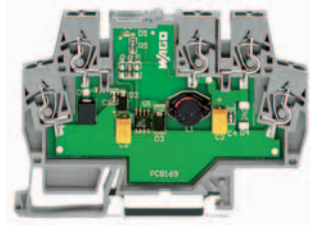
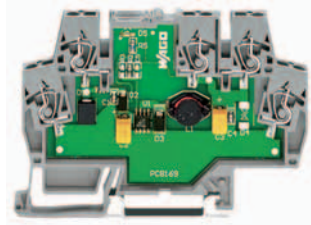
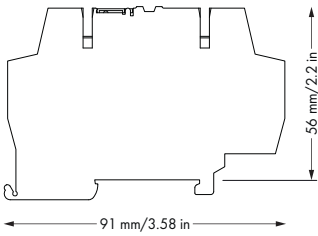
## Dimensions and weight:

Dimensions (mm) W x H x L	72 x 89 x 59
Weight	Length from upper-edge of DIN 35 rail 264 g

## Standards and approvals:

Standards/Specifications	EN 60950, EN 61204-3, UL 60950-1, UL 508, GL * (* pending)
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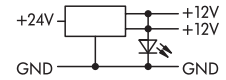
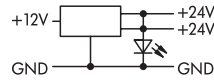
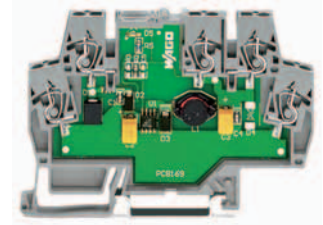
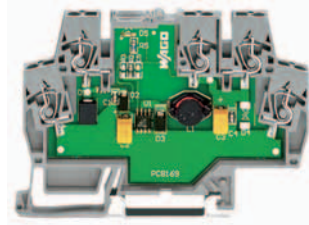
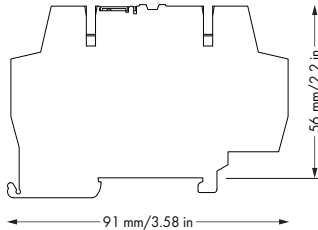
	DC/DC converter 24 V / 5 V, 0.5 ADCADC	DC/DC converter 24 V / 10 V, 0.5 ADC
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Description	V <sub>N</sub> / V <sub>O</sub>	Item No.	Pack. Unit	V <sub>N</sub> / V <sub>O</sub>	Item No.	Pack. Unit
DC/DC converter, for DIN 35 rail	24 VDC / 5 VDC ± 2 %	859-801	1	24 VDC / 10 VDC ± 2 %	859-802	1

Technical Data						
Nominal input voltage (V <sub>N</sub> )	24 VDC			24 VDC		
Input voltage range	10 ... 30 VDC			15 ... 30 VDC		
Output voltage	5 VDC ± 2 %			10 VDC ± 2 %		
Output current (max.)	500 mA (individual terminal block, 10 mm distance); 400 mA (terminal strip)			500 mA		
Line regulation, max. (full load, over input voltage range)	2 %			0.5 %		
Max. load regulation (no load to full load, nominal input)	0.5 %			0.7 %		
Efficiency at full load (24 VDC in)	70 %			85 %		
Output noise peak-to-peak max. (20 MHz bandwidth)	150 mV			20 mV		
Switching frequency	200 kHz (nominal)			200 kHz (nominal)		
Isolation	non-isolated			non-isolated		
Reverse voltage protection, input	yes			yes		
Minimum load requirement	no			no		
Max. transient recovery time (recovery time for load change from 25 % to 75% of full load)	40 µs			500 µs		
Max. startup time (24 VDC in, full load)	3 ms			3 ms		
Max. hold time (nominal input voltage, full load)	1 ms			500 µs		
Input fuse	TVS diode			TVS diode		
Output short circuit protection	temporary (short-circuit of the output for 1 minute without damage to the device)			temporary (short-circuit of the output for 1 minute without damage to the device)		
Temperature coefficient	70 ppm/°C			100 ppm/°C		
Ambient operating temperature	0 °C ... +40 °C			-25 °C ... +55 °C		
Dimensions (mm) W x H x L	6 x 56 x 91			6 x 56 x 91		
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®			Height from upper-edge of DIN 35 rail CAGE CLAMP®		
Cross sections	0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 14			0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 14		
Stripped lengths	5 ... 6 mm / 0.22 in			5 ... 6 mm / 0.22 in		

	<b>DC/DC converter</b> <b>12 V / 24 V, 250 mADC</b>	<b>DC/DC converter</b> <b>24 V / 12 V, 0.5 ADC</b>
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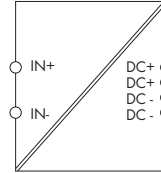
Description	V <sub>N</sub> / V <sub>O</sub>	Item No.	Pack. Unit	V <sub>N</sub> / V <sub>O</sub>	Item No.	Pack. Unit
DC/DC converter, for DIN 35 rail	12 VDC / 24 VDC ± 1 %	859-804	1	24 VDC / 12 VDC ± 2 %	859-805	1

**Technical Data**

	12 VDC / 24 VDC ± 1 %	24 VDC / 12 VDC ± 2 %
Nominal input voltage (V <sub>N</sub> )	12 VDC	24 VDC
Input voltage range	8 ... 16 VDC	15 ... 30 VDC
Output voltage	24 VDC ± 1 %	12 VDC ± 2 %
Output current (max.)	250 mA	500 mA
Line regulation, max. (full load, over input voltage range)	0.5 %	0.5 %
Max. load regulation (no load to full load, nominal input)	0.5 %	0.7 %
Efficiency at full load (24 VDC in)	83 %	85 %
Output noise peak-to-peak max. (20 MHz bandwidth)	40 mV	20 mV
Switching frequency	1.2 MHz (nominal)	200 kHz (nominal)
Isolation	non-isolated	non-isolated
Reverse voltage protection, input	yes	yes
Minimum load requirement	no	no
Max. transient recovery time (recovery time for load change from 25 % to 75% of full load)	50 µs	500 µs
Max. startup time (24 VDC in, full load)	8 ms	3 ms
Max. hold time (nominal input voltage, full load)	500 µs	500 µs
Input fuse	TVS diode	TVS diode
Output short circuit protection	fuse	temporary (short-circuit of the output for 1 minute without damage to the device)
Temperature coefficient	100 ppm/°C	100 ppm/°C
Ambient operating temperature	-25 °C ... +55 °C	-25 °C ... +55 °C
Dimensions (mm) W x H x L	6 x 56 x 91	6 x 56 x 91
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

## Rail-Mounted Modules - DC/DC Converter

EPSITRON® COMPACT Power



- Primary switch mode power supply unit
- Suitable for protection class II equipment
- Natural convection cooling when horizontally mounted
- Stepped profile, ideal for distribution boards or distribution boxes
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

Description	Item No.	Pack. Unit
Switched-mode power supply, 24 VDC / 2.0 A	787-1014	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i, nom}$	110 VDC
Input voltage range	77 V ... 140 VDC
Frequency	0 Hz
Input current $I_i$	0.77 A at 77 VDC / 0.42 A at 140 VDC
Inrush current	< 30 A, NTC
Mains failure hold-up time	> 8 ms at 77 VDC / > 25 ms at 140 VDC
<b>Output:</b>	
Nominal output voltage $V_{o, nom}$	24 VDC (SELV)
Output current $I_o$	2.0 A at 24 VDC max. 1.6 A in any mounting position
Factory preset	24 VDC
Adjustment accuracy	2 %
Residual ripple	< 100 mV (peak-to-peak) at 20 MHz
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	LED green ( $V_o$ )
<b>Efficiency/Power losses:</b>	
Efficiency	85 % typ.
Power loss $P_V$	1.9 W (110 VDC/no load), 9.9 W (110 VDC/nominal load)
Max. power loss $P_V$	9.9 W typ. (77 VDC / 24 VDC, 2 A)
<b>Fuse protection:</b>	
Internal fuse	T 4 A / 125 VDC
External fuse	6 A, 10 A power circuit breakers, B, C characteristics

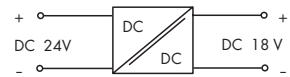
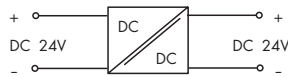
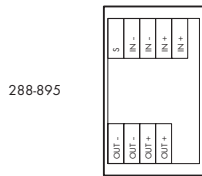
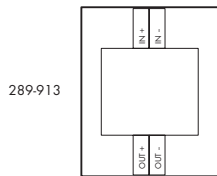
Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-40 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Rel. humidity	5 % ... 96 % (varnished PCB)
Derating	-1.5 %/K (> 55 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)
Shock and vibration	Category 1, class B (acc. to EN 61373:2010)
<b>Safety and protection:</b>	
Enclosure	Plastic, light gray, Flammability class V0 acc. to UL94
Test voltage pri. - sec.	4.2 kV DC
Protection class	Prepared for class II equipment
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	Varistor (input side); internal protective circuit, < 40 VDC (output side in case of an error)
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 35 VDC
Parallel operation	yes
Series connection	yes
MTBF	> 500000 h
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output: WAGO 740 Series
Cross sections	Input/Output: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output: 6 ... 7 mm / 0.24 ... 0.28 in
Type of mounting	DIN-rail mount (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	72 x 89 x 59
Height	55 mm, from upper-edge of DIN 35 rail
Weight	250 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950 *, UL 508 *, GL *
	* (pending)



# 5 Rail-Mounted Modules - DC/DC Converter

322

	24 V / 24 V; 0.21 ADC	24 V / 18 V; 0.4 ADC
	Mounting feet for DIN 35 rail	Mounting carrier for DIN 35 rail

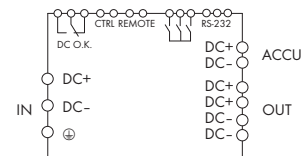


Description	Item No.	Pack. Unit	Item No.	Pack. Unit
DC/DC converter	289-913	1	288-895	1

Technical Data				
Input voltage	24 VDC		24 VDC	
Input voltage range	± 10 %		18 ... 36 VDC	
Output voltage	24 VDC (± 3 %)		18 VDC (± 1 %)	
Nominal output current	210 mA		400 mA	
Peak output current	315 mA			
Efficiency	65 % ... 75 %		82 %	
Test voltage input/output	500 VDC		1500 VDC	
Short circuit protection	Thermal cut-out		permanent	
Ambient operating temperature	-25 °C ... +40 °C		-25 °C ... +70 °C	
Weight	77 g		75.9 g	
Dimensions (mm) W x H x L	83 x 25 x 77		50 x 25 x 85	
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (236 Series)		Height from upper-edge of DIN 35 rail CAGE CLAMP® (256 Series)	
Cross sections	0.08 ... 2.5 mm² / AWG 28 ... 12 (THHN, THWN)		0.08 ... 2.5 mm² / AWG 28 ... 12 (THHN, THWN)	
Stripped lengths	5 ... 6 mm / 0.22 in		5 ... 6 mm / 0.22 in	
EMC I-Immunity to interference			acc. to EN 50082-2 (1996) * * Only in conjunction with DALI/DSI Master Module 750-641	
EMC I-Emission of interference			acc. to EN 50081-1 (1993) * * Only in conjunction with DALI/DSI Master Module 750-641	
<b>Accessories</b>				
WMB Multi marking system for mounting carrier			see from page 506	
Marker strips for mounting carrier			white 709-198 / translucent 709-196	





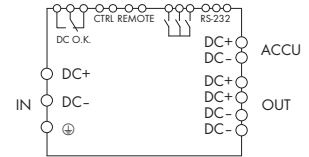


- Charger and controller for uninterruptible power supply (UPS)
- Current and voltage monitoring, as well as parameter setting via LCD and RS-232 interface
- Active signal outputs for watchdog functions
- Remote input for switching off buffered output
- Input for temperature control of connected battery
- Battery control (from manufacturing no. 215563) detects both battery life and battery type

Description	Item No.	Pack. Unit
UPS charger and controller, 24 V DC / 10 A	787-870	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	24 V DC
Input voltage range	22 V ... 29 V DC
Input current $I_i$	0.1 A (no-load running); 0.8 A (charging); 10.8 A (max.)
Inrush current	< 4 A (no load)
Switch-on threshold (adjustable)	20 V ... 25.5 V DC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	24 V DC
Output voltage range	$V_i - 0.5$ V DC (below switch-on threshold); 20 V ... 25.5 V DC (during buffer operation)
Output current $I_o$	10 A
Current limitation	typ. 11 - 14 A
Buffer time	10 s ... 600 s or constant (adjustable)
Final load voltage	26 V ... 29.5 V DC or temperature controlled (adjustable)
Charging current	max. 0.6 A
Recommended battery modules	787-871, 787-872, 787-873, 787-876
Operational indication	LED green ( $V_o$ ), LED yellow (warning), LED red (error)
Signaling	LCD, 3 x signal output 24 V DC, 25 mA and 1 x floating relay contact 30 V DC, 1 A
Remote input	to switch off buffer operation
LineMonitor, parameter setting	via LCD and RS-232 serial interface
<b>Efficiency / power losses:</b>	
Efficiency	95 % typ.
Power loss $P_V$	15 W (stand-by) / 20 W (rated load)
<b>Fuse protection:</b>	
Internal fuse	15AT

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-10 °C ... +60 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation))
<b>Safety and protection:</b>	
Test voltage	500 V DC (terminals to enclosure)
Protection class	III
Reverse voltage protection	yes
Degree of protection	IP20 acc. to EN 60529
Feedback voltage	max. 35 VDC
Parallel operation	yes, for buffer time extension (temperature measurement evaluation is only possible via one battery module)
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output: WAGO 231 Series
Cross sections	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 in
Line length	≤ 3 m (Input, Output, Battery Control)
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	40 x 163 x 163
	Height from upper-edge of DIN 35 rail
Weight	800 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, UL 60950, UL 508, EN 61000-6-2, EN 61000-6-3



- Charger and controller for uninterruptible power supply (UPS)
- Current and voltage monitoring, as well as parameter setting via LCD and RS-232 interface
- Active signal outputs for watchdog functions
- Remote input for switching off buffered output
- Input for temperature control of connected battery
- Battery control (from manufacturing no. 215563) detects both battery life and battery type

### Technical Data

#### Input:

Nominal input voltage $V_i$ nom	24 V DC
Input voltage range	22 V ... 29 V DC
Input current $I_i$	0.1 A (no-load running); 1.5 A (charging);
	21.5 A (max.)
Inrush current	< 4 A (no load)
Switch-on threshold (adjustable)	20 V ... 25.5 V DC

#### Output:

Nominal output voltage $V_o$ nom	24 V DC
Output voltage range	$V_i - 1$ V DC (below switch-on threshold);
	20 V ... 25.5 V DC (buffer mode)
Output current $I_o$	20 A
Current limitation	typ. 22 - 26A
Buffer time	10 s ... 600 s or constant (adjustable)
Final load voltage	26 V ... 29.5 V DC or temperature
	controlled (adjustable)

Charging current	max. 1.0 A
Recommended battery modules	787-871, 787-872, 787-873
Operational indication	LED green ( $V_o$ ), LED yellow (warning), LED red (error)
Signaling	LCD, 3 x signal output 24 V DC, 25 mA and 1 x floating relay contact 30 V DC, 1 A

Remote input	to switch off buffer operation
LineMonitor, parameter setting	via LCD and RS-232 serial interface

#### Efficiency / power losses:

Efficiency	95 % typ.
Power loss $P_v$	15 W (stand-by) / 30 W (rated load)

#### Fuse protection:

Internal fuse	25 AT
---------------	-------

### Description

UPS charger and controller,  
24 V DC / 20 A

### Item No.

787-875

### Pack. Unit

1

### Technical Data

#### Environmental requirements:

Ambient operating temperature	-10 °C ... +60 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation))

#### Safety and protection:

Test voltage	500 V DC (terminals to enclosure)
Protection class	III
Reverse voltage protection	yes
Degree of protection	IP20
Feedback voltage	max. 35 VDC
Parallel operation	yes, for buffer time extension (temperature measurement evaluation is only possible via one battery module)

#### Connection and type of mounting:

Wire connection	Input/Output: WAGO 831 Series Signalling: WAGO 733 Series
Cross sections	Input/Output: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Signalling: 0.08 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> / AWG 28 ... 20
Strip lengths	Input/Output: 13 ... 15 mm / 0.55 in Signalling: 5 ... 6 mm / 0.22 in
Line length	≤ 3 m (Input, Output, Battery Control)
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions

#### Dimensions and weight:

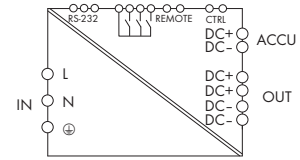
Dimensions (mm) W x H x L	57 x 163 x 171
Weight	Height from upper-edge of DIN 35 rail 1200 g

#### Standards and approvals:

Standards/Specifications	EN 60950, UL 60950*, UL 508*, EN 61000-6-2, EN 61000-6-3 (* pending)
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# Switched-Mode Power Supply with Integrated UPS Charger and Controller

## EP SITRON®



- Primary switch mode power supply with integrated charger and controller for uninterruptible power supply (UPS)
- Battery control technology for smooth charging and predictive maintenance applications
- Potential-free contacts provide function monitoring
- Buffer time can be set on-site via rotary switch
- Parameter setting and monitoring via RS-232 interface
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

### Technical Data

#### Input:

Nominal input voltage $V_i$ nom	100 ... 240 VAC; 110 ... 370 VDC
Input voltage range	85 ... 264 VAC
Frequency	45 ... 65 Hz; 0 Hz
Input current $I_i$	1,1 A at 230 VAC and 5 ADC
Discharge current	1 mA typ.
Inrush current	< 30 A

#### Output:

Nominal output voltage $V_o$ nom	24 VDC (SELV)
Output voltage range	23.0 ... 28.5 VDC (mains operation)
	18.5 ... 27.5 VDC (battery operation)
Output current $I_o$	5 A
Adjustment accuracy	1 %
Residual ripple	< 100 mV (peak-peak)
Current limitation	1.1 x $I_o$ ; TopBoost approx. 24 A
Buffer time	0.5 ... 20 min, IPC mode or constant (adjustable)
Switch-on threshold (adjustable)	22 VDC (pre-configured), 20 ... 25.5 VDC (configurable via software)
Final load voltage	26 ... 29.5 VDC temperature-controlled (fixed or adjustable)
Charging current	0.3 A ... 0.6 A
Recommended battery modules	787-876, 787-871, 787-872, 787-873
Operational indication	Green LED (DC OK), yellow LED (battery mode), red LED (warning/fault)
Signaling	3 x 24 VDC signal output, 25 mA and 1 x 30 VDC isolated relay contact, 1 A
Remote input	to switch off buffer operation
LineMonitor, parameter setting	via RS-232 serial interface
<b>Efficiency / power losses:</b>	
Efficiency	89 % typ.
Power loss $P_V$	5.2 W (battery operation, 24 VDC, 5 A) / 17 W (mains operation, 230 VAC/24 VDC, 5 A)

#### Fuse protection:

Internal fuse	T 4 A / 250 V (input side)
External fuse	Circuit breakers 6 A, 10 A, 16 A, characteristic: B or C; An external DC fuse is required for the DC input voltage

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, with Integrated UPS Charger and Controller, 24VDC / 5A	787-1675	1

### Technical Data

#### Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C;
	Device start at -40 °C (type-tested)
Storage temperature	-25 °C ... +85 °C
Derating	-3 % / K (> +50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

#### Safety and protection:

Test voltage	
pri.-sec./pri.-gr./sec.-gr.	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	I
Reverse voltage protection	yes
Degree of protection	IP20 (acc. to EN 60529)
Feedback voltage	max. 35 VDC
Parallel operation	yes, max. 3 battery modules for buffer time extension

#### Connection and type of mounting:

Wire connection	Input/Output/Signals: WAGO 721 Series Interface: WAGO 733 Series
Cross sections	Input/Output/Signals: 0 .5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 10 Interface: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output/Signals: 13 ... 15 mm / 0.55 in Interface: 8 ... 9 mm / 0.33 in
Line length	≤ 3 m (Output, Battery Control)
Type of mounting	DIN-rail mount (EN 60715)

#### Dimensions and weight:

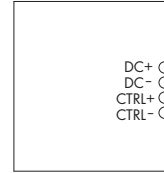
Dimensions (mm) W x H x L	60 x 127 x 135.5
	Length from upper-edge of DIN 35 rail
Weight	885 g

#### Standards and approvals:

Standards/Specifications	EN 60950, UL 60950, UL 508, EN 61204-3, GL * (* pending)
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Similar to picture



- Lead-acid Absorbed Glass Mat (AGM) battery module for uninterruptible power supply (UPS)
- Can be connected to both 787-870 UPS Charger and Controller and 787-1675 Power Supply with integrated UPS charger and controller
- Parallel operation provides higher buffer time \*
- With built-in NTC K164 (4.7 kOhm) temperature sensor
- DIN 35 carrier rail mounting
- Battery control (from manufacturing no. 216570) detects both battery life and battery type

### Technical Data

<b>Input:</b>	
Nominal input voltage $V_i$ nom	24 V DC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	24 V DC
Output current $I_o$	max. 7.5 A
Final load voltage	max. 27 V DC (at 25 °C)
Charging current	max. 0.3 A
Capacity	1.2 Ah
<b>Fuse protection:</b>	
Internal fuse	15 AT (Type FK 2)

\* for parallel connection, please switch battery capacity setting to "OFF" in the UPS charger and controller.

Description	Item No.	Pack. Unit
Lead-acid Absorbed Glass Mat (AGM) battery module	787-876	1

### Technical Data

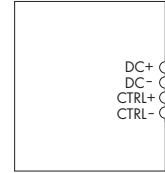
<b>Environmental requirements:</b>	
Ambient operating temperature	-10 °C ... +40 °C
Storage temperature	-20 °C ... +40 °C
Service life	typ. 5/ 4/ 2 years at 20 °C/ 30 °C/ 40 °C
<b>Safety and protection:</b>	
Temperature sensor	NTC K164 (4.7 kΩ)
Protection class	III
Degree of protection	IP20 (acc. to EN 60529)
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output: WAGO 231 Series Battery Control: WAGO 231 Series
Cross sections	Input/Output: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Battery Control: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 in Battery Control: 8 ... 9 mm / 0.33 in
Line length	≤ 3 m (Input, Output, Battery Control)
Type of mounting	DIN-rail mount (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	55 x 153 x 136.5 Height, incl. female connector, Length from upper-edge of DIN 35 rail
Weight	1800 g
<b>Standards and approvals:</b>	
Standards/Specifications	Battery is tested to VdS, UL 508

# 5 EPSITRON® - Lead-Acid (AGM) Battery Modules

328



Similar to picture



- Lead-acid Absorbed Glass Mat (AGM) battery module for uninterruptible power supply (UPS)
- Can be connected to 787-873 or 787-875 UPS Controller and power supply with integrated UPS charger and controller
- Parallel connection to increase the buffer time\*
- Features built-in NTC K164 (4.7 kOhm) temperature sensor
- Battery control (from manufacturing no. 216654) detects both battery life and battery type

## Technical Data

### Input:

Nominal input voltage  $V_i \text{ nom}$       24 V DC

### Output:

Nominal output voltage  $V_o \text{ nom}$       24 V DC

Output current  $I_o$                           20 A

Final load voltage                          max. 27 V DC (at 25 °C)

Charging current                            max. 0.8 A

Capacity                                        3.2 Ah

### Fuse protection:

Internal fuse                                 25 AT

\* for parallel connection, please switch battery capacity setting to "OFF" in the UPS charger and controller.

Description	Item No.	Pack. Unit
Lead-acid Absorbed Glass Mat (AGM) battery module	787-871	1

## Technical Data

### Environmental requirements:

Ambient operating temperature	-10 °C ... +40 °C
Storage temperature	-20 °C ... +40 °C
Service life	typ. 5/ 4/ 2 years at 20 °C/ 30 °C/ 40 °C

### Safety and protection:

Temperature sensor	NTC K164 (4.7 kΩ)
Protection class	III
Degree of protection	IP20 acc. to EN 60529

### Connection and type of mounting:

Wire connection	Input/Output: WAGO 231 Series Battery Control: WAGO 231 Series
Cross sections	Input/Output: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Battery Control: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 in Battery Control: 8 ... 9 mm / 0.33 in
Line length	≤ 3 m (Input, Output, Battery Control)
Type of mounting	Screw mount

### Dimensions and weight:

Dimensions (mm) W x H x L	76.2 x 168 x 175.5
Weight	3975 g

### Standards and approvals:

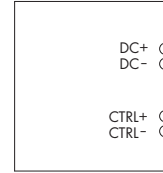
Standards/Specifications	battery is tested to VdS, UL 508
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Similar to picture



- Lead-acid Absorbed Glass Mat (AGM) battery module for uninterruptible power supply (UPS)
- Can be connected to 787-873 or 787-875 UPS Controller and power supply with integrated UPS charger and controller
- Parallel connection to increase the buffer time\*
- Features built-in NTC K164 (4.7 kOhm) temperature sensor
- Battery control (from manufacturing no. 213412) detects both battery life and battery type
- With UL 508 approval (from manufacturing no. 416334)

**Technical Data**

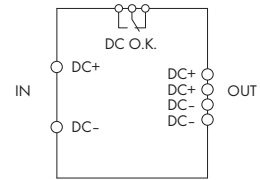
<b>Input:</b>	
Nominal input voltage $V_i$ nom	24 V DC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	24 V DC
Output current $I_o$	40 A
Final load voltage	max. 27 V DC (at 25 °C)
Charging current	max. 3A
Capacity	12 Ah
<b>Fuse protection:</b>	
Internal fuse	2 x 25 AT

\* for parallel connection, please switch battery capacity setting to "OFF" in the UPS charger and controller.

Description	Item No.	Pack. Unit
Lead-acid Absorbed Glass Mat (AGM) battery module	787-873	1

**Technical Data**

<b>Environmental requirements:</b>	
Ambient operating temperature	-10 °C ... +40 °C
Storage temperature	-20 °C ... +40 °C
Service life	typ. 5/ 4/ 2 years at 20 °C/ 30 °C/ 40 °C
<b>Safety and protection:</b>	
Temperature sensor	NTC K164 (4.7 k $\Omega$ )
Protection class	III
Degree of protection	IP20 (acc. to EN 60529)
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output: WAGO 831 Series Battery Control: WAGO 231 Series
Cross sections	Input/Output: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Battery Control: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output: 13 ... 15 mm / 0.55 in Battery Control: 8 ... 9 mm / 0.33 in
Line length	≤ 3 m (Input, Output, Battery Control)
Type of mounting	Screw mount
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	120.5 x 239 x 217.5
Weight	10830 g
<b>Standards and approvals:</b>	
Standards/Specifications	Battery is tested to VdS, UL 508



- Capacitive buffer module bridges short duration voltage drops
- For uninterruptible power supply
- Potential-free contact for charge condition monitoring

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	24 V DC
Input voltage range	20 V ... 30 V DC
Input current $I_i$	60 mA (no-load running); 1 A (charging); 11 A (max.)
Switch-on threshold (adjustable)	20 V ... 24 V DC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	24 V DC
Output voltage range	$V_i - 0.5$ V DC (below switch-on threshold); 20.4 V ... 24 V DC (during buffer operation)
Output current $I_o$	10 A
Current limitation	electronic, typ. 11 A
Buffer time	0.06 s ... 7.2 s (depends on load current and switch-on threshold)
Charging time	typ. 5 minutes
Operational indication	LED green ( $V_a > 20$ V), LED yellow (charging), LED red ( $V_a < 20$ V)
Signaling	1 x floating relay contact 30 V DC, 1 A
<b>Efficiency / power losses:</b>	
Power loss $P_v$	1.5 W open circuit 6.5 W nominal load

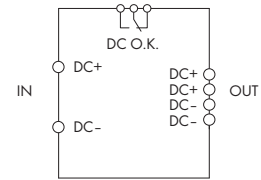
Description	Item No.	Pack. Unit
Capacitive buffer modules, for DIN 35 rail	787-880	1
<b>Technical Data</b>		
<b>Environmental requirements:</b>		
Ambient operating temperature	-10 °C ... +50 °C	
Storage temperature	-10 °C ... +60 °C	
Service life	typ. 87.600 h (at 25 °C ambient operating temperature); typ. 30.500 h (at 40 °C ambient operating temperature)	
Rel. humidity	30 % ... 85 % (no condensation)	
<b>Safety and protection:</b>		
Test voltage	500 V DC (terminals to enclosure)	
Protection class	III	
Reverse voltage protection	yes	
Degree of protection	IP20 acc. to EN 60529	
Feedback voltage	max. 35 VDC	
Parallel operation	yes	
<b>Connection and type of mounting:</b>		
Wire connection	Input/Output: WAGO 231 Series Relay: WAGO 231 Series	
Cross sections	Input/Output: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 Relay: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 in Relay: 8 ... 9 mm / 0.33 in	
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	57 x 179 x 163 Height from upper-edge of DIN 35 rail	
Weight	1000 g	
<b>Standards and approvals:</b>		
Standards/Specifications	EN 60950, UL 508, EN 61000-6-2, EN 61000-6-3	

# 5 EPSITRON® - Capacitive Buffer Modules



Similar to picture

- Capacitive buffer module bridges short duration voltage drops
- For uninterruptible power supply
- Potential-free contact for charge condition monitoring



Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	24 V DC
Input voltage range	20 V ... 30 V DC
Input current $I_i$	60 mA (no-load running); 1 A (charging); 22 A (max.)
Switch-on threshold (adjustable)	20 V ... 24 V DC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	24 V DC
Output voltage range	$V_i - 1$ V DC (below switch-on threshold); 20.4 V ... 24 V DC (during buffer operation)
Output current $I_o$	20 A
Current limitation	electronic, typ. 22 A
Buffer time	0.17 s ... 16.5 s (depends on load current and switch-on threshold)
Charging time	typ. 5 minutes
Operational indication	LED green ( $V_a > 20$ V), LED yellow (charging), LED red ( $V_a < 20$ V)
Signaling	1 x floating relay contact 30 V DC, 1 A
<b>Efficiency / power losses:</b>	
Power loss $P_V$	1.5 W open circuit 15 W nominal load

Description	Item No.	Pack. Unit
Capacitive buffer modules, for DIN 35 rail	787-881	1
Technical Data		
<b>Environmental requirements:</b>		
Ambient operating temperature	-10 °C ... +50 °C	
Storage temperature	-10 °C ... +60 °C	
Service life	typ. 87.600 h (at 25 °C ambient operating temperature); typ. 30.500 h (at 40 °C ambient operating temperature)	
Rel. humidity	30 % ... 85 % (no condensation)	
<b>Safety and protection:</b>		
Test voltage	500 V DC (terminals to enclosure)	
Protection class	III	
Reverse voltage protection	yes	
Degree of protection	IP20 acc. to EN 60529	
Feedback voltage	max. 35 VDC	
Parallel operation	yes	
<b>Connection and type of mounting:</b>		
Wire connection	Input/Output: WAGO 831 Series Relay: WAGO 231 Series	
Cross sections	Input/Output: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Relay: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Strip lengths	Input/Output: 13 ... 15 mm / 0.55 in Relay: 8 ... 9 mm / 0.33 in	
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	57 x 179 x 181 Height from upper-edge of DIN 35 rail	
Weight	1000 g	
<b>Standards and approvals:</b>		
Standards/Specifications	EN 60950, UL 508, EN 61000-6-2, EN 61000-6-3	

# Back-Up Capacitor Module

	<p><b>Back-up capacitor module smoothes unstable 24 VDC power supplies Mounting carrier for DIN 35 rail</b></p>	
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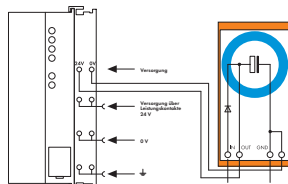
This module is equipped with a capacitor which smoothes unstable 24 VDC power supplies in case the voltage tolerances mentioned in our data sheets cannot be ensured. Reasons for voltage transients could be:

- Voltage disconnections (switching transients) on primary side
- Overloads on secondary side
- Switching of inductive or capacitive loads

The back-up capacitor module is connected between the 24 V power supply and the electronic device which has to be protected.

Notice:

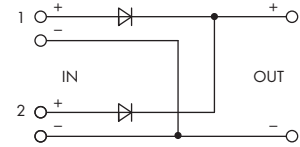
If using a non-filtered single-phase power supply, the capacitor causes a voltage increase.



Description	Item No.	Pack. Unit
Back-up capacitor module	288-824	1

Technical Data		
Nominal voltage	24 VDC (+25 %)	
Nominal current	1 A	
Nominal capacity	10000 µF	
Weight	104.4 g	
Dimensions (mm) W x H x L	38 x 81 x 85	
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (236 Series)	
Cross sections	0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Stripped lengths	5 ... 6 mm / 0.22 in	

5 **EPSITRON® - Redundancy Module**

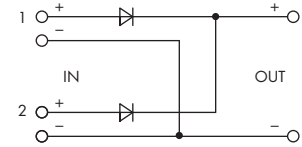


- Redundancy module with 2 inputs for decoupling 2 power supplies
- For redundant or uninterruptible power supply
- With potential-free contact for input voltage monitoring

Description	Item No.	Pack. Unit
<b>Redundancy Module</b>	<b>787-885</b>	<b>1</b>
<b>24 VDC, 2 x 20 A / 1 x 40 A</b>		

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	2 x 24 V DC
Input voltage range	18 V ... 30 V DC
Input current $I_i$	2 x 20 A, max. 1 x 40 A
<b>Output:</b>	
Nominal output voltage $V_o$ nom	24 V DC
Output voltage range	$V_e - 1$ V DC
Output current $I_o$	20 A, max. 40 A
Operational indication	LED green ( $V_o$ ), 2 x LED yellow ( $V_i$ )
Signaling	1 x floating relay contact 30 V DC, 1 A
<b>Efficiency / power losses:</b>	
Efficiency	97 % typ.
Power loss $P_v$	1.5 W open circuit 14 W nominal load (20 A) / 26 W nominal load (40 A)
<b>Fuse protection:</b>	
Internal fuse	no

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-10 °C ... +60 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
<b>Safety and protection:</b>	
Test voltage	500 V DC (terminals to enclosure)
Protection class	III
Reverse voltage protection	yes
Degree of protection	IP20 (acc. to EN 60529)
Feedback voltage	max. 33 VDC
Parallel operation	yes
<b>Connection and type of mounting:</b>	
Wire connection	Input/Output: WAGO 831 Series Relay: WAGO 231 Series
Cross sections	Input/Output: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Relay: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input/Output: 13 ... 15 mm / 0.55 in Relay: 8 ... 9 mm / 0.33 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	40 x 163 x 181 Height from upper-edge of DIN 35 rail, T=127mm without pluggable female
Weight	870 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, UL 60950, UL 508, EN 61000-6-2, EN 61000-6-3

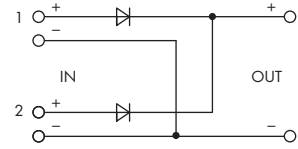


- Redundancy module with 2 inputs for decoupling 2 power supplies
- For redundant or uninterruptible power supply
- With potential-free contact for input voltage monitoring

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	2 x 48 V DC
Input voltage range	36 V ... 54 V DC
Input current $I_i$	2 x 20 A, max. 1 x 40 A
<b>Output:</b>	
Nominal output voltage $V_o$ nom	48 V DC
Output voltage range	$V_e - 1$ V DC
Output current $I_o$	20 A, max. 40 A
Operational indication	LED green ( $V_o$ ), 2 x LED yellow ( $V_i$ )
Signaling	1 x floating relay contact 30 V DC, 1 A
<b>Efficiency / power losses:</b>	
Efficiency	96 % typ.
Power loss $P_V$	1.7 W (48 VDC/no load) / 20 W (48 VDC/rated load) (20 A) / 40 W (48 VDC/rated load) (40 A)
<b>Fuse protection:</b>	
Internal fuse	no

Description	Item No.	Pack. Unit
Redundancy Module	787-886	1
48 VDC, 2 x 20 A / 1 x 40 A		
Technical Data		
<b>Environmental requirements:</b>		
Ambient operating temperature	-10 °C ... +60 °C	
Storage temperature	-25 °C ... +85 °C	
Rel. humidity	30 % ... 85 % (no condensation)	
<b>Safety and protection:</b>		
Test voltage	500 V DC (terminals to enclosure)	
Protection class	III	
Reverse voltage protection	yes	
Degree of protection	IP20 (acc. to EN 60529)	
Feedback voltage	max. 60 VDC	
Parallel operation	yes	
<b>Connection and type of mounting:</b>		
Wire connection	Input/Output: WAGO 831 Series Relay: WAGO 231 Series	
Cross sections	Input/Output: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Relay: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Strip lengths	Input/Output: 13 ... 15 mm / 0.55 in Relay: 8 ... 9 mm / 0.33 in	
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	40 x 181 x 163 Length from upper-edge of DIN 35 rail	
Weight	860 g	
<b>Standards and approvals:</b>		
Standards/Specifications	EN 60950, UL 60950*, UL 508*, EN 61000-6-2, EN 61000-6-3 (* pending)	

5 **EPSITRON® - Redundancy Module**

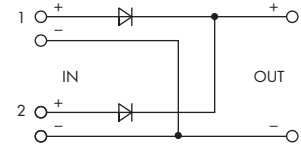


- Diode redundancy module with 2 inputs for decoupling 2 power supplies
- For redundant and fail-safe power supply
- Same profile as EPSITRON® ECO Power Supplies
- Connects to power supplies with electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i\text{nom}}$	2 x 24 VDC
Input voltage range	2 x 9 ... 54 VDC
Input current $I_i$	max. 2 x 12.5 ADC
<b>Output:</b>	
Nominal output voltage $V_{o\text{nom}}$	24 VDC
Output voltage range	9 ... 54 VDC
Voltage drop	0.6 V (input/output)
Output current $I_o$	max. 25 ADC
Operational indication	2 x LED green ( $V_i > 7.5$ VDC), 1 x LED green ( $V_o > 7.5$ VDC)
Output power	≤ 1350 W
<b>Efficiency/Power losses:</b>	
Efficiency	≥ 96 %
Power loss $P_V$	12.5 W (nominal load)
<b>Environmental Requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Relative humidity	≤ 95 % (no condensation)
Derating	-2.66 %/K (55 °C < $T_{\text{amb}}$ ≤ 70 °C)
Temperature coefficient	± 0.03 %/K (0 °C < $T_{\text{amb}}$ < 50 °C)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721, except for low air pressure)
Vibration resistance	0.7 g (acc. to EN 60068-2-6)
Shock resistance	15 g (acc. to EN 60068-2-27)

Description	Item No.	Pack. Unit
<b>Diode Redundancy Module</b> 24 VDC, 12.5 A	<b>787-783</b>	<b>1</b>
Technical Data		
<b>Safety and protection:</b>		
Test voltage	0.5 kV (input - housing); 0.5 kV (output - housing)	
Protection class	Prepared for class I equipment	
Degree of protection	IP20 acc. to EN 60529	
Overvoltage protection	no	
Short circuit protection	no	
No-load proof	yes	
Feedback voltage	60 V	
Parallel operation	yes	
MTBF	> 10 Mio. h (acc. to IEC 61709)	
<b>Connection and type of mounting:</b>		
Wire connection	CAGE CLAMP® (WAGO 2706 Series)	
Cross sections	solid/fine-stranded: 0.5 ... 6 mm² / AWG 20 ... 10	
Strip lengths	11 ... 12 mm / 0.43 ... 0.47 in	
Type of mounting	DIN-rail mounting (EN 60715)	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	50 x 130 x 92	
Weight	Length from upper-edge of DIN rail 340 g	
<b>Standards and approvals:</b>		
Standards/Specifications	UL 508 (pending)	



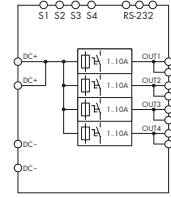


- Diode redundancy module with 2 inputs for decoupling 2 power supplies
- For redundant and fail-safe power supply
- Same profile as EPSITRON® ECO Power Supplies
- Connects to power supplies with electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950-1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i, \text{nom}}$	2 x 24 VDC
Input voltage range	2 x 9 ... 54 VDC
Input current $I_i$	max. 2 x 40 ADC (in total max. 76 ADC)
<b>Output:</b>	
Nominal output voltage $V_{o, \text{nom}}$	24 VDC
Output voltage range	9 ... 54 VDC
Voltage drop	0.6 V (input/output)
Output current $I_o$	max. 76 ADC
Operational indication	2 x LED green ( $V_i > 7.5$ VDC), 1 x LED green ( $V_o > 7.5$ VDC)
Output power	≤ 4104 W
<b>Efficiency/Power losses:</b>	
Efficiency	≥ 97 %
Power loss $P_v$	29.7 W (nominal load)
<b>Environmental Requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Relative humidity	≤ 95 % (no condensation)
Derating	-2.66 %/K ( $55 \text{ °C} < T_{\text{amb}} \leq 70 \text{ °C}$ )
Temperature coefficient	± 0.03 %/K ( $0 \text{ °C} < T_{\text{amb}} < 50 \text{ °C}$ )
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721, except for low air pressure)
Vibration resistance	0.7 g (acc. to EN 60068-2-6)
Shock resistance	15 g (acc. to EN 60068-2-27)

Description	Item No.	Pack. Unit
Diode Redundancy Module 24 VDC, 40 A	787-785	1

Technical Data	
<b>Safety and protection:</b>	
Test voltage	0.5 kV (input - housing); 0.5 kV (output - housing)
Protection class	Prepared for class I equipment
Degree of protection	IP20 acc. to EN 60529
Overvoltage protection	no
Short circuit protection	no
No-load proof	yes
Feedback voltage	60 V
Parallel operation	yes
MTBF	> 10 Mio. h (acc. to IEC 61709)
<b>Connection and type of mounting:</b>	
Wire connection	CAGE CLAMP® (WAGO 2716 Series)
Cross sections	solid/fine-stranded: 1.5 ... 16 mm <sup>2</sup> / AWG 16 ... 6
Strip lengths	12 ... 13 mm / 0.47 ... 0.51 in
Type of mounting	DIN-rail mounting (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	83 x 130 x 153
Weight	Length from upper-edge of DIN rail 960 g
<b>Standards and approvals:</b>	
Standards/Specifications	UL 508 (pending)



- Electronic circuit breaker with 4 channels, parametrizable
- Time-delayed switching of channels
- Floating switch contact
- Current and voltage monitoring via RS-232 interface and LCD
- Watchdog functions with active signal ports

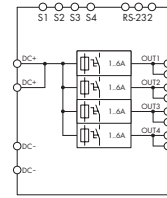
Description	Item No.	Pack. Unit
<b>Electronic Circuit Breaker, 24 VDC / 4 x 10 A</b>	<b>787-862</b>	<b>1</b>

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i \text{ nom}$	24 V DC
Input voltage range	18 ... 30 V DC
<b>Output:</b>	
Nominal output voltage $V_o \text{ nom}$	4 x 24 V DC
Nominal current	4 x 1 ... 10 A DC (adjustable for each channel in 1 A steps)
Voltage drop	140 mV at 6 A, 240 mV at 10 A
Trip time	100 s (100 ms .. 600 s; adjustable)
Switch-on capacity	max. 20,000 µF
Switch-on behavior	time-delayed channel switching (250 ms each)
Active current limitation	no
Operational indication	LED green (all channels o.k.), LED yellow (warning), LED red (at least one channel has tripped)
Signaling	LCD, 4 x signal output 24 V DC, 25 mA and 1 x floating relay contact 30 V DC, 1 A
Remote input	Reactivation of all tripped channels via 18 V ... 30 V DC impulse for min. 50 ms via LCD and RS-232 serial interface
LineMonitor, parameter setting	
<b>Efficiency / power losses:</b>	
Efficiency	96 % typ.
Power loss $P_V$	2 W (stand-by) / 12 W (rated load)
<b>Fuse protection:</b>	
Internal fuse	15 AT

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-10 °C ... +60 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
<b>Safety and protection:</b>	
Test voltage	500 V DC (terminals to enclosure)
Protection class	III
Reverse voltage protection	no
Degree of protection	IP20 acc. to EN 60529
Overload protection	via suppressor diode at input
Feedback voltage	max. 33 VDC
Series connection of several devices	not permitted
Parallel operation of single channels	not permitted
<b>Connection and type of mounting:</b>	
Wire connection	Input: WAGO 831 Series Output: WAGO 231 Series
Cross sections	Input: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Output: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input: 13 ... 15 mm / 0.55 in Output: 8 ... 9 mm / 0.33 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	40 x 171 x 163 Height from upper-edge of DIN 35 rail
Weight	800 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, UL 508, EN 61000-6-2, EN 61000-6-3

# Electronic Circuit Breaker

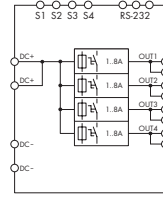
## EPSITRON®



- Electronic circuit breaker with 4 channels, parametrizable
- Time-delayed switching of channels
- Floating switch contact
- Current and voltage monitoring via RS-232 interface and LCD
- Watchdog functions with active signal ports

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	24 V DC
Input voltage range	18 ... 30 V DC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	4 x 24 V DC
Nominal current	4 x 1 ... 6 A DC (adjustable for each channel in 1 A steps)
Voltage drop	140 mV at 6 A
Trip time	100 s (100 ms .. 600 s; adjustable)
Switch-on capacity	max. 20,000 $\mu$ F
Switch-on behavior	time-delayed channel switching (250 ms each)
Active current limitation	no
Operational indication	LED green (all channels o.k.), LED yellow (warning), LED red (at least one channel has tripped)
Signaling	LCD, 4 x signal output 24 V DC, 25 mA and 1 x floating relay contact 30 V DC, 1 A
Remote input	Reactivation of all tripped channels via 18 V ... 30 V DC impulse for min. 50 ms via LCD and RS-232 serial interface
<b>LineMonitor, parameter setting</b>	
<b>Efficiency / power losses:</b>	
Efficiency	96 % typ.
Power loss $P_v$	2 W (stand-by) / 5.5 W (rated load)
<b>Fuse protection:</b>	
Internal fuse	6.3 AT

Description	Item No.	Pack. Unit
Electronic Circuit Breaker, 24 VDC / 4 x 6 A	787-860	1
Technical Data		
<b>Environmental requirements:</b>		
Ambient operating temperature	-10 °C ... +60 °C	
Storage temperature	-25 °C ... +85 °C	
Rel. humidity	30 % ... 85 % (no condensation)	
<b>Safety and protection:</b>		
Test voltage	500 V DC (terminals to enclosure)	
Protection class	III	
Reverse voltage protection	no	
Degree of protection	IP20 acc. to EN 60529	
Overload protection	via suppressor diode at input	
Feedback voltage	max. 33 VDC	
Series connection of several devices	not permitted	
Parallel operation of single channels	not permitted	
<b>Connection and type of mounting:</b>		
Wire connection	Input: WAGO 831 Series Output: WAGO 231 Series	
Cross sections	Input: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Output: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Strip lengths	Input: 13 ... 15 mm / 0.55 in Output: 8 ... 9 mm / 0.33 in	
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	40 x 171 x 163 Height from upper-edge of DIN 35 rail	
Weight	800 g	
<b>Standards and approvals:</b>		
Standards/Specifications	EN 60950, UL 508, EN 61000-6-2, EN 61000-6-3	



- Electronic circuit breaker with 4 channels, parametrizable
- Features active current limitation, reliably prevents voltage drops
- Time-delayed switching of channels
- Current and voltage monitoring via RS-232 interface and LCD
- Watchdog functions with active signal ports

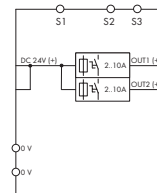
Description	Item No.	Pack. Unit
Electronic Circuit Breaker, 24 VDC / 4 x 8 A	787-861	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	24 V DC
Input voltage range	18 ... 30 V DC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	4 x 24 V DC
Nominal current	4 x 1 ... 8 A DC (adjustable for each channel in 1 A steps)
Voltage drop	140 mV at 8 A
Trip time	100 ms (100 ms .. 1.5 s; adjustable, depending on nominal current)
Switch-on capacity	max. 20,000 $\mu$ F
Switch-on behavior	time-delayed channel switching (250 ms each)
Trip current	1.1 x nominal current typ.
Active current limitation	yes
Current limitation	1.5 x nominal current typ.
Operational indication	LED green (all channels o.k.), LED yellow (warnings), LED red (at least one channel has tripped)
Signaling	LCD, 4 x signal output 24 V DC, 25 mA
LineMonitor, parameter setting	via LCD and RS-232 serial interface
<b>Efficiency / power losses:</b>	
Efficiency	96 % typ.
Power loss $P_V$	2 W (stand-by) / 8.2 W (rated load)
<b>Fuse protection:</b>	
Internal fuse	15 AT

Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-10 °C ... +60 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
<b>Safety and protection:</b>	
Test voltage	500 V DC (terminals to enclosure)
Protection class	III
Reverse voltage protection	no
Degree of protection	IP20 acc. to EN 60529
Overload protection	via suppressor diode at input
Feedback voltage	max. 33 VDC
Series connection of several devices	not permitted
Parallel operation of single channels	not permitted
<b>Connection and type of mounting:</b>	
Wire connection	Input: WAGO 831 Series Output: WAGO 231 Series
Cross sections	Input: 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Output: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input: 13 ... 15 mm / 0.55 in Output: 8 ... 9 mm / 0.33 in
Type of mounting	DIN-rail mounting (EN 60715) in 2 positions
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	40 x 171 x 163 Height from upper-edge of DIN 35 rail
Weight	800 g
<b>Standards and approvals:</b>	
Standards/Specifications	EN 60950, UL 508, EN 61000-6-2, EN 61000-6-3

# Electronic Circuit Breaker

## EPSITRON®

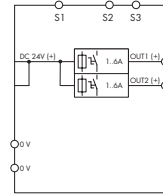


- Space-saving electronic circuit breaker with 2 channels
- 2–10 A nominal current, adjustable for each channel via sealable selector switch
- Switch-on capacity > 50,000  $\mu\text{F}$  per channel
- One illuminated three-colored button per channel simplifies switching (on/off), resetting, and on-site diagnostics
- Time-delayed switching of channels
- Tripped message (group signal)
- Status message for each channel via pulse sequence
- Remote input resets tripped channels or switches on/off any number of channels via pulse sequence

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i\text{nom}}$	24 VDC
Input voltage range	18 ... 30 VDC
<b>Output:</b>	
Nominal output voltage $V_{o\text{nom}}$	2 x 24 VDC
Nominal current	max. 2 x 10 ADC (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)
Voltage drop	200 mV at 10 A
Trip time	Load-dependent (16 ms ... 100 s)
Switch-on capacity	> 50,000 $\mu\text{F}$ per channel
Switch-on behavior	Time-delayed channel switching (load-dependent, min. 50 ms / max. 5 s)
Active current limitation	no
Operational indication	Green LED (O.K. channel), Red LED (tripped channel)
Signaling	2 x LED (green/red/orange)
Remote input	Reactivation of all tripped channels via 15–30 VDC pulse for min. 500 ms. Switching on/off any number of channels via pulse sequence.
<b>Efficiency/Power losses:</b>	
Efficiency	99 % typ.
Power loss $P_V$	5.5 W (nominal load)
<b>Fuse protection:</b>	
Internal fuse	15 AT per channel

Description	Item No.	Pack. Unit
Electronic circuit breaker, 24 VDC / 2 x 10 A	787-1662	1
<b>Technical Data</b>		
<b>Environmental requirements:</b>		
Ambient operating temperature	-25 °C ... +70 °C	
Storage temperature	-25 °C ... +85 °C	
Rel. humidity	30% ... 85% (no condensation permissible)	
Derating	no derating	
<b>Safety and protection:</b>		
Test voltage	500 VDC (connectors to housing)	
Protection class	III	
Reverse voltage protection	no	
Degree of protection	IP20 (acc. to EN 60529)	
Overvoltage protection	via 33 V suppressor diode at input	
Feedback voltage	max. 35 VDC	
Series connection of several devices	not permitted	
Parallel operation of single channels	not permitted	
<b>Connection and type of mounting:</b>		
Wire connection	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series	
Cross sections	Input (+): 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Input (-), output, signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Strip lengths	Input (+): 13 ... 15 mm / 0.55 in Input (-), output, signaling: 8 ... 9 mm / 0.33 in	
Type of mounting	DIN-rail mount (EN 60715)	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	45 x 90 x 115.5 Length from upper-edge of DIN 35 rail	
Weight	200 g	
<b>Standards and approvals:</b>		
Standards/Specifications	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3	

**Electronic Circuit Breaker**  
**EPSITRON®**



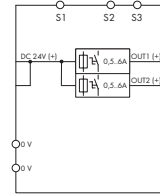
- Space-saving electronic circuit breaker with 4 channels
- 1 – 6 A nominal current, adjustable for each channel via sealable selector switch
- Switch-on capacity > 50,000 µF per channel
- One illuminated three-colored button per channel simplifies switching (on/off), resetting, and on-site diagnostics
- Time-delayed switching of channels
- Tripped message (group signal)
- Status message for each channel via pulse sequence
- Remote input resets tripped channels or switches on/off any number of channels via pulse sequence

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_{i\text{nom}}$	24 VDC
Input voltage range	18 ... 30 VDC
<b>Output:</b>	
Nominal output voltage $V_{o\text{nom}}$	2 x 24 VDC
Nominal current	max. 2 x 6 ADC
	(1, 2, 3, 4, 5, 6 A adjustable for each channel via selector switch)
Voltage drop	120 mV at 6 A
Trip time	Load-dependent (16 ms ... 100 s)
Switch-on capacity	> 50,000 µF per channel
Switch-on behavior	Time-delayed channel switching (load-dependent, min. 50 ms / max. 5 s)
Active current limitation	no
Operational indication	Green LED (O.K. channel), Red LED (tripped channel)
Signaling	2 x LED (green/red/orange)
Remote input	Reactivation of all tripped channels via 15–30 VDC pulse for min. 500 ms. Switching on/off any number of channels via pulse sequence.
<b>Efficiency/Power losses:</b>	
Efficiency	99 % typ.
Power loss $P_V$	2.5 W (nominal load)
<b>Fuse protection:</b>	
Internal fuse	15 AT per channel

Description	Item No.	Pack. Unit
Electronic circuit breaker, 24 VDC / 2 x 6 A	787-1662/106-000	1
<b>Technical Data</b>		
<b>Environmental requirements:</b>		
Ambient operating temperature	-25 °C ... +70 °C	
Storage temperature	-25 °C ... +85 °C	
Rel. humidity	30% ... 85% (no condensation permissible)	
Derating	no derating	
<b>Safety and protection:</b>		
Test voltage	500 VDC (connectors to housing)	
Protection class	III	
Reverse voltage protection	no	
Degree of protection	IP20 (acc. to EN 60529)	
Overvoltage protection	via 33 V suppressor diode at input	
Feedback voltage	max. 35 VDC	
Series connection of several devices	not permitted	
Parallel operation of single channels	not permitted	
<b>Connection and type of mounting:</b>		
Wire connection	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series	
Cross sections	Input (+): 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Input (-), output, signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Strip lengths	Input (+): 13 ... 15 mm / 0.55 in Input (-), output, signaling: 8 ... 9 mm / 0.33 in	
Type of mounting	DIN-rail mount (EN 60715)	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	45 x 90 x 115.5 Length from upper-edge of DIN 35 rail	
Weight	170 g	
<b>Standards and approvals:</b>		
Standards/Specifications	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3	

# Electronic Circuit Breaker with Active Current Limitation

## EPSITRON®



- Space-saving electronic circuit breaker with 2 channels
- 0.5–6 A nominal current, adjustable for each channel via sealable selector switch
- Active current limitation
- Switch-on capacity > 65000  $\mu\text{F}$  per channel
- One illuminated three-colored button per channel simplifies switching (on/off), resetting, and on-site diagnostics
- Time-delayed switching of channels
- Tripped message (group signal)
- Status message for each channel via pulse sequence
- Remote input resets tripped channels or switches on/off any number of channels via pulse sequence

### Technical Data

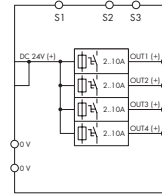
<b>Input:</b>	
Nominal input voltage $V_{i, \text{nom}}$	24 VDC
Input voltage range	18 ... 30 VDC
<b>Output:</b>	
Nominal output voltage $V_{o, \text{nom}}$	2 x 24 VDC
Nominal current	max. 2 x 6 ADC (0.5, 1, 2, 3, 4, 6 A adjustable for each channel via selector switch)
Voltage drop	145 mV at 6 A
Trip time	Load-dependent (16 ms ... 5 s)
Switch-on capacity	> 65,000 $\mu\text{F}$ per channel
Switch-on behavior	Time-delayed channel switching (load-dependent, min. 50 ms / max. 5 s)
Active current limitation	yes
Operational indication	Green LED (O.K. channel), Red LED (tripped channel)
Signaling	2 x LED (green/red/orange)
Remote input	Reactivation of all tripped channels via 15–30 VDC pulse for min. 500 ms. Switching on/off any number of channels via pulse sequence.
<b>Efficiency/Power losses:</b>	
Efficiency	99 % typ.
Power loss $P_V$	2.5 W (nominal load)
<b>Fuse protection:</b>	
Internal fuse	15 AT per channel

Description	Item No.	Pack. Unit
Electronic circuit breaker, 24 VDC / 2 x 6 A	787-1662/006-1000	1

### Technical Data

<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30% ... 85% (no condensation permissible)
Derating	no derating
<b>Safety and protection:</b>	
Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	no
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via 33 V suppressor diode at input
Feedback voltage	max. 35 VDC
Series connection of several devices	not permitted
Parallel operation of single channels	not permitted
<b>Connection and type of mounting:</b>	
Wire connection	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
Cross sections	Input (+): 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Input (-), output, signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input (+): 13 ... 15 mm / 0.55 in Input (-), output, signaling: 8 ... 9 mm / 0.33 in
Type of mounting	DIN-rail mount (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	45 x 90 x 115.5 Length from upper-edge of DIN 35 rail
Weight	170 g
<b>Standards and approvals:</b>	
Standards/Specifications	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3





- Compact 4-channel electronic circuit breaker
- 2–10 A nominal current, adjustable for each channel via sealable selector switch
- Switch-on capacity > 50000  $\mu$ F per channel
- One illuminated three-colored button per channel simplifies switching (on/off), resetting and on-site diagnosing
- Time-delayed switching of channels
- Tripped message (group signal)
- Status message for each channel via pulse sequence
- Remote input resets tripped channels or switching on/off any number of channels via pulse sequence

Description	Item No.	Pack. Unit
Electronic Circuit Breaker, 24 VDC / 4 x 10 A	787-1664	1

Technical Data	
<b>Input:</b>	
Nominal input voltage $V_i$ nom	24 V DC
Input voltage range	18 ... 30 V DC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	4 x 24 V DC
Nominal current	max. 4 x 10 ADC (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)
Voltage drop	200 mV at 10 A
Trip time	Load-dependent (20 ms - 100 s)
Switch-on capacity	> 50000 $\mu$ F per channel
Switch-on behavior	Time-delayed channel switching (50 - 100 ms each)
Active current limitation	no
Operational indication	Green LED (channel OK), Red LED (channel triggered)
Signaling	4 x LED (green/red/orange)
Remote input	Reactivation of all tripped channels via 15 - 30 VDC pulse for min. 500 ms. Switching on/off any number of channels via pulse sequence.
<b>Efficiency / power losses:</b>	
Efficiency	99 % typ.
Power loss $P_V$	1.3 W (stand-by) / 20 W (nominal load)
<b>Fuse protection:</b>	
Internal fuse	15 AT per channel

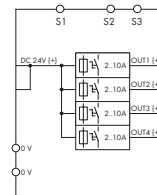
Technical Data	
<b>Environmental requirements:</b>	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	$\geq$ +50 °C: see instruction manual
<b>Safety and protection:</b>	
Test voltage	500 V DC (terminals to enclosure)
Protection class	III
Reverse voltage protection	no
Degree of protection	IP20 (acc. to EN 60529)
Overload protection	via 33 V suppressor diode at input
Feedback voltage	max. 35 VDC
Series connection of several devices	not permitted
Parallel operation of single channels	not permitted
<b>Connection and type of mounting:</b>	
Wire connection	Input (+): WAGO 831 Series Input (-), Output, Signalling: WAGO 721 Series
Cross sections	Input (+): 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Input (-), Output, Signalling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input (+): 13 ... 15 mm / 0.55 in Input (-), Output, Signalling: 8 ... 9 mm / 0.33 in
Type of mounting	DIN-rail mount (EN 60715)
<b>Dimensions and weight:</b>	
Dimensions (mm) W x H x L	45 x 90 x 115.5 Length from upper-edge of DIN 35 rail
Weight	170 g
<b>Standards and approvals:</b>	
Standards/Specifications	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3

# Electronic Circuit Breaker

## EPSITRON®



Similar to picture



- Space-saving electronic circuit breaker with 4 channels
- 2–6 A nominal current, adjustable for each channel via sealable selector switch; factory preset: 2 A, switched off
- Switch-on capacity > 50000 µF per channel
- One illuminated three-colored button per channel simplifies switching (on/off), resetting, and on-site diagnosis
- Time-delayed switching of channels
- Tripped and switched off message (common group signal S3)
- Status message for each channel via pulse sequence
- Remote input resets tripped channels or switches on/off any number of channels via pulse sequence

### Technical Data

<b>Input:</b>	
Nominal input voltage $V_{i, nom}$	24 VDC
Input voltage range	18 ... 30 VDC
<b>Output:</b>	
Nominal output voltage $V_{o, nom}$	4 x 24 VDC
Nominal current	max. 4 x 10 ADC (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)
Factory preset	2 ADC, switched off
Voltage drop	200 mV at 10 A
Trip time	Load-dependent (20 ms - 100 s)
Switch-on capacity	> 50000 µF per channel
Switch-on behavior	Time-delayed channel switching (50 - 100 ms each)
Active current limitation	no
Operational indication	Green LED (channel OK), Red LED (channel triggered)
Signaling	4 x LED (green/red/orange)
Remote input	Reactivation of all tripped channels via 15–30 VDC pulse for min. 500 ms. Switching on/off any number of channels via pulse sequence.
<b>Efficiency/Power Losses:</b>	
Efficiency	99 % typ.
Power loss $P_V$	1.3 W (stand-by) / 20 W (nominal load)
<b>Fuse Protection:</b>	
Internal fuse	15 AT per channel

### Description

Electronic Circuit Breaker,  
24 VDC / 4 x 10 A

### Item No.

787-1664/000-004

### Pack. Unit

1

### Technical Data

#### Environmental Requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Relative humidity	30% ... 85% (no condensation permissible)
Derating	≥ +50 °C: see instruction manual

#### Safety and protection:

Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	no
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via 33 V suppressor diode at input
Feedback voltage	max. 35 VDC
Series connection of several devices	not permitted
Parallel operation of single channels	not permitted

#### Connection and type of mounting:

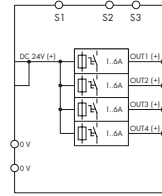
Wire connection	Input (+): WAGO 831 Series
	Input (-), output, signaling: WAGO 721 Series
Cross sections	Input (+): 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8
	Input (-), output, signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input (+): 13 ... 15 mm / 0.55 in
	Input (-), output, signaling: 8 ... 9 mm / 0.33 in
Type of mounting	DIN-rail mount (EN 60715)

#### Dimensions and weight:

Dimensions (mm) W x H x L	45 x 90 x 115.5
	Length from upper-edge of DIN 35 rail
Weight	161 g

#### Standards and Specifications:

Standards/specifications	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3
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- Space-saving electronic circuit breaker with 4 channels
- 1–6 A nominal current, adjustable for each channel via sealable selector switch
- Switch-on capacity > 50,000  $\mu\text{F}$  per channel
- One illuminated three-colored button per channel simplifies switching (on/off), resetting, and on-site diagnostics
- Time-delayed switching of channels
- Tripped message (group signal)
- Status message for each channel via pulse sequence
- Remote input resets tripped channels or switches on/off any number of channels via pulse sequence

#### Technical Data

<b>Input:</b>	
Nominal input voltage $V_{i\text{nom}}$	24 VDC
Input voltage range	18 ... 30 VDC
<b>Output:</b>	
Nominal output voltage $V_{o\text{nom}}$	4 x 24 VDC
Nominal current	max. 4 x 6 ADC
	(1, 2, 3, 4, 5, 6 A adjustable for each channel via selector switch)
Voltage drop	120 mV at 6 A
Trip time	Load-dependent (16 ms ... 100 s)
Switch-on capacity	> 50,000 $\mu\text{F}$ per channel
Switch-on behavior	Time-delayed channel switching (load-dependent, min. 50 ms / max. 5 s)
Active current limitation	no
Operational indication	Green LED (O.K. channel), Red LED (tripped channel)
Signaling	4 x LED (green/red/orange)
Remote input	Reactivation of all tripped channels via 15–30 VDC pulse for min. 500 ms. Switching on/off any number of channels via pulse sequence.
<b>Efficiency/Power losses:</b>	
Efficiency	99 % typ.
Power loss $P_V$	4.2 W (nominal load)
<b>Fuse protection:</b>	
Internal fuse	15 AT per channel

#### Description

Electronic circuit breaker,  
24 VDC / 4 x 6 A

#### Item No.

787-1664/106-000

#### Pack. Unit

1

#### Technical Data

##### Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30% ... 85% (no condensation permissible)
Derating	no derating

##### Safety and protection:

Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	no
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via 33 V suppressor diode at input
Feedback voltage	max. 35 VDC
Series connection of several devices	not permitted
Parallel operation of single channels	not permitted

##### Connection and type of mounting:

Wire connection	Input (+): WAGO 831 Series
	Input (-), output, signaling: WAGO 721 Series
Cross sections	Input (+): 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8
	Input (-), output, signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input (+): 13 ... 15 mm / 0.55 in
	Input (-), output, signaling: 8 ... 9 mm / 0.33 in
Type of mounting	DIN-rail mount (EN 60715)

##### Dimensions and weight:

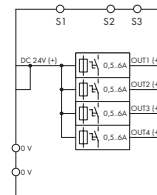
Dimensions (mm) W x H x L	45 x 90 x 115.5
	Length from upper-edge of DIN 35 rail
Weight	170 g

##### Standards and approvals:

Standards/Specifications	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3
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# Electronic Circuit Breaker with Active Current Limitation

## EPSITRON®



- Space-saving electronic circuit breaker with 4 channels
- 0.5–6 A nominal current, adjustable for each channel via sealable selector switch
- Active current limitation
- Switch-on capacity > 65000  $\mu\text{F}$  per channel
- One illuminated three-colored button per channel simplifies switching (on/off), resetting, and on-site diagnostics
- Time-delayed switching of channels
- Tripped message (group signal)
- Status message for each channel via pulse sequence
- Remote input resets tripped channels or switches on/off any number of channels via pulse sequence

### Technical Data

<b>Input:</b>	
Nominal input voltage $V_{i\text{nom}}$	24 VDC
Input voltage range	18 ... 30 VDC
<b>Output:</b>	
Nominal output voltage $V_{o\text{nom}}$	4 x 24 VDC
Nominal current	max. 4 x 6 ADC (0.5, 1, 2, 3, 4, 6 A adjustable for each channel via selector switch)
Voltage drop	145 mV at 6 A
Trip time	Load-dependent (16 ms ... 5 s)
Switch-on capacity	> 65,000 $\mu\text{F}$ per channel
Switch-on behavior	Time-delayed channel switching (load-dependent, min. 50 ms / max. 5 s)
Active current limitation	yes
Operational indication	Green LED (O.K. channel), Red LED (tripped channel)
Signaling	4 x LED (green/red/orange)
Remote input	Reactivation of all tripped channels via 15–30 VDC pulse for min. 500 ms. Switching on/off any number of channels via pulse sequence.
<b>Efficiency/Power losses:</b>	
Efficiency	99 % typ.
Power loss $P_V$	4.3 W (nominal load)
<b>Fuse protection:</b>	
Internal fuse	15 AT per channel

### Description

Electronic circuit breaker,  
24 VDC / 4 x 6 A

### Item No.

787-1664/006-1000

### Pack. Unit

1

### Technical Data

#### Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30% ... 85% (no condensation permissible)
Derating	no derating

#### Safety and protection:

Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	no
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via 33 V suppressor diode at input
Feedback voltage	max. 35 VDC
Series connection of several devices	not permitted
Parallel operation of single channels	not permitted

#### Connection and type of mounting:

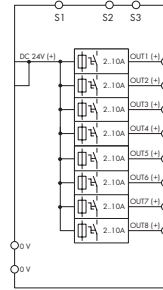
Wire connection	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
Cross sections	Input (+): 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Input (-), output, signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input (+): 13 ... 15 mm / 0.55 in Input (-), output, signaling: 8 ... 9 mm / 0.33 in
Type of mounting	DIN-rail mount (EN 60715)

#### Dimensions and weight:

Dimensions (mm) W x H x L	45 x 90 x 115.5 Length from upper-edge of DIN 35 rail
Weight	170 g

#### Standards and approvals:

Standards/Specifications	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3
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- Compact 8-channel electronic circuit breaker
- 2–10 A nominal current, adjustable for each channel via sealable selector switch
- Switch-on capacity > 50000  $\mu$ F per channel
- One illuminated three-colored button per channel simplifies switching (on/off), resetting and on-site diagnosing
- Time-delayed switching of channels
- Tripped message (group signal)
- Status message for each channel via pulse sequence
- Remote input resets tripped channels or switching on/off any number of channels via pulse sequence

#### Technical Data

<b>Input:</b>	
Nominal input voltage $V_i$ nom	24 V DC
Input voltage range	18 ... 30 V DC
<b>Output:</b>	
Nominal output voltage $V_o$ nom	8x 24 V DC
Nominal current	max. 8 x 10 ADC (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)
Voltage drop	200 mV at 10 A
Trip time	Load-dependent (20 ms – 100 s)
Switch-on capacity	> 50000 $\mu$ F per channel
Switch-on behavior	Time-delayed channel switching (50 – 100 ms each)
Active current limitation	no
Operational indication	Green LED (channel OK), Red LED (channel triggered)
Signaling	8 x LED (green/red/orange)
Remote input	Reactivation of all tripped channels via 15 – 30 VDC pulse for min. 500 ms. Switching on/off any number of channels via pulse sequence.
<b>Efficiency / power losses:</b>	
Efficiency	99 % typ.
Power loss $P_V$	1.3 W (stand-by) / 20 W (nominal load)
<b>Fuse protection:</b>	
Internal fuse	15 AT per channel

#### Description

Electronic Circuit Breaker,  
24 VDC / 8 x 10 A

#### Item No.

787-1668

#### Pack. Unit

1

#### Technical Data

##### Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	$\geq +50$ °C: see instruction manual

##### Safety and protection:

Test voltage	500 V DC (terminals to enclosure)
Protection class	III
Reverse voltage protection	no
Degree of protection	IP20 (acc. to EN 60529)
Overload protection	via 33 V suppressor diode at input
Feedback voltage	max. 35 VDC
Series connection of several devices	not permitted
Parallel operation of single channels	not permitted

##### Connection and type of mounting:

Wire connection	Input (+): WAGO 831 Series
	Input (-), Output, Signalling: WAGO 721 Series
Cross sections	Input (+): 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8
	Input (-), Output, Signalling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input (+): 13 ... 15 mm / 0.55 in
	Input (-), Output, Signalling: 8 ... 9 mm / 0.33 in
Type of mounting	DIN-rail mount (EN 60715)

##### Dimensions and weight:

Dimensions (mm) W x H x L	42 x 127 x 142.5
	Length from upper-edge of DIN 35 rail
Weight	800 g

##### Standards and approvals:

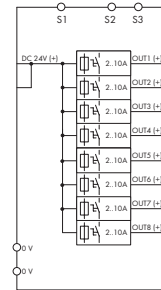
Standards/Specifications	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3
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# Electronic Circuit Breaker

## EPSITRON®



Similar to picture

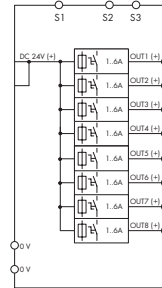


- Space-saving electronic circuit breaker with 8 channels
- 2–6 A nominal current, adjustable for each channel via sealable selector switch; factory preset: 2 A, switched off
- Switch-on capacity > 50000  $\mu$ F per channel
- One illuminated three-colored button per channel simplifies switching (on/off), resetting, and on-site diagnosis
- Time-delayed switching of channels
- Tripped and switched off message (common group signal S3)
- Status message for each channel via pulse sequence
- Remote input resets tripped channels or switches on/off any number of channels via pulse sequence

System Data	
<b>Input:</b>	
Nominal input voltage $V_{i, \text{nom}}$	24 VDC
Input voltage range	18 ... 30 VDC
<b>Output:</b>	
Nominal output voltage $V_{o, \text{nom}}$	8 x 24 VDC
Nominal current	max. 8 x 10 ADC (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)
Factory preset	2 ADC, switched off
Voltage drop	200 mV at 10 A
Trip time	Load-dependent (20 ms - 100 s)
Switch-on capacity	> 50000 $\mu$ F per channel
Switch-on behavior	Time-delayed channel switching (50 - 100 ms each)
Active current limitation	no
Operational indication	Green LED (channel OK), Red LED (channel triggered)
Signaling	8 x LED (green/red/orange)
Remote input	Reactivation of all tripped channels via 15–30 VDC pulse for min. 500 ms. Switching on/off any number of channels via pulse sequence.
<b>Efficiency/Power Losses:</b>	
Efficiency	99 % typ.
Power loss $P_v$	1.3 W (stand-by) / 20 W (nominal load)
<b>Fuse Protection:</b>	
Internal fuse	15 AT per channel

Description	Item No.	Pack. Unit
Electronic Circuit Breaker, 24 VDC / 8 x 10 A	787-1668/000-004	1
<b>Technical Data</b>		
<b>Environmental Requirements:</b>		
Ambient operating temperature	-25 °C ... +70 °C	
Storage temperature	-25 °C ... +85 °C	
Relative humidity	30% ... 85% (no condensation permissible)	
Derating	$\geq +50$ °C: see instruction manual	
<b>Safety and protection:</b>		
Test voltage	500 VDC (connectors to housing)	
Protection class	III	
Reverse voltage protection	no	
Degree of protection	IP20 (acc. to EN 60529)	
Overvoltage protection	via 33 V suppressor diode at input	
Feedback voltage	max. 35 VDC	
Series connection of several devices	not permitted	
Parallel operation of single channels	not permitted	
<b>Connection and type of mounting:</b>		
Wire connection	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series	
Cross sections	Input (+): 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Input (-), output, signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Strip lengths	Input (+): 13 ... 15 mm / 0.55 in Input (-), output, signaling: 8 ... 9 mm / 0.33 in	
Type of mounting	DIN-rail mount (EN 60715)	
<b>Dimensions and weight:</b>		
Dimensions (mm) W x H x L	42 x 127 x 142.5 Length from upper-edge of DIN 35 rail	
Weight	420 g	
<b>Standards and Specifications:</b>		
Standards/specifications	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3	





- Space-saving electronic circuit breaker with 8 channels
- 1–6 A nominal current, adjustable for each channel via sealable selector switch
- Switch-on capacity > 50,000  $\mu\text{F}$  per channel
- One illuminated three-colored button per channel simplifies switching (on/off), resetting, and on-site diagnostics
- Time-delayed switching of channels
- Tripped message (group signal)
- Status message for each channel via pulse sequence
- Remote input resets tripped channels or switches on/off any number of channels via pulse sequence

#### Technical Data

<b>Input:</b>	
Nominal input voltage $V_{i\text{nom}}$	24 VDC
Input voltage range	18 ... 30 VDC
<b>Output:</b>	
Nominal output voltage $V_{o\text{nom}}$	8 x 24 VDC
Nominal current	max. 8 x 6 ADC
	(1, 2, 3, 4, 5, 6 A adjustable for each channel via selector switch)
Voltage drop	120 mV at 6 A
Trip time	Load-dependent (16 ms ... 100 s)
Switch-on capacity	> 50,000 $\mu\text{F}$ per channel
Switch-on behavior	Time-delayed channel switching (load-dependent, min. 50 ms / max. 5 s)
Active current limitation	no
Operational indication	Green LED (O.K. channel), Red LED (tripped channel)
Signaling	8 x LED (green/red/orange)
Remote input	Reactivation of all tripped channels via 15–30 VDC pulse for min. 500 ms. Switching on/off any number of channels via pulse sequence.
<b>Efficiency/Power losses:</b>	
Efficiency	99 % typ.
Power loss $P_V$	8 W (nominal load)
<b>Fuse protection:</b>	
Internal fuse	15 AT per channel

#### Description

Electronic circuit breaker,  
24 VDC / 8 x 6 A

#### Item No.

787-1668/106-000

#### Pack. Unit

1

#### Technical Data

##### Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30% ... 85% (no condensation permissible)
Derating	no derating

##### Safety and protection:

Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	no
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via 33 V suppressor diode at input
Feedback voltage	max. 35 VDC
Series connection of several devices	not permitted
Parallel operation of single channels	not permitted

##### Connection and type of mounting:

Wire connection	Input (+): WAGO 831 Series
	Input (-), output, signaling: WAGO 721 Series
Cross sections	Input (+): 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8
	Input (-), output, signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input (+): 13 ... 15 mm / 0.55 in
	Input (-), output, signaling: 8 ... 9 mm / 0.33 in
Type of mounting	DIN-rail mount (EN 60715)

##### Dimensions and weight:

Dimensions (mm) W x H x L	42 x 127 x 142.5
	Length from upper-edge of DIN 35 rail
Weight	440 g

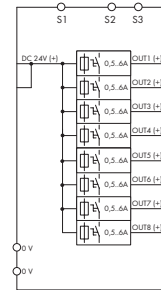
##### Standards and approvals:

Standards/Specifications	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3
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# Electronic Circuit Breaker with Active Current Limitation

## EPSITRON®



- Space-saving electronic circuit breaker with 8 channels
- 0.5–6 A nominal current, adjustable for each channel via sealable selector switch
- Active current limitation
- Switch-on capacity > 65000 µF per channel
- One illuminated three-colored button per channel simplifies switching (on/off), resetting, and on-site diagnostics
- Time-delayed switching of channels
- Tripped message (group signal)
- Status message for each channel via pulse sequence
- Remote input resets tripped channels or switches on/off any number of channels via pulse sequence

### Technical Data

<b>Input:</b>	
Nominal input voltage $V_{i, nom}$	24 VDC
Input voltage range	18 ... 30 VDC
<b>Output:</b>	
Nominal output voltage $V_{o, nom}$	8 x 24 VDC
Nominal current	max. 8 x 6 ADC (0.5, 1, 2, 3, 4, 6 A adjustable for each channel via selector switch)
Voltage drop	155 mV at 6 A
Trip time	Load-dependent (16 ms ... 5 s)
Switch-on capacity	> 65,000 µF per channel
Switch-on behavior	Time-delayed channel switching (load-dependent, min. 50 ms / max. 5 s)
Active current limitation	yes
Operational indication	Green LED (O.K. channel), Red LED (tripped channel)
Signaling	8 x LED (green/red/orange)
Remote input	Reactivation of all tripped channels via 15–30 VDC pulse for min. 500 ms. Switching on/off any number of channels via pulse sequence.
<b>Efficiency/Power losses:</b>	
Efficiency	99 % typ.
Power loss $P_V$	8.6 W (nominal load)
<b>Fuse protection:</b>	
Internal fuse	15 AT per channel

### Description

Electronic circuit breaker,  
24 VDC / 8 x 6 A

### Item No.

787-1668/006-1000

### Pack. Unit

1

### Technical Data

#### Environmental requirements:

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30% ... 85% (no condensation permissible)
Derating	no derating

#### Safety and protection:

Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	no
Degree of protection	IP20 (acc. to EN 60529)
Overvoltage protection	via 33 V suppressor diode at input
Feedback voltage	max. 35 VDC
Series connection of several devices	not permitted
Parallel operation of single channels	not permitted

#### Connection and type of mounting:

Wire connection	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
Cross sections	Input (+): 0.5 mm <sup>2</sup> ... 10 mm <sup>2</sup> / AWG 20 ... 8 Input (-), output, signaling: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip lengths	Input (+): 13 ... 15 mm / 0.55 in Input (-), output, signaling: 8 ... 9 mm / 0.33 in
Type of mounting	DIN-rail mount (EN 60715)

#### Dimensions and weight:

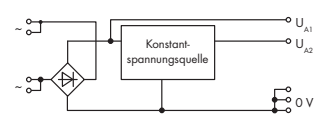
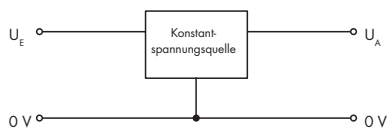
Dimensions (mm) W x H x L	42 x 127 x 142.5 Length from upper-edge of DIN 35 rail
Weight	440 g

#### Standards and approvals:

Standards/Specifications	UL 508*, UL 2367*, GL, EN 60950, EN 61000-6-2, EN 61000-6-3 (* pending)
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# 5 Rail-Mounted Modules - Constant Voltage Sources

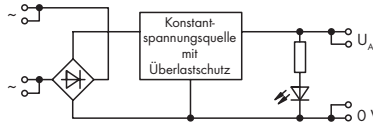
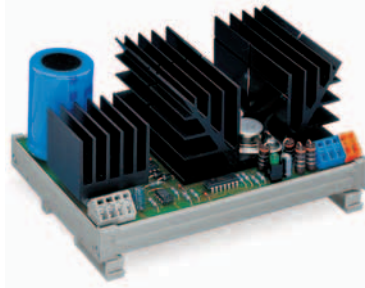
	<p>24 VDC; 3 A Input 27 ... 35 VDC</p> <p>Mounting feet for DIN 35 rail</p>	<p>24 VDC; 3 A Input 24 VAC +10 %, 50 ... 60 Hz</p> <p>Mounting carrier for DIN 35 rail</p>
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Description	Item No.	Pack. Unit
Constant voltage source 24 VDC	289-907	1

Technical Data		
Input voltage	27 ... 35 VDC	24 VAC +10%
Output voltage	24 VDC (± 10 %)	24 VDC (± 10 %)
Nominal output current	3 A	3 A
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Weight	88 g	209 g
Dimensions (mm) W x H x L	78.5 x 39 x 66	140 x 44 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (236 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (236 Series)
Cross sections	0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 (THHN, THWN)	0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 (THHN, THWN)
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
<b>Accessories</b>		
WMB Multi marking system for mounting carrier		see from page 506
Marker strips for mounting carrier		white 709-198 / translucent 709-196

	<p>24 VDC; 5 A                  Input 24 VAC +10 %                  Electronic overload protection                  Output voltage indication by LED</p> <p>Mounting carrier for DIN 35 rail</p>	
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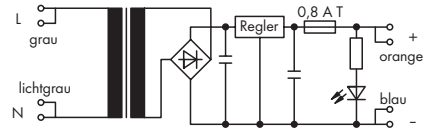
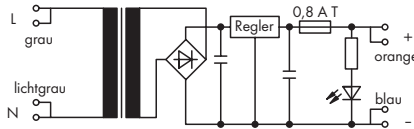
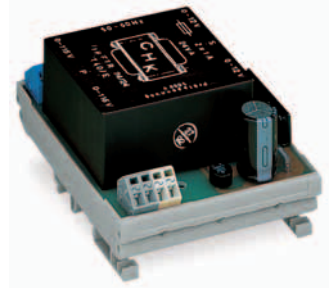
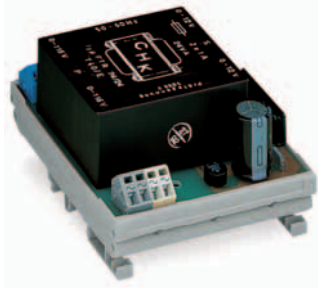


Description	Item No.	Pack. Unit
Constant voltage source 24 VDC	288-801	1

Technical Data		
Input voltage	24 VAC +10%	
Output voltage	24 VDC (± 10 %)	
Nominal output current	5 A	
Overload protection	electronic	
Voltage returns after removal of overload	after 4 s	
Ambient operating temperature	0 °C ... +30 °C	
Weight	600.5 g	
Dimensions (mm) W x H x L	170 x 85 x 108	
	Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP® (236 Series)	
Cross sections	0.08 ... 2.5 mm² / AWG 28 ... 12 (THHN, THWN)	
Stripped lengths	5 ... 6 mm / 0.22 in	
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	
Marker strips for mounting carrier	white 709-198 / translucent 709-196	

# 5 Rail-Mounted Modules - Power Supplies

	<b>115 VAC / 24 VDC; 0.5 A</b> Output voltage indication by LED	<b>230 VAC / 24 VDC; 0.5 A</b> Output voltage indication by LED
	Mounting carrier for DIN 35 rail	Mounting carrier for DIN 35 rail

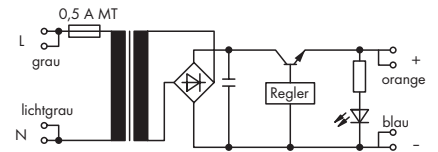
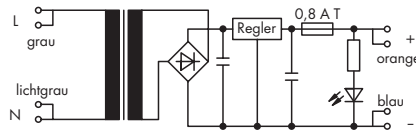
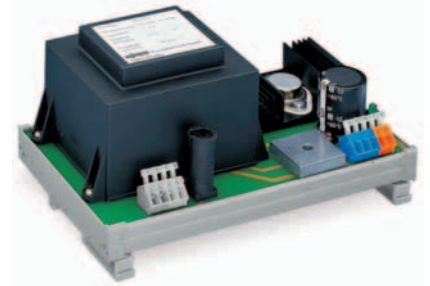
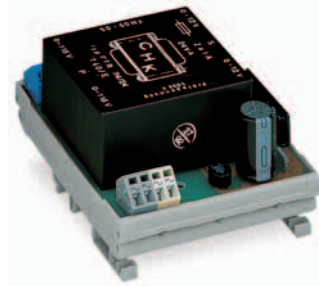


Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Power supply, with universal mounting carrier	<b>288-809</b>	1	<b>288-810</b>	1

**Technical Data**

Nominal input voltage $V_i$ nom	115 VAC	230 VAC
Input voltage range	$\pm 10\%$	$\pm 10\%$
Frequency	50 Hz ... 60 Hz	50 Hz ... 60 Hz
Power consumption at nominal load	30 VA	30 VA
Nominal output voltage $V_o$ nom	24 VDC	24 VDC
Output voltage range	$\pm 4\%$	$\pm 4\%$
Output current $I_o$	0.5 A	0.5 A
Residual ripple	$\leq 10$ mV <sub>ss</sub>	$\leq 10$ mV <sub>ss</sub>
Output fuse	0.8 A slow	0.8 A slow
Ambient operating temperature	0 °C ... +50 °C	0 °C ... +50 °C
Weight	579 g	552 g
Dimensions (mm) W x H x L	77 x 52 x 106	77 x 52 x 106
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (236 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (236 Series)
Cross sections	0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 (THHN, THWN)	0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 (THHN, THWN)
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	Transformer acc. to VDE 0551	Transformer acc. to VDE 0551
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	see from page 506
Marker strips for mounting carrier	white 709-198 / translucent 709-196	white 709-198 / translucent 709-196

	<p>230 VAC / 12 VDC; 0.5 A Output voltage indication by LED</p> <p>Mounting carrier for DIN 35 rail</p>	<p>115 VAC / 24 VDC; 2 A Output voltage indication by LED</p> <p>Mounting carrier for DIN 35 rail</p>
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Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Power supply, with universal mounting carrier	288-808	1	288-813	1

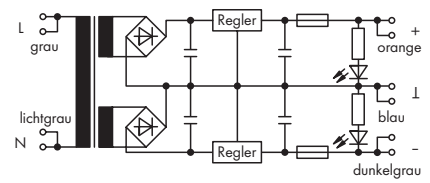
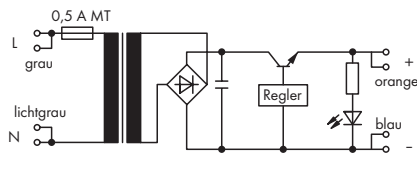
**Technical Data**

Nominal input voltage $V_i$ nom	230 VAC	115 VAC
Input voltage range	$\pm 10\%$	$\pm 10\%$
Frequency	50 Hz ... 60 Hz	50 Hz ... 60 Hz
Power consumption at nominal load	23 VA	80 VA
Nominal output voltage $V_o$ nom	12 VDC	24 VDC
Output voltage range	$\pm 4\%$	$\pm 10\%$
Output current $I_o$	0.5 A	2 A
Residual ripple	$\leq 10$ mVss	$\leq 80$ mVss
Input fuse		0.8 A medium-slow
Output fuse	0.8 A slow	electronic, short-circuit protected
Short-circuit current		2.5 A
Ambient operating temperature	0 °C ... +50 °C	0 °C ... +40 °C
Weight	574 g	1969 g
Dimensions (mm) W x H x L	77 x 52 x 106	182 x 98 x 106
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (236 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (256 Series)
Cross sections	0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 (THHN, THWN)	0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 (THHN, THWN)
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	Transformer acc. to VDE 0551	Transformer acc. to VDE 0551
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	see from page 506
Marker strips for mounting carrier	white 709-198 / translucent 709-196	white 709-198 / translucent 709-196

# 5 Rail-Mounted Modules - Power Supplies

356

	<b>230 VAC / 24 VDC; 2 A</b> <b>Output voltage indication by LED</b>  <b>Mounting carrier for DIN 35 rail</b>	<b>230 VAC / ± 12 VDC; 0.5 A</b> <b>230 VAC / ± 15 VDC; 0.5 A</b> <b>Output voltage indication by LED</b>  <b>Mounting carrier for DIN 35 rail</b>
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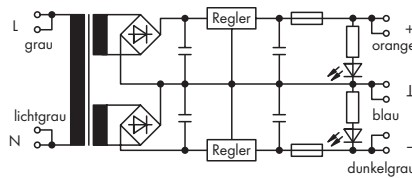
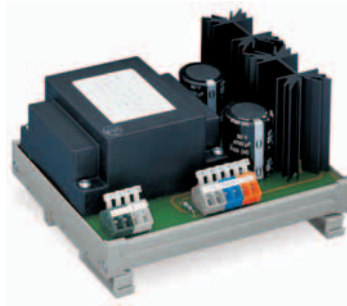


Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Power supply, with universal mounting carrier	288-812	1	288-814	1
			288-815	1

## Technical Data

Nominal input voltage $V_i$ nom	230 VAC	230 VAC
Input voltage range	± 10 %	± 10 %
Frequency	50 Hz ... 60 Hz	50 Hz ... 60 Hz
Power consumption at nominal load	80 VA	27 VA
Nominal output voltage $V_o$ nom	24 VDC	± 12 VDC (288-814)
		± 15 VDC (288-815)
Output voltage range	± 10 %	± 4 %
Output current $I_o$	2 A	2 x 0.5 A
Residual ripple	≤ 80 mV <sub>ss</sub>	≤ 10 mV <sub>ss</sub>
Input fuse	0.5 A medium-slow	
Output fuse	electronic, short-circuit protected	2 x 0.8 A slow
Short-circuit current	2.5 A	
Ambient operating temperature	0 °C ... +40 °C	0 °C ... +40 °C
Weight	1900 g	675 g (288-814)
		665 g (288-815)
Dimensions (mm) W x H x L	182 x 98 x 106	94 x 57 x 106
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (256 Series)	CAGE CLAMP® (256 Series)
Cross sections	0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 (THHN, THWN)	0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 (THHN, THWN)
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	Transformer acc. to VDE 0551	Transformer acc. to VDE 0551
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	see from page 506
Marker strips for mounting carrier	white 709-198 / translucent 709-196	white 709-198 / translucent 709-196

	<p><b>230 VAC / ± 15 VDC;</b>  <b>2 × 1 A short-circuit proof</b>  <b>Output voltage indication by LED</b></p> <p><b>Mounting carrier for DIN 35 rail</b></p>	
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Description	Item No.	Pack. Unit
Power supply, with universal mounting carrier	288-816	1

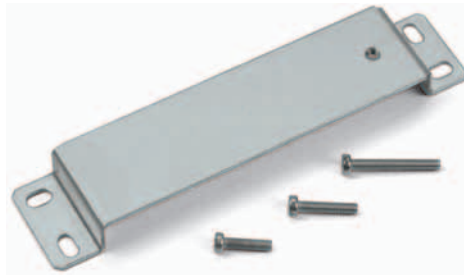
**Technical Data**

Nominal input voltage $V_i$ nom	230 VAC
Input voltage range	± 10 %
Frequency	50 Hz ... 60 Hz
Power consumption at nominal load	53 VA
Nominal output voltage $V_o$ nom	± 15 VDC
Output voltage range	± 4 %
Output current $I_o$	2 × 1 A
Residual ripple	≤ 10 mVss
Short-circuit current	approx. 1.5 A
Ambient operating temperature	0 °C ... +40 °C
Weight	1011 g
Dimensions (mm) W × H × L	138 × 87 × 106
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (256 Series)
Cross sections	0.08 ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 (THHN, THWN)
Stripped lengths	5 ... 6 mm / 0.22 in
Approvals	Transformer acc. to VDE 0551
<b>Accessories</b>	
WMB Multi marking system for mounting carrier	see from page 506
Marker strips for mounting carrier	white 709-198 / translucent 709-196





	<p><b>Wall mounting adapter, for screw fixing of 787-8xx devices on mounting plate or wall without DIN 35 rail.</b></p>	
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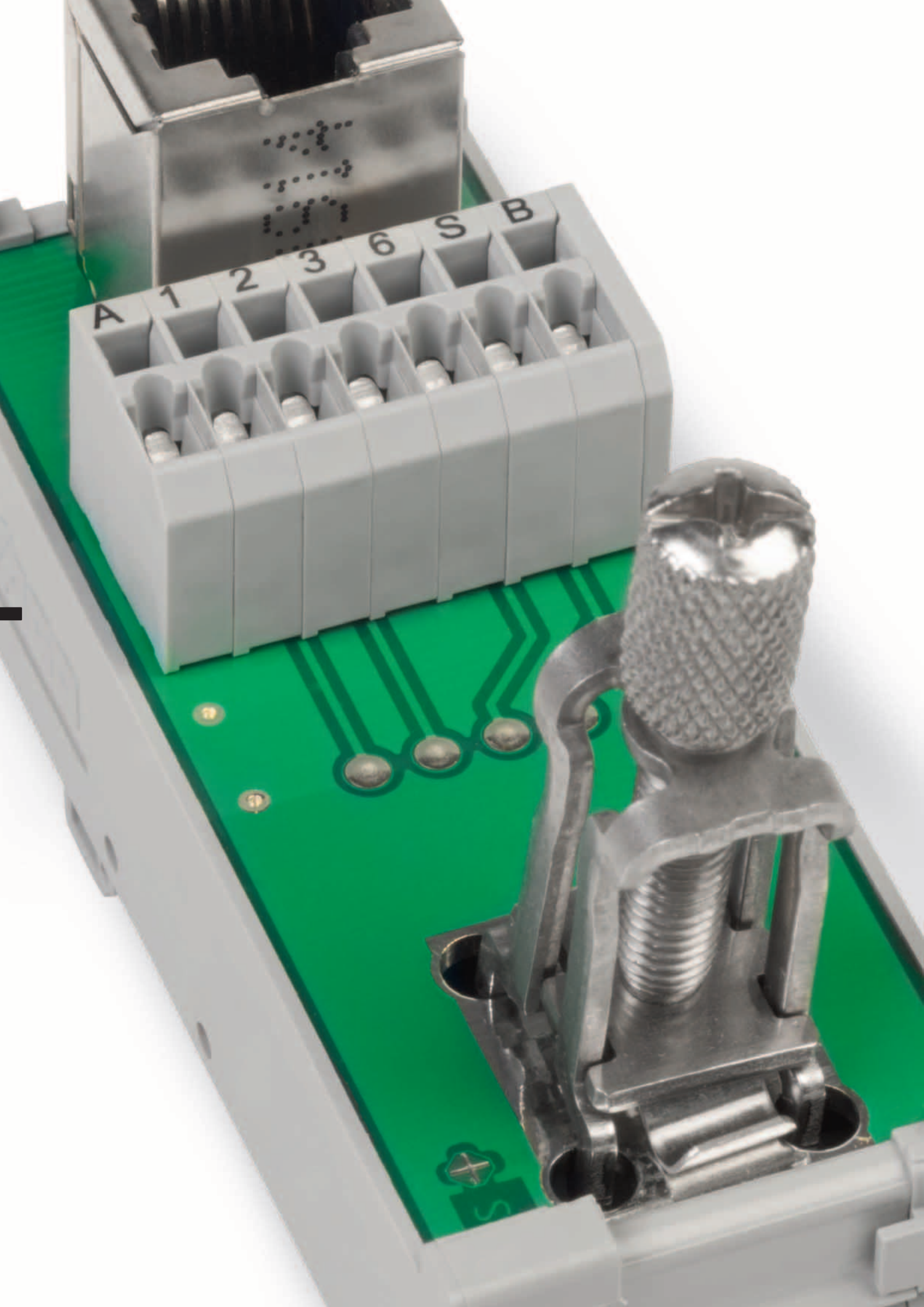
Wall mounting adapter, for screw fixing of 787-8xx devices on mounting plate or wall without DIN 35 rail. The wall mounting adapter replaces the rail support of the 787-8xx device. The adapter is screwed to the 787-8xx device using one of the provided screws.

Description	Item No.	Pack. Unit	
<b>Wall Mount Adapter</b>	<b>787-895</b>	<b>5</b>	

<b>Technical Data</b>		
Material	Galvanized sheet steel	
Dimensions (mm) W x H x L	35 x 15 x 158.5	
Fixing	Fixing holes: 4 slots, 5.3 mm x 9 mm Fixing hole spacing: 143 mm x 19.5 mm	
Included	Wall mounting adapter 1x screw M4 x 16 1x screw M4 x 20 1x screw M4 x 30	







# 6



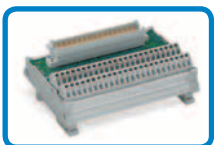
**Interface Modules for D-Sub/HD D-Sub Connectors**  
289 Series

364 - 373



**Interface Modules for Connectors acc. to DIN 41651**  
289 Series

374 - 375



**Interface Modules for Connectors acc. to DIN 41612**  
289 Series

376 - 379



**Interface Modules for RJ-45 Connectors**  
289 Series

380 - 383

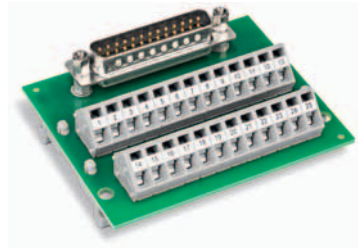
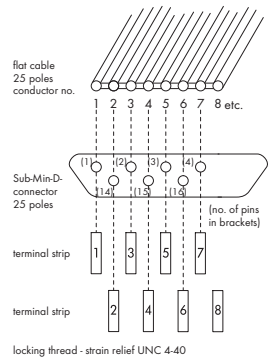


**Connection Modules for Sensors and Actuators**  
289 Series

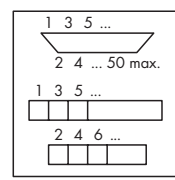
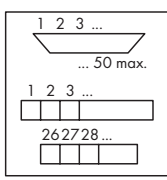
384 - 385

# 6 Interface Modules for D-Sub/HD D-Sub Connectors

	<p><b>Interface module with D-subminiature male connector, for mating connectors with solder connection, mating direction vertical</b></p> <p><b>Mounting carrier for DIN 35 rail</b></p>	<p><b>Interface module with D-subminiature male connector, for mating connectors with IDC, mating direction vertical</b></p> <p><b>Mounting carrier for DIN 35 rail</b></p>
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289-440 to 289-444



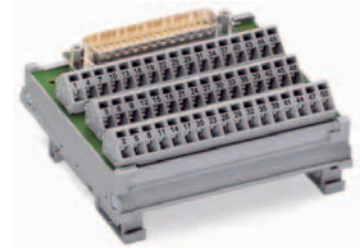
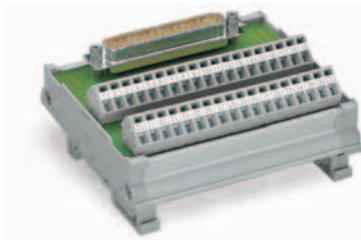
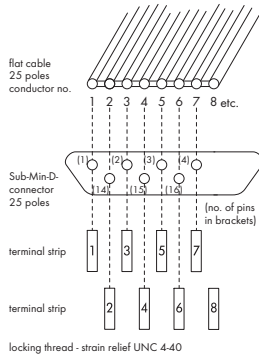
Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	9	38	<b>289-445</b>	1	9	38	<b>289-440</b>	1
	15	53.5	<b>289-446</b>	1	15	53.5	<b>289-441</b>	1
	25	79	<b>289-447</b>	1	25	79	<b>289-442</b>	1
	37	120	<b>289-448</b>	1	37	120	<b>289-443</b>	1
	50	157	<b>289-449</b>	1	50	157	<b>289-444</b>	1

## Technical Data

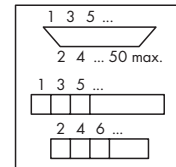
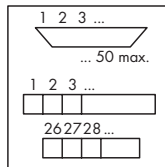
Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	1 A	1 A
Connector contact	Au over Ni	Au over Ni
Contact resistance	≤ 30 mΩ	≤ 30 mΩ
Performance level	2 / 200 mating cycles	2 / 200 mating cycles
Nominal voltage to EN 60664-1	50 V / 0.8 kV / 2	50 V / 0.8 kV / 2
Ambient operating temperature	-20 °C ... +50 °C	-20 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L, incl. mounting carrier or feet	W x 19 x 63.5	W x 19 x 63.5
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in



	<b>Interface module with D-subminiature male connector, for mating connectors with solder connection, mating direction vertical</b>  <b>Mounting carrier for DIN 35 rail</b>	<b>Interface module with D-subminiature male connector, for mating connectors with IDC, mating direction vertical</b>  <b>Mounting carrier for DIN 35 rail</b>
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289-540 to 289-544



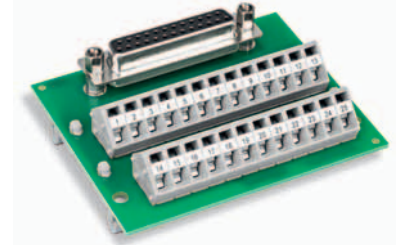
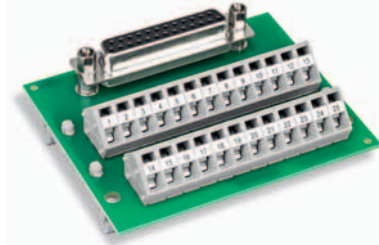
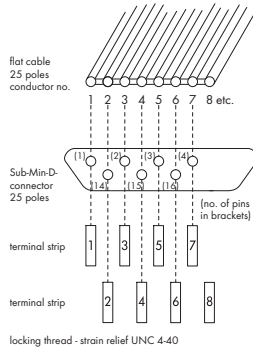
Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	9	38	289-545	1	9	38	289-540	1
	15	46	289-546	1	15	46	289-541	1
	25	72	289-547	1	25	72	289-542	1
	37	102	289-548	1	37	102	289-543	1
	50	94	289-549	1	50	94	289-544	1

**Technical Data**

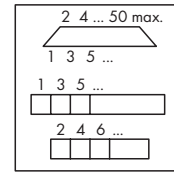
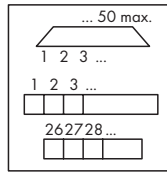
Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	2 A	2 A
Connector contact	Au over Ni	Au over Ni
Contact resistance	≤ 30 mΩ	≤ 30 mΩ
Performance level	2 / 200 mating cycles	2 / 200 mating cycles
Nominal voltage to EN 60664-1	125 V / 0.8 kV / 2	125 V / 0.8 kV / 2
Ambient operating temperature	-20 °C ... +50 °C	-20 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L, incl. mounting carrier or feet	W x 34 x 85	W x 34 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

# 6 Interface Modules for D-Sub/HD D-Sub Connectors

	<p><b>Interface module with D-subminiature female connector, for mating connectors with solder connection, mating direction vertical</b></p> <p><b>Mounting carrier for DIN 35 rail</b></p>	<p><b>Interface module with D-subminiature female connector, for mating connectors with IDC, mating direction vertical</b></p> <p><b>Mounting carrier for DIN 35 rail</b></p>
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289-450 to 289-454

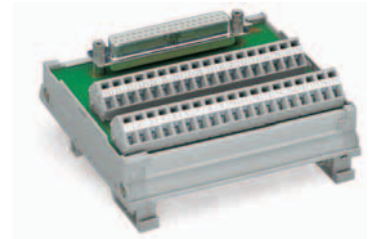
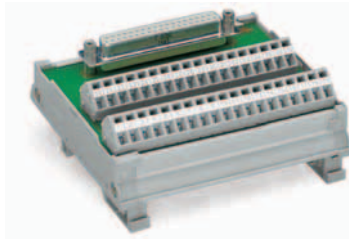
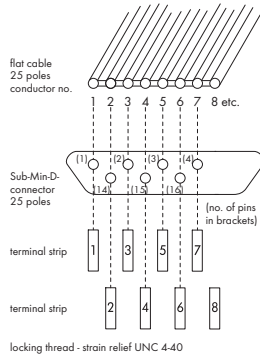


Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	9	38	<b>289-455</b>	1	9	38	<b>289-450</b>	1
	15	53.5	<b>289-456</b>	1	15	53.5	<b>289-451</b>	1
	25	79	<b>289-457</b>	1	25	79	<b>289-452</b>	1
	37	120	<b>289-458</b>	1	37	120	<b>289-453</b>	1
	50	157	<b>289-459</b>	1	50	157	<b>289-454</b>	1

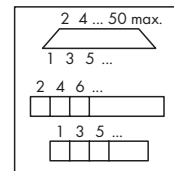
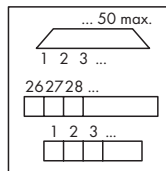
## Technical Data

		125 V AC / DC		125 V AC / DC	
Operating voltage		125 V AC / DC		125 V AC / DC	
Nominal current		1 A		1 A	
Connector contact		Au over Ni		Au over Ni	
Contact resistance		≤ 30 mΩ		≤ 30 mΩ	
Performance level		2 / 200 mating cycles		2 / 200 mating cycles	
Nominal voltage to EN 60664-1		50 V / 0.8 kV / 2		50 V / 0.8 kV / 2	
Ambient operating temperature		-20 °C ... +50 °C		-20 °C ... +50 °C	
Storage temperature		-40 °C ... +70 °C		-40 °C ... +70 °C	
Dimensions (mm) W x H x L, incl. mounting carrier or feet		W x 19 x 63.5		W x 19 x 63.5	
Wire connection		Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)		Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)	
Cross sections		0.08 mm² ... 2.5 mm² / AWG 28 ... 12		0.08 mm² ... 2.5 mm² / AWG 28 ... 12	
Strip length		5 ... 6 mm / 0.22 in		5 ... 6 mm / 0.22 in	

	<p><b>Interface module with D-subminiature female connector, for mating connectors with solder connection, mating direction vertical</b></p> <p><b>Mounting carrier for DIN 35 rail</b></p>	<p><b>Interface module with D-Subminiature female connector, for mating connectors with IDC, mating direction vertical</b></p> <p><b>Mounting carrier for DIN 35 rail</b></p>
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289-550 to 289-554



Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	9	38	289-555	1	9	38	289-550	1
	15	46	289-556	1	15	46	289-551	1
	25	72	289-557	1	25	72	289-552	1
	37	102	289-558	1	37	102	289-553	1
	50	94	289-559	1	50	94	289-554	1

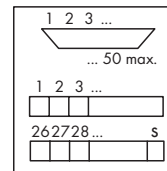
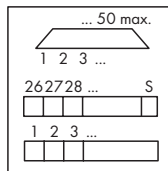
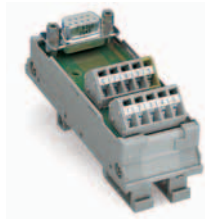
**Technical Data**

Technical Data	Interface module with solder connection	Interface module with IDC connection
Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	2 A	2 A
Connector contact	Au over Ni	Au over Ni
Contact resistance	≤ 30 mΩ	≤ 30 mΩ
Performance level	2 / 200 mating cycles	2 / 200 mating cycles
Nominal voltage to EN 60664-1	125 V / 0.8 kV / 2	125 V / 0.8 kV / 2
Ambient operating temperature	-20 °C ... +50 °C	-20 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L, incl. mounting carrier or feet	W x 34 x 85	W x 34 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

# 6 Interface Modules

for D-Sub/HD D-Sub Connectors

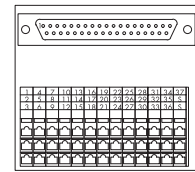
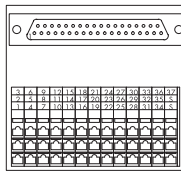
	<p><b>Interface module with D-subminiature female connector, for mating connectors with solder connection, mating direction vertical, shield (screen) connection</b> Mounting carrier for DIN 35 rail</p>	<p><b>Interface module with D-subminiature male connector, for mating connectors with solder connection, mating direction vertical, shield (screen) connection</b> Mounting carrier for DIN 35 rail</p>
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Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	9	33	<b>289-575</b>	1	9	38.5	<b>289-585</b>	1
	15	43	<b>289-576</b>	1	15	46	<b>289-586</b>	1
	25	68.5	<b>289-577</b>	1	25	71.5	<b>289-587</b>	1
	37	99	<b>289-578</b>	1	37	102	<b>289-588</b>	1

Technical Data			
Operating voltage	125 V AC / DC		125 V AC / DC
Nominal current	2 A		2 A
Connector contact	Au over Ni		Au over Ni
Contact resistance	≤ 30 mΩ		≤ 30 mΩ
Performance level	2 / 200 mating cycles		2 / 200 mating cycles
Nominal voltage to EN 60664-1	125 V / 0.8 kV / 2		125 V / 0.8 kV / 2
Ambient operating temperature	-20 °C ... +50 °C		-20 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C		-40 °C ... +70 °C
Dimensions (mm) W x H x L, incl. mounting carrier or feet	W x 34 x 85		W x 34 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)		Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12		0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in		5 ... 6 mm / 0.22 in
<b>Accessories</b>			
WMB Multi marking system for mounting carrier	see from page 506		see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197		white 709-198 / transparent 709-197

	<p><b>Interface module with D-subminiature female connector, for mating connectors with solder connection, mating direction vertical, shield (screen) connection</b> Mounting carrier for DIN 35 rail</p>	<p><b>Interface module with D-subminiature male connector, for mating connectors with solder connection, mating direction vertical, shield (screen) connection</b> Mounting carrier for DIN 35 rail</p>
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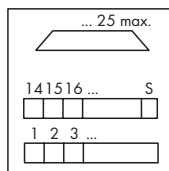
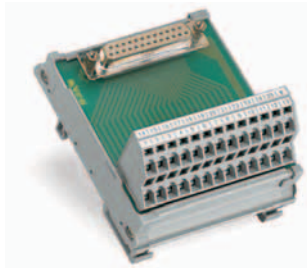
Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	25	56	289-623	1	25	56	289-620	1
	37	74	289-624	1	37	74	289-621	1

**Technical Data**

Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	2 A	2 A
Connector contact	Au over Ni	Au over Ni
Contact resistance	≤ 30 mΩ	≤ 30 mΩ
Performance level	2 / 200 mating cycles	2 / 200 mating cycles
Nominal voltage to EN 60664-1	125 V / 0.8 kV / 2	125 V / 0.8 kV / 2
Mounting direction	vertical	
Pull relief stud bolt	UNC 4-40	
Ambient operating temperature	-20 °C ... +55 °C	-20 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L, incl. mounting carrier or feet	W x 62 x 85	W x 62 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 737 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 737 Series)
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

Interface module  
with D-subminiature female connector  
with shield (screen) connection

Mounting carrier for DIN 35 rail

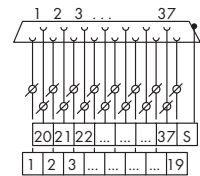
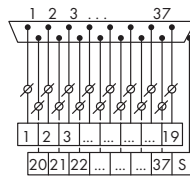


Description	No. of Poles	Width	Item No.	Pack. Unit
Interface module	9	33	<b>289-650</b>	1
	25	68.5	<b>289-652</b>	1

#### Technical Data

Operating voltage	125 V AC / DC
Nominal current	2 A
Connector contact	Au over Ni
Contact resistance	≤ 30 mΩ
Performance level	2 / 200 mating cycles
Nominal voltage to EN 60664-1	125 V / 0.8 kV / 2
Mounting direction	vertical
Pull relief stud bolt	UNC 4-40
Ambient operating temperature	-20 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C
Dimensions (mm) W x H x L, incl. mounting carrier or feet	W x 48 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 736 Series)
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in
<b>Accessories</b>	
WMB Multi marking system for mounting carrier	see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197

	<p><b>Interface module with D-subminiature male connector</b></p> <p>Mounting carrier for DIN 35 rail</p>	<p><b>Interface module with D-subminiature female connector</b></p> <p>Mounting carrier for DIN 35 rail</p>
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1 solder pin per pole is available for testing and patching (except for shield (screen) contact)

Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
<b>Interface module</b>	9	33.5	<b>289-720</b>	1	9	33.5	<b>289-725</b>	1
	15	43.5	<b>289-721</b>	1	15	43.5	<b>289-726</b>	1
	25	69	<b>289-722</b>	1	25	69	<b>289-727</b>	1
	37	99.5	<b>289-723</b>	1	37	99.5	<b>289-728</b>	1

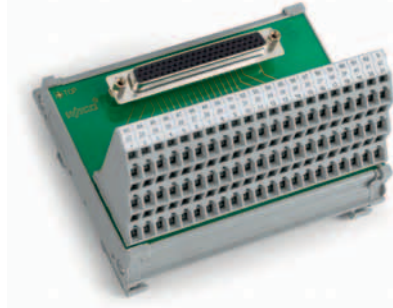
**Technical Data**

Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	2 A	2 A
Connector contact	Au over Ni	Au over Ni
Contact resistance	≤ 30 mΩ	≤ 30 mΩ
Performance level	2 / 200 mating cycles	2 / 200 mating cycles
Nominal voltage to EN 60664-1	50 V / 0.8 kV / 2	50 V / 0.8 kV / 2
Mounting direction	vertical	vertical
Pull relief stud bolt	UNC 4-40	UNC 4-40
Ambient operating temperature	-20 °C ... +50 °C	-20 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L, incl. mounting carrier or feet	W x 48 x 85	W x 48 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 736 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 736 Series)
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

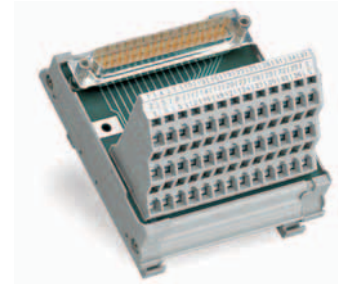
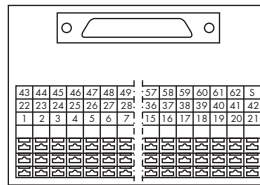


# 6 Interface Modules for D-Sub/HD D-Sub Connectors

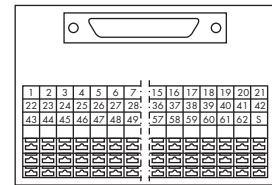
	<b>Interface module with HD D-sub female connector,  mounting carrier for DIN 35 rail</b>	<b>Interface module with HD D-sub male connector,  mounting carrier for DIN 35 rail</b>
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Picture: 289-708  
Drawing: 289-708



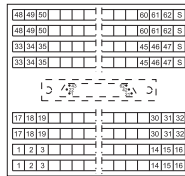
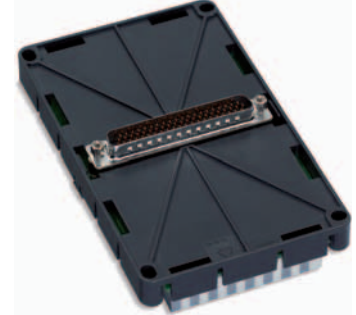
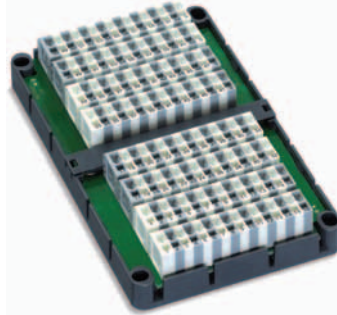
Similar to picture  
Drawing: 289-710



Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	15	35	<b>289-713</b>	1	15	35	<b>289-714</b>	1
	44	79	<b>289-707</b>	1				
	62	108	<b>289-708</b>	1	62	62	<b>289-710</b>	1

Technical Data			
Operating voltage	125 V AC/DC		125 V AC/DC
Nominal current	1 A		1 A
Connector contact	Au over Ni		Au over Ni
Contact resistance	≤ 15 mΩ		≤ 15 mΩ
Performance level	3 / 50 mating cycles		3 / 50 mating cycles
Nominal voltage to EN 60664-1	125 V / 0.8 kV / 2		125 V / 0.8 kV / 2
Mounting direction	vertical		vertical
Pull relief stud bolt	UNC 4-40		UNC 4-40
Ambient operating temperature	-20 °C ... +55 °C		-20 °C ... +55 °C
Storage temperature	-40 °C ... +70 °C		-40 °C ... +70 °C
Dimensions (mm) W x H x L, incl. mounting carrier or feet	W x 62 x 85		W x 62 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 737 Series)		Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 737 Series)
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12 (THHN, THWN)		0.08 mm² ... 2.5 mm² / AWG 28 ... 12 (THHN, THWN)
Strip length	5 ... 6 mm / 0.22 in		5 ... 6 mm / 0.22 in
Standards/specifications	VDE 0660, EN 60947		VDE 0660, EN 60947
<b>Accessories</b>	WMB Multi marking system for mounting carrier		see from page 506
	Marker strips for mounting carrier		White 709-198 / Transparent 709-197

	<b>Interface module with high density D-sub header for 19" racks</b>	
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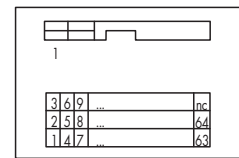
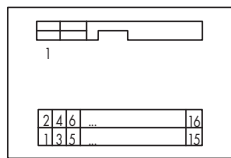
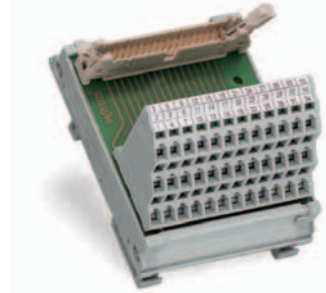
Description	No. of Poles	Width	Item No.	Pack. Unit
Interface module for 19" racks	62	80	289-822	1

Technical Data	
Operating voltage	125 V AC / DC
Nominal current	1 A
Connector contact	0.8 µm Au over Ni
Contact resistance	≤ 10 mΩ
Performance level	2 / 400 mating cycles
Nominal voltage to EN 60664-1	125 V / 0.8 kV / 2
Touch-proof terminal strip	IP20
Touch-proof HD D-sub header	IP00
Dimensions (mm) W x H x L, incl. mounting carrier or feet	W x 27 x 132
Wire connection	CAGE CLAMP® (WAGO 739 Series)
Cross sections	0.08 mm² ... 1.5 mm² / AWG 28 ... 14 * * (AWG14: THHN, THWN)
Strip length	5 ... 6 mm / 0.22 in
Mounting direction	vertical
Pull relief stud bolt	UNC 4-40
Ambient operating temperature	-20 °C ... +55 °C
Storage temperature	-40 °C ... +70 °C
Standards/specifications	EN 60664

# Interface Modules

for Connectors acc. to DIN 41651

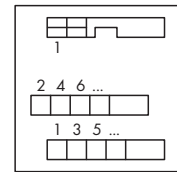
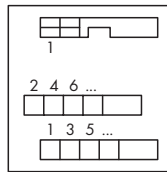
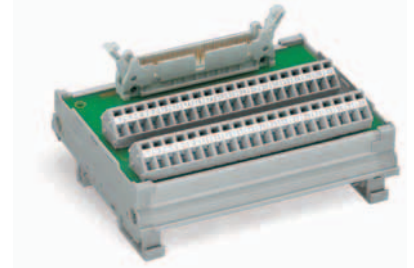
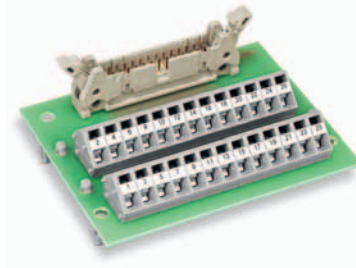
	<b>Interface module for connectors acc. to DIN 41651</b>  <b>Mounting carrier for DIN 35 rail</b>	<b>Interface module for connectors acc. to DIN 41651</b>  <b>Mounting carrier for DIN 35 rail</b>
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Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	10	35	289-611	1	20	47	289-614	1
	14	40	289-612	1	26	55	289-615	1
	16	45	289-613	1	34	65	289-616	1
					40	74	289-617	1
					50	88	289-618	1
					64	114	289-619	1

Technical Data		
Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	1 A	1 A
Connector contact	Au over Ni	Au over Ni
Performance level	3 / 50 mating cycles	3 / 50 mating cycles
Nominal voltage to EN 60664-1	125 V / 0.8 kV / 2	125 V / 0.8 kV / 2
Mounting direction	vertical	vertical
Ambient operating temperature	-20 °C ... +55 °C	-20 °C ... +55 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) W x H x L, incl. mounting carrier or feet	W x 48 x 85	W x 62 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 736 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 737 Series)
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Standards/specifications	IEC 60603-1 / DIN 41651 Part 1 and 2	IEC 60603-1 / DIN 41651 Part 1 and 2
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

	<p><b>Interface module for connectors acc. to DIN 41651</b></p> <p><b>Mounting carrier for DIN 35 rail</b></p>	<p><b>Interface module for connectors acc. to DIN 41651</b></p> <p><b>Mounting carrier for DIN 35 rail</b></p>
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Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	10	41	289-401	1	10	38	289-501	1
	14	51.5	289-402	1	14	43	289-502	1
	16	56.5	289-403	1	16	46	289-503	1
	20	66.5	289-404	1	20	53.5	289-504	1
	26	81	289-405	1	26	71	289-505	1
	34	102	289-406	1	34	94	289-506	1
	40	126	289-407	1	40	114	289-507	1
	50	151	289-408	1	50	132	289-508	1
	64	187	289-409	1	64	170	289-509	1
					64	120	289-510	1

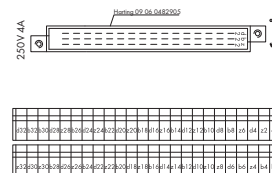
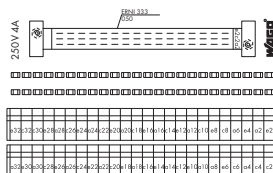
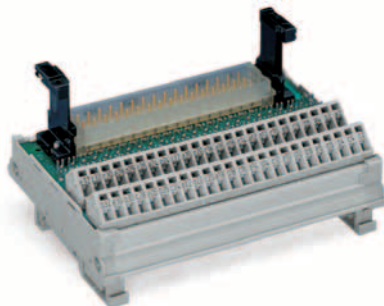
**Technical Data**

Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	1 A	1 A
Connector contact	Au over Ni	Au over Ni
Performance level	3 / 50 mating cycles	3 / 50 mating cycles
Nominal voltage to EN 60664-1	50 V / 0.8 kV / 2	125 V / 0.8 kV / 2
Dimensions (mm) W x H x L, incl. mounting carrier or feet	W x 28 x 63.5	W x 36 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
<b>Accessories</b>		
WMB Multi marking system for mounting carrier		see from page 506
Marker strips for mounting carrier		white 709-198 / transparent 709-197

# Interface Modules

for Connectors acc. to DIN 41612

	<p><b>Interface module</b> for connectors acc. to DIN 41 612, with male connector, type E, with strain relief device for ERNI mating connector Mounting carrier for DIN 35 rail</p>	<p><b>Interface module</b> for connectors acc. to DIN 41 612, with male connector, type F, with strain relief device for Harting mating connector Mounting carrier for DIN 35 rail</p>
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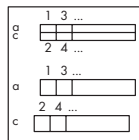
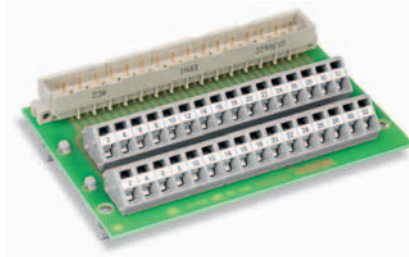


Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	48	128	289-434	1	48	128	289-436	1

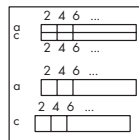
### Technical Data

	289-434	289-436
Operating voltage	250 V AC / DC	250 V AC / DC
Nominal current	4 A	4 A
Connector contact	Copper alloy, gold plated	Copper alloy, gold plated
Contact resistance	≤ 16 mΩ	≤ 16 mΩ
Performance level	2 / 400 mating cycles	1 / 500 mating cycles
Nominal voltage to EN 60664-1	50 V / 1.5 kV / 2	50 V / 1.5 kV / 2
Dimensions (mm) W x H x L, incl. mounting carrier or feet	W x 55 x 85	W x 39 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

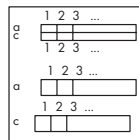
	<p><b>Interface module for connectors acc. to DIN 41 612, with male connector, type C, mating direction vertical</b></p> <p><b>Mounting carrier for DIN 35 rail</b></p>	<p><b>Interface module for connectors acc. to DIN 41 612, with male connector, type C, mating direction horizontal</b></p> <p><b>Mounting carrier for DIN 35 rail</b></p>
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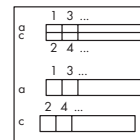
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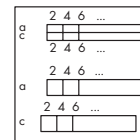
289-424



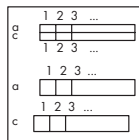
289-426



289-423



289-425



289-427

Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module, for connector with IDC	64	187	<b>289-422</b>	1	64	187	<b>289-423</b>	1
Interface module, for connector with solder contact	32	97	<b>289-424</b>	1	32	97	<b>289-425</b>	1
Interface module, for connector with solder contact	64	187	<b>289-426</b>	1	64	187	<b>289-427</b>	1

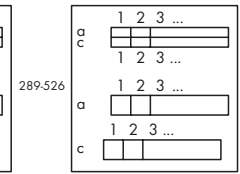
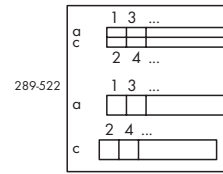
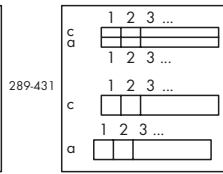
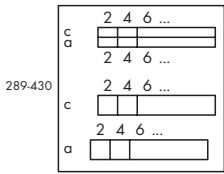
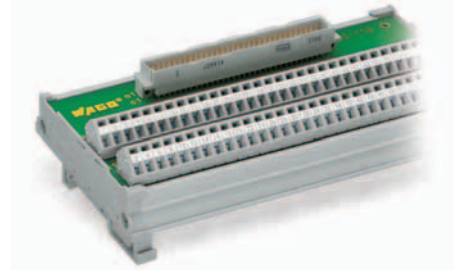
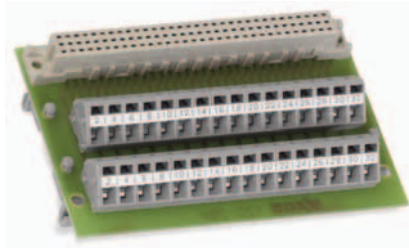
**Technical Data**

	289-422, 289-424, 289-426	289-423, 289-425, 289-427
Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	1 A	1 A
Connector contact	Copper alloy, gold plated	Copper alloy, gold plated
Contact resistance	≤ 20 mΩ	≤ 20 mΩ
Performance level	2 / 400 mating cycles	2 / 400 mating cycles
Nominal voltage to EN 60664-1	50 V / 0.8 kV / 2	50 V / 0.8 kV / 2
Dimensions (mm) W x H x L, incl. mounting carrier or feet	W x 21 x 63.5	W x 21 x 63.5
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

# 6 Interface Modules

for Connectors acc. to DIN 41612

	<p><b>Interface module</b> for connectors acc. to DIN 41 612, with female connector, type C, mating direction vertical, for male connector with solder contact Mounting carrier for DIN 35 rail</p>	<p><b>Interface module</b> for connectors acc. to DIN 41 612, with female connector, type C, mating direction vertical, for female connector with IDC connection or with solder contact Mounting carrier for DIN 35 rail</p>
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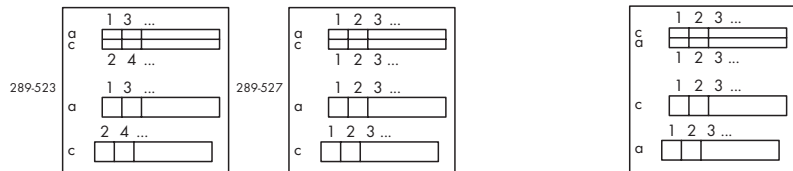


Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	32	97	<b>289-430</b>	1	64	171	<b>289-522</b>	1
	64	187	<b>289-431</b>	1	64	171	<b>289-526</b>	1

Technical Data			
Operating voltage	125 V AC / DC		125 V AC / DC
Nominal current	1 A		1 A
Connector contact	Copper alloy, gold plated		Copper alloy, gold plated
Contact resistance	≤ 20 mΩ		≤ 20 mΩ
Performance level	2 / 400 mating cycles		2 / 400 mating cycles
Nominal voltage to EN 60664-1	50 V / 0.8 kV / 2		125 V / 0.8 kV / 2
Dimensions (mm) W x H x L, incl. mounting carrier or feet	W x 21 x 63.5		W x 34 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)		Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12		0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in		5 ... 6 mm / 0.22 in
<b>Accessories</b>			
WMB Multi marking system for mounting carrier	see from page 506		see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197		white 709-198 / transparent 709-197



	<p><b>Interface module</b> for connectors acc. to DIN 41 612, with female connector, type C, mating direction horizontal, for female connector with IDC connection or with solder contact</p>	<p><b>Interface module</b> for connectors acc. to DIN 41 612, with female connector, type C, mating direction vertical, for male connector with solder contact Mounting carrier for DIN 35 rail</p>
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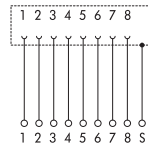
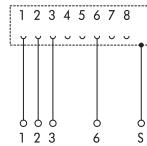
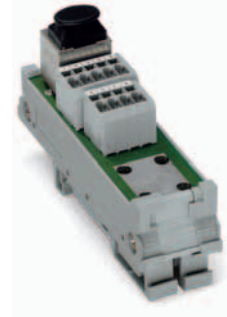


Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	64	171	289-523	1	64	171	289-531	1
	64	171	289-527	1				

Technical Data		
Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	1 A	1 A
Connector contact	Copper alloy, gold plated	Copper alloy, gold plated
Contact resistance	≤ 20 mΩ	≤ 20 mΩ
Performance level	2 / 400 mating cycles	2 / 400 mating cycles
Nominal voltage to EN 60664-1	125 V / 0.8 kV / 2	125 V / 0.8 kV / 2
Dimensions (mm) W x H x L, incl. mounting carrier or feet	W x 34 x 85	W x 34 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

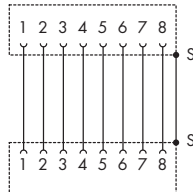
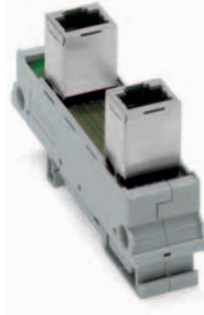
## Interface Modules for RJ-45 Connectors

	<p><b>RJ-45 interface module with shield clamping unit for WAGO shield (screen) clamping saddle Mounting carrier for DIN 35 rail</b></p>	<p><b>RJ-45 interface module with shield clamping unit for WAGO shield (screen) clamping saddle Mounting carrier for DIN 35 rail</b></p>
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Description	Item No.	Pack. Unit	Item No.	Pack. Unit
RJ-45 Interface module	289-174	1	289-175	1
<b>Technical Data</b>				
Connecting cable	min. CAT5		min. CAT5	
Max. transmission length	100 m		100 m	
Connector	RJ-45 shielded		RJ-45 shielded	
Min. mating cycles	500		500	
Current load	≤ 1.5 A		≤ 1.5 A	
Insulation resistance	> 500 MΩ		> 500 MΩ	
Dielectric strength contact-contact	1 kV <sub>rms</sub>		1 kV <sub>rms</sub>	
Contact resistance	typ. < 20 mΩ		typ. < 20 mΩ	
Ambient operating temperature	-40 °C ... +85 °C (actuation: -35 °C ... +85 °C)		-40 °C ... +85 °C (actuation: -35 °C ... +85 °C)	
Dimensions (mm) W x H x L, incl. mounting carrier or feet	24 x 40 x 85		24 x 40 x 85	
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 739 Series)		Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 739 Series)	
Cross sections	0.08 mm² ... 1.5 mm² / AWG 28 ... 14		0.08 mm² ... 1.5 mm² / AWG 28 ... 14	
Strip length	5 ... 6 mm / 0.22 in		5 ... 6 mm / 0.22 in	
Standards/specifications	ISO/IEC 11801: 2002-09; EN 55022		ISO/IEC 11801: 2002-09; EN 55022	
<b>Accessories</b>				
WMB Multi marking system for mounting carrier	see from page 506		see from page 506	
Marker strips for mounting carrier	white 709-198 / transparent 709-197		white 709-198 / transparent 709-197	
WAGO shield (screen) clamping saddle	790-108 (11 mm wide; cable diameter up to 8 mm)		790-108 (11 mm wide; cable diameter up to 8 mm)	

	<p><b>RJ-45 interface module</b>  <b>Mounting carrier for DIN 35 rail</b></p>	
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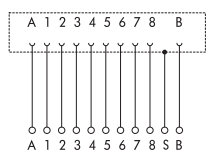
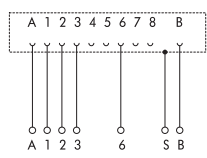
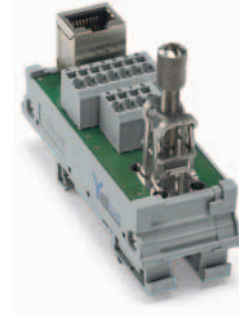
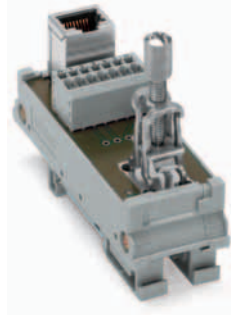


Description	Item No.	Pack. Unit
RJ-45 Interface module	289-172	1

Technical Data		
Connecting cable	min. CAT5	
Max. transmission length	100 m	
Connector	RJ-45 shielded	
Min. mating cycles	500	
Current load	≤ 1.5 A	
Voltage load	30V AC / 42 V DC	
Insulation resistance	> 500 MΩ	
Dielectric strength contact-contact	1 kV <sub>rms</sub>	
Contact resistance typ.	< 20mΩ	
Ambient operating temperature	-40 °C ... +85 °C	
Dimensions (mm) W x H x L, incl. mounting carrier or feet	20.5 x 51 x 85	
Standards/specifications	Height from upper-edge of DIN 35 rail ISO/IEC 11801: 2002-09; EN 55022	
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	
Marker strips for mounting carrier	white 709-198 / transparent 709-197	

# Interface Modules for RJ-45 Connectors

	<b>RJ-45 interface module with power contacts and shield clamping unit for WAGO shield (screen) clamping saddle</b> <b>Mounting carrier for DIN 35 rail</b>	<b>RJ-45 interface module with power contacts and shield carrier for WAGO shield clamping saddle</b> <b>Mounting carrier for DIN 35 rail</b>
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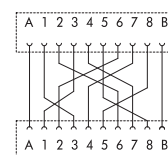
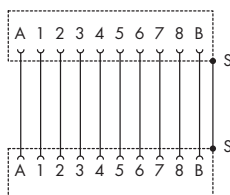
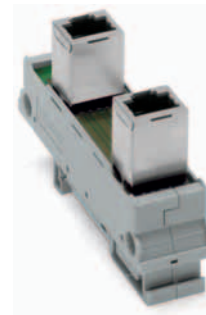


Description	Item No.	Pack. Unit	Item No.	Pack. Unit
RJ-45 Interface module with power contacts	289-178	1	289-179	1

### Technical Data

	Item No. 289-178	Item No. 289-179
Connecting cable	min. CAT5	min. CAT5
Max. transmission length	100 m	100 m
Connector	RJ-45 shielded, with 2 additional power contacts	RJ-45 shielded, with 2 additional power contacts
Min. mating cycles	1000	1000
Current load	≤ 2.1 A	≤ 2.1 A
Voltage load	35 V AC / 50 V DC	35 V AC / 50 V DC
Insulation resistance	> 500 MΩ	> 500 MΩ
Dielectric strength contact-contact	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Contact resistance	typ. 40 mΩ	< 40 mΩ
WAGO shield (screen) clamping saddle	11 mm wide; cable diameter up to 8 mm	790-108 (11 mm wide; up to 8 mm cable diameter)
Ambient operating temperature	-40 °C ... +85 °C (actuation: -35 °C ... +85 °C)	-40 °C ... +85 °C (actuation: -35 °C ... +85 °C)
Dimensions (mm) W x H x L, incl. mounting carrier or feet	30 x 67 x 85	30 x 67 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 739 Series)
Cross sections	0.08 mm² ... 1.5 mm² / AWG 28 ... 14	0.08 mm² ... 1.5 mm² / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Standards/specifications	ISO/IEC 11801: 2002-09; EN 55022	ISO/IEC 11801: 2002-09; EN 55022
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197	

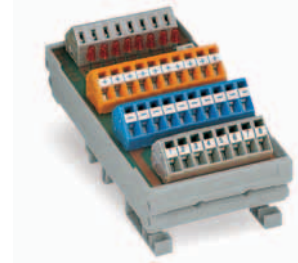
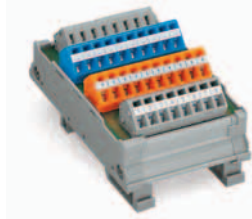
	<b>RJ-45 interface module with power contacts</b> <b>Mounting carrier for DIN 35 rail</b>	<b>RJ-45 interface module with power contacts</b> <b>cross-over connection</b> <b>Mounting carrier for DIN 35 rail</b>
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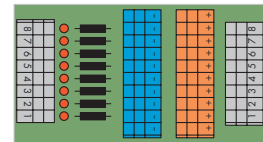
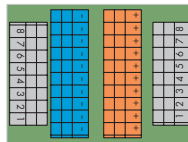
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
RJ-45 Interface module with power contacts	289-176	1	289-177	1

Technical Data				
Connecting cable	min. CAT5		min. CAT5	
Max. transmission length	100 m		100 m	
Connector	RJ-45 shielded, with 2 additional power contacts		RJ-45 shielded, with 2 additional power contacts	
Min. mating cycles	1000		1000	
Current load	≤ 2.1 A		≤ 2.1 A	
Voltage load	35 V AC / 50 V DC		35 V AC / 50 V DC	
Insulation resistance	> 500 MΩ		> 500 MΩ	
Dielectric strength contact-contact	1 kV <sub>rms</sub>		1 kV <sub>rms</sub>	
Contact resistance typ.	< 40mΩ		typ. < 40 mΩ	
Ambient operating temperature	-40 °C ... +85 °C		-40 °C ... +85 °C	
Dimensions (mm) W x H x L, incl. mounting carrier or feet	30 x 51 x 85		30 x 51 x 85	
Standards/specifications	Height from upper-edge of DIN 35 rail ISO/IEC 11801: 2002-09; EN 55022		Height from upper-edge of DIN 35 rail ISO/IEC 11801: 2002-09; EN 55022	
<b>Accessories</b>				
WMB Multi marking system for mounting carrier	see from page 506		see from page 506	
Marker strips for mounting carrier	white 709-198 / transparent 709-197		white 709-198 / transparent 709-197	

	Connection module for 8 x 3-conductor sensors	Connection module for 8 x 3-conductor sensors LED indicator for positive or negative switching
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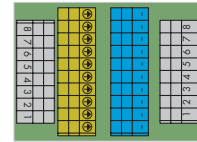
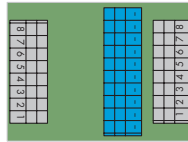
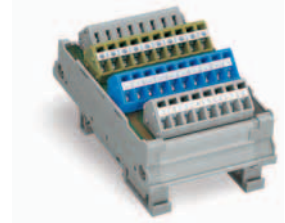
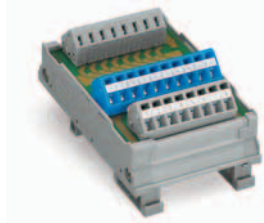
Graphic 289-665



Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Connection module	289-664	1	289-665	1
			289-666	1

Technical Data				
Operating voltage	125 V AC/DC		24 V DC (± 10 %)	
Max. current per connection	1 A		1 A	
Max. total current	8 A		8 A	
Power consumption LED			5.2 mA	
Nominal voltage to EN 60664-1	125 V / 1.5 kV / 2			
Dimensions (mm) W x H x L, incl. mounting carrier or feet	56 x 34 x 85		56 x 34 x 105	
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)		Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)	
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12		0.08 mm² ... 2.5 mm² / AWG 28 ... 12	
Strip length	5 ... 6 mm / 0.22 in		5 ... 6 mm / 0.22 in	
<b>Accessories</b>				
WMB Multi marking system for mounting carrier	see from page 506		see from page 506	
Marker strips for mounting carrier	white 709-198 / transparent 709-197		white 709-198 / transparent 709-197	

	Connection module for 8 actuators	Connection module for 8 actuators with shield (screen) connection
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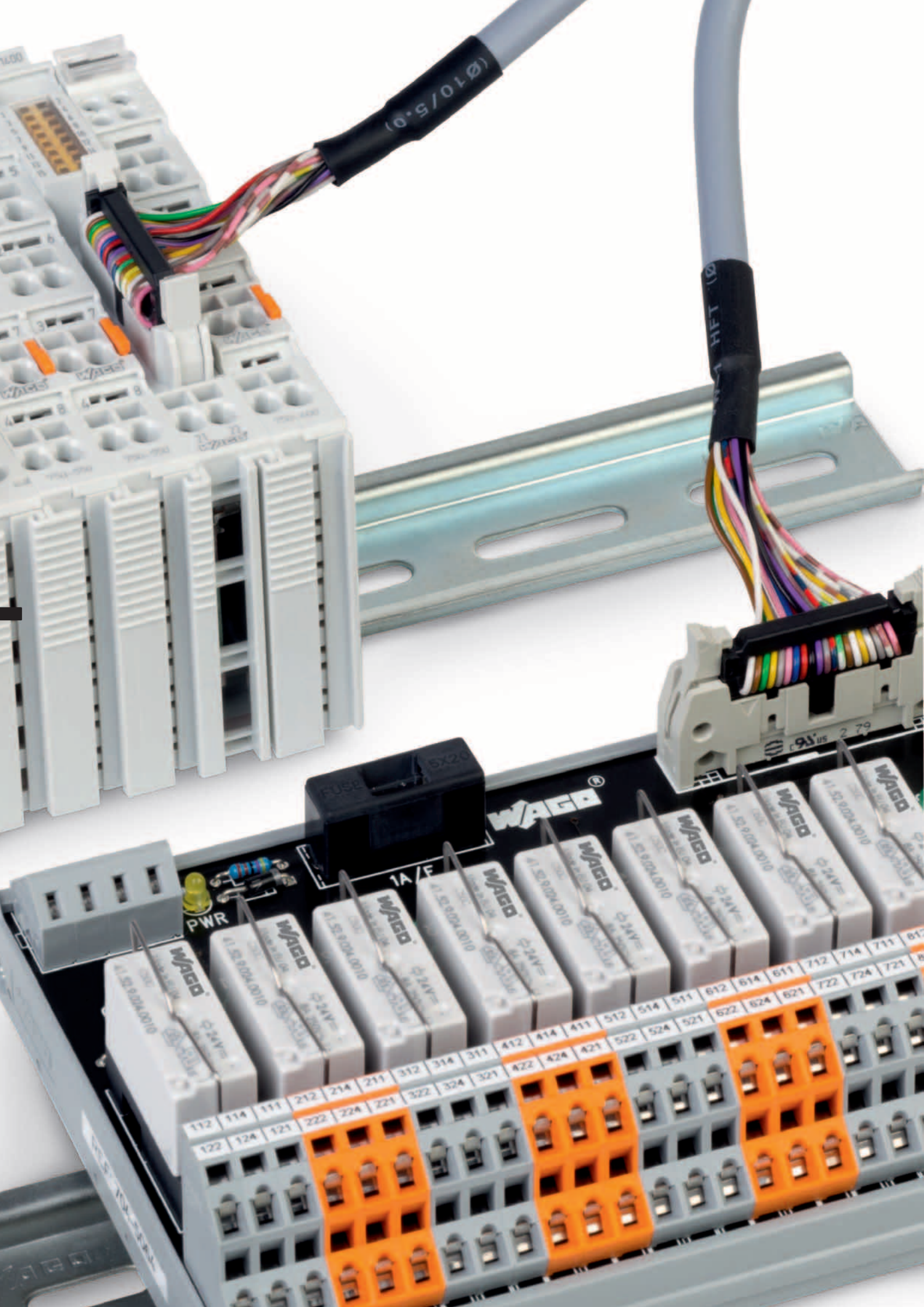


Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Connection module	289-667	1	289-671	1

**Technical Data**

Operating voltage	125 V AC/DC	125 V AC/DC
Max. current per connection	1 A	1 A
Max. total current	8 A	8 A
Nominal voltage to EN 60664-1	125 V / 1.5 kV / 2	125 V / 1.5 kV / 2
Dimensions (mm) W x H x L, incl. mounting carrier or feet	56 x 34 x 85	56 x 34 x 85
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 236 Series)
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
<b>Accessories</b>		
WMB Multi marking system for mounting carrier	see from page 506	see from page 506
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197





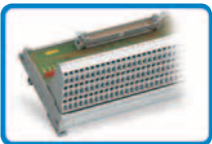
# 7



## WAGO System Wiring

Overview and Application Examples

388 - 391



## Interface Modules for System Wiring

704 Series  
Interface Adapters, 857 Series

392 - 400  
402 - 403



## WAGO Interface Cables, 706 Series

for 289, 704 Series  
for Interface Adapters, 857 Series

404 - 411  
412 - 414

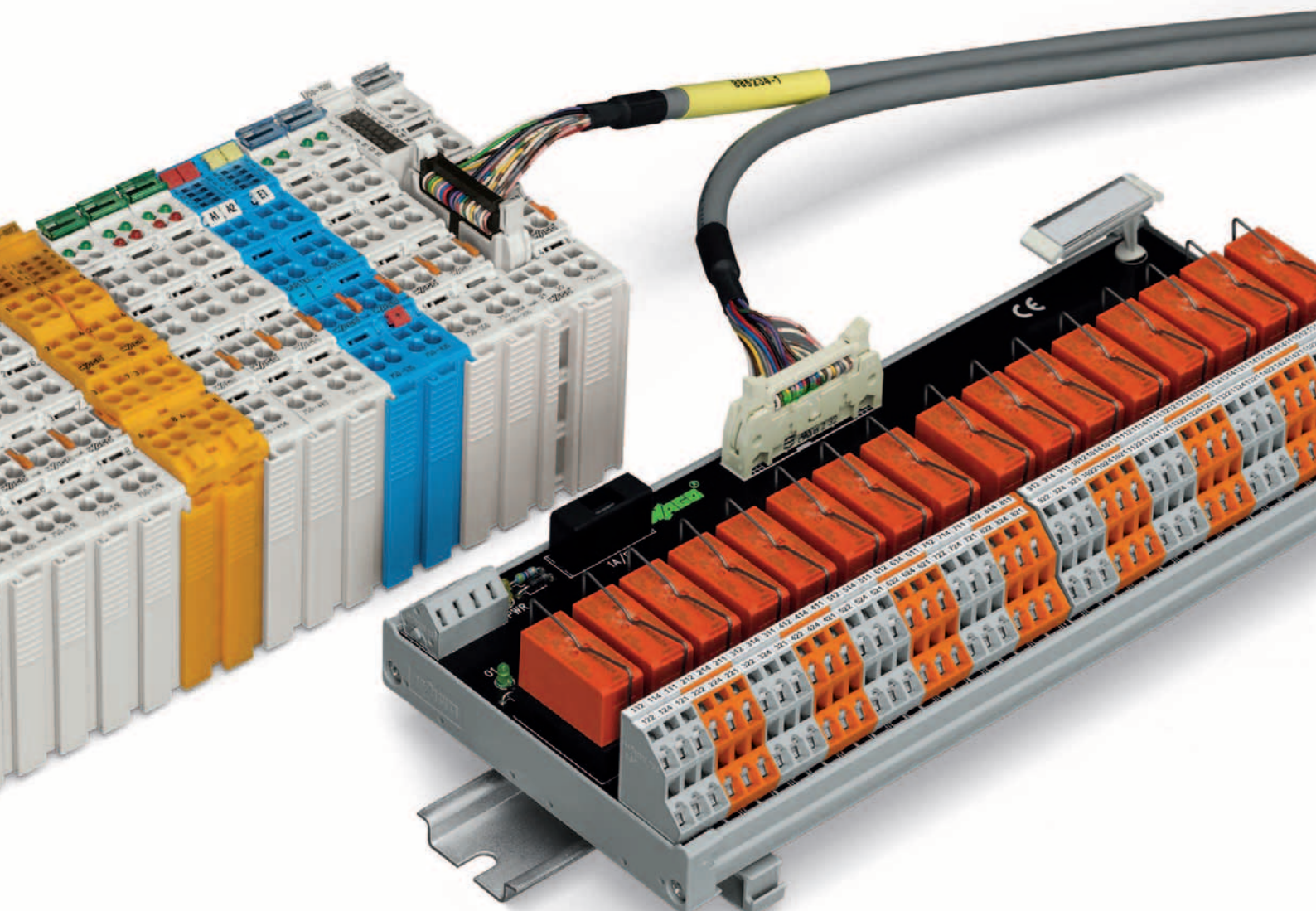


### 16-Channel I/O Module with Interface Module

The new 750-14xx and 750-15xx Series I/O Modules with cable connection acc to DIN 41651 offer 16 digital channels in a module less than 1/2 inch (12mm) wide. Offering quick connections and a space-efficient design, the DIN-rail mount interface modules simplify installation in confined areas and relocate the termination point. When combined with WAGO interface modules (e.g., item no. 289-614, 289-611), a switch cabinet can be pre-wired before install to minimize wiring time and errors. This is beneficial as wiring

can be performed independently of a plant's construction. Pre-wired electronics can be installed right before start-up, saving valuable time during final stages of project completion. The modules are also ideal for connecting series machines or relay modules tasked with the higher loads common to buildings and industrial applications. The interface module also combines the advantages of relays (e.g., manual operation or rapid replacement with socked-mounted versions) with the benefits of a modern I/O system. Another ideal application would be the integration of pneumatic controllers into a fieldbus network.

Most pneumatic modules have an appropriate connector and can be controlled by the WAGO-I/O-SYSTEM. Five variants are available: two 16-channel input or output modules (one high-side and one low-side switching variant), as well as a version combining 8 inputs and 8 outputs.



Application Examples		
WAGO-I/O-SYSTEM 753	WAGO Interface Cables	WAGO Interface Modules
		
753-430 (x2), 16 DI	WAGO-753 T8ES, 2 m long 706-7753/301-200	T16ES 704-2004

WAGO-I/O-SYSTEM 753		WAGO Interface Cables		WAGO Interface Modules		
	I/O Modules	Item No.	pcs	Type	pcs	
DI	753-430 (x1)	8 DI	706-7753/300-XXX	1	T8ES	1
	753-430 (x2)	16 DI	706-7753/301-XXX	1	T16ES	1
	753-431 (x1)	8 DI	706-7753/300-XXX	1	T8ES	1
	753-431 (x2)	16 DI	706-7753/301-XXX	1	T16ES	1
DO	753-530 (x1)	8 DO	706-7753/300-XXX	1	T8ES/T8S	1
	753-530 (x2)	16 DO	706-7753/301-XXX	1	T16ES/T16S	1

Overview over cables and interface modules see page 389

WAGO-I/O-SYSTEM 750		WAGO Interface Cables		WAGO Interface Modules		
	I/O Modules	Item No.	pcs	Type	pcs	
DI	750-1400	16 DI	706-3057/300-XXX	1	T16ES	1
DO	750-1500	16 DO	706-3057/300-XXX	1	T16ES	1
DI/DO	750-1502	8 DI/8 DO	706-7753/302-XXX	1	T8ES/T8S	1/1
	750-1502	8 DI/8 DO	706-3057/300-XXX	1	T16ES	1

Overview over cables and interface modules see page 389

# WAGO System Wiring

## Overview and Application Examples

SIEMENS S7-300			WAGO Interface Cables		WAGO Interface Modules	
			Item No.	pcs	Type	pcs
CPU	6ES7 313-5BE01-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
	6ES7 313-5BF03-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
	6ES7 313-6BE01-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
	6ES7 313-6BF03-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
	6ES7 313-6CE01-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
	6ES7 313-6CF03-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
	6ES7 314-6BF01-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
	6ES7 314-6BG03-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
	6ES7 314-6CG03-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
DI	6ES7 321-1BH02-0AA0	16 DI	706-2300/300-XXX	1	T16ES	1
	6ES7 321-1BH10-0AA0	16 DI	706-2300/300-XXX	1	T16ES	1
	6ES7 321-1BH80-0AA0	16 DI	706-2300/300-XXX	1	T16ES	1
	6ES7 321-1BL00-0AA0	32 DI	706-2300/301-XXX	1	T16ES	2
	6ES7 321-1BL80-0AA0	32 DI	706-2300/301-XXX	1	T16ES	2
	6ES7 321-1BP00-0AA0	64 DI	706-2300/100-XXX	2	T16ES	4
	6ES7 321-7BH01-0AA0	16 DI	706-2300/101-XXX	1	T16ES	1
	6ES7 321-7BH80-0AA0	16 DI	706-2300/101-XXX	1	T16ES	1
DO	6ES7 322-1BH01-0AA0	16 DO	706-2300/300-XXX	1	T16ES /T16S	1
	6ES7 322-1BH10-0AA0	16 DO	706-2300/300-XXX	1	T16ES /T16S	1
	6ES7 322-1BH80-0AA0	16 DO	706-2300/300-XXX	1	T16ES /T16S	1
	6ES7 322-1BL00-0AA0	32 DO	706-2300/301-XXX	1	T16ES /T16S	2
	6ES7 322-1BP00-0AA0	64 DO	706-2300/200-XXX	2	T16ES /T16S	4
	6ES7 322-1EH01-0AA0	16 DO	706-2300/300-XXX	1	T16ES /T16S	1
	6ES7 322-8BF00-0AB0	8 DO	706-2300/201-XXX	1	T8ES /T8S	1
AI	6ES7 331-7HF01-0AB0	8 AI	706-2300/400-XXX	1	A8ES	1
	6ES7 331-7KF02-0AB0	8 AI	706-2300/400-XXX	1	A8ES	1
	6ES7 331-7NF00-0AB0	8 AI	706-2300/404-XXX	1	A8ES	1
	6ES7 331-7NF10-0AB0	8 AI	706-2300/406-XXX	1	A8ES	1
	6ES7 331-7SF00-0AB0	8 AI	706-2300/400-XXX	1	A8ES	1
	6ES7 331-7TF00-0AB0	8 AI	706-2300/400-XXX	1	A8ES	1
AO	6ES7 332-5HB01-0AB0	2 AO	706-2300/400-XXX	1	A4ES	1
	6ES7 332-5HB81-0AB0	2 AO	706-2300/400-XXX	1	A4ES	1
	6ES7 332-5HD01-0AB0	4 AO	706-2300/404-XXX	1	A4ES	1
	6ES7 332-5HF00-0AB0	8 AO	706-2300/406-XXX	1	A8ES	1
	6ES7 332-7ND02-0AB0	4 AO	706-2300/400-XXX	1	A4ES	1
	6ES7 332-8TF00-0AB0	8 AO	706-2300/400-XXX	1	A8ES	1

### System Wiring for

- GEFANUC 90-30 / ALSPA 80-35
  - SCHNEIDER M340
  - SCHNEIDER QUANTUM
  - SCHNEIDER TSX 37 (Micro)
  - SCHNEIDER TSX 57 (Premium)
  - ROCKWELL COMPACT LOGIX (1769)
  - ROCKWELL CONTROL LOGIX (1756)
- contact factory

WAGO Interface Modules			
	Type	Item No.	
DI/DO	T8ES	289-611	see page 374
		704-2003	see page 392
	T8S	704-5003	see page 393
		704-5013	see page 393
	T16ES	289-614	see page 374
		704-2004	see page 394
		704-2024	see page 394
		704-2044	see page 395
		704-2054	see page 395
	T16S	704-5004	see page 397
		704-5014	see page 397
		704-5024	see page 396
		704-5034	see page 397
		704-5044	see page 396
704-5054		see page 398	
704-5064		see page 399	
704-5074		see page 398	
AI/AO	A4ES	704-8012	see page 400
	A8ES	704-8013	see page 400

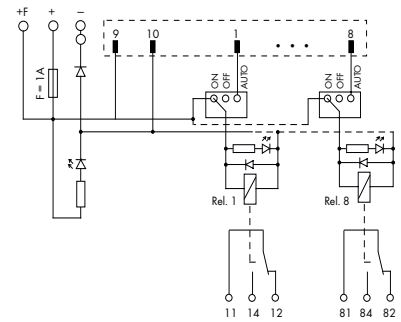
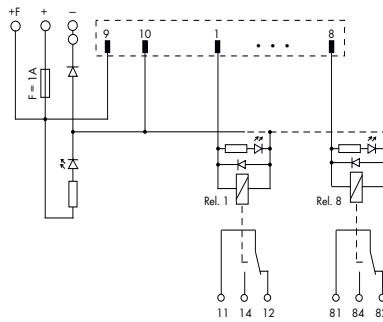
WAGO Interface Cables			
	Type	Item No.	
DI/DO	WAGO-753 T8ES	706-7753/300-XXX	see www.wago.com
	WAGO-753 T16ES	706-7753/301-XXX	see www.wago.com
	WAGO-750 HE T8E8S	706-7753/302-XXX	see page 402
	TSX T16ES	706-3057/300-XXX	see page 404
	S7-300 T16E	706-2300/101-XXX	see page 406
	S7-300 2 x T16E	706-2300/100-XXX	see page 406
	S7-300 T8S	706-2300/201-XXX	see page 407
	S7-300 2 x T16S	706-2300/200-XXX	see page 407
	S7-300 T16ES	706-2300/300-XXX	see page 408
	S7-300 2 x T16ES	706-2300/301-XXX	see page 408
AI/AO	S7-300 A8E	706-2300/400-XXX	see page 409
	S7-300 A8E11	706-2300/404-XXX	see page 410
	S7-300 A8E12	706-2300/406-XXX	see page 410
	S7-300 A4SI	706-2300/500-XXX	see page 411
	S7-300 A8SI	706-2300/502-XXX	see page 411

Cable Length Overview			
Item No.	-XXX	Length	Example
706-2300/201-XXX	-100	1 m	706-2300/201-100
	-200	2 m	706-2300/201-200
	-300	3 m	706-2300/201-300





	<p>Relay output module with miniature switching relay for 8 channels, 1 changeover contact each (1 u) with integrated status indication, 10-pole connector acc. to DIN 41651</p>	<p>Relay output module with miniature switching relay for 8 channels, 1 changeover contact each (1 u) with integrated status indication and manual operation, 10-pole connector acc. to DIN 41651</p>
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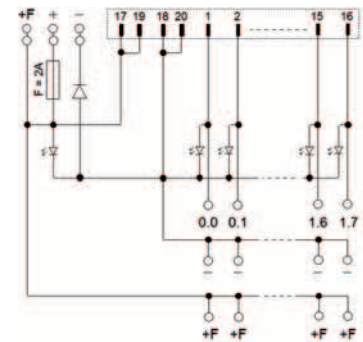
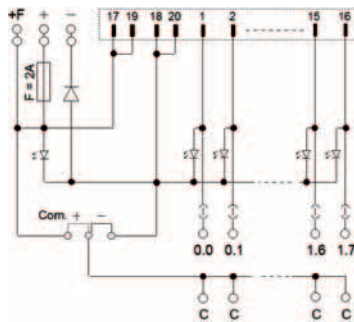
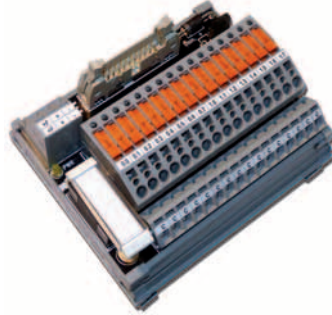
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Switching relay module, for DIN 35 rail	704-5003	1	704-5013	1

**Technical Data**

Contact material	AgNi 90/10	AgNi 90/10
Contact type	1 changeover contact	1 changeover contact
Operating voltage	24 V DC (± 10 %)	24 V DC (± 10 %)
Max. switching voltage	250 V AC / 48 V DC	250 V AC / 48 V DC
Max. continuous current	5 A	5 A
Max. switching power (resistive)	1250VA / 50W	1250VA / 50W
Status indication	LED green : Channel LED yellow : Power supply	LED green : Channel LED yellow : Power supply
Mechanical life	10 x 10 <sup>6</sup> switching operations	10 x 10 <sup>6</sup> switching operations
Dielectric strength contact-coil (AC, 1 min)	4 kV	4 kV
Dielectric strength contact-contact	1 kV	1 kV
Fuse	Supply: 1 A Relay output: -	Supply: 1 A Relay output: -
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) L x W x H	70 x 65 x 105	70 x 65 x 105
incl. mounting carrier and relay	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	Inpu: 10-pole connector acc. to DIN 41651 Output: CAGE CLAMP®	Inpu: 10-pole connector acc. to DIN 41651 Output: CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Accessories	Spare relay 857-152	Spare relay 857-152



	<p>Interface module for direct wiring (2 conductors) 16 channels with integrated status indication and disconnection, 20-pole connector acc. to DIN 41651</p>	<p>Interface module for direct wiring (3 conductors) 16 channels with integrated status indication, 20-pole connector acc. to DIN 41651</p>
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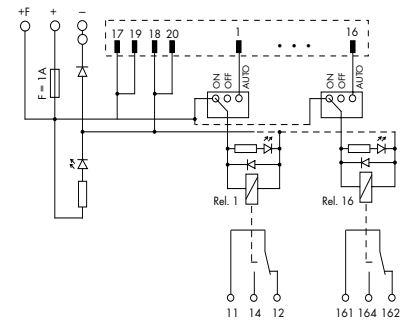
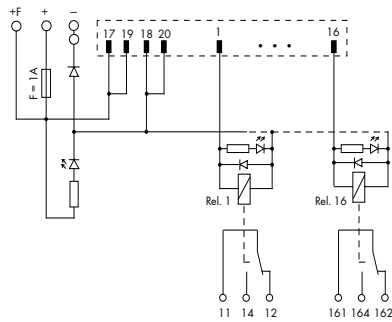
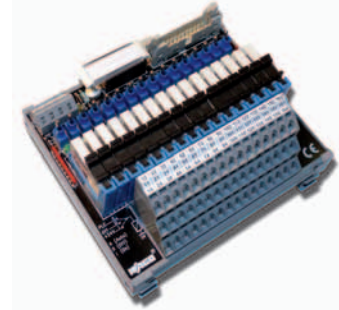
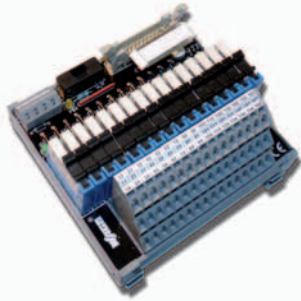


Description	Item No.	Pack. Unit
Interface module, for DIN 35 rail	704-2044	1

Technical Data		
Operating voltage	24 V DC (± 10 %)	24 V DC (± 10 %)
Max. continuous current	1 A per channel	1 A per channel
Max. total current	2 A	2 A
Fuse	2 A	2 A
Status indication	LED green : Channel; LED yellow : Power supply	LED green : Channel; LED yellow : Power supply
Power consumption LED	5 mA	5 mA
Nominal voltage to EN 60664-1	50 V / 0.8 kV / 2	50 V / 0.8 kV / 2
Ambient operating temperature	-20 °C ... +50 °C	-20 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions incl. mounting carrier (mm) W x H x L	99 x 85 x 50 Height from upper-edge of DIN 35 rail	85 x 85 x 63 Height from upper-edge of DIN 35 rail
Wire connection	Inpu: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®	Inpu: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

Relay output module with miniature switching relay for 16 channels, 1 changeover contact each (1 u) with integrated status indication, 20-pole connector acc. to DIN 41651

Relay output module with miniature switching relay for 16 channels, 1 changeover contact each (1 u) with integrated status indication and manual operation, 20-pole connector acc. to DIN 41651

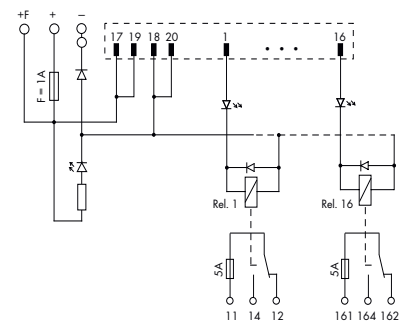
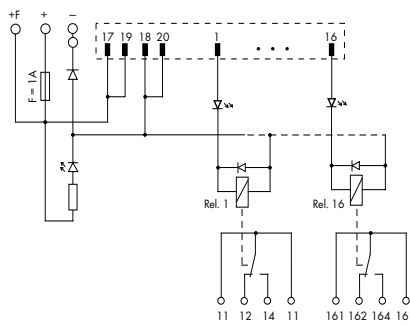
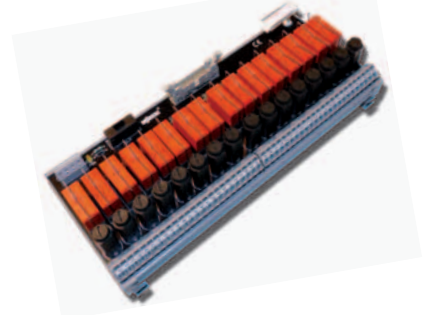
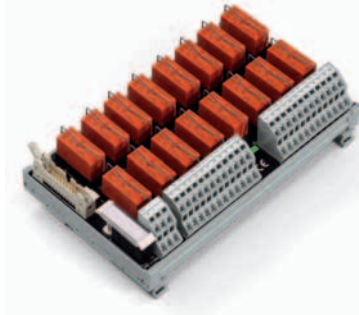


Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Switching relay module, for DIN 35 rail	704-5024	1	704-5044	1

### Technical Data

Contact material	AgNi 90/10	AgNi 90/10
Contact type	1 changeover contact	1 changeover contact
Operating voltage	24 V DC (± 10 %)	24 V DC (± 10 %)
Max. switching voltage	250 V AC / 48 V DC	250 V AC / 48 V DC
Max. continuous current	5 A	5 A
Max. switching power (resistive)	1250VA / 50W	1250VA / 50W
Status indication	LED green : Channel LED yellow : Power supply	LED green : Channel LED yellow : Power supply
Mechanical life	10 x 10 <sup>6</sup> switching operations	10 x 10 <sup>6</sup> switching operations
Dielectric strength contact-coil (AC, 1 min)	4 kV	4 kV
Dielectric strength contact-contact	1 kV	1 kV
Fuse	Supply: 1 A Relay output: -	Supply: 1 A Relay output: -
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) L x W x H incl. mounting carrier and relay	111 x 65 x 105	111 x 65 x 105
Wire connection	Height from upper-edge of DIN 35 rail Inpu: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®	Height from upper-edge of DIN 35 rail Inpu: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Accessories	Spare relay 857-152	Spare relay 857-152

	<p>Relay output module with miniature switching relay for 16 channels, 1 changeover contact each (1 u) with integrated status indication, 20-pole connector acc. to DIN 41651</p>	<p>Relay output module with miniature switching relay for 16 channels, 1 changeover contact each (1 u) with integrated status indication and output fuse, 20-pole connector acc. to DIN 41651</p>
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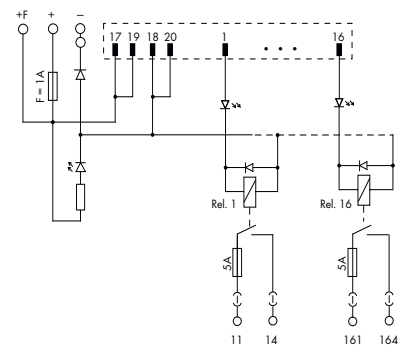
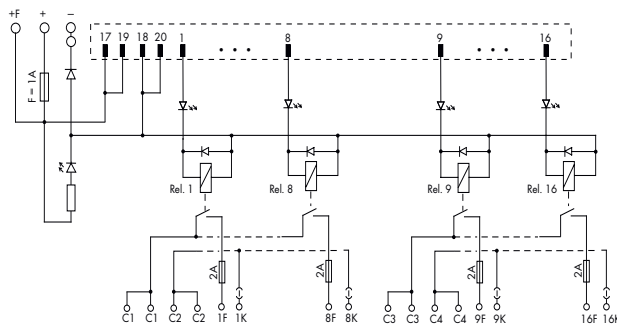
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Switching relay module, for DIN 35 rail	704-5004	1	704-5034	1
Switching relay module without miniature switching relay, for DIN 35 rail	704-5014	1		

**Technical Data**

Contact material	AgNi 90/10	AgNi 90/10
Contact type	1 changeover contact	1 changeover contact
Operating voltage	24 V DC (± 10 %)	24 V DC (± 10 %)
Max. switching voltage	250 V AC / 48 V DC	250 V AC / 48 V DC
Max. continuous current	5 A	5 A
Inrush current	2s, 16A	2s, 16A
Max. switching power (resistive)	1250VA / 50W	1250VA / 50W
Status indication	LED green : Channel LED yellow : Power supply	LED green : Channel LED yellow : Power supply
Mechanical life	30 x 10 <sup>6</sup> switching operations	30 x 10 <sup>6</sup> switching operations
Dielectric strength contact-coil (AC, 1 min)	3 kV	4 kV
Dielectric strength contact-contact	1 kV	1 kV
Fuse	Supply: 1 A Relay output: -	Supply: 1 A Relay output: 5 A
Ambient operating temperature	-25 °C ... +50 °C	-25 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) L x W x H incl. mounting carrier and relay	180 x 50 x 105	247 x 55 x 105
Wire connection	Height from upper-edge of DIN 35 rail Inpu: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®	Height from upper-edge of DIN 35 rail Inpu: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Accessories	Spare relay 788-154	Spare relay 788-154

Relay output module with miniature switching relay for 16 channels, 1 make contact each (1 a) with integrated status indication, disconnect terminal block and output fuse, 20-pole connector acc. to DIN 41651

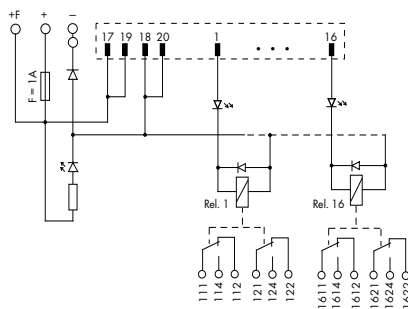
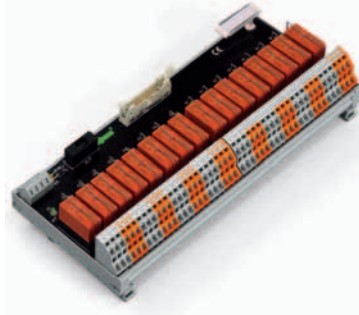
Relay output module with miniature switching relay for 16 channels, 1 make contact each (1 a) with integrated status indication, double disconnect terminal block and output fuse, 20-pole connector acc. to DIN 41651



Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Switching relay module, for DIN 35 rail	704-5054	1	704-5074	1

Technical Data				
Contact material	AgNi 90/10		AgNi 90/10	
Contact type	1 make contact		1 make contact	
Operating voltage	24 V DC (± 10 %)		24 V DC (± 10 %)	
Max. switching voltage	250 V AC / 48 V DC		250 V AC / 48 V DC	
Max. continuous current	2 A		5 A	
Max. switching power (resistive)	500VA / 50W		1250VA / 50W	
Status indication	LED green : Channel LED yellow : Power supply		LED green : Channel LED yellow : Power supply	
Mechanical life	30 x 10 <sup>6</sup> switching operations		30 x 10 <sup>6</sup> switching operations	
Dielectric strength contact-coil (AC, 1 min)	4 kV		4 kV	
Dielectric strength contact-contact	1 kV		1 kV	
Fuse	Supply: 1 A Relay output: 2 A		Supply: 1 A Relay output: 5 A	
Ambient operating temperature	-25 °C ... +50 °C		-25 °C ... +50 °C	
Storage temperature	-40 °C ... +70 °C		-40 °C ... +70 °C	
Dimensions (mm) L x W x H incl. mounting carrier and relay	240 x 55 x 105		240 x 55 x 105	
Wire connection	Height from upper-edge of DIN 35 rail Inpu: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®		Height from upper-edge of DIN 35 rail Inpu: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®	
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12		0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Strip length	5 ... 6 mm / 0.22 in		5 ... 6 mm / 0.22 in	
Accessories	Spare relay 788-154		Spare relay 788-154	

	<p><b>Relay output module with miniature switching relay for 16 channels, 2 changeover contacts each (2 u) with integrated status indication, 20-pole connector acc. o DIN 41651</b></p>	
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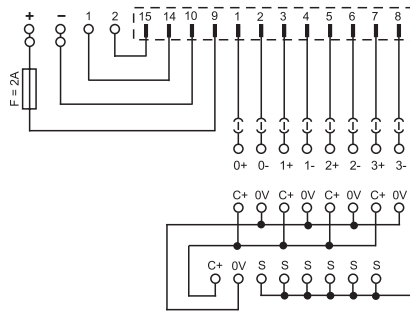
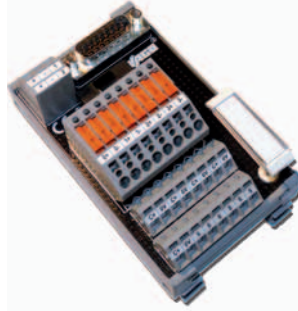


Description	Item No.	Pack. Unit
Switching relay module, for DIN 35 rail	704-5064	1

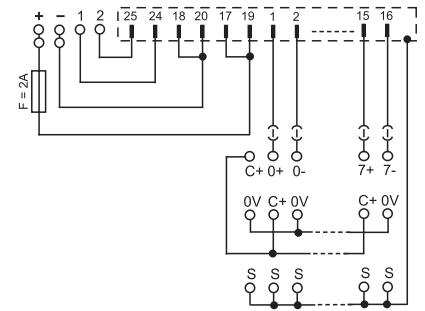
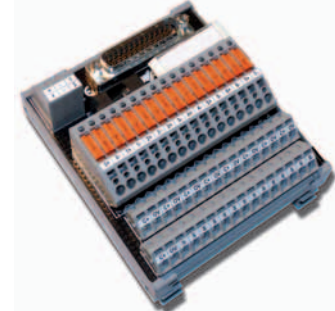
Technical Data		
Contact material	AgNi 90/10	
Contact type	2 changeover contact	
Operating voltage	24 V DC (± 10 %)	
Max. switching voltage	250 V AC / 48 V DC	
Max. continuous current	5 A	
Inrush current	2s, 8A	
Max. switching power (resistive)	1000VA / 50W	
Status indication	LED green : Channel LED yellow : Power supply	
Mechanical life	30 x 10 <sup>6</sup> switching operations	
Dielectric strength contact-coil (AC, 1 min)	4 kV	
Dielectric strength contact-contact	1 kV	
Fuse	Supply: 1 A Relay output: -	
Ambient operating temperature	-25 °C ... +50 °C	
Storage temperature	-40 °C ... +70 °C	
Dimensions (mm) L x W x H incl. mounting carrier and relay	247 x 50 x 105	
Wire connection	Height from upper-edge of DIN 35 rail Inpu: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®	
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Strip length	5 ... 6 mm / 0.22 in	
Accessories	Spare relay 788-156	



Interface module for analog sensors  
 (2 and 4 conductors)  
 4 channels with integrated disconnection,  
 15-pole D-sub female connector acc. to  
 DIN 41651



Interface module for analog sensors  
 (2 and 4 conductors)  
 8 channels with integrated disconnection,  
 15-pole D-sub female connector acc. to  
 DIN 41651



Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Interface module, for DIN 35 rail	704-8012	1	704-8013	1

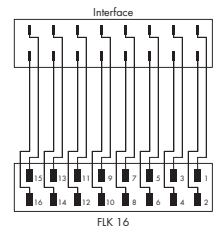
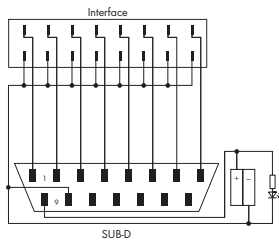
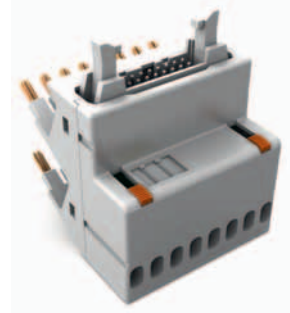
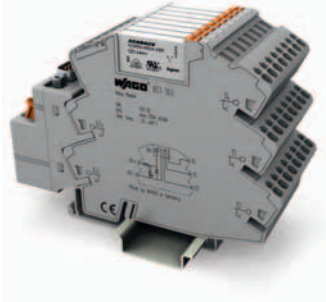
**Technical Data**

Operating voltage	max. 48 V DC	max. 48 V DC
Output current (per channel)	max. 1 A	max. 1 A
Fuse	2 A (supply)	2 A (supply)
Nominal voltage to EN 60664-1	50 V / 0.8 kV / 2	50 V / 0.8 kV / 2
Ambient operating temperature	-20 °C ... +50 °C	-20 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions incl. mounting carrier (mm) W x H x L	66 x 105 x 50 Height from upper-edge of DIN 35 rail	92 x 105 x 50 Height from upper-edge of DIN 35 rail
Wire connection	Input: 15-pin D-sub female connector Output: CAGE CLAMP®	Input: 15-pin D-sub female connector Output: CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in





	<p>8-channel adapter with D-sub male connector, Input, positive switching</p>	<p>8-channel adapter with 16-pin ribbon cable connector Analog</p>
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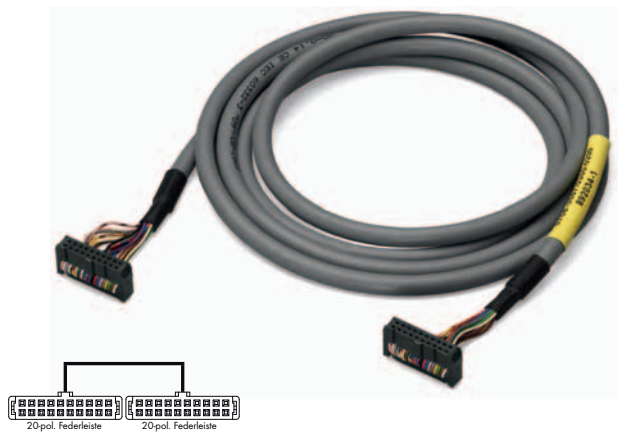
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
8-channel adapter for system wiring	857-986	1	857-980	1

**Technical Data**

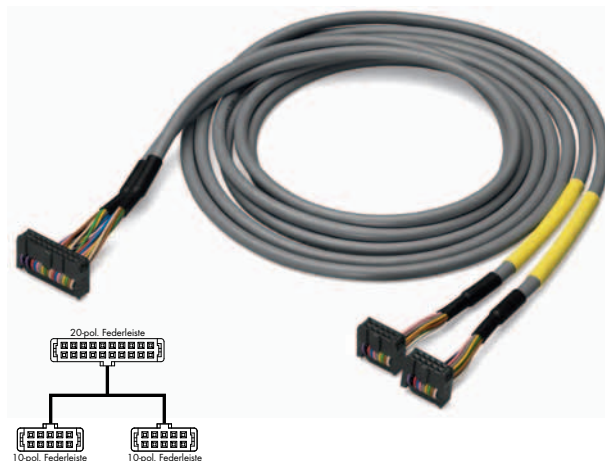
Connection type, signal level	15-pin D-sub male connector	16-pin ribbon cable connector acc. to DIN 41651
Performance level	2	3
Contact resistance	≤ 10mΩ	≤ 20mΩ
Current carrying capacity	1A	1A
Test voltage	500 V / 50 Hz / 1 min.	500 V / 50 Hz / 1 min.
Nominal supply voltage V <sub>S</sub>	24 VDC	
Supply voltage range	16.8 V ... 31.2 V	
Max. total current	3 A	
Operational indication	LED, green	
Connection type, supply	231 Series with CAGE CLAMP®	
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	
Strip length	5 ... 6 mm / 0.22 in	
Overvoltage category		III
Degree of pollution		2

# 7 WAGO Interface Cables

for 289, 704 Series, in connection with WAGO-I/O-SYSTEM 750



WAGO Interface Cables provide fast and easy connection of WAGO I/O modules equipped with a HE 10 connector (750-1400, -1402, -1500, -1501, 1502) to appropriate interface or relay modules (16-channel) featuring a 20-pole HE 10 connector. The cables are available in 1-, 2- and 3-meter lengths; each has one 20-pole connector at both ends.

















WAGO Interface Cables provide fast and easy connection of WAGO I/O modules equipped with a HE 10 connector (750-1400, -1402, -1500, -1501, 1502) to appropriate interface or relay modules featuring a 10-pole HE 10 connector. For example, this cable connects 2 relay modules (8-channel) to a WAGO I/O module. The cables are available in 1- and 2-meter lengths; each has one 20-pole and two 10-pole connectors on the ends.





















Description	Item No.	Pack. Unit
WAGO Interface Cable 20/20, length 1 m	<b>706-3057/300-100</b>	1
WAGO Interface Cable 20/20, length 2 m	<b>706-3057/300-200</b>	1
WAGO Interface Cable 20/20, length 3 m	<b>706-3057/300-300</b>	1
<b>Technical Data</b>		
Ports	2 x 20-pole connector acc. to DIN 41651	
Wire cross-section	0.14 mm <sup>2</sup> LiYY	
Color coding	acc. to DIN VDE 47100	
Current per channel	max. 1A	
Operating temperature	-25 °C ... +70 °C	
Degree of protection	IP20	
Length	1 m (706-3057/300-100) 2 m (706-3057/300-200) 3 m (706-3057/300-300)	

Description	Item No.	Pack. Unit
WAGO Interface Cable 20/2x10, length 1 m	<b>706-7753/302-100</b>	1
WAGO Interface Cable 20/2x10, length 2 m	<b>706-7753/302-200</b>	1
<b>Technical Data</b>		
Ports	1 x 20-pole / 2 x 10-pole connector acc. to DIN 41651	
Wire cross-section	0.14 mm <sup>2</sup> LiYY	
Color coding	acc. to DIN VDE 47100	
Current per channel	max. 1A	
Operating temperature	-25 °C ... +70 °C	
Degree of protection	IP20	
Length	1 m (706-7753/302-100) 2 m (706-7753/302-200)	



Color coding acc. to DIN VDE 47100	HE 10 14-pole	
	contact number	
white		1
brown		2
green		3
yellow		4
grey		5
pink		6
blue		7
red		8
black		9
violet		10
grey/pink		11
red/blue		12
white/green		13
brown/green		14



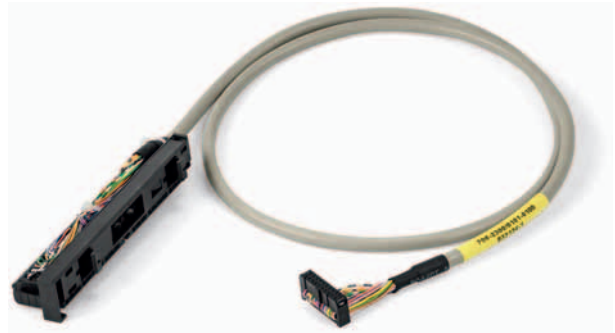
Color coding acc. to DIN VDE 47100	HE 10 20-pole	
	contact number	
white		1
brown		2
green		3
yellow		4
grey		5
pink		6
blue		7
red		8
black		9
violet		10
grey/pink		11
red/blue		12
white/green		13
brown/green		14
white/yellow		15
yellow/brown		16
white/grey		17
grey/brown		18
white/pink		19
pink/brown		20

Description	Item No.	Pack. Unit
WAGO Interface Cable, 10-pole/ one free cable end, length 2 m	706-100/1301-200	1
<b>Technical Data</b>		
Ports	10-pole HE 10 connector/ one free cable end	
Wire cross-section	0.14 mm <sup>2</sup> LiYY	
Color coding	acc. to DIN VDE 47100	
Current per channel	max. 1 A	
Operating temperature	-25 °C ... +70 °C	
Degree of protection	IP20	
Length	2 m	

Description	Item No.	Pack. Unit
WAGO Interface Cable, 20-pole/ one free cable end, length 2 m	706-100/1300-200	1
<b>Technical Data</b>		
Ports	20-pole HE 10 connector/ one free cable end	
Wire cross-section	0.14 mm <sup>2</sup> LiYY	
Color coding	acc. to DIN VDE 47100	
Current per channel	max. 1 A	
Operating temperature	-25 °C ... +70 °C	
Degree of protection	IP20	
Length	2 m	

# WAGO Interface Cables

for 289, 704 Series, in connection with Siemens S7-300



Description	Item No.	Pack. Unit
WAGO Interface Cable 2 x T16E, 1 m long	706-2300/100-100	1
WAGO Interface Cable 2 x T16E, 2 m long	706-2300/100-200	1
WAGO Interface Cable 2 x T16E, 3 m long	706-2300/100-300	1

Technical Data	
Ports	1 x Fujitsu FCN-367-J40 2 x 20-pole connector acc. to DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color coding	acc. to DIN VDE 47100
Operating voltage	60 V
Current per channel	max. 1 A
Operating temperature	-20 °C ... +50 °C
Degree of protection	IP20
Length	1 m (706-2300/100-100) 2 m (706-2300/100-200) 3 m (706-2300/100-300)

Description	Item No.	Pack. Unit
WAGO Interface Cable T16E, 1 m long	706-2300/101-100	1
WAGO Interface Cable T16E, 2 m long	706-2300/101-200	1
WAGO Interface Cable T16E, 3 m long	706-2300/101-300	1

Technical Data	
Ports	1 x Siemens 6ES7-392-1BJ00-0AA0 1 x 20-pole connector acc. to DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color coding	acc. to DIN VDE 47100
Operating voltage	60 V
Current per channel	max. 1 A
Operating temperature	-20 °C ... +50 °C
Degree of protection	IP20
Length	1 m (706-2300/101-100) 2 m (706-2300/101-200) 3 m (706-2300/101-300)





Similar to picture

Description	Item No.	Pack. Unit
WAGO Interface Cable 2 x T16S, 1 m long	706-2300/200-100	1
WAGO Interface Cable 2 x T16S, 2 m long	706-2300/200-200	1
WAGO Interface Cable 2 x T16S, 3 m long	706-2300/200-300	1
<b>Technical Data</b>		
Ports	1 x Fujitsu FCN-367-J40 2 x 20-pole connector acc. to DIN 41651	
Wire cross-section	0.14 mm <sup>2</sup> LiYY	
Color coding	acc. to DIN VDE 47100	
Operating voltage	60 V	
Current per channel	max. 1 A	
Operating temperature	-20 °C ... +50 °C	
Degree of protection	IP20	
Length	1 m (706-2300/200-100) 2 m (706-2300/200-200) 3 m (706-2300/200-300)	

Description	Item No.	Pack. Unit
WAGO Interface Cable T8S, 1 m long	706-2300/201-100	1
WAGO Interface Cable T8S, 2 m long	706-2300/201-200	1
WAGO Interface Cable T8S, 3 m long	706-2300/201-300	1
<b>Technical Data</b>		
Ports	1 x Siemens 6ES7-392-1BJ00-0AA0 1 x 10-pole connector acc. to DIN 41651	
Wire cross-section	0.14 mm <sup>2</sup> LiYY	
Color coding	acc. to DIN VDE 47100	
Operating voltage	60 V	
Current per channel	max. 1 A	
Operating temperature	-20 °C ... +50 °C	
Degree of protection	IP20	
Length	1 m (706-2300/201-100) 2 m (706-2300/201-200) 3 m (706-2300/201-300)	

# WAGO Interface Cables

for 289, 704 Series, in connection with Siemens S7-300



Description	Item No.	Pack. Unit
WAGO Interface Cable T16ES, 1 m long	<b>706-2300/300-100</b>	1
WAGO Interface Cable T16ES, 2 m long	<b>706-2300/300-200</b>	1
WAGO Interface Cable T16ES, 3 m long	<b>706-2300/300-300</b>	1

Technical Data	
Ports	1 x Siemens 6ES7-392-1BJ00-0AA0 1 x 20-pole connector acc. to DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color coding	acc. to DIN VDE 47100
Operating voltage	60 V
Current per channel	max. 1 A
Operating temperature	-20 °C ... +50 °C
Degree of protection	IP20
Length	1 m (706-2300/300-100) 2 m (706-2300/300-200) 3 m (706-2300/300-300)

Description	Item No.	Pack. Unit
WAGO Interface Cable 2 x T16ES, 1 m long	<b>706-2300/301-100</b>	1
WAGO Interface Cable 2 x T16ES, 2 m long	<b>706-2300/301-200</b>	1
WAGO Interface Cable 2 x T16ES, 3 m long	<b>706-2300/301-300</b>	1

Technical Data	
Ports	1 x Siemens 6ES7-392-1BM00-0AA0 2 x 20-pole connector acc. to DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color coding	acc. to DIN VDE 47100
Operating voltage	60 V
Current per channel	max. 1 A
Operating temperature	-20 °C ... +50 °C
Degree of protection	IP20
Length	1 m (706-2300/301-100) 2 m (706-2300/301-200) 3 m (706-2300/301-300)



Description	Item No.	Pack. Unit
WAGO Interface Cable A8E, 1 m long	706-2300/400-100	1
WAGO Interface Cable A8E, 2 m long	706-2300/400-200	1
WAGO Interface Cable A8E, 3 m long	706-2300/400-300	1

Technical Data	
Ports	1 x Siemens 6ES7-392-1BJ00-0AA0 1 x 25-pole D-sub female connector
Wire cross-section	0.25 mm <sup>2</sup> Li YCY
Color coding	acc. to DIN VDE 47100
Operating voltage	125 V
Current per channel	max. 2 A
Operating temperature	-20 °C ... +50 °C
Degree of protection	IP20
Length	1 m (706-2300/400-100) 2 m (706-2300/400-200) 3 m (706-2300/400-300)

# WAGO Interface Cables

for 289, 704 Series, in connection with Siemens S7-300



Description	Item No.	Pack. Unit
WAGO Interface Cable A8EI1, 1 m long	706-2300/404-100	1
WAGO Interface Cable A8EI1, 2 m long	706-2300/404-200	1
WAGO Interface Cable A8EI1, 3 m long	706-2300/404-300	1

Technical Data	
Ports	1 x Siemens 6ES7-392-1BM00-0AA0 1 x 25-pole D-sub female connector acc. to
Wire cross-section	0.25 mm <sup>2</sup> Li YCY
Color coding	acc. to DIN VDE 47100
Operating voltage	125 V
Current per channel	max. 2 A
Operating temperature	-20 °C ... +50 °C
Degree of protection	IP20
Length	1 m (706-2300/404-100) 2 m (706-2300/404-200) 3 m (706-2300/404-300)

Description	Item No.	Pack. Unit
WAGO Interface Cable A8EI2, 1 m long	706-2300/406-100	1
WAGO Interface Cable A8EI2, 2 m long	706-2300/406-200	1
WAGO Interface Cable A8EI2, 3 m long	706-2300/406-300	1

Technical Data	
Ports	1 x Siemens 6ES7-392-1BM00-0AA0 1 x 25-pole D-sub female connector
Wire cross-section	0.25 mm <sup>2</sup> Li YCY
Color coding	acc. to DIN VDE 47100
Operating voltage	125 V
Current per channel	max. 2 A
Operating temperature	-20 °C ... +50 °C
Degree of protection	IP20
Length	1 m (706-2300/406-100) 2 m (706-2300/406-200) 3 m (706-2300/406-300)



Description	Item No.	Pack. Unit
WAGO Interface Cable A4SI, 1 m long	706-2300/500-100	1
WAGO Interface Cable A4SI, 2 m long	706-2300/500-200	1
WAGO Interface Cable A4SI, 3 m long	706-2300/500-300	1
Technical Data		
Ports	1 x Siemens 6ES7-392-1BJ00-0AA0 1 x 15-pole D-sub female connector	
Wire cross-section	0.25 mm <sup>2</sup> Li YCY	
Color coding	acc. to DIN VDE 47100	
Operating voltage	125 V	
Current per channel	max. 2 A	
Operating temperature	-20 °C ... +50 °C	
Degree of protection	IP20	
Length	1 m (706-2300/500-100) 2 m (706-2300/500-200) 3 m (706-2300/500-300)	

Description	Item No.	Pack. Unit
WAGO Interface Cable A8SI, 1 m long	706-2300/502-100	1
WAGO Interface Cable A8SI, 2 m long	706-2300/502-200	1
WAGO Interface Cable A8SI, 3 m long	706-2300/502-300	1
Technical Data		
Ports	1 x Siemens 6ES7-392-1BM00-0AA0 1 x 15-pole D-sub female connector	
Wire cross-section	0.25 mm <sup>2</sup> Li YCY	
Color coding	acc. to DIN VDE 47100	
Operating voltage	125 V	
Current per channel	max. 2 A	
Operating temperature	-20 °C ... +50 °C	
Degree of protection	IP20	
Length	1 m (706-2300/502-100) 2 m (706-2300/502-200) 3 m (706-2300/502-300)	

# 7 WAGO Interface Cables

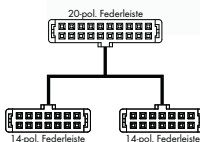
## for Interface Adapter, 857 Series



The 14-pin WAGO Interface Cables transmit signals one-to-one from the 14-pole connector and are available in 1-, 2- and 3-meter lengths.

Suitable for system wiring when combined with the Interface Adapters (Item No. 857-981 and 857-982)

Description	Item No.	Pack. Unit
WAGO Interface Cable 14/14, 1m long	<b>706-753/300-100</b>	1
WAGO Interface Cable 14/14, 2m long	<b>706-753/300-200</b>	1
WAGO Interface Cable 14/14, 3m long	<b>706-753/300-300</b>	1
<b>Technical Data</b>		
Ports	2 x 14-pole connector acc. to DIN 41651	
Wire cross-section	0.14 mm <sup>2</sup> LiYY	
Color coding	acc. to DIN VDE 47100	
Current per channel	max. 1 A	
Operating temperature	-25 °C ... +70 °C	
Degree of protection	IP20	
Length	1 m (706-753/300-100) 2 m (706-753/300-200) 3 m (706-753/300-300)	



WAGO Interface Cables provide fast and easy connection of WAGO I/O modules featuring ribbon cable connectors. The following WAGO I/O modules and adapters are compatible:

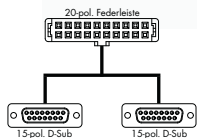
**750-1500 (16 DO) -> 857-981 (DO)**

**750-1502 (8 DO / 8 DI) -> 857-981 (DO) and 857-982 (DI)**

The cables are available in 1-, 2- and 3-meter lengths – each has one 20-pole or two 14-pole connectors on the ends.

Suitable for system wiring when combined with Interface Adapters (Item No. 857-981 and 857-982)

Description	Item No.	Pack. Unit
WAGO Interface Cable 20/2x14, 1m long	<b>706-7753/304-100</b>	1
WAGO Interface Cable 20/2x14, 2m long	<b>706-7753/304-200</b>	1
WAGO Interface Cable 20/2x14, 3m long	<b>706-7753/304-300</b>	1
<b>Technical Data</b>		
Ports	1 x 20-pole connector / 2 x 14-pole connector acc. to DIN 41651	
Wire cross-section	0.14 mm <sup>2</sup> LiYY	
Color coding	acc. to DIN VDE 47100	
Current per channel	max. 1 A	
Operating temperature	-25 °C ... +70 °C	
Degree of protection	IP20	
Length	1 m (706-7753/304-100) 2 m (706-7753/304-200) 3 m (706-7753/304-300)	



WAGO Interface Cables provide fast and easy connection of WAGO I/O modules featuring ribbon cable connectors. The following WAGO I/O modules and D-sub adapters are compatible:

**750-1500 (16 DO) → 857-986 (DO)**

The cables are available in 1-, 2- and 3-meter lengths - each has one 20-pole or two 15-pole connectors on the ends.

Suitable for system wiring when combined with Interface Adapter (Item No. 857-986)

Description	Item No.	Pack. Unit
WAGO Interface Cable 20/2x15, 1m long	<b>706-7753/306-100</b>	1
WAGO Interface Cable 20/2x15, 2m long	<b>706-7753/306-200</b>	1
WAGO Interface Cable 20/2x15, 3m long	<b>706-7753/306-300</b>	1
<b>Technical Data</b>		
Ports	1 x 20-pole connector to DIN 41651 / 2 x 15-pole D-sub female connector acc. to DIN 41652	
Wire cross-section	0.14 mm <sup>2</sup> LiYY	
Color coding	acc. to DIN VDE 47100	
Current per channel	max. 1 A	
Operating temperature	-25 °C ... +70 °C	
Degree of protection	IP20	
Length	1 m (706-7753/306-100) 2 m (706-7753/306-200) 3 m (706-7753/306-300)	



The 16-pin WAGO Interface Cables transmit signals one-to-one from the 16-pole connector and are available in 1-, 2- and 3-meter lengths. Signal transmission from the 857-980 Interface Adapter is also possible.

Suitable for system wiring when combined with the Interface Adapter (Item No. 857-980)

Description	Item No.	Pack. Unit
WAGO Interface Cable 16/16, 1m long	<b>706-753/301-100</b>	1
WAGO Interface Cable 16/16, 2m long	<b>706-753/301-200</b>	1
WAGO Interface Cable 16/16, 3m long	<b>706-753/301-300</b>	1
<b>Technical Data</b>		
Ports	2 x 16-pole connector acc. to DIN 41651	
Wire cross-section	0.14 mm <sup>2</sup> LiYY	
Color coding	acc. to DIN VDE 47100	
Current per channel	max. 1 A	
Operating temperature	-25 °C ... +70 °C	
Degree of protection	IP20	
Length	1 m (706-753/301-100) 2 m (706-753/301-200) 3 m (706-753/301-300)	



# WAGO Interface Cables

for Interface Adapters, 857 Series



Color coding acc. to DIN VDE 47100		HE 10	10-pole
		contact number	
white			1
brown			2
green			3
yellow			4
grey			5
pink			6
blue			7
red			8
black			9
violet			10

Color coding acc. to DIN VDE 47100		HE 10	16-pole
		contact number	
white			1
brown			2
green			3
yellow			4
grey			5
pink			6
blue			7
red			8
black			9
violet			10
grey/pink			11
red/blue			12
white/green			13
brown/green			14
white/yellow			15
yellow/brown			16

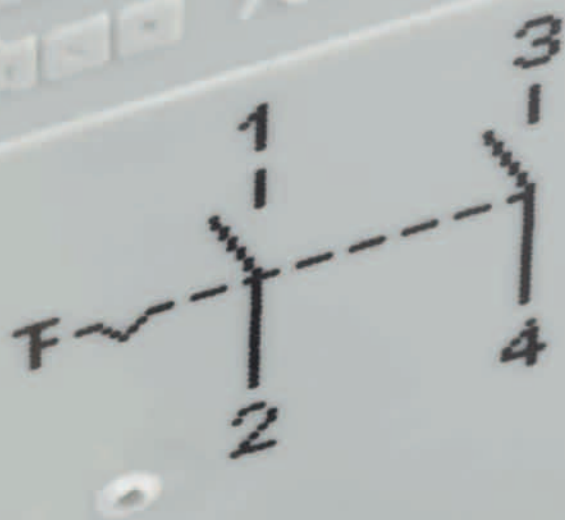
Description	Item No.	Pack. Unit
WAGO Interface Cable, 14-pole/ one free cable end, length 2 m	706-100/1303-200	1
<b>Technical Data</b>		
Ports	14-pole HE 10 connector/ one free cable end	
Wire cross-section	0.14 mm <sup>2</sup> LiYY	
Color coding	acc. to DIN VDE 47100	
Current per channel	max. 1 A	
Operating temperature	-25 °C ... +70 °C	
Degree of protection	IP20	
Length	2 m	

Description	Item No.	Pack. Unit
WAGO Interface Cable, 16-pole/ one free cable end, length 2 m	706-100/1602-200	1
<b>Technical Data</b>		
Ports	16-pole HE 10 connector/ one free cable end	
Wire cross-section	0.14 mm <sup>2</sup> LiYY	
Color coding	acc. to DIN VDE 47100	
Current per channel	max. 1 A	
Operating temperature	-25 °C ... +70 °C	
Degree of protection	IP20	
Length	2 m	





789



02  
V AC / 16A  
2774--01

# 8



## Switching Modules

Switching Modules in DIN-Rail Mount Enclosure, 789 Series  
 Pluggable Modules - Switches, 286 Series

418 - 420  
 421



## NAMUR Switching Amplifiers

Pluggable Modules - NAMUR Switching Amplifiers, 286 Series

422



## Rectifier Modules

Pluggable Modules - Bridge Rectifiers, 280, 286 Series

424 - 425



## Indicator Modules

DIN-Rail-Mounted Modules - LED Gate Module, 289 Serie  
 Pluggable Modules - LED Indicator, 286 Series

426  
 427



## Component Modules

DIN-Rail-Mounted Modules - Diode Gates, 289 Series  
 Pluggable Modules - Diode Gates, 286 Series  
 DIN-Rail-Mounted Modules - Resistors, 289 Series  
 DIN-Rail-Mounted Modules for Building Custom Circuits, 289 Series

428 - 431  
 432  
 433 - 434  
 435



## Potential Multiplication Modules

DIN-Rail Mount Potential Multiplication Modules, 288 Series

436 - 437



## Fault Indication Modules

Pluggable Modules - Fault Indication, 286 Series

438 - 439



## Modules with Additional Specialty Functions

Pluggable Modules - Current Flow Monitoring, 286 Series  
 Pluggable Modules - Fuses, 286 Series  
 Manual Control Modules in DIN-Rail Mount Enclosure, 789 Series  
 Pluggable Modules - SO Optocouplers, 286 Series  
 Pluggable Modules - SO Supply, 286 Series  
 Pluggable Modules - AND Gate, 286 Series  
 Pluggable Modules - Flip-Flop, 286 Series

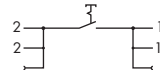
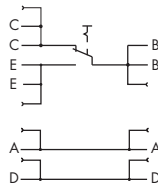
440 - 441  
 442  
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 445  
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 447

Switching module,  
changeover, 1-pole

Switching module,  
breaker, 1-pole

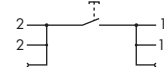
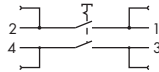
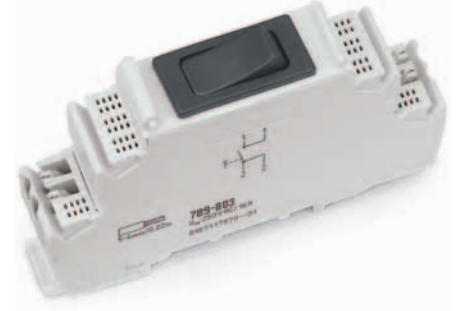


Similar to picture



Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Switching module in DIN-rail mount enclosure, for DIN 35 rail	789-800	1	789-801	1
<b>Technical Data</b>				
	Accessories see page 115		Accessories see page 115	
<b>Contacts:</b>				
Contact material	Ag alloy		Ag alloy	
Operating voltage	250 VAC		250 VAC	
Max. switching power (resistive)	10 A		16 A	
Max. switching power (motor load)	4 A		4 A	
Peak inrush current	100 A, capacitive		100 A, capacitive	
Contact resistance	< 100 mΩ (12 V / 1A DC, new condition)		< 100 mΩ (12 V / 1A DC, new condition)	
Insulation resistance	> 100 MΩ (500 VDC, new condition)		> 100 MΩ (500 VDC, new condition)	
Contact gap	≥ 3 mm		≥ 3 mm	
Mechanical life	1 × 10 <sup>5</sup> switching operations		5 × 10 <sup>4</sup> switching operations	
Electrical life	1 × 10 <sup>4</sup> switching operations		1 × 10 <sup>4</sup> switching operations	
<b>General specifications:</b>				
Dielectric strength open contact	1.25 kV		1.25 kV	
Nominal voltage to EN 60664-1	250 V / 4 kV / 3		250 V / 4 kV / 3	
Ambient operating temperature at V <sub>N</sub>	-20 °C ... +55 °C		-20 °C ... +55 °C	
Storage temperature	-40 °C ... +80 °C		-40 °C ... +80 °C	
Dimensions (mm) W x H x L	17.5 x 55 x 90		17.5 x 55 x 90	
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®		Height from upper-edge of DIN 35 rail CAGE CLAMP®	
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14		0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	
Strip lengths	5 ... 6 mm / 0.22 in		5 ... 6 mm / 0.22 in	
Standards/Specifications	EN 50178; EN 60664-1, EN 61058-1		EN 50178; EN 60664-1, EN 61058-1	

	Switching module, breaker, 2-pole	Switching module, switch, 1-pole
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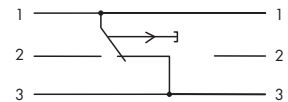
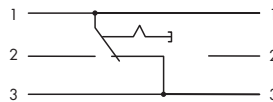
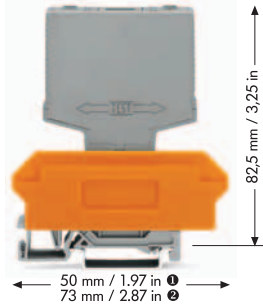
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Switching module in DIN-rail mount enclosure, for DIN 35 rail	789-802	1	789-803	1

Technical Data	Accessories see page 115	Accessories see page 115
<b>Contacts:</b>		
Contact material	Ag alloy	Ag alloy
Operating voltage	250 VAC	250 VAC
Max. switching power (resistive)	16 A	16 A
Max. switching power (motor load)	4 A	4 A
Peak inrush current	100 A, capacitive	100 A, capacitive
Contact resistance	< 100 mΩ (12 V / 1A DC, new condition)	< 100 mΩ (12 V / 1A DC, new condition)
Insulation resistance	> 100 MΩ (500 VDC, new condition)	> 100 MΩ (500 VDC, new condition)
Contact gap	≥ 3 mm	≥ 3 mm
Mechanical life	5 x 10 <sup>4</sup> switching operations	5 x 10 <sup>4</sup> switching operations
Electrical life	1 x 10 <sup>4</sup> switching operations	1 x 10 <sup>4</sup> switching operations
<b>General specifications:</b>		
Dielectric strength open contact	1.25 kV	1.25 kV
Nominal voltage to EN 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Ambient operating temperature at V <sub>N</sub>	-20 °C ... +55 °C	-20 °C ... +55 °C
Storage temperature	-40 °C ... +80 °C	-40 °C ... +80 °C
Dimensions (mm) W x H x L	17.5 x 55 x 90	17.5 x 55 x 90
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Standards/Specifications	EN 50178; EN 60664-1, EN 61058-1	EN 50178; EN 60664-1, EN 61058-1





	<b>1-pole changeover with changeover rocker switch</b>  Module width 15 mm / 0.591 in	<b>1-pole changeover with momentary switch</b>  Module width 15 mm / 0.591 in
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WSB marker card

- Marking S; Item No.: 209-682
- Marking 1 ... 10; Item No.: 209-702

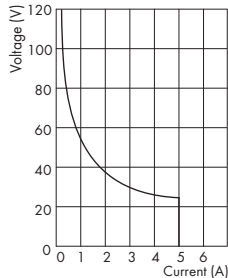
5 cards, each containing 10 strips with 10 markers

Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Switching module	286-895	1	286-896	1

Technical Data	Accessories see pages 99 ... 100		Accessories see pages 99 ... 100	
Max. switching voltage	24 V DC / 250 V AC		24 V DC / 250 V AC	
Switching current, resistive	6 A AC		6 A AC	
Switching current, inductive	4 A AC		4 A AC	
Electrical life	≥ 50.000 switching operations		≥ 50.000 switching operations	
Contact gap	≥ 3 mm		≥ 3 mm	
Isolation voltage	1250 V		1250 V	
Ambient operating temperature	-20 °C ... +40 °C		-20 °C ... +40 °C	
Approvals	Switch tested acc. to EN 61058-1		Switch tested acc. to EN 61058-1	

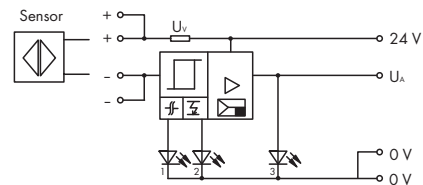
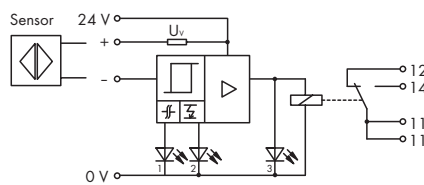
Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit		
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	17 mm / 0.669 in wide	280-619	1	17 mm / 0.669 in wide	280-619	1
with 4-conductor terminal blocks, orange separator ②	17 mm / 0.669 in wide	280-609	1	17 mm / 0.669 in wide	280-609	1
with 4-conductor terminal blocks, marker plate ②	20 mm / 0.787 in wide	280-763	1	20 mm / 0.787 in wide	280-763	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in						

	<p><b>NAMUR switching amplifier with relay output</b> (the switching amplifier has got an isolated output, e.g. for the connection of a PLC)</p> <p>Module width 20 mm / 0.787 in</p>	<p><b>NAMUR switching amplifier with relay output</b> (the electronic output <math>V_A</math> provides the status of the NAMUR sensor)</p> <p>Module width 20 mm / 0.787 in</p>
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NAMUR switching amplifier for the supply of NAMUR sensors and the evaluation and amplification of the sensor signals in accordance with DIN 19234 and DIN 50 227. A line break or a sensor short circuit are monitored by the module and indicated via LEDs.

- LED 1 yellow: Line break
- LED 2 yellow: Short circuit
- LED 3 red: Output active



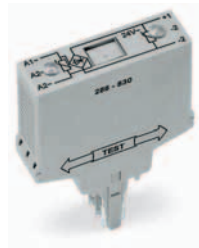
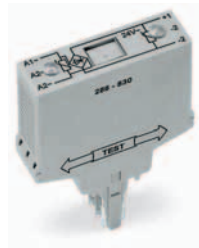
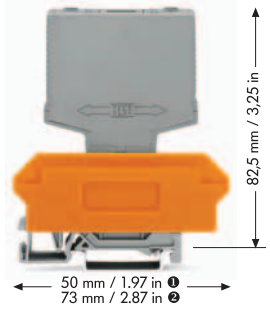
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
NAMUR switching amplifier	286-880	1	286-881	1

Technical Data	Accessories see pages 99 ... 100	Accessories see pages 99 ... 100
Supply voltage $V_B$	24 V DC ( $\pm 10\%$ )	24 V DC ( $\pm 10\%$ )
Nominal input current	20 mA	20 mA
Input	2-wire NAMUR proximity sensor	2-wire NAMUR proximity sensor
Nominal voltage	8 V DC	8 V DC
Current limitation	8 mA	8 mA
Signal current (1)	$\geq 2$ mA	$\geq 2$ mA
Signal current (0)	$\leq 1.7$ mA	$\leq 1.7$ mA
Switching delay	10 ms	10 ms
Max. operating frequency		50 Hz
Short circuit monitoring	$I \geq 7$ mA	$I \geq 7$ mA
Line break monitoring	$I \leq 0.2$ mA	$I \leq 0.2$ mA
Output	relay 1 changeover contact	transistor
Contact material	AgNi 0.15	
Max. switching voltage	250 V AC / 120 V DC	24 V DC
Switching current	3 A	0.5 A
Output voltage $V_A$		22 V $\pm 10\%$
Max. breaking capacity (resistive)	750 VA AC; DC see load limit curve	
Recommended minimum load	100 mA / 10 V AC/DC (1 W, 1VA)	
Pull-in/drop-out/bounce time typ.	8 ms / 5 ms / 4 ms	8 ms / 5 ms / 4 ms
Dielectric strength contact-coil (AC, 1 min)	4 kV	
Dielectric strength open contact	1 kV	
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 3	
Mechanical life	$1 \times 10^8$ switching operations	
Mechanical life at max. load (resistance)	$3 \times 10^5$ switching operations	
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Approvals	DIN VDE 0160 and IEC 60255, DIN VDE 0435 (corresponding parts) DIN 19234, DIN 50227	DIN VDE 0160 and IEC 60255, DIN VDE 0435 (corresponding parts) DIN 19234, DIN 50227

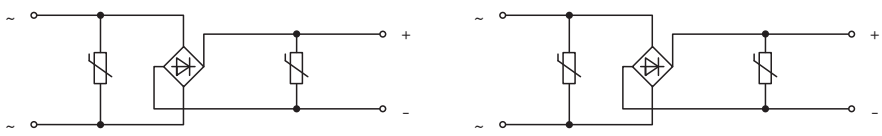


# 8 Pluggable Modules - Bridge Rectifiers

	<b>Bridge with varistor protection for input voltage 24 V AC/1 A</b>  <b>Module width 15 mm / 0.591 in</b>	<b>Bridge with varistor protection for input voltage 250 V AC/1 A</b>  <b>Module width 15 mm / 0.591 in</b>
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WSB marker card  
 • Marking V; Item No.: 209-784  
 • Marking 1 ... 10; Item No.: 209-702  
 • Marking +/-; Item No.: 209-652  
 5 cards, each containing 10 strips with 10 markers

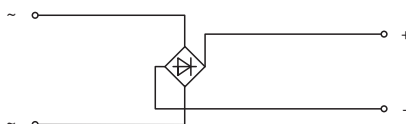


Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Bridge rectifiers	286-830	1	286-840	1

Technical Data	Accessories see pages 99 ... 100		Accessories see pages 99 ... 100	
Input voltage	24 V AC		250 V AC	
Nominal current	1 A		1 A	
Current pulse limit	10 A (10 ms)		10 A (10 ms)	
Max. charging capacitor	2200 µF		500 µF	
Max. nominal operating voltage input (Varistor)	35 V		250 V	
Max. nominal operating voltage output (Varistor)	60 V		300 V	
Ambient operating temperature	-25 °C ... +40 °C		-25 °C ... +40 °C	

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	17 mm / 0.669 in wide 280-619	1	17 mm / 0.669 in wide 280-619	1
with 4-conductor terminal blocks, orange separator ②	17 mm / 0.669 in wide 280-609	1	17 mm / 0.669 in wide 280-609	1
with 4-conductor terminal blocks, marker plate ③	20 mm / 0.787 in wide 280-763	1	20 mm / 0.787 in wide 280-763	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				

	<b>Bridge rectifier for input voltage 250 V AC/1 A</b>	
	<b>Module width 10 mm / 0.394 in</b>	



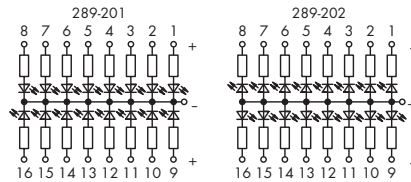
Description	Item No.	Pack. Unit
Bridge rectifiers	280-804/281-419	1

<b>Technical Data</b>	Accessories see pages 99 ... 100
-----------------------	----------------------------------

Input voltage	250 V AC
Nominal current	1 A
Max. charging capacitor	500 µF
Ambient operating temperature	-25 °C ... +40 °C

Accessories	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ❶	12 mm / 0.472 in wide <b>280-618</b>	1
with 4-conductor terminal blocks, orange separator ❷	12 mm / 0.472 in wide <b>280-608</b>	1
with 4-conductor terminal blocks, marker plate ❸	15 mm / 0.591 in wide <b>280-762</b>	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in		

LED gate module  
with 16 LEDs,  
common anode or cathode

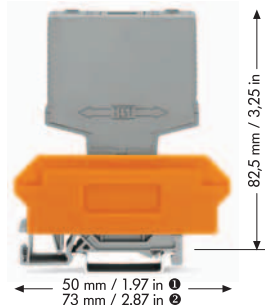


Description	Item No.	Pack. Unit	
Gate module	289-202	1	
	289-201	1	
<b>Technical Data</b>			
Operating voltage	24 V DC		
Operating voltage range	20 V ... 26 V DC		
Power consumption at $V_N$	5.6 mA each LED		
Ambient operating temperature	-25 °C ... +40 °C		
Dimensions (mm) W x H x L, incl. mounting carrier or feet	47 x 31.5 x 65.5		
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®		
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12		
Strip length	5 ... 6 mm / 0.22 in		
<b>Accessories</b>			
Mounting carrier, for screw-fixing or DIN-rail mounting (with snap-fit type universal mounting feet to be ordered separately)	288-001	1	
Universal mounting foot; snap-fit type; suitable for DIN 15, 32 and 35 rails	288-002	10	

# Pluggable Modules - LED Gate Modules

LED indicator module  
with 8 LED, common cathode

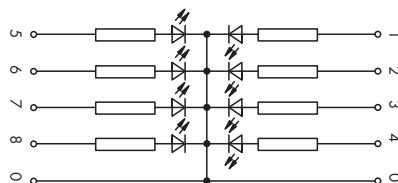
Module width 25 mm / 0.984 in



WSB marker card

- Marking D; Item No.: 209-783
- Marking 1 ... 10; Item No.: 209-702
- Marking +, -, 1, 2, 3, 13, 14, 4, 5, 6;  
Item No.: 249-608

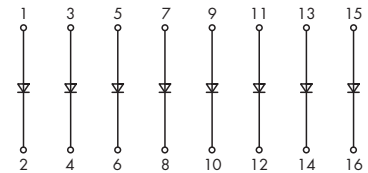
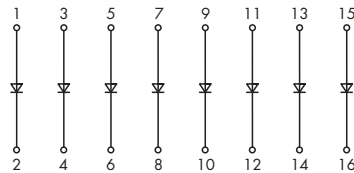
5 cards, each containing 10 strips with 10 markers



Description	Item No.	Pack. Unit	
AND gate module	286-822	1	
<b>Technical Data</b> <span style="float: right;">Accessories see pages 99 ... 100</span>			
Operating voltage	24 V DC		
Operating voltage range	20 V ... 26 V DC		
Power consumption at V <sub>N</sub>	5.1 mA each LED		
Ambient operating temperature	-25 °C ... +40 °C		
<b>Accessories</b>			
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	27 mm / 1.063 in	280-639	1
with 4-conductor terminal blocks, orange separator ②	27 mm / 1.063 in	280-629	1
with 4-conductor terminal blocks, marker plate ③	30 mm / 1.181 in	280-765	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in			



	Open diode gate with 8 diodes 1 N 4007 can be connected individually	Open diode gate with 8 diodes P 600 B can be connected individually
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\* Max. admissible current acc. to the manufacturer's data sheet. With all diodes loaded, the continuous current must be reduced.

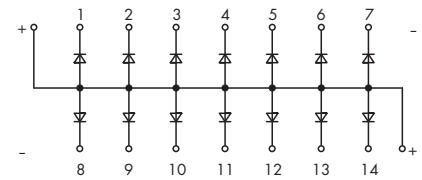
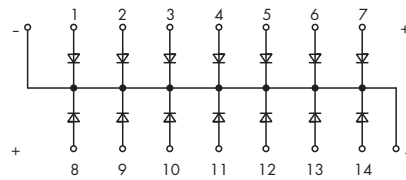
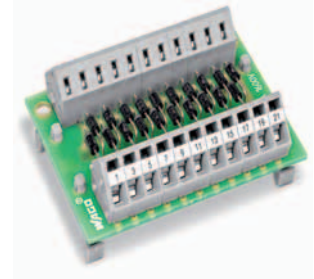
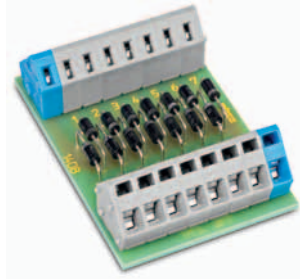
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Open diode gate	289-101	1	289-103	1

Technical Data				
Operating voltage	250 V AC/DC		100 V AC/DC	
Peak reverse voltage	1000 V		100 V	
Rectified current for each diode *	1 A		6 A	
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250V / 4kV / 2		250V / 4kV / 2	
Ambient operating temperature	-25 °C ... +40 °C		-25 °C ... +30 °C	
Dimensions (mm) L x W x H incl. mounting carrier and universal mounting feet	47x31.5x65.5		47x31.5x65.5	
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®		Height from upper-edge of DIN 35 rail CAGE CLAMP®	
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12		0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Strip length	5 ... 6 mm / 0.22 in		5 ... 6 mm / 0.22 in	

Accessories				
Mounting carrier, for screw-fixing or DIN-rail mounting (with snap-fit type universal mounting feet to be ordered separately)	288-001	1	288-001	1
Universal mounting foot; snap-fit type; suitable for DIN 15, 32 and 35 rails	288-002	10	288-002	10



	<b>Polarized diode gate with 14 diodes 1 N 4007 common cathode</b>	<b>Polarized diode gate with 14 diodes 1 N 4007 common anode</b>
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\* Max. admissible current acc. to the manufacturer's data sheet. With all diodes loaded, the continuous current must be reduced.

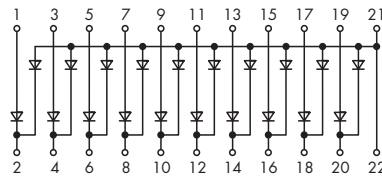
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Polarized diode gate</b>	<b>289-111</b>	<b>1</b>	<b>289-121</b>	<b>1</b>

#### Technical Data

Operating voltage	250 V AC/DC	250 V AC/DC
Peak reverse voltage	1000 V	1000 V
Rectified current for each diode *	1 A	1 A
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250V / 4kV / 2	250V / 4kV / 2
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Dimensions (mm) L x W x H incl. mounting carrier and universal mounting feet	47x31.5x65.5	47x31.5x65.5
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Mounting carrier,</b> for screw-fixing or DIN-rail mounting (with snap-fit type universal mounting feet to be ordered separately)	<b>288-001</b>	<b>1</b>	<b>288-001</b>	<b>1</b>
<b>Universal mounting foot;</b> snap-fit type; suitable for DIN 15, 32 and 35 rails	<b>288-002</b>	<b>10</b>	<b>288-002</b>	<b>10</b>

	<p><b>Lamp test circuit module with 20 diodes for testing 10 lamps with Mounting feet for DIN 35 rail</b></p>	
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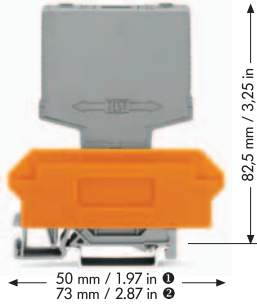


Description	Item No.	Pack. Unit
Gate module	289-151	1

Technical Data		
Operating voltage	250 V AC/DC	
Operating voltage range	0 V ... 250 V AC/DC	
Peak reverse voltage	1600 V	
Rectified current for each diode, resistive	1 A	
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250V / 4kV / 2	
Ambient operating temperature	-25 °C ... +40 °C	
Dimensions (mm) W x H x L, incl. mounting carrier or feet	69 x 21 x 50	
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	
Strip length	5 ... 6 mm / 0.22 in	

# 8 Pluggable Modules - Diode Gates

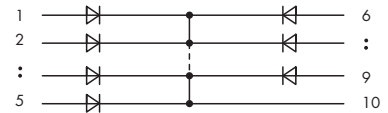
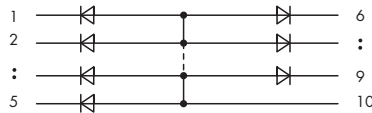
	<p><b>Diode gate module with 3, 5, 7 or 9 diodes 1 N 4007, common anode</b></p> <p>Module width see Item No.</p>	<p><b>Diode gate module with 3, 5, 7 or 9 diodes 1 N 4007, common cathode</b></p> <p>Module width see Item No.</p>
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WSB marker card

- Marking V; Item No.: 209-784
- Marking 1 ... 10; Item No.: 209-702
- Marking +/-; Item No.: 209-652

5 cards, each containing 10 strips with 10 markers

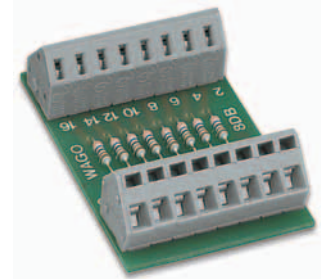
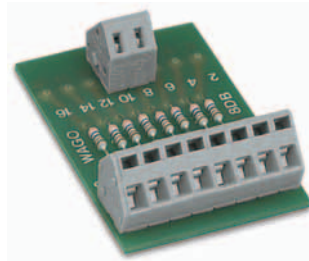


Description	Module width	Item No.	Pack. Unit	Module width	Item No.	Pack. Unit
Diode gate module with 3 diodes	10 mm / 0.394 in	<b>286-803</b>	1	10 mm / 0.394 in	<b>286-813</b>	1
with 5 diodes	15 mm / 0.591 in	<b>286-805</b>	1	15 mm / 0.591 in	<b>286-815</b>	1
with 7 diodes	20 mm / 0.787 in	<b>286-807</b>	1	20 mm / 0.787 in	<b>286-817</b>	1
with 9 diodes	25 mm / 0.984 in	<b>286-809</b>	1	25 mm / 0.984 in	<b>286-819</b>	1

Technical Data	Accessories see pages 99 ... 100		Accessories see pages 99 ... 100	
Operating voltage	250 V AC/DC		250 V AC/DC	
Peak reverse voltage	1000 V		1000 V	
Rectified current for each diode, resistive	1 A		1 A	
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2		250 V / 4 kV / 2	
Ambient operating temperature	-25 °C ... +40 °C		-25 °C ... +40 °C	

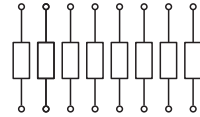
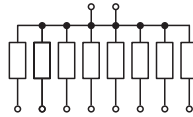
Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	12 mm / 0.472 in <b>280-618</b>	1	12 mm / 0.472 in <b>280-618</b>	1
with 4-conductor terminal blocks, orange separator ②	12 mm / 0.472 in <b>280-608</b>	1	12 mm / 0.472 in <b>280-608</b>	1
with 4-conductor terminal blocks, marker plate ②	15 mm / 0.591 in <b>280-762</b>	1	15 mm / 0.591 in <b>280-762</b>	1
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	17 mm / 0.669 in <b>280-619</b>	1	17 mm / 0.669 in <b>280-619</b>	1
with 4-conductor terminal blocks, orange separator ②	17 mm / 0.669 in <b>280-609</b>	1	17 mm / 0.669 in <b>280-609</b>	1
with 4-conductor terminal blocks, marker plate ②	20 mm / 0.787 in <b>280-763</b>	1	20 mm / 0.787 in <b>280-763</b>	1
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	22 mm / 0.866 in <b>280-638</b>	1	22 mm / 0.866 in <b>280-638</b>	1
with 4-conductor terminal blocks, orange separator ②	22 mm / 0.866 in <b>280-628</b>	1	22 mm / 0.866 in <b>280-628</b>	1
with 4-conductor terminal blocks, marker plate ②	25 mm / 0.984 in <b>280-764</b>	1	25 mm / 0.984 in <b>280-764</b>	1
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	27 mm / 1.063 in <b>280-639</b>	1	27 mm / 1.063 in <b>280-639</b>	1
with 4-conductor terminal blocks, orange separator ②	27 mm / 1.063 in <b>280-629</b>	1	27 mm / 1.063 in <b>280-629</b>	1
with 4-conductor terminal blocks, marker plate ②	30 mm / 1.181 in <b>280-765</b>	1	30 mm / 1.181 in <b>280-765</b>	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				

	<b>Resistor gate with 1 end commoned, 8 resistors 2 k 2; 1 W</b>	<b>Open resistor gate with 8 resistors 2 k 7; 0.6 W individual connection possible</b>
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other resistors – contact factory

\* Max. admissible power dissipation of a single resistor.  
With all resistors loaded, the max. admissible power dissipation must be reduced.



Description	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Resistor gate</b>	<b>289-113</b>	<b>1</b>	<b>289-114</b>	<b>1</b>

**Technical Data**

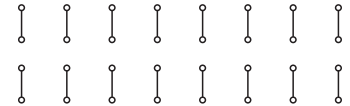
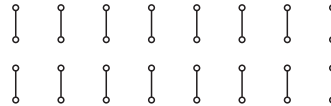
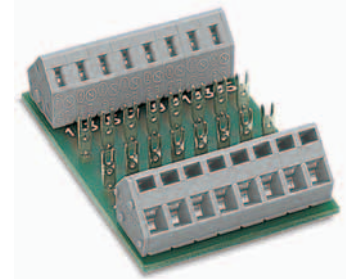
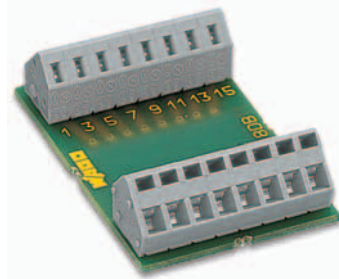
Operating voltage	40 V AC/DC	40 V AC/DC
Resistor type	DIN 0414	DIN 0207
Temperature coefficient	50 ppm	50 ppm
Tolerance	± 1%	± 1%
Power dissipation *	1 W	0.6 W
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Dimensions (mm) L x W x H incl. mounting carrier and universal mounting feet	47x31.5x65.5	47x31.5x65.5
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Mounting carrier,</b> for screw-fixing or DIN-rail mounting (with snap-fit type universal mounting feet to be ordered separately)	<b>288-001</b>	<b>1</b>	<b>288-001</b>	<b>1</b>
<b>Universal mounting foot;</b> snap-fit type; suitable for DIN 15, 32 and 35 rails	<b>288-002</b>	<b>10</b>	<b>288-002</b>	<b>10</b>





	Module with 2 x 8 drilled holes Diameter of drilled holes 1 mm, Pin spacing 3.83 mm x 16 mm	Module with 2 x 8 soldering points Pin spacing 5 mm x 12 mm
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Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Module for building custom circuits	289-102	1	289-131	1

Technical Data				
Operating voltage	250 V AC/DC		250 V AC/DC	
Nominal current	3 A		3 A	
Ambient operating temperature	-25 °C ... +40 °C		-25 °C ... +40 °C	
Dimensions (mm) L x W x H incl. mounting carrier and universal mounting feet	47x31.5x65.5		42.5x32x62.5	
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®		Height from upper-edge of DIN 35 rail CAGE CLAMP®	
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12		0.08 mm² ... 2.5 mm² / AWG 28 ... 12	
Strip length	5 ... 6 mm / 0.22 in		5 ... 6 mm / 0.22 in	

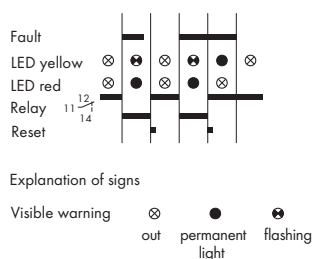
Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Mounting carrier, for screw-fixing or DIN-rail mounting (with snap-fit type universal mounting feet to be ordered separately)	288-001	1	288-001	1
Universal mounting foot; snap-fit type; suitable for DIN 15, 32 and 35 rails	288-002	10	288-002	10



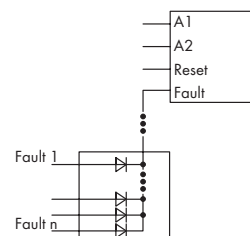




	<b>Fault indicator module with reset</b> <b>Indication of original fault with single flashing light</b> <b>Output for audible warning</b> <b>Visible warning by LED Extensible to collective fault indicator by means of diode gates</b> <b>Module width 20 mm / 0.787 in</b>	
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can be used with diode gate



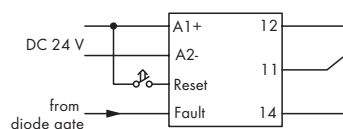
Accessories for collective fault indication

- Diode gate 286-813 to 286-819
- Diode gate 289-111 with common cathode

WSB marker card

- Marking D; Item No.: 209-783
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A2, Quitt, Stör, 12, 11, 11, 14; Item No.: 249-653

5 cards, each containing 10 strips with 10 markers



Description	Item No.	Pack. Unit
<b>Fault indicator module with reset</b>	<b>286-683</b>	1

**Technical Data**

Accessories see pages 99 ... 100

Nominal voltage	24 V DC / RW ≤ 6%
Tolerance	± 10 %
Power consumption	25 mA
Flashing frequency LED (yellow)	1 Hz
Relay output	1 electrically isolated changeover contact
Max. switching voltage	250 V AC / 120 V DC
Max. switching current	5 A
Max. switching capacity	120 W / 1250 VA
Contact material	AgNi 0.15
Dielectric strength contact-coil (AC, 1 min)	2.5 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2
Ambient operating temperature	-25 °C ... +40 °C

**Accessories**

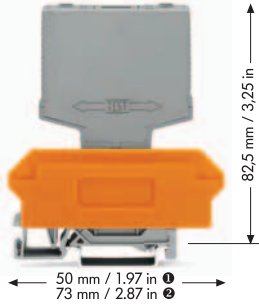
Item No.

Pack. Unit

<b>Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①</b>	22 mm / 0.866 in wide	<b>280-638</b>	1
<b>with 4-conductor terminal blocks, orange separator ②</b>	22 mm / 0.866 in wide	<b>280-628</b>	1
<b>with 4-conductor terminal blocks, marker plate ②</b>	25 mm / 0.984 in wide	<b>280-764</b>	1
<b>wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in</b>			

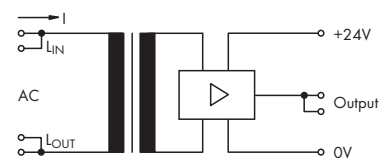
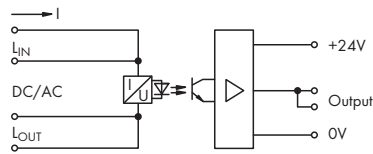
# 8 Pluggable Modules - Current Flow Monitoring

	<b>AC/DC current flow monitoring module</b> 15 mA DC/35 mA ... 300 mA AC  Module width 20 mm / 0.787 in	<b>AC current flow monitoring module</b> 80 mA ... 6 A  Module width 20 mm / 0.787 in
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WSB marker card

- Marking U; Item No.: 209-789
  - Marking 1 ... 10; Item No.: 209-702
  - Marking Lin, Lin, Lout, Lout, 24V, UA, UA, 0V; Item No.: 209-957
- 5 cards, each containing 10 strips with 10 markers

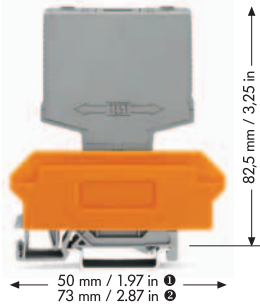


Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Current flow monitoring module	286-659	1	286-661	1

Technical Data	Accessories see pages 99 ... 100		Accessories see pages 99 ... 100	
Current monitoring range	15 mA DC / 35 mA ... 300 mA AC Current < 15/35 mA Output 24 V DC Current > 15/35 mA Output 0 V		80 mA ... 6 A AC Current < 80 mA Output 24 V DC Current > 80 mA Output 0 V	
Voltage range	10 V ... 250 V AC/DC		5 V ... 250 V AC	
Nominal power consumption min / max	45 mW / 900 mW		1 mVA / 2.8 VA	
Voltage drop	3 V		13 mV ... 460 mV	
Response time	5 ms		40 ms	
Operating voltage	24 V DC		24 V DC	
Power consumption	61 mA		41 mA	
Switching current	50 mA		50 mA	
Switching voltage	24 V DC		24 V DC	
Switching power	1.2 W		1.2 W	
Dielectric strength input / output	2 kV		2 kV	
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2		250 V / 4 kV / 2	
Ambient operating temperature	-25 °C ... +40 °C		-25 °C ... +40 °C	
Status indication	Operation: LED = green output LOW, current interruption: LED = red output HIGH		Operation: LED = green output LOW, current interruption: LED = red output HIGH	

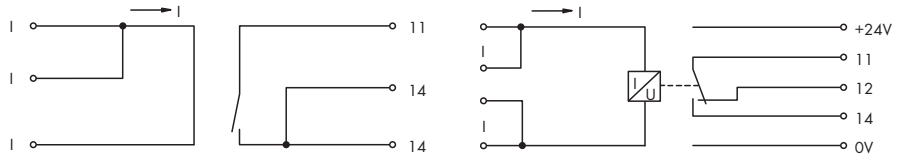
Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	22 mm / 0.866 in wide 280-638	1	22 mm / 0.866 in wide 280-638	1
with 4-conductor terminal blocks, orange separator ②	22 mm / 0.866 in wide 280-628	1	22 mm / 0.866 in wide 280-628	1
with 4-conductor terminal blocks, marker plate ②	25 mm / 0.984 in wide 280-764	1	25 mm / 0.984 in wide 280-764	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				

	<b>DC current flow monitoring module</b> 0.4 A ... 3.5 A 1 make contact  Module width 15 mm / 0.591 in	<b>AC current flow monitoring module</b> 0.2 A ... 3 A, adjustable (286-664) 1 A ... 10 A, adjustable (286-665) 1 changeover contact (1 u)  Module width 25 mm / 0.984 in
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WSB marker card

- Marking U; Item No.: 209-789
  - Marking 1 ... 10; Item No.: 209-702
  - Marking Lin, Lin, Lout, 11, 14, 14, Lin, Lin, Lout; Item No.: 249-654
  - Marking Lin, Lin, Lout, Lout, 24V, 11, 12, 14, 0V; Item No.: 209-997
- 5 cards, each containing 10 strips with 10 markers



Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Current flow monitoring module	286-662	1	286-664	1
			286-665	1

Technical Data	Accessories see pages 99 ... 100		Accessories see pages 99 ... 100	
Current monitoring range	0.4 A ... 3.5 A DC (-20 °C ... +40 °C); 0.4 A ... 3 A DC (-20 °C ... +60 °C); 0.4 A ... 2 A DC (-20 °C ... +70 °C)		0.2 A ... 3 A AC (286-664) 1 A ... 10 A AC (286-665)	
Voltage range	12 V ... 28 V DC			
Nominal power consumption min / max	45 mW / 630 mW		9 mVA / 1.3 VA (286-664) 23 mVA / 8.5 VA (286-665)	
Switching threshold			min. 0.2 A (adjustable) (286-664) min. 1 A (adjustable) (286-665)	
Turn on / off point	0.35 A / 0.07 A			
Voltage drop	24 mV ... 210 mV		44 mV ... 430 mV (286-664) 23 mV ... 850 mV (286-665)	
Response time	0.5 ms		300 ms (286-664) 200 ms (286-665)	
Output	1 make contact		1 changeover contact	
Operating voltage			24 V DC	
Power consumption			17 mA (286-664) 28 mA (286-665)	
Switching current	0.5 A		5 A	
Switching voltage	200 V DC		250 V AC	
Switching power	10 W		1250 VA	
Dielectric strength input / output	1.5 kV		1.5 kV	
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1			250 V / 2.5 kV / 2	
Ambient operating temperature	-25 °C ... +40 °C		-25 °C ... +40 °C	
Storage temperature			-40 °C ... +70 °C	
Status indication			Current < switching threshold LED red, Relay switched	

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	17 mm / 0.669 in wide 280-619	1	27 mm / 1.063 in wide 280-639	1
with 4-conductor terminal blocks, orange separator ②	17 mm / 0.669 in wide 280-609	1	27 mm / 1.063 in wide 280-629	1
with 4-conductor terminal blocks, marker plate ③	20 mm / 0.787 in wide 280-763	1	30 mm / 1.181 in wide 280-765	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				



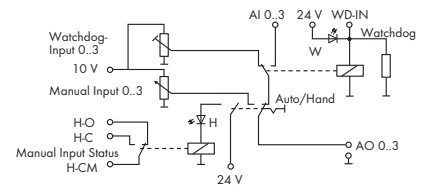
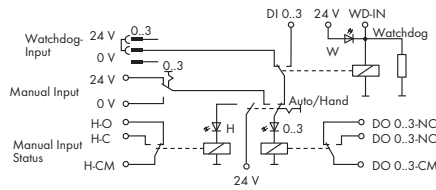


	<b>Manual control module, digital, 4 outputs</b>	<b>Manual control module, analog, 4 outputs</b>
--	--	---

The digital manual control module 789-810 controls the different outputs 0 ... 3 and indicates their status via green LEDs and the changeover contact of the power relay. Depending on both the manual/automatic switch and watchdog input, the states 0 or 1 are transmitted in an electrically isolated form to the output via a relay.



The analog manual control module 789-811 controls the different analog outputs 0 ... 3. Depending on both the manual/automatic switch and watchdog input, the voltages set between 0 ... 10 V are transmitted to the output.



Description	Item No.	Pack. unit	Item No.	Pack. unit
<b>Hand / Auto module</b>	<b>789-810</b>	1	<b>789-811</b>	1

**Technical Data**

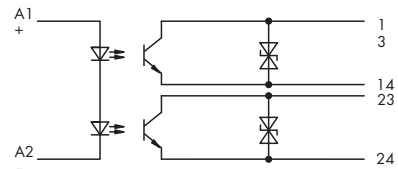
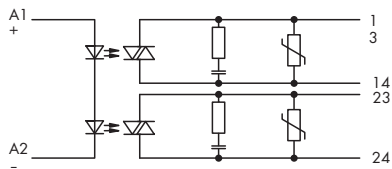
Voltage supply	24 V DC ± 20 %	24 V DC ± 20 %
Dielectric strength input / output	4 kV	4 kV
Ambient operating temperature	0 °C ... +50 °C	0 °C ... +50 °C
Storage temperature	-25 °C ... +70 °C	-25 °C ... +70 °C
Dimensions (mm) W x H x L	106 x 58 x 90	106 x 58 x 90
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 734 and 231 Series)	Height from upper-edge of DIN 35 rail CAGE CLAMP® (WAGO 734 and 231 Series)
Cross sections	0.08 mm² ... 1.5 mm² / AWG 28 ... 14	0.08 mm² ... 1.5 mm² / AWG 28 ... 14
Stripped lengths	0.08 mm² ... 2.5 mm² / AWG 28 ... 12 7 mm / 0.28 in 8 ... 9 mm / 0.33 in	0.08 mm² ... 2.5 mm² / AWG 28 ... 12 7 mm / 0.28 in 8 ... 9 mm / 0.33 in
Approvals	VDE 0110 (corresponding parts)	VDE 0110 (corresponding parts)
Inputs		
No. 1/10	24 V Operating voltage supply	24 V Operating voltage supply
No. 2	GND ground	GND ground
No. 3 ... 6	DI-0 ... 3; Input 0 ... 3; 24 V/max. 20 mA	AI-0 ... 3; Input 0 ... 3; 0-10 V/max. 20 mA
No. 11	WD-IN; Watchdog input; 24 V/max. 20 mA	WD-IN; Watchdog input; 24 V/max. 20 mA
Outputs		
No. 7	H-C; Manual operation "closed"	H-C; Manual operation "closed"
No. 8	H-CM; Manual operation "common"	H-CM; Manual operation "common"
No. 9	H-O; Manual operation "open"	H-O; Manual operation "open"
No. 12/15/18/21	DO-0 ... 3-NC; Break contact; channel 0 ... 3	GND
No. 13/16/19/22	DO-0 ... 3-CM; Common; channel 0 ... 3	AO-0 ... 3; Output 0 ... 3; 0-10 V/max. 20 mA
No. 14/17/20/23	DO-0 ... 3-NO; Make contact; channel 0 ... 3	GND
Max. switching voltage channel nos. 12 ... 23	250 V AC / 30 V DC	250 V AC / 30 V DC
Max. switching current channel nos. 12 ... 23	8 A AC / 8 A DC	8 A AC / 8 A DC

# 8 Pluggable Modules - S0 Optocouplers

	<b>Power optocoupler for S0 current meter interface with AC output</b>  Module width 20 mm / 0.787 in	<b>Power optocoupler for S0 current meter interface with DC output</b>  Module width 20 mm / 0.787 in
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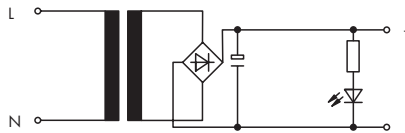
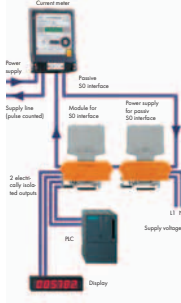
The optocoupler for the S0 current meter interface sends counter pulses from the supply lines. Via this interface the user has the possibility to access data which is created by pulse generating current meters with a S0 current meter interface in accordance with DIN 43 864. The user can extract the data without affecting the S0 circuit and use them for their own evaluations, for example, optimizing energy consumption by reducing peak demands.



Description	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>S0 interface</b>	<b>286-740</b>	1	<b>286-741</b>	1
<b>Terminal block for pluggable modules, with shunt resistance</b>	22 mm / 0.866 in wide	1	22 mm / 0.866 in wide	1

Technical Data	Accessories see pages 99 ... 100	Accessories see pages 99 ... 100
Input current I-Signal (H)	> 10 mA ... < 27 mA	> 10 mA ... < 27 mA
Input current O-Signal (L)	< 2 mA	< 2 mA
Switch-on threshold	> 8.5 mA	> 8.5 mA
Switch-off threshold	< 7 mA	< 7 mA
Transmission frequency		<100 Hz
Input wiring	reverse protection diode	reverse protection diode
Operating voltage range	24 V ... 280 V (50 Hz ... 60 Hz) AC	15 V ... 120 V DC
Peak reverse voltage	600 V AC	200 V DC
Continuous current	2 x 1 A	2 x 750 mA
Surge current t = 20 ms	60 A	3 A
Min. load current	30 mA	
Voltage drop at I max	< 1.2 V	< 1.2 V
Leakage current when turned off	< 2 mA	
Switch on / Switch off time	10 ms / 10 ms	5 ms / 3 ms
Output circuit	RC module / varistor	suppressor diode
Test voltage input / output	2.5 kV eff.	2.5 kV eff.
Wire connection	CAGE CLAMP®	CAGE CLAMP®
Ambient operating temperature	-25 °C ... +60 °C (at 0.4 A continuous current)	-25 °C ... +60 °C (at 200 mA continuous current)
Storage temperature	-40 °C ... +80 °C	-40 °C ... +80 °C
Approvals	EN 60664-1	EN 60664-1
Mounting position	any	any
Dimensions (mm) L x H x W incl. terminal block	20 x 82.5 x 73	20 x 82.5 x 73

	<b>Supply module for passive S0 current meter interface acc. to DIN 43864</b>	
	<b>Module width 25 mm / 0.984 in</b>	



This compact module supplies power to passive S0 current meter interfaces.

Description	Item No.	Pack. Unit
S0 supply module	286-742	1

**Technical Data**

Accessories see pages 99 ... 100

Nominal input voltage (V <sub>N</sub> )	230 V AC
Frequency	50 Hz
Max. output voltage DC	27 V
Max. output current	27 mA
Test voltage input / output	2.5 kV eff.
Ambient operating temperature	0 °C ... +70 °C
Storage temperature	-40 °C ... +80 °C
Approvals	EN 60664-1; EN 60742
Mounting position	any
Dimensions (mm) L x H x W incl. terminal block	25 x 82.5 x 73

**Accessories**

Item No.

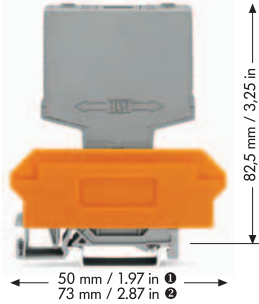
Pack. Unit

Terminal block for pluggable modules, with 4-conductor terminal blocks, orange separator	27 mm / 280-629	1
Wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14;	1.063 in wide	
Stripped lengths 8 ... 9 mm / 0.33 in		
WSB marker card with marking: +/-	209-552	5

# 8 Pluggable Modules - AND Gate

446

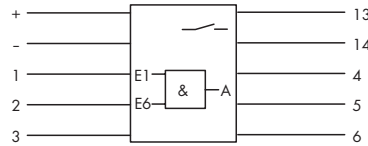
	<b>AND gate module with 6 inputs</b> <b>Relay output with 1 make contact</b>	
<b>Module width 25 mm / 0.984 in</b>		



WSB marker card

- Marking D; Item No.: 209-783
- Marking 1 ... 10; Item No.: 209-702
- Marking +, -, 1, 2, 3, 13, 14, 4, 5, 6; Item No.: 249-608

5 cards, each containing 10 strips with 10 markers

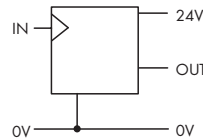
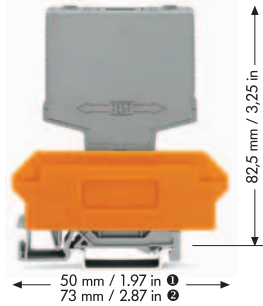


Description	Item No.	Pack. Unit
Gate module	286-826	1

Technical Data		Accessories see pages 99 ... 100
Operating voltage	24 V DC	
Operating voltage range	24 V ... 27.5 V DC	
Gate voltage - input	DC 24 V	
Power consumption at $V_N$	max. 34.6 mA	
Relay output	make contact	
Max. switching voltage	250 V AC / 120 V DC	
Max. continuous current	3 A	
Max. Switching power (resistive)	120 W / 750 VA	
Dielectric strength input / output	2.5 kV	
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2	
Ambient operating temperature	-25 °C ... +40 °C	

Accessories	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	27 mm / 1.063 in wide 280-639	1
with 4-conductor terminal blocks, orange separator ②	27 mm / 1.063 in wide 280-629	1
with 4-conductor terminal blocks, marker plate ②	30 mm / 1.181 in wide 280-765	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in		

	<b>Flip-Flop</b> Operating voltage 24 V DC  Module width 15 mm / 0.591 in	
--	--	--



Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Flip Flop module	286-825	1		

Technical Data		Accessories see pages 99 ... 100		
Input voltage	24 V DC (± 10 %)			
Input current	0.25 mA			
Input voltage (High Signal)	> 7 V			
Input voltage (Low Signal)	< 3 V			
Pulse frequency	5 kHz			
Min. output voltage	$V_b - 1.5 V$			
Max. output current	0.5 A			
Operating voltage	24 V DC			
Operating voltage range	20 V ... 30 V DC			
Power consumption	7.5 mA			
Reverse voltage transistor	80 V			
Test voltage input/output	2.5 kV			
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 2			
Ambient operating temperature	0 °C ... +55 °C			

Accessories	Item No.	Pack. Unit		
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	17 mm / 0.669 in wide	280-619	1	
with 4-conductor terminal blocks, orange separator ②	17 mm / 0.669 in wide	280-609	1	
with 4-conductor terminal blocks, marker plate ②	20 mm / 0.787 in wide	280-763	1	
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				





# 9



## Empty Housings, 2857 Series

Overview and Configuration  
 Modular Empty Housings  
 Stripboards

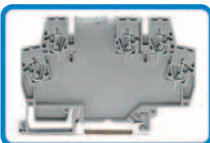
450 - 0  
 0 - 0  
 0 - 0



## Empty Component Plug Housings 280, 286, 786 Series

Empty Component Plug Housings for Building Custom Circuits  
 Empty Component Plug Housings for Building Custom Circuits

0 - 0  
 0



## Empty Housings, 859 Series

Empty Electronic Terminal Block Housings

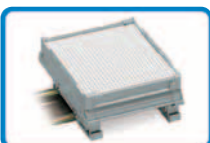
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## Empty Housings, 789 Series

DIN-Rail Mounted Enclosures  
 Accessories, 789 Series

0  
 0



## Mounting Carriers, 209, 210, 288 Series

Mounting Carriers for DIN-Rail Mounting PCBs  
 Mounting Carriers and Feet for DIN-Rail Mounting PCBs

0 - 0  
 0 - 0

# 9 Modular Empty Housings, 2857 Series

Overview and Configuration

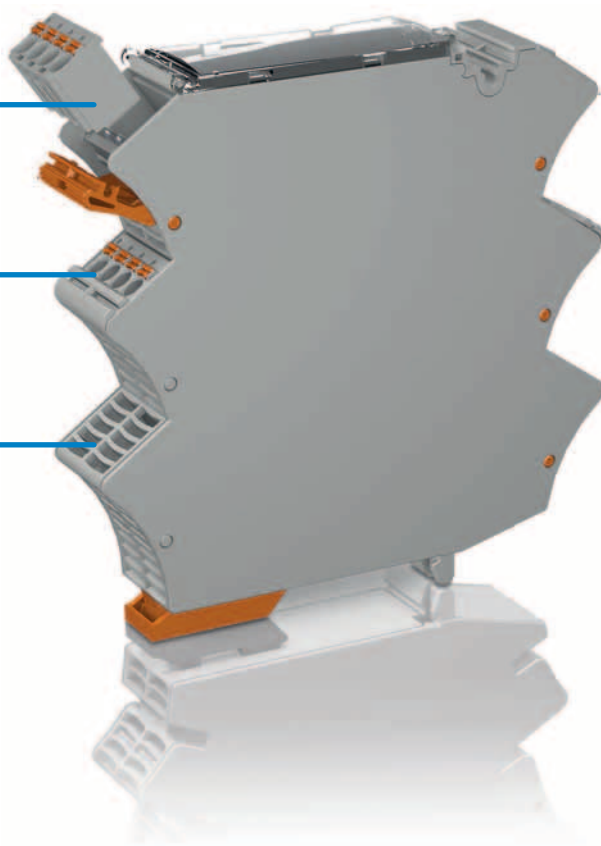
450

Pluggable connection with *picoMAX*<sup>®</sup>

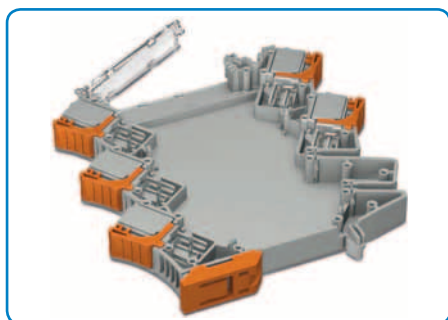
Fixed connection with *picoMAX*<sup>®</sup>

Empty slot without connection technology

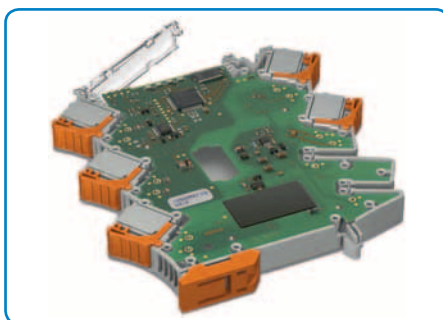
... freely selectable at each connection point



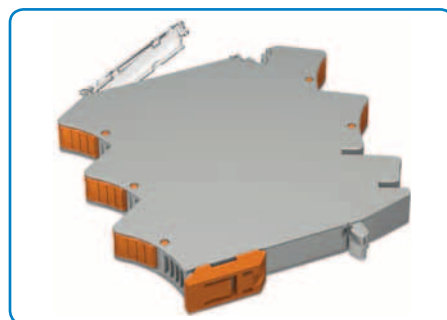
## Supplied as a pre-assembled unit



1. Pre-assembled unit







2. Inserting and soldering the PCB.



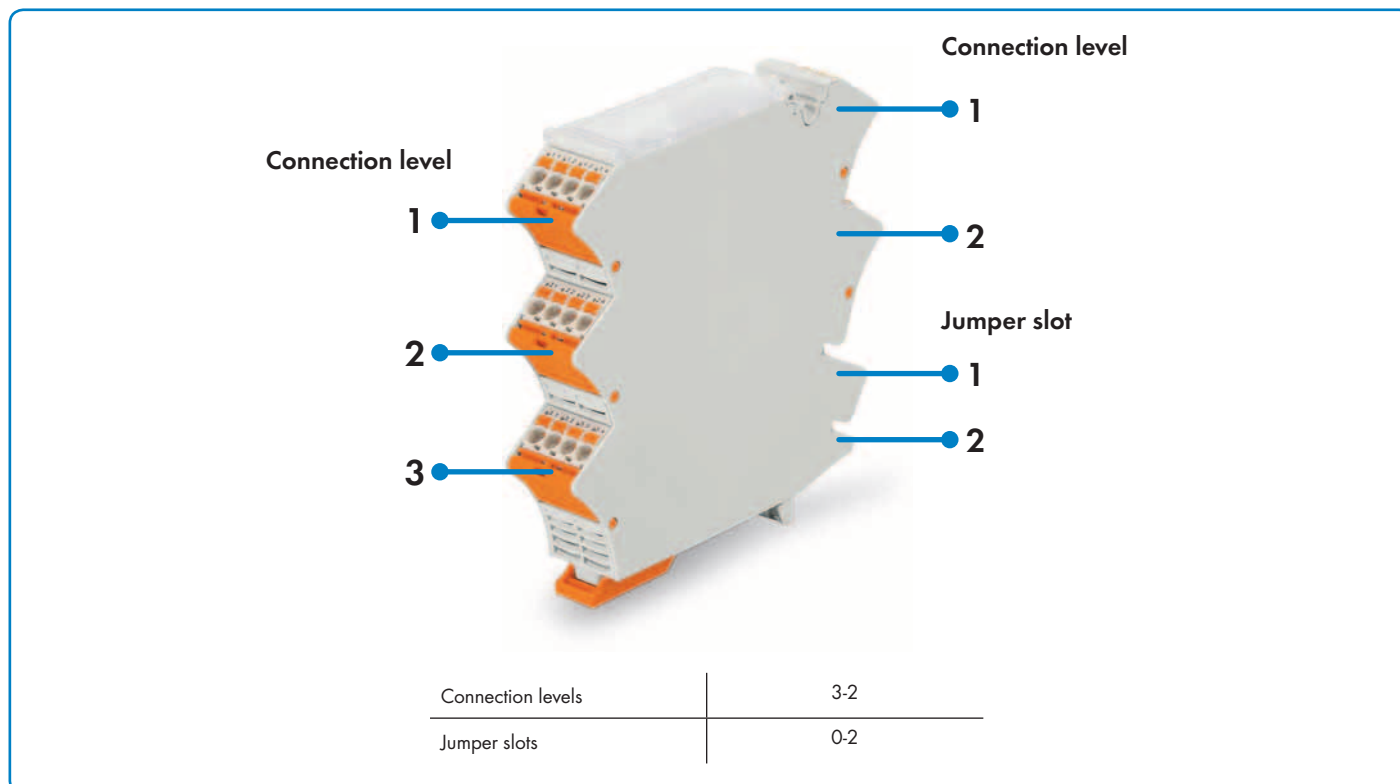
3. Snapping on side wall.

## Housing configuration

Housing width: 12.5 mm	 2857-101	 2857-102	 2857-103	-
Housing width: 22.5 mm	 2857-121	 2857-122	 2857-123	 2857-124
Connection levels	2-2	3-2	3-3	1-1
Jumper slots	2-2	0-2	0-0	2-2

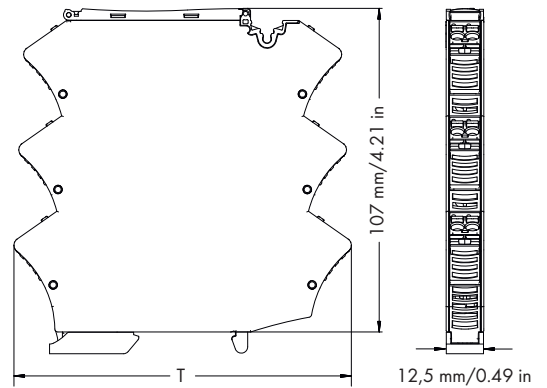
Mixed configuration (fixed/removable/empty slot) upon request.

### Example of connection level and jumper slot assignment:



Modular Empty Housings

Housing width: 12.5 mm



Features:

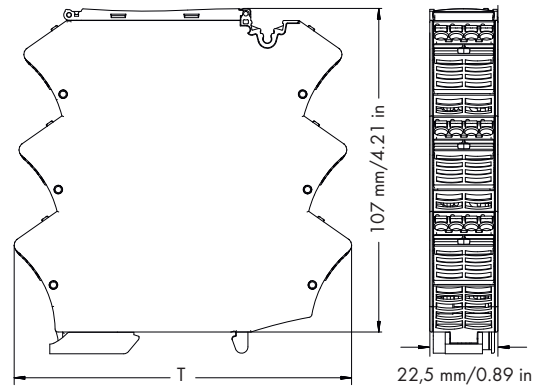
- picoMAX® female connectors, with coding keys, 2-pole
- Pre-assembled unit
- Flexible conductor termination
- Customization of connection levels
- Various marking options available
- Sealable, transparent cover
- Commoning option via 859-402 jumpers

Technical Data: Empty Housing	
<b>Material Data:</b>	
Housing material	PC
Flammability rating	V0
<b>Environmental Requirements:</b>	
Ambient operating temperature	-40 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
<b>Dimensions:</b>	
Dimensions (mm) W x H x L	12.5 x 107 x 108 (2857-101) 12.5 x 107 x 110 (2857-102) 12.5 x 107 x 112 (2857-103)
	Height from upper-edge of DIN 35 rail
<b>Technical Data:</b>	
Power loss	2 W
Accessories	Coding key carrier: 2092-1610 Jumpers: 859-402 Marker strips, WMB and WMB Inline: see section 11

Description	Item No.	Pack. Unit	
<b>Modular empty housing, for DIN 35 rail</b>			
<b>Housing width: 12.5 mm</b>			
2-2 connection levels, 2-2 jumper slots	<b>2857-101</b>	10	
3-2 connection levels, 0-2 jumper slots	<b>2857-102</b>	10	
3-3 connection levels, 0-0 jumper slots	<b>2857-103</b>	10	
<b>Technical Data: Female Connector with picoMAX® 5.0 Conductor Termination</b>			
<b>Technical Data:</b>			
Pin spacing	5 mm / 0.197 in		
Ratings per	IEC/EN 60664-1		
Overvoltage category EN	III	II	
Pollution degree	3	2	
Rated voltage EN	250 V	320 V	630 V
Rated surge voltage	4 kV	4 kV	4 kV
Nominal current	16 A	16 A	16 A
Approvals per	UL/CSA		
Use Group UL 1059	B	C	D
Rated voltage	300 V	-	300 V
Nominal current UL	15 A	-	10 A
<b>Conductor Data:</b>			
Wire connection	CAGE CLAMP® S		
Solid sizes	0.2 ... 2.5 mm <sup>2</sup> / AWG 24 ... 12		
Fine-stranded wires	0.2 ... 2.5 mm <sup>2</sup> / AWG 24 ... 12		
Fine-stranded wires with insulated ferrule	0.2 ... 1.5 mm <sup>2</sup> / AWG 24 ... 16		
Fine-stranded wires with uninsulated ferrule	0.2 ... 2.5 mm <sup>2</sup> / AWG 24 ... 14		
Strip length	9 ... 10 mm / 0.35 ... 0.39 in		
<b>Material Data:</b>			
Clamping spring material	Chrome nickel spring steel (CrNi)		
Contact material	Electrolytic copper (Ecu)		
Contact plating	Tin-plated		
Insulating material	Polyphthalamide glass fiber (PPA-GF)		
Flammability rating	V0		
For additional technical data, see WAGO's picoMAX® catalog.			

# Modular Empty Housings

Housing width: 22.5 mm



**Features:**

- *picoMAX*® female connectors, with coding keys, 4-pole
- Pre-assembled unit
- Flexible conductor termination
- Customization of connection levels
- Various marking options available
- Sealable, transparent cover
- Commoning option via 859-402 jumpers

Description	Item No.	Pack. Unit
<b>Modular empty housing, for DIN 35 rail</b>		
<b>Housing width: 22.5 mm</b>		
2-2 connection levels, 2-2 jumper slots	<b>2857-121</b>	5
3-2 connection levels, 0-2 jumper slots	<b>2857-122</b>	5
3-3 connection levels, 0-0 jumper slots	<b>2857-123</b>	5
1-1 connection levels, 2-2 jumper slots	<b>2857-124</b>	5

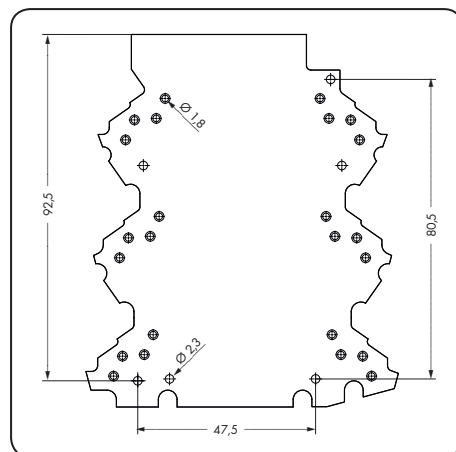
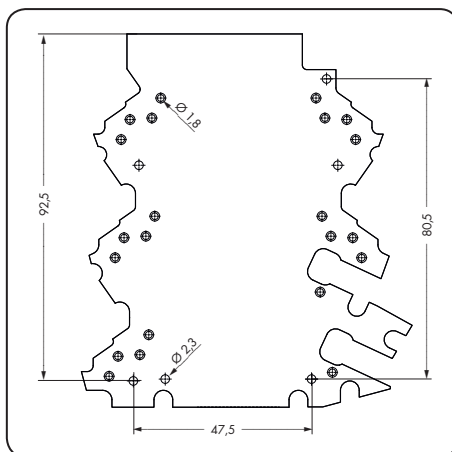
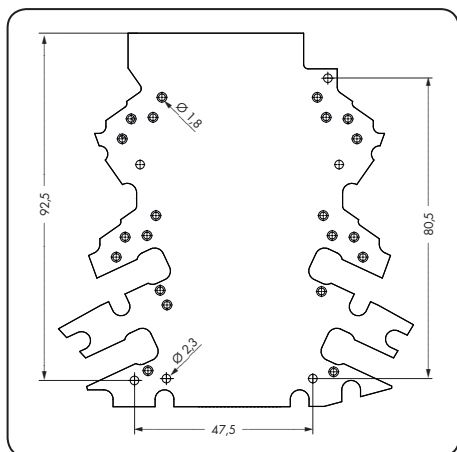
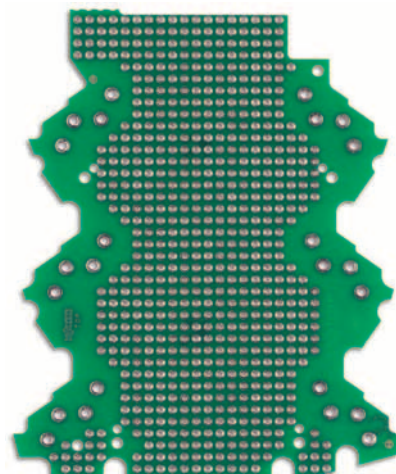
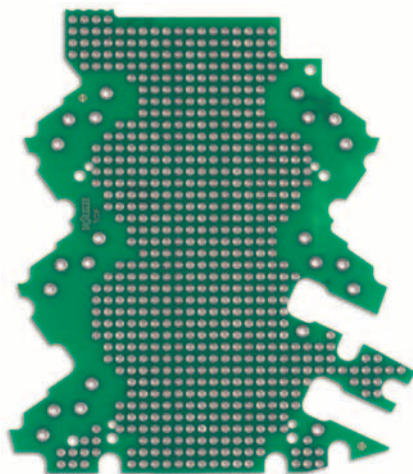
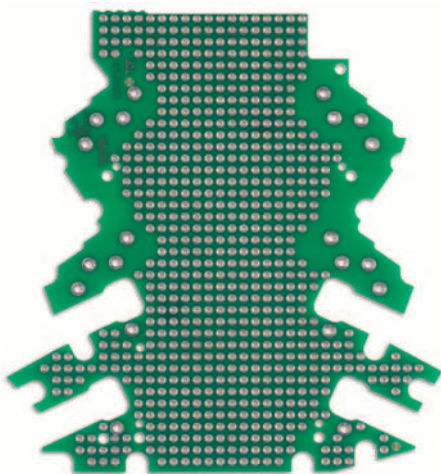
Technical Data: Empty Housing	
<b>Material Data:</b>	
Housing material	PC
Flammability rating	V0
<b>Environmental Requirements:</b>	
Ambient operating temperature	-40 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
<b>Dimensions:</b>	
Dimensions (mm) W x H x L	22.5 x 107 x 108 (2857-121)
	22.5 x 107 x 110 (2857-122)
	22.5 x 107 x 112 (2857-123)
	22.5 x 107 x 105 (2857-124)
	Height from upper-edge of DIN 35 rail
<b>Technical Data:</b>	
Power loss	3 W
Accessories	Coding key carrier: 2092-1610
	Jumpers: 859-402
	Marker strips, WMB and
	WMB Inline: see section 11

Technical Data: Female Connector with <i>picoMAX</i> ® 5.0 Conductor Termination			
<b>Technical Data:</b>			
Pin spacing	5 mm / 0.197 in		
Ratings per	IEC/EN 60664-1		
Overtolerance category EN	III	III	II
Pollution degree	3	2	2
Rated voltage EN	250 V	320	630 V
Rated surge voltage	4 kV	4 kV	4 kV
Nominal current	16 A	16 A	16 A
Approvals per	UL/CSA		
Use Group UL 1059	B	C	D
Rated voltage	300 V	-	300 V
Nominal current UL	15 A	-	10 A
<b>Conductor Data:</b>			
Wire connection	CAGE CLAMP® S		
Solid sizes	0.2 ... 2.5 mm² / AWG 24 ... 12		
Fine-stranded wires	0.2 ... 2.5 mm² / AWG 24 ... 12		
Fine-stranded wires with insulated ferrule	0.2 ... 1.5 mm² / AWG 24 ... 16		
Fine-stranded wires with uninsulated ferrule	0.2 ... 2.5 mm² / AWG 24 ... 14		
Strip length	9 ... 10 mm / 0.35 ... 0.39 in		
<b>Material Data:</b>			
Clamping spring material	Chrome nickel spring steel (CrNi)		
Contact material	Electrolytic copper (Ecu)		
Contact plating	Tin-plated		
Insulating material	Polyphthalamide glass fiber (PPA-GF)		
Flammability rating	V0		
For additional technical data, see WAGO's <i>picoMAX</i> ® catalog.			

**Stripboard**  
2-2 connection levels  
2-2 jumper slots

**Stripboard**  
3-2 connection levels  
0-2 jumper slots

**Stripboard**  
3-3 connection levels  
0-0 jumper slots

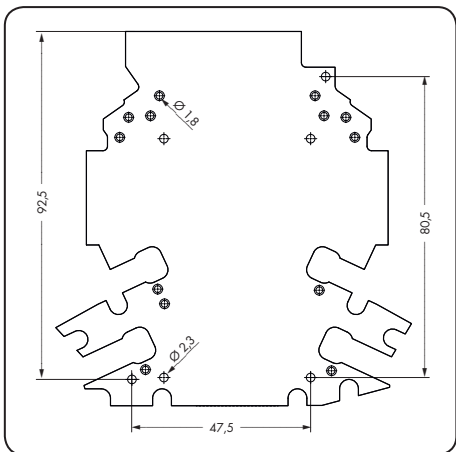
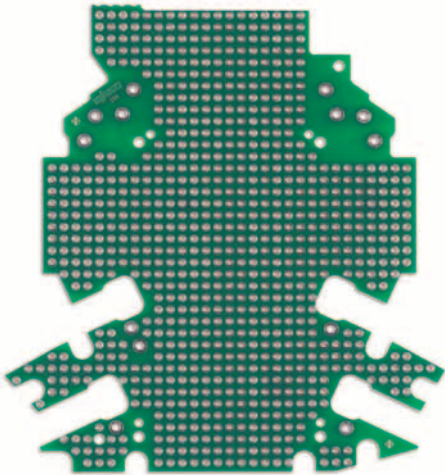


Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
Stripboard, for installation in 12.5mm and 22.5mm empty housings		Stripboard, for installation in 12.5mm and 22.5mm empty housings		Stripboard, for installation in 12.5mm and 22.5mm empty housings	
2857-191/3140-000	5 (5 x 1)	2857-192/3140-000	5 (5 x 1)	2857-193/3140-000	5 (5 x 1)

# Stripboards, 2857 Series

for Empty Housings

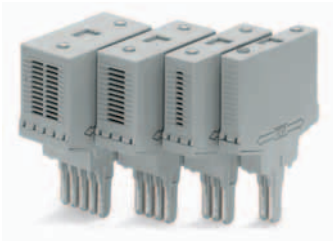
<p><b>Stripboard</b> 1-1 connection levels 2-2 jumper slots</p>		
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Item No.	Pack. Unit
<p><b>Stripboard,</b> for installation in 12.5mm and 22.5mm empty housings</p>	
<p>2857-194/3140-000</p>	<p>5 (5 x 1)</p>



## 286 Series, empty component plug



Description		Item No.	Pack. Unit
Empty component plug, type 9	4-pole, 10 mm / 0.394 in wide	286-110	1
Empty component plug, type 10	6-pole, 15 mm / 0.591 in wide	286-111	1
Empty component plug, type 11	8-pole, 20 mm / 0.787 in wide	286-112	1
Empty component plug, type 12	10-pole, 25 mm / 0.984 in wide	286-113	1

250 V/ 4 KV/ 3 (rated voltage/ rated surge voltage/ pollution degree);

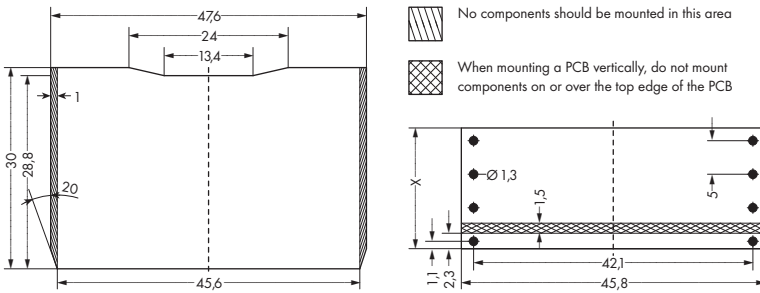
6 A per contact;

Module height 82.5 mm/3.25 in (from upper-edge of DIN 35 rail);

PCB dimensions and component height see drawing and table

### PCB dimensions

Module width	10	15	20	25
Component height	4.2	9.2	14.2	19.2
X = total height of PCB	8	13	18	23



## 786 Series, empty component plug



Description		Item No.	Pack. Unit
Empty component plug, type 14	6-pole, 15 mm / 0.591 in wide	786-101	1
Empty component plug, type 15	8-pole, 20 mm / 0.787 in wide	786-102	1
Empty component plug, type 16	10-pole, 25 mm / 0.984 in wide	786-103	1

250 V/ 4 KV/ 3 (rated voltage/ rated surge voltage/ pollution degree);

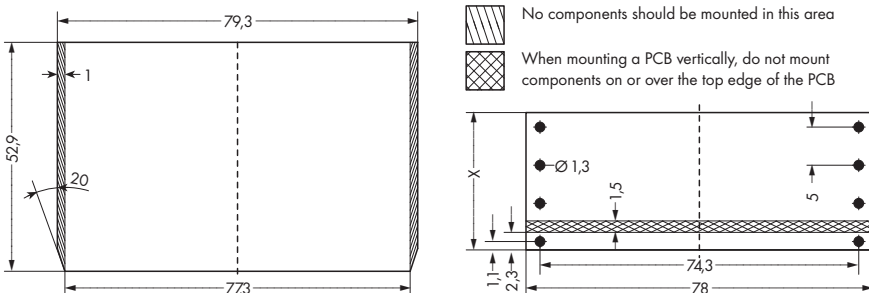
6 A per contact;

Module height 82.5 mm/3.25 in (from upper-edge of DIN 35 rail);

PCB dimensions and component height see drawing and table

### PCB dimensions

Module width	15	20	25
Component height	9.2	14.2	19.2
X = total height of PCB	13	18	23



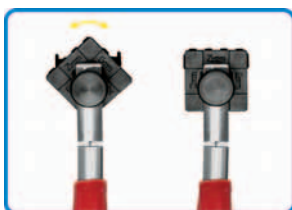
Unlocking pliers for component plug housing



WSB-marker cards



Description	Item No.	Pack. Unit
Unlocking pliers for component plug housing	210-492	1
WSB Quick marking system for module width 5 - 17.5 mm plain	209-501	5 cards
Marking 1 ... 10 (10 x)	209-702	5 cards
10 strips with 10 markers, white with black printing		



Adjust the pliers to the proper housing width



Insert the pliers into the locking slots ...



... by compressing the pliers ...



... the cover is removed.

2-conductor terminal block



4-conductor terminal block



Description	Item No.	Pack. Unit	
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator	12 mm / 0.472 in wide	280-618	1
with 4-conductor terminal blocks, orange separator	12 mm / 0.472 in wide	280-608	1
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator	17 mm / 0.669 in wide	280-619	1
with 4-conductor terminal blocks, orange separator	17 mm / 0.669 in wide	280-609	1
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator	22 mm / 0.866 in wide	280-638	1
with 4-conductor terminal blocks, orange separator	22 mm / 0.866 in wide	280-628	1
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator	27 mm / 1.063 in wide	280-639	1
with 4-conductor terminal blocks, orange separator	27 mm / 1.063 in wide	280-629	1

Wire range 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 28 ... 14; Stripped lengths 8 ... 9 mm / 0.33 in

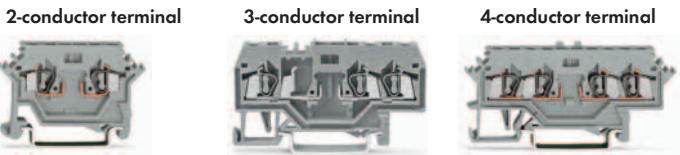
Other Terminal blocks see Full Line Catalog, Volume 1, Rail-Mounted Terminal Block Systems

280 Series, empty component plug housings for building custom circuits



Description	Item No.	Pack. Unit
<b>Empty component plug, type 1</b> 2-pole, 5 mm / 0.197 in wide; Inside dimensions of plug W/H/D 3.2/15/15 mm (0.126/0.591/0.591 in)	<b>280-801</b>	100
<b>Empty component plug, type 2</b> 2-pole, 10 mm / 0.394 in wide; Inside dimensions of plug W/H/D 8.2/15/15 mm (0.323/0.591/0.591 in)	<b>280-802</b>	50
<b>Empty component plug, type 3</b> 4-pole, 10 mm / 0.394 in wide; Inside dimensions of plug W/H/D 8.2/15/15 mm (0.323/0.591/0.591 in)	<b>280-804</b>	50

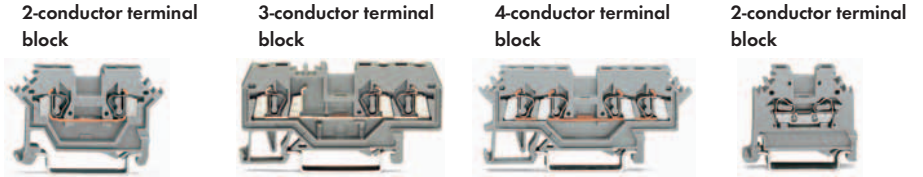
250 V / 4 KV / 3 (rated voltage/ rated surge voltage/ pollution degree);



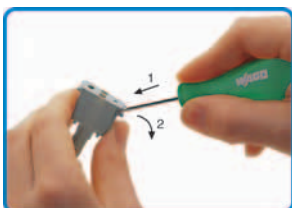
Description	Item No.	Pack. Unit
<b>2-conductor terminal block</b> gray, terminal block width 5 mm /0.197 in, marking on both sides	<b>280-616</b>	100
<b>2-conductor terminal block</b> gray, terminal block width 5 mm /0.197 in, marking in center position	<b>280-916</b>	100
<b>3-conductor terminal block</b> gray, terminal block width 5 mm /0.197 in	<b>280-610</b>	100
<b>4-conductor terminal block</b> gray, terminal block width 5 mm /0.197 in, marking on both sides	<b>280-606</b>	100
<b>4-conductor terminal block</b> gray, terminal block width 5 mm /0.197 in, marking in center position	<b>280-686</b>	100

Wire range 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / AWG 28 ... 14; Stripped lengths 8 ... 9 mm / 0.33 in  
For accessories like end plates, jumpers etc. see Full Line Catalog, Volume 1, Rail-Mounted Terminal Block Systems

Empty Component Plug Housings for Building Custom Circuits, 280 Series



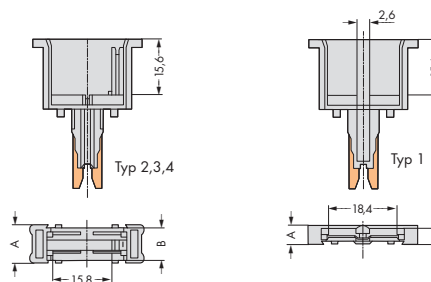
Description	Item No.	Pack. Unit
<b>Empty component plug, type 4</b> 2-pole, 10 mm / 0.394 in wide; Inside dimensions of plug W/H/D 8.2/15/15 250 V / 4 KV / 3 (rated voltage/ rated surge voltage/ pollution degree); 6 A max.	<b>280-803</b>	50
<b>Front-entry 2-conductor terminal block</b> gray, terminal block width 5 mm /0.197 in, marking on both sides	<b>280-601</b>	100
<b>Front-entry 2-conductor terminal block</b> gray, terminal block width 5 mm /0.197 in, marking in center position	<b>280-901</b>	100
<b>Front-entry 3-conductor terminal block</b> gray, terminal block width 5 mm /0.197 in	<b>280-681</b>	100
Wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12 (THHN, THWN); Stripped lengths 8 ... 9 mm / 0.33 in		
<b>Front-entry 4-conductor terminal block</b> gray, terminal block width 5 mm /0.197 in, marking on both sides	<b>280-621</b>	100
<b>Front-entry 4-conductor terminal block</b> gray, terminal block width 5 mm /0.197 in, marking in center position	<b>280-833</b>	100
<b>Side-entry 2-conductor terminal block</b> gray, terminal block width 5 mm /0.197 in	<b>280-101</b>	100
Wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; Stripped lengths 8 ... 9 mm / 0.33 in, For accessories like end plates, jumpers etc. see Full Line Catalog, Volume 1, Rail-Mounted Terminal Block Systems		



Press screwdriver into appropriate slot (1) and remove cover with levering action (2).



Introduce cover in the outer groove of the plug and press completely down until snap-fit engaged.

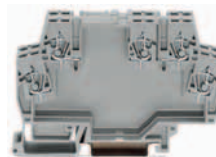
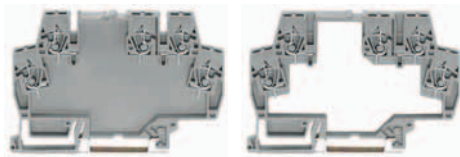


Typ	1	2	3	4
A	5	10	10	10
B	3,2	8,2	8,2	8,2

859-110

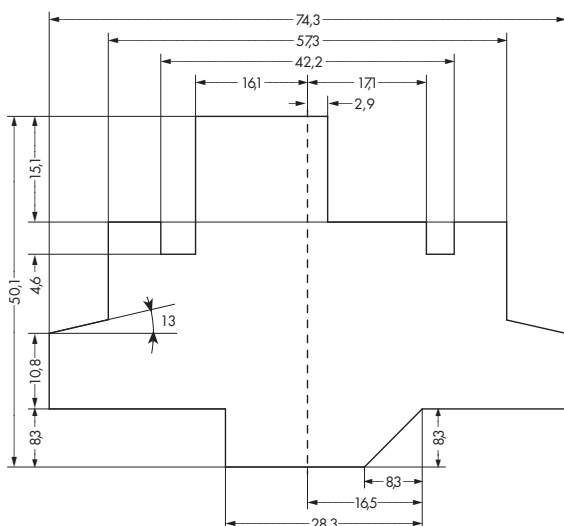
859-501

859-110 and 859-501

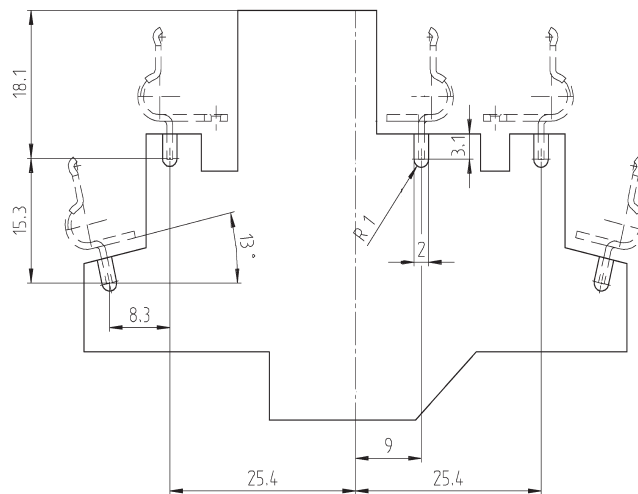


Description	Item No.	Pack. Unit	Technical Data
Modular housing for mounting electronic components in a rail-mounted terminal block	859-110	1	Housing material: PA 6.6
Frame to enlarge the terminal block width	859-501	1	Flammability rating: V0 Color: gray (similar to RAL 7038) Degree of protection: IP20 Perm. ambient temperature: -25 °C ... +70 °C Storage temperature: -40 °C ... +85 °C Width: 6 mm (859-110), 8 mm (859-501) Mounting position: any Dimensions (W x H x L): (6 x 56 x 91) mm Height from upper-edge of DIN 35 rail Wire connection: CAGE CLAMP® Cross sections: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> /AWG 28 ... 14 Stripped lengths: 5 ... 6 mm / 0.22 in

PCB dimensions



PCB dimensions



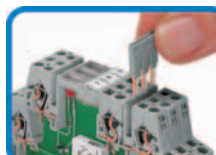
End and intermediate plate



Push-in type jumper bar



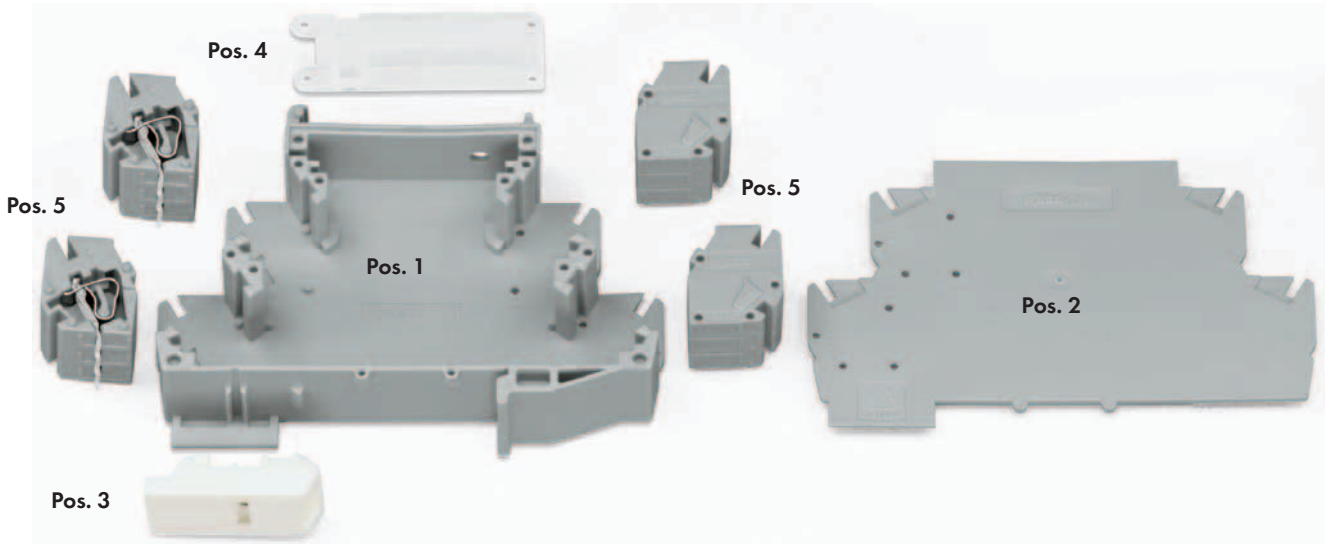
Commoning



Test pin



Description	Item No.	Pack. Unit
End and intermediate plate; 1 mm / 0.039 in thick, gray	859-525	100 (4x25)
Push-in type jumper bars, light gray, insulated, 18 A	859-402	200 (8x25)
	859-403	200 (8x25)
	859-404	200 (8x25)
	859-405	200 (8x25)
	859-406	100 (4x25)
	859-407	100 (4x25)
	859-408	100 (4x25)
	859-409	100 (4x25)
	859-410	100 (4x25)
Item no. suffix for colored push-in type jumper bars	yellow	... /000-029
	blue	... /000-006
	red	... /000-005
Test pin; Ø 1 mm / 0.039 in; test wire for sold. onto test plug	859-500	1 (1x1)

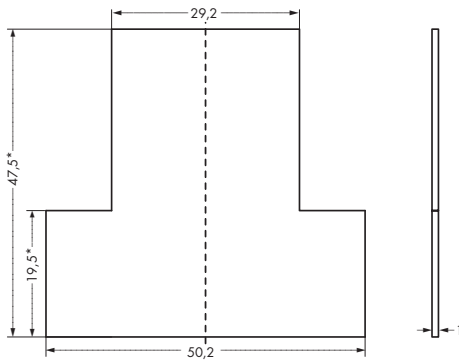


Description	Item No.	Pack. Unit	Technical Data	
Housing 55 mm/2.17 in	Pos. 1	789-120	1	Rated voltage acc. to VDE 0110 Part 1 /4.97 IEC 60664-1: 250 V /4 kV /3
Top cover 55 mm/2.17 in	Pos. 2	789-122	1	Housing material: PA 6.6
Transparent cover	Pos. 4	789-124	1	Flammability rating: V0
Release mechanism	Pos. 3	789-126	1	Color: gray (similar to RAL 7038)
3-pole terminal block: CCC*	Pos. 5	789-127	1	Degree of protection: IP20
3-pole terminal block: COC*	Pos. 5	789-128	1	Perm. ambient temperature: -25 °C ... +70 °C
3-pole terminal block: CCO*	Pos. 5	789-129	1	Storage temperature: -40 °C ... +85 °C
3-pole terminal block: OCC*	Pos. 5	789-130	1	Mounting position: any
3-pole terminal block: OCO*	Pos. 5	789-131	1	Dimensions (W x H x L): (17.5 x 55 x 90) mm High from upper-edge of DIN 35 rail
3-pole terminal block: OOO*	Pos. 5	789-132	1	Wire connection: CAGE CLAMP®
3-pole terminal block: OOC*	Pos. 5	789-133	1	Cross sections: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> /AWG 28 ... 14
3-pole terminal block: COO*	Pos. 5	789-134	1	Stripped lengths: 5 ... 6 mm / 0.22 in

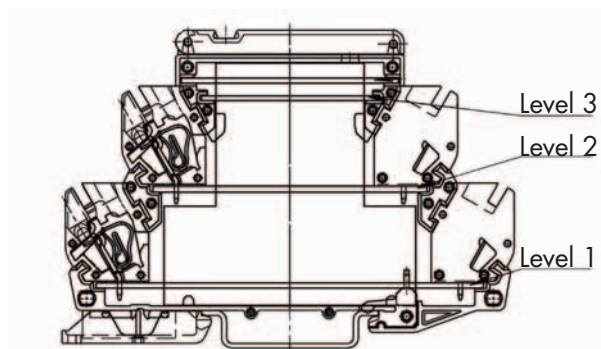
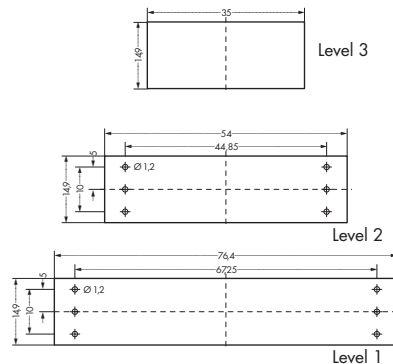
\* C = with clamping spring, O = without clamping spring, enclosure open on the right side

### PCB dimensions, horizontal mounting

\* less 4.5mm when mounting a vertical PCB on level 1



### PCB dimensions vertical mounting (max. PCB thickness 1.5 mm) in level 1; (max. PCB thickness 1 mm) in level 2 and 3



Push-in type jumper bars



Commoning



Description		Item No.	Pack. Unit
Push-in type jumper bars	uninsulated, 12-way, to be cut to the required length	789-112	100 (4x25)

Operating tool



Wire connection



Marking pen with fiber tip



Description		Item No.	Pack. Unit
Operating tool, with partially insulated shaft	Type 2, blade (3.5 x 0.5) mm	210-720	1
Marking pen	for permanent marking	210-110	1

Miniature quick marking card

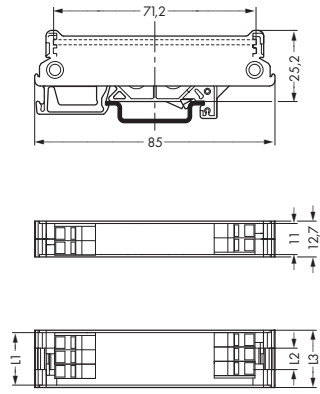
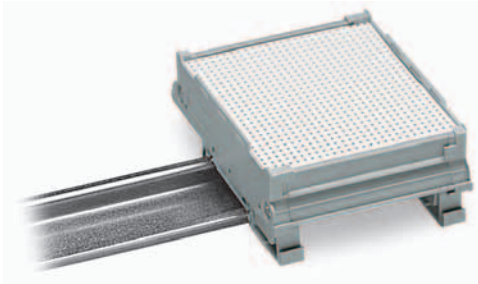


Marking



Description		Item No.	Pack. Unit
Miniature WSB Quick marking system	plain	248-501	5 cards
Marking software and printer/plotter see Section 11			
Marking	1 ... 10 (10 x)	248-502	5 cards
	11 ... 20 (10x)	248-503	5 cards
	21 ... 30 (10x)	248-504	5 cards
	31 ... 40 (10x)	248-505	5 cards
	41 ... 50 (10 x)	248-506	5 cards
	1 ... 50 (2 x)	248-566	5 cards
	K 1 ... K 10 (10 x)	248-450	5 cards
	K 11 ... K 20 (10 x)	248-451	5 cards
	K 100 (10 x)	248-452	5 cards
	U 1 ... U 10 (10 x)	248-453	5 cards
U 11 ... U 20 (10 x)	248-454	5 cards	
	U 100 (10 x)	248-455	5 cards
10 strips with 10 markers, white with black printing			

## Mounting carrier size 1



Description	Item No.	Pack. Unit
Lateral cover, size 1, small, 6.35 mm /0.25 in thick	288-601	1
Fixing foot for mounting on DIN 35 rails	288-602	1
Track section, size 1, 1 m /3'3" long	288-600	1

In order to determine the length of a complete mounting carrier:

Length of PCB: L1

Length of track section:  $L2 = L1 - 11 \text{ mm} / 0.433 \text{ in}$

Length of mounting carrier:  $L3 = L1 + 1.7 \text{ mm} / 0.067 \text{ in}$

with lateral cover size 1, 6.35 mm/0.25 in thick.

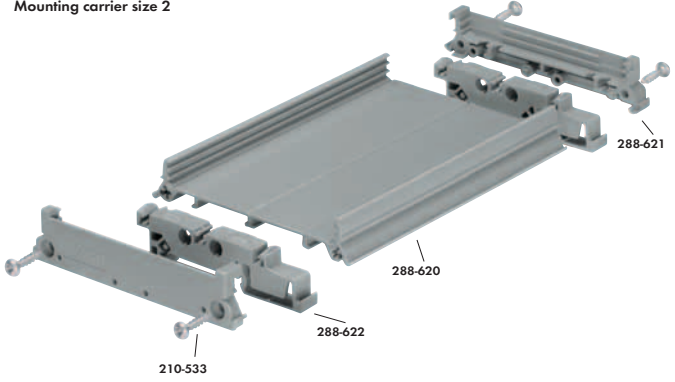
Distance between PCB and upper groove of track section is 5 mm/0.197 in PCB tolerances: thickness 1.5 mm ± 0.2 mm, length/width ± 0.2 mm; -0.1/+0.3 for milling contours

### Marker strips



Description	Item No.	Pack. Unit
Phillips screw 2.9 x 13*	210-533	25
7.5x0.5mm on roll 5x1 m, white	709-198	1
7.5x0.5mm on roll 5x1 m, translucent	709-196	1

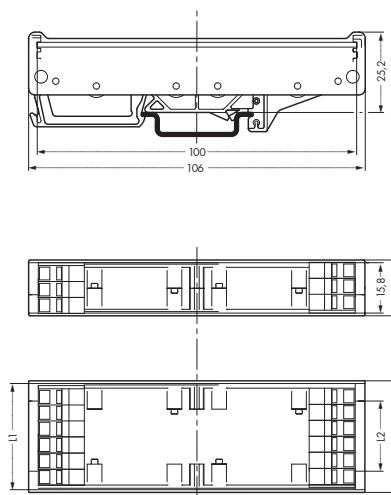
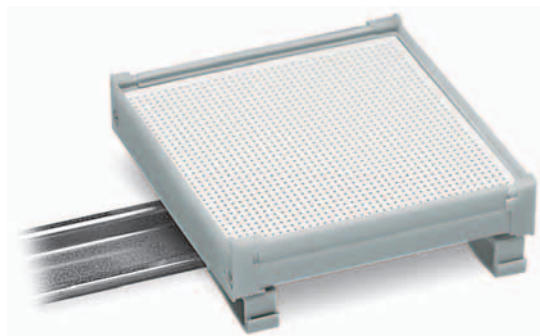
## Mounting carrier size 2





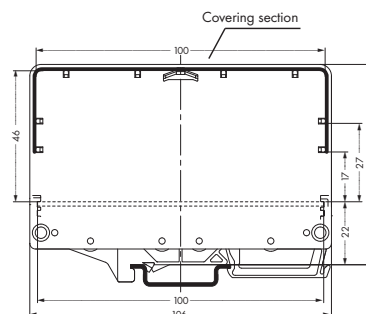
# Mounting Carriers for DIN-Rail Mounting PCBs

## Mounting carrier size 2



Description	Item No.	Pack. Unit
Lateral cover, size 2, small*, 8.75 mm /0.344 in thick	288-621	1
Fixing foot for mounting on DIN 35 rails	288-622	1
Track section, size 2, 1 m /3'3" long	288-620	1

## Mounting carrier size 2, with covering section

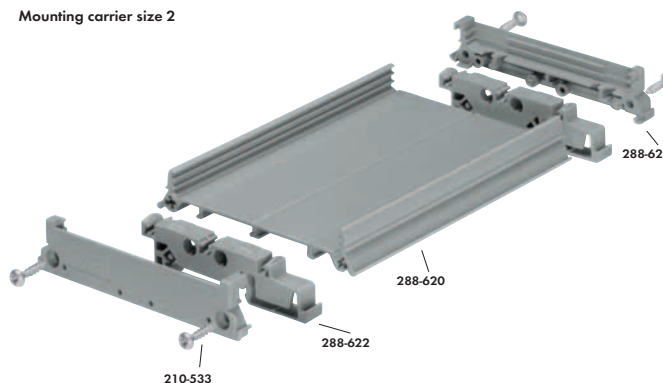


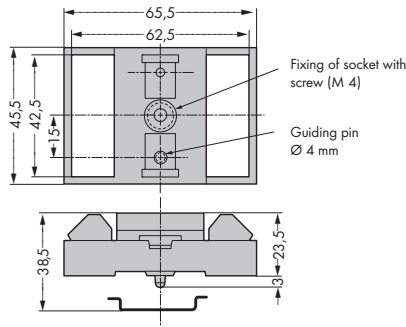
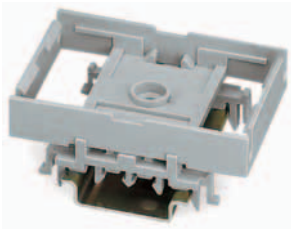
Description	Item No.	Pack. Unit
Lateral cover, size 2, big* 8.75 mm /0.344 in thick	288-626	1
Covering section, size 2, 1 m /3'3" long	288-627	1

In order to determine the length of a complete mounting carrier:

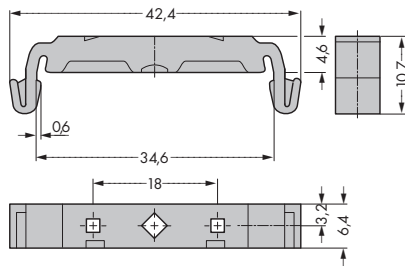
- Length of PCB: L1
- Length of track section: L2 = L1 - 15,8 mm/0.622 in
- Length of mounting carrier: L3 = L1 + 1.7 mm/0.067 in
- Length of covering section: L4 = L1
- with lateral cover, size 2, 8.75 mm/0.344 in thick
- Distance between PCB and upper groove of track section is 5 mm/0.197 in PCB tolerances: thickness 1.5 mm ± 0.2 mm, length/width ± 0.2 mm; -0.1/+0.3 for milling contours

Mounting carrier size 2

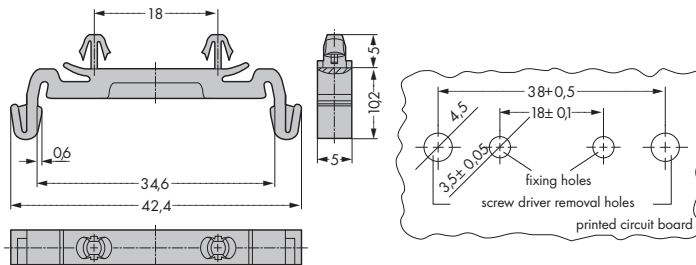
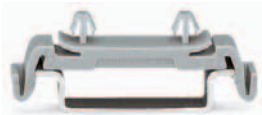




Description		Item No.	Pack. Unit
<b>Mounting carrier</b>	For screw-fixing or DIN-rail mounting with snap-fit type universal mounting feet (then needs 2 x mounting feet)	<b>288-001</b>	1
<b>Universal mounting foot</b>	Snap-fit type, suitable for DIN 15, 32 and 35 rails	<b>288-002</b>	10
<b>Universal mounting foot</b>	Suitable for Europa card (100 x 160) mm	<b>288-003</b>	1

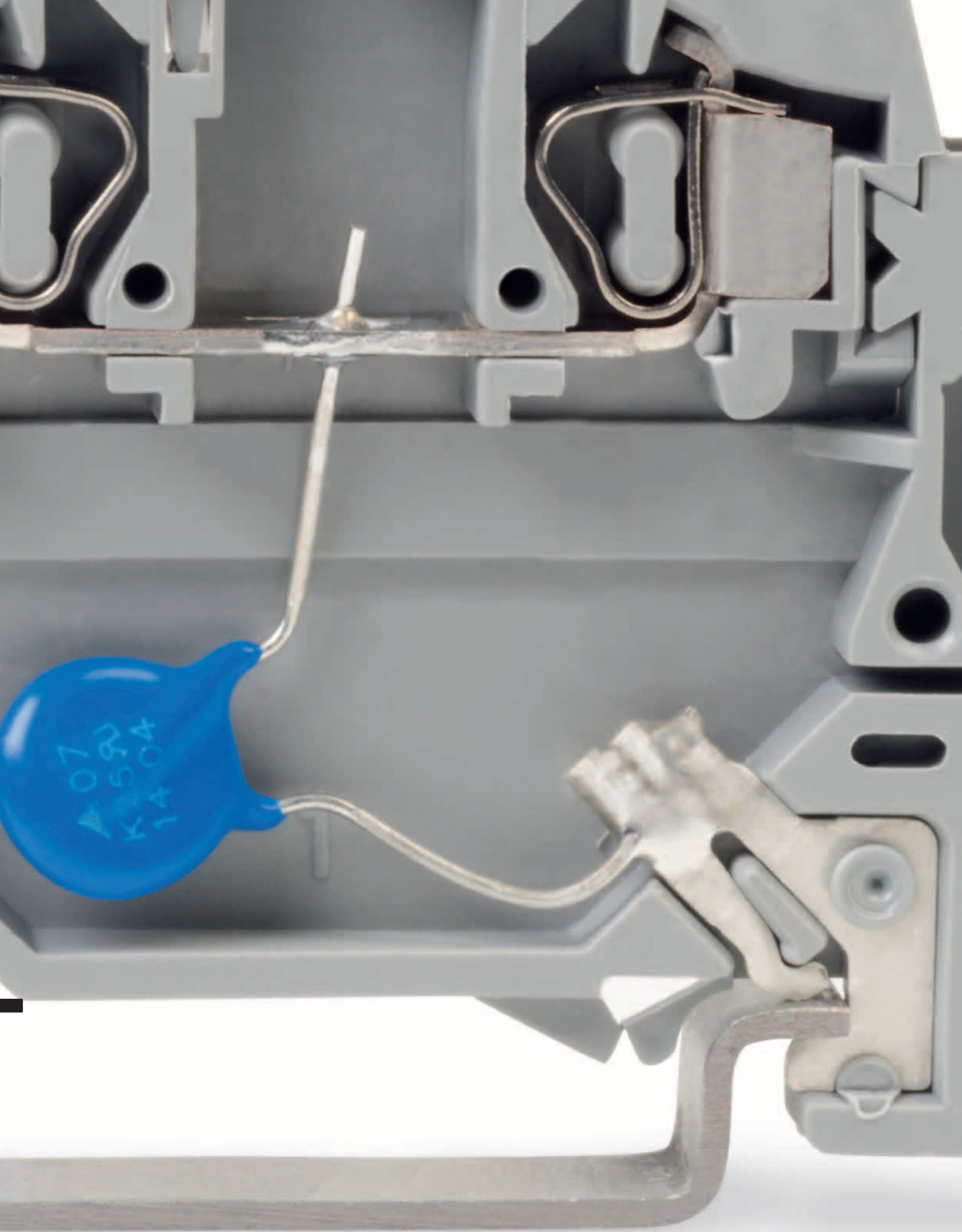


Description		Item No.	Pack. Unit
<b>Mounting foot</b>	For screw-fixing to relay modules, holes for fixing screws 2 mm/0.079 in, PCB hole $\varnothing$ 3.2 mm/0.126 in, distance 18 mm/0.709 in,	<b>209-120</b>	25
<b>Fixing screw</b>	For mounting foot 209-120	<b>209-119</b>	50

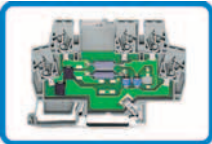


Description		Item No.	Pack. Unit
<b>Mounting foot</b>	For snap-fit mounting to relay modules, for fixing hole $\varnothing$ 3.5 mm/0.138 in, distance 18 mm/0.709 in, for mounting on DIN 35 rail	<b>209-188</b>	25





# 10



## Rail-Mounted Terminal Blocks with Overvoltage Protection

792 Series  
Accessories, 792 Series

468 - 470  
471



## Rail-Mounted Terminal Blocks with Overvoltage Protection

280, 870 Series

472 - 476



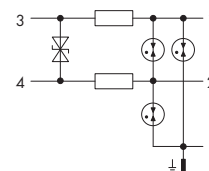
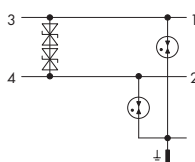
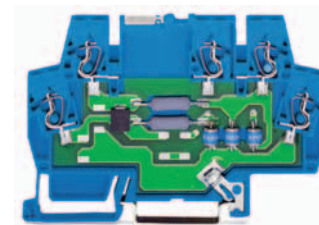
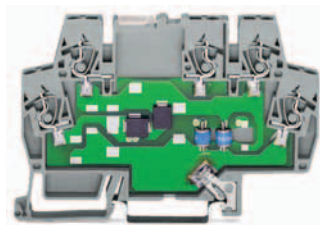
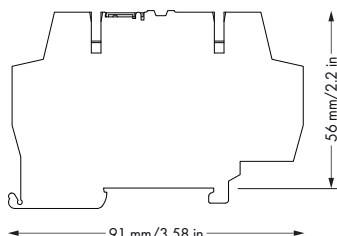
## Pluggable Modules - Surge Suppression Devices

Pluggable Modules on Terminal Blocks - Surge Suppression Devices, 286 Series  
Pluggable Modules for Terminal Blocks - Surge Suppression Devices, 286 Series

477 - 478  
479 - 481



	<b>Overvoltage protection for information technology systems SD24 24 V DC; for protection of supply lines (power supply units)</b>	<b>Overvoltage protection for information technology systems MDEX24 24 V DC; for protection in intrinsically safe circuits</b>
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The coordination characteristics give information about the let-through energy of the overvoltage protector and the protection capacity.

Description	Nominal voltage	Item No.	Pack. Unit	Nominal voltage	Item No.	Pack. Unit
<b>Overvoltage protection in terminal block, for DIN 35 Rail</b>	24 V DC	<b>792-802</b>	1	24 V DC	<b>792-803</b>	1

**Technical Data**

Accessories see page 471

Accessories see page 471

Nominal voltage	24 V DC	24 V DC
Max. cont. operating voltage	33 V DC / 23 V AC	33 V DC / 23 V AC
Max. Input voltage acc. to EN 50020 U <sub>i</sub>		30 V
Max. input current acc. to EN 50020 I <sub>i</sub>		0.5A
Nominal current	10 A	0.5 A
Nominal discharge current I <sub>SN</sub> (8/20) μs	5 kA (line/protected ground); 300 A (line/line)	5 kA per line ; 10 kA total
Voltage protection level at I <sub>Nt</sub> category C2	≤ 50 V (line/line); ≤ 750 V (line/protected ground)	≤ 1500 V (line/protected ground); ≤ 50 V (line/line)
Voltage protection level at 1 kV/μs category C3	≤ 45 V (line/line); ≤ 650 V (line/protected ground)	≤ 1400 V (line/protected ground); ≤ 45 V (line/line)
Coordination characteristics	X / 1	X / 1
Series impedance R / line		1.8 Ω
Response time t <sub>o</sub>	≤ 100 ns (line/protected ground); ≤ 1 ns (line/line)	≤ 100 ns (line/protected ground); ≤ 1 ns (line/line)
Limiting frequency	7 MHz	6 MHz
Capacitance C	≤ 12 pF (line/protected ground); ≤ 1 nF (line/line)	≤ 6 pF (line/protected ground); ≤ 1 nF (line/line)
Degree of protection	IP00	IP00
Degree of protection with end and intermediate plate	IP20	IP20
Operating temperature	-40 °C ... +80 °C	-40 °C ... +80 °C
Storage temperature	-40 °C ... +80 °C	-40 °C ... +80 °C
Dimensions (mm) W x H x L	6 x 56 x 91	6 x 56 x 91
Wire connection	Height from upper-edge of DIN 35 rail CAGE CLAMP®	Height from upper-edge of DIN 35 rail CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Standards/specifications	IEC 61643-21	IEC 61643-21





Operating tool



Marking pen with fiber tip



Test pin



End and intermediate plate

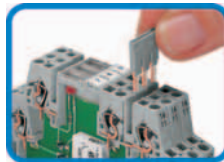


Description	Item No.	Pack. Unit
End and intermediate plate; 1 mm / 0.039 in thick, gray	859-525	100 (4x25)
Test pin; Ø 1 mm / 0.039 in; test wire for sold. onto test plug	859-500	1 (1x1)
Marking pen for permanent marking	210-110	1
Operating tool, with partially insulated shaft Type 2, blade (3.5 x 0.5) mm	210-720	1

Push-in type jumper bar



Commoning



Description	Item No.	Pack. Unit	
Push-in type jumper bars, light gray, insulated, 18 A	2-way	859-402	200 (8x25)
	3-way	859-403	200 (8x25)
	4-way	859-404	200 (8x25)
	5-way	859-405	200 (8x25)
	6-way	859-406	100 (4x25)
	7-way	859-407	100 (4x25)
	8-way	859-408	100 (4x25)
	9-way	859-409	100 (4x25)
	10-way	859-410	100 (4x25)
	Item no. suffix for colored push-in type jumper bars	yellow	... /000-029
red		... /000-005	
blue		... /000-006	

Miniature quick marking card



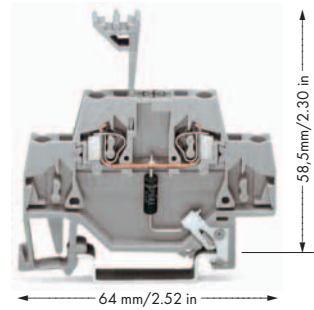
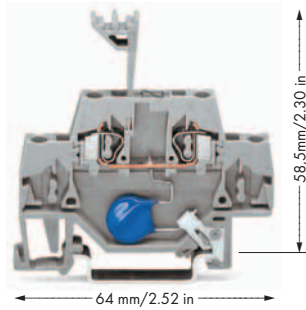
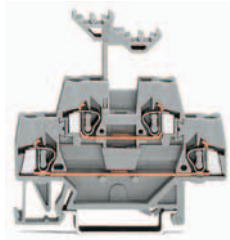
Marking



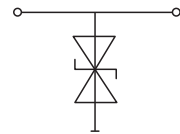
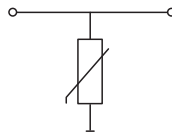
Description	Item No.	Pack. Unit	
Miniature WSB Quick marking system plain	248-501	5 cards	
Marking software and printer/plotter see Section 11			
Marking	1 ... 10 (10 x)	248-502	5 cards
	11 ... 20 (10x)	248-503	5 cards
	21 ... 30 (10x)	248-504	5 cards
	31 ... 40 (10x)	248-505	5 cards
	41 ... 50 (10 x)	248-506	5 cards
	1 ... 50 (2 x)	248-566	5 cards
	K 1 ... K 10 (10 x)	248-450	5 cards
	K 11 ... K 20 (10 x)	248-451	5 cards
	K 100 (10 x)	248-452	5 cards
	U 1 ... U 10 (10 x)	248-453	5 cards
U 11 ... U 20 (10 x)	248-454	5 cards	
U 100 (10 x)	248-455	5 cards	
10 strips with 10 markers, white with black printing			

# Rail-Mounted Terminal Blocks with Overvoltage Protection

	<b>With varistor</b> $V_{BN}$ AC/DC 24 V ... 115 V; $I_N$ 60 A ... 300 A  Terminal block width 5 mm/0.197 in	<b>With suppressor diode</b> $V_{BN}$ AC/DC 24 V ... AC 230 V; $I_N$ 1.1 A ... 12 A  Terminal block width 5 mm/0.197 in
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Through terminal blocks with the same shape see Full Line Catalog Volume 1



Description	$V_{BN}$	Item No.	Pack. Unit	$V_{BN}$	Item No.	Pack. Unit
Terminal block with surge suppression device and direct connection to DIN 35 rail	24 VDC	280-502/281-609	50	24 VDC	280-502/281-602	50
	48 VDC	280-502/281-610	50	48 VDC	280-502/281-603	50
	60 VDC	280-502/281-611	50	60 VDC	280-502/281-604	50
	110 VDC	280-502/281-612	50	110 VDC	280-502/281-605	50
	24 VAC	280-502/281-613	50	24 VAC	280-502/281-606	50
	115 VAC	280-502/281-614	50	115 VAC	280-502/281-607	50
				230 VAC	280-502/281-608	50


Technical Data	Nominal operating voltage $V_{BN}$	Max. cont. operating voltage $V_C$	Nominal discharge current (8/20 $\mu$ s) per line $I_N$	Max. surge current (8/20 $\mu$ s) $I_{max}$	Capacity	Protection level (8/20 $\mu$ s) $V_P$
Terminal blocks with varistor	24 VDC	31 VDC	60 A	250 A	$\leq 1.25$ nF	77 VDC
	48 VDC	65 VDC	300 A	1.2 kA	$\leq 0.5$ nF	135 VDC
	60 VDC	85 VDC	300 A	1.2 kA	$\leq 0.48$ nF	165 VDC
	110 VDC	150 VDC	300 A	1.2 kA	$\leq 0.22$ nF	300 VDC
	24 VAC	30 VAC	60 A	250 A	$\leq 1.05$ nF	93 VAC
	115 VAC	140 VAC	300 A	1.2 kA	$\leq 0.18$ nF	360 VAC

Technical Data	Nominal operating voltage $V_{BN}$	Max. cont. operating voltage $V_C$	Nominal discharge current (10/1000 $\mu$ s) per line $I_N$	Capacity	Protection level (10/1000 $\mu$ s) $V_P$
Terminal blocks with suppressor diode	24 VDC	30.8 V DC	12 A	$\leq 1$ nF	50 VDC
	48 VDC	58 V DC	6.5 A	$\leq 0.63$ nF	92 VDC
	60 VDC	77 V DC	4.8 A	$\leq 0.55$ nF	125 VDC
	110 VDC	136 V DC	2.7 A	$\leq 0.4$ nF	219 VDC
	24 VAC	28 V AC	9.3 A	$\leq 0.8$ nF	65 VAC
	115 VAC	133 V AC	1.7 A	$\leq 0.35$ nF	384 VAC
	230 VAC	253 V AC	1.1 A	$\leq 0.36$ nF	548 VAC

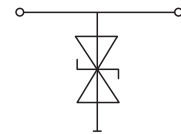
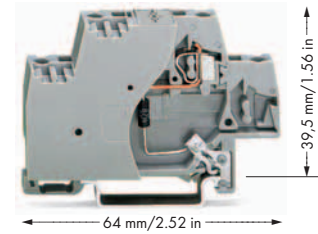
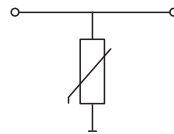
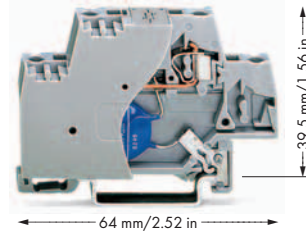
## Technical Data

Wire connection	CAGE CLAMP®	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	8 ... 9 mm / 0.33 in	8 ... 9 mm / 0.33 in

## Accessories

	Item No.	Pack. Unit	Item No.	Pack. Unit
 End and Intermediate Plate, 2.5 mm/0.098 in thick	orange	280-341	100 (4*25)	orange
	gray	280-340	100 (4*25)	gray

	<p><b>With varistor</b>  <math>V_{BN}</math> AC/DC 24 V ... AC 230 V;  <math>I_N</math> 300 A ... 1 kA</p> <p>Terminal block width 10 mm/0.394 in</p>	<p><b>With suppressor diode</b>  <math>V_{BN}</math> AC/DC 24 V ... AC 230 V;  <math>I_N</math> 14 A ... 169 A</p> <p>Terminal block width 10 mm/0.394 in</p>
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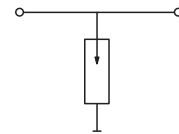
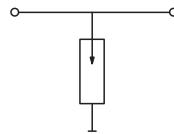
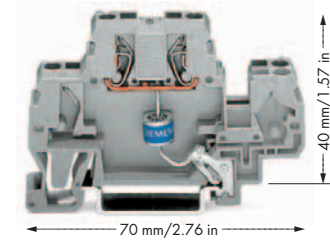
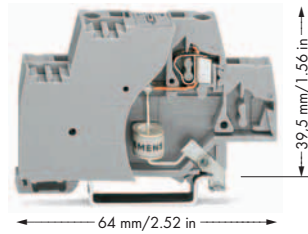
Description	$V_{BN}$	Item No.	Pack. Unit	$V_{BN}$	Item No.	Pack. Unit
Terminal block with surge suppression device and direct connection to DIN 35 rail	24 VDC	280-502/281-582	25	24 VDC	280-502/281-589	25
	48 VDC	280-502/281-583	25	48 VDC	280-502/281-590	25
	60 VDC	280-502/281-584	25	60 VDC	280-502/281-591	25
	110 VDC	280-502/281-585	25	110 VDC	280-502/281-592	25
	24 VAC	280-502/281-586	25	24 VAC	280-502/281-593	25
	115 VAC	280-502/281-587	25	115 VAC	280-502/281-594	25
	230 VAC	280-502/281-588	25	230 VAC	280-502/281-595	25

Technical Data	Nominal operating voltage $V_{BN}$	Max. cont. operating voltage $V_C$	Nominal discharge current (8/20 $\mu$ s) per line $I_N$	Max. surge current (8/20 $\mu$ s) $I_{max}$	Capacity	Protection level (8/20 $\mu$ s) $V_p$
Terminal blocks with varistor and end plate	24 VDC	DC 31 V	300 A	1 kA	$\leq 4.6$ nF	77 VDC
	48 VDC	56 V DC	300 A	1 kA	$\leq 2.8$ nF	135 VDC
	60 VDC	85 V DC	1 kA	4.5 kA	$\leq 1.7$ nF	165 VDC
	110 VDC	150 V DC	1 kA	4.5 kA	$\leq 0.8$ nF	300 VDC
	24 VAC	30 V AC	300 A	1 kA	$\leq 3.5$ nF	93 VAC
	115 VAC	150 V AC	1 kA	4.5 kA	$\leq 0.57$ nF	395 VAC
	230 VAC	275 V AC	1 kA	4.5 kA	$\leq 0.32$ nF	710 VAC
Terminal blocks with varistor and end plate	24 VDC	28 V DC	169 A		$\leq 2.7$ nF	59 VDC
	48 VDC	53 V DC	90 A		$\leq 1.7$ nF	111 VDC
	60 VDC	70 V DC	69 A		$\leq 1.35$ nF	146 VDC
	110 VDC	128 V DC	38 A		$\leq 0.85$ nF	265 VDC
	24 VAC	26 V AC	143 A		$\leq 2.4$ nF	70 VAC
	115 VAC	133 V AC	26 A		$\leq 0.63$ nF	388 VAC
	230 VAC	253 V AC	14 A		$\leq 0.4$ nF	706 VAC

Technical Data		
Wire connection	CAGE CLAMP®	
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	
Strip length	8 ... 9 mm / 0.33 in	


# Rail-Mounted Terminal Blocks with Overvoltage Protection

	<p>With gas filled surge arrester  <math>V_{BN}</math> AC 24 V ... 230 V;  <math>I_N</math> 5 kA</p> <p>Terminal block width 10 mm/0.394 in</p>	<p>With gas filled surge arrester  <math>V_{BN}</math> AC 24 V ... 230 V;  <math>I_N</math> 5 kA</p> <p>Terminal block width 10 mm/0.394 in</p>
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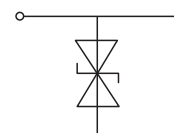
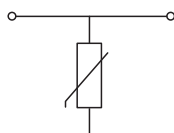
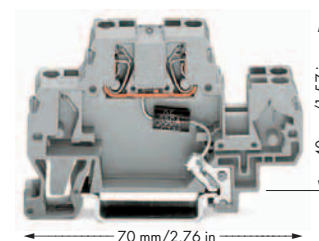
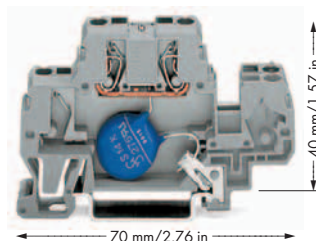


Description	$V_{BN}$	Item No.	Pack. Unit	$V_{BN}$	Item No.	Pack. Unit
Terminal block with surge suppression device and direct connection to DIN 35 rail	24 V AC/DC	280-503/281-579	25	24 V AC/DC	870-523/281-579	25
	110/120 V AC/DC	280-503/281-580	25	110/120 V AC/	870-523/281-580	25
	230 V AC/DC	280-503/281-581	25	230 V AC/DC	870-523/281-581	25

Technical Data						
Max. cont. operating voltage $V_C$	70 V AC/90 V DC 180 V AC/230 V DC 450 V AC/600 V DC			70 V AC/90 V DC 180 V AC/230 V DC 450 V AC/600 V DC		
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	5 kA			5 kA		
Capacity	$\leq 2$ pF			$\leq 2$ pF		
Protection level (8/20 $\mu$ s) $V_p$	600 VAC 650 VAC 1100 VAC			600 VAC 650 VAC 1100 VAC		
Wire connection	CAGE CLAMP®			CAGE CLAMP®		
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14			0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / 4 mm <sup>2</sup> "f-st" / AWG 28 ... 14		
Strip length	8 ... 9 mm / 0.33 in			6 ... 7 mm / 0.26 in		

Accessories	Item No.	Pack. Unit
End and Intermediate Plate, 2 mm/0.079 in thick	gray 870-518	100 (4*25)
	orange 870-519	100 (4*25)

	<p><b>With varistor</b>  <math>V_{BN}</math> AC/DC 24 V ... AC 230 V;  <math>I_N</math> 300 A ... 1 kA</p> <p>Terminal block width 10 mm/0.394 in</p>	<p><b>With suppressor diode</b>  <math>V_{BN}</math> AC/DC 24 V ... AC 230 V;  <math>I_N</math> 14 A ... 169 A</p> <p>Terminal block width 10 mm/0.394 in</p>
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Description	$V_{BN}$	Item No.	Pack. Unit	$V_{BN}$	Item No.	Pack. Unit
Terminal block with surge suppression device and direct connection to DIN 35 rail	24 VDC	870-523/281-582	25	24 VDC	870-523/281-589	25
	48 VDC	870-523/281-583	25	48 VDC	870-523/281-590	25
	60 VDC	870-523/281-584	25	60 VDC	870-523/281-591	25
	110 VDC	870-523/281-585	25	110 VDC	870-523/281-592	25
	24 VAC	870-523/281-586	25	24 VAC	870-523/281-593	25
	115 VAC	870-523/281-587	25	115 VAC	870-523/281-594	25
	230 VAC	870-523/281-588	25	230 VAC	870-523/281-595	25

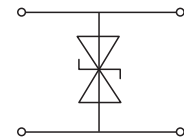
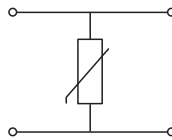
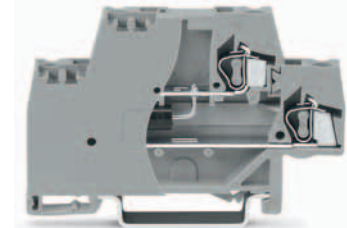
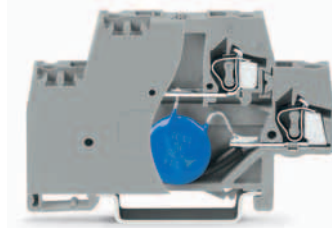
Technical Data	Nominal operating voltage $V_{BN}$	Max. cont. operating voltage $V_C$	Nominal discharge current (8/20 $\mu$ s) per line $I_N$	Max. surge current (8/20 $\mu$ s) $I_{max}$	Capacity	Protection level (8/20 $\mu$ s) $V_p$
	24 VDC	31 VDC	300 A	1 kA	$\leq 4.6$ nF	77 VDC
	48 VDC	56 VDC	300 A	1 kA	$\leq 2.8$ nF	135 VDC
	60 VDC	85 VDC	1 kA	4.5 kA	$\leq 1.7$ nF	165 VDC
	110 VDC	150 VDC	1 kA	4.5 kA	$\leq 0.8$ nF	300 VDC
	24 VAC	30 VAC	300 A	1 kA	$\leq 3.5$ nF	93 VAC
	115 VAC	150 VAC	1 kA	4.5 kA	$\leq 0.57$ nF	395 VAC
	230 VAC	275 VAC	1 kA	4.5 kA	$\leq 0.32$ nF	710 VAC
	24 VDC	28 VDC	169 A		$\leq 2.7$ nF	59 VDC
	48 VDC	53 VDC	90 A		$\leq 1.7$ nF	111 VDC
	60 VDC	70 VDC	69 A		$\leq 1.35$ nF	146 VDC
	110 VDC	128 VDC	38 A		$\leq 0.85$ nF	265 VDC
	24 VAC	26 VAC	143 A		$\leq 2.4$ nF	70 VAC
	115 VAC	133 VAC	26 A		$\leq 0.63$ nF	388 VAC
	230 VAC	253 VAC	14 A		$\leq 0.4$ nF	706 VAC

**Technical Data**

	CAGE CLAMP®	CAGE CLAMP®
Wire connection		
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / 4 mm <sup>2</sup> "s+f-st" / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / 4 mm <sup>2</sup> "s+f-st" / AWG 28 ... 14
Strip length	6 ... 7 mm / 0.26 in	6 ... 7 mm / 0.26 in

# Rail-Mounted Terminal Blocks with Overvoltage Protection

	<b>Varistor</b> $V_{BN}$ 24 V AC/DC ... 230 VAC; $I_N$ 300 A ... 1 kA  Terminal block width: 10 mm/0.394 in.	<b>Suppressor diode</b> $V_{BN}$ 24 V AC/DC ... 230 VAC; $I_N$ 14 ... 169 A  Terminal block width: 10 mm/0.394 in.
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Description	$V_{BN}$	Item No.	Pack. Unit	$V_{BN}$	Item No.	Pack. Unit
Double-deck terminal block with surge suppression device	24 VDC	280-504/281-582	25	24 VDC	280-944/281-589	25
	48 VDC	280-504/281-583	25	48 VDC	280-944/281-590	25
	60 VDC	280-504/281-584	25	60 VDC	280-944/281-591	25
	110 VDC	280-504/281-585	25	110 VDC	280-944/281-592	25
	24 VAC	280-504/281-586	25	24 VAC	280-944/281-593	25
	115 VAC	280-504/281-587	25	115 VAC	280-944/281-594	25
	230 VAC	280-504/281-588	25	230 VAC	280-944/281-595	25

Technical Data	Nominal operating voltage $V_{BN}$	Max. cont. operating voltage $V_C$	Nominal discharge current (8/20 $\mu$ s) per line $I_N$	Max. surge current (8/20 $\mu$ s) $I_{max}$	Capacity	Protection level (8/20 $\mu$ s) $V_p$
Terminal blocks with varistor and end plate	24 VDC	31 VDC	300 A	1 kA	$\leq 4.6$ nF	77 VDC
	48 VDC	56 VDC	300 A	1 kA	$\leq 2.8$ nF	135 VDC
	60 VDC	85 VDC	1 kA	4.5 kA	$\leq 1.7$ nF	165 VDC
	110 VDC	150 VDC	1 kA	4.5 kA	$\leq 0.8$ nF	300 VDC
	24 VAC	30 VAC	300 A	1 kA	$\leq 3.5$ nF	93 VAC
	115 VAC	150 VAC	1 kA	4.5 kA	$\leq 0.57$ nF	395 VAC
	230 VAC	275 VAC	1 kA	4.5 kA	$\leq 0.32$ nF	710 VAC
Terminal blocks with suppressor diode and end plate	24 VDC	28 VDC	169 A		$\leq 2.7$ nF	59 VDC
	48 VDC	53 VDC	90 A		$\leq 1.7$ nF	111 VDC
	60 VDC	70 VDC	69 A		$\leq 1.35$ nF	146 VDC
	110 VDC	128 VDC	38 A		$\leq 0.85$ nF	265 VDC
	24 VAC	26 VAC	143 A		$\leq 2.4$ nF	70 VAC
	115 VAC	-	26 A		$\leq 0.63$ nF	388 VAC
	230 VAC	253 VAC	14 A		$\leq 0.4$ nF	706 VAC

Technical Data		
Wire connection	CAGE CLAMP®	
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip length	8 ... 9 mm / 0.33 in	8 ... 9 mm / 0.33 in

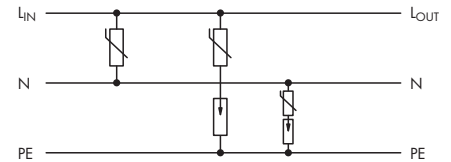
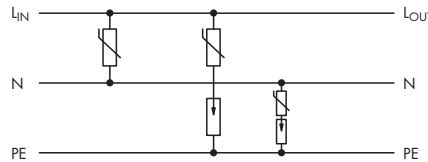


	<p><b>Single stage suppression for 3-wire control, signal or power circuits</b>  <b>No interruption of current flow when changing module 24 V AC/DC</b></p> <p>Module width 15 mm / 0.591 in</p>	<p><b>Single stage suppression for 3-wire control, signal or power circuits</b>  <b>No interruption of current flow when changing module 110 V / 120 V AC; 230 V AC</b></p> <p>Module width 15 mm / 0.591 in</p>
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Note:  
 For isolation measurements the ground (earth) contact at the transient suppression module must be disconnected.

WSB marker card

- Marking F; Item No.: 209-791
  - Marking 1 ... 10; Item No.: 209-702
  - Marking Lin, N, PE Lout, N, PE, Lin, N, PE; Item No.: 249-655
- 5 cards, each containing 10 strips with 10 markers



Description	V <sub>BN</sub>	Item No.	Pack. Unit	V <sub>BN</sub>	Item No.	Pack. Unit
Surge suppression module	24 V AC/DC	<b>286-836</b>	1	230 V AC	<b>286-835</b>	1
				115 V AC	<b>286-835/115-000</b>	1

**Technical Data**

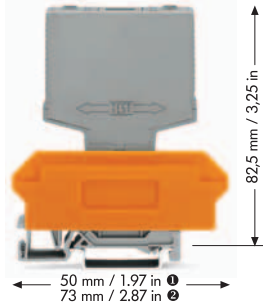
Accessories see pages 99 ... 100

Accessories see pages 99 ... 100

	24 V AC/DC	230 V AC; 115 V AC
Nominal operating voltage V <sub>BN</sub>	24 V AC/DC	230 V AC; 115 V AC
Operating voltage	35 V AC / 45 V DC	275 V AC; 150 V AC
Nominal current	10 A	10 A
Nominal discharge current between L/N and PE	300 A	1 kA
Nominal discharge current between L and N	300 A	1 kA
Max. surge current between L/N and PE	1 kA	4.5 kA
Max. surge current between L and N	1 kA	4.5 kA
Protection level between L/N and PE	700 V	1,3 kV; 1 kV
Protection level between L and N	100 V	700 V; 400 V
Response time between L/N and PE	1 μs	1 μs
Response time between L and N	25 ns	25 ns
Nominal voltage to EN 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2
Ambient operating temperature	-25 °C ... +85 °C	-25 °C ... +85 °C
Dimensions (mm) L x H x W incl. terminal block	17 x 82.5 x 73	17 x 82.5 x 73



	<p>Three-stage suppression for 2-wire data, measuring and control circuits 24 V DC</p> <p>Module width 20 mm / 0.787 in</p>	<p>Three-stage suppression for 3-wire data, measuring and control circuits 12 V DC</p> <p>Module width 20 mm / 0.787 in</p>
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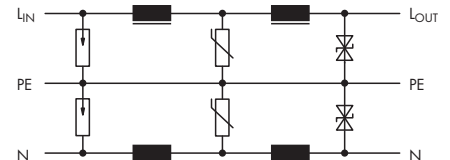
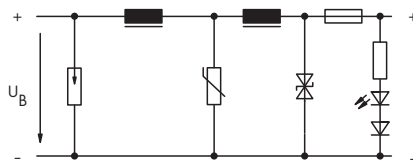
**Note:**

For isolation measurements the ground (earth) contact at the transient suppression module must be disconnected.

WSB marker card

- Marking F; Item No.: 209-791
- Marking 1 ... 10; Item No.: 209-702
- Marking +/-; Item No.: 209-652
- Marking Lin, PE, PE, N, Lout, PE, PE, N; Item No.: 249-652

5 cards, each containing 10 strips with 10 markers



Description	V <sub>BN</sub>	Item No.	Pack. Unit	V <sub>BN</sub>	Item No.	Pack. Unit
Surge suppression module	24 V DC	286-833	1	12 V DC	286-834	1

**Technical Data**

Accessories see pages 99 ... 100

Accessories see pages 99 ... 100

Nominal operating voltage V <sub>BN</sub>	24 V DC	12 V DC
Operating voltage	30 V DC	14 V DC
Nominal current	0.1 A	6 A
Nominal discharge current between L/N and PE		1.5 kA
Nominal discharge current between L and N	5 kA	
Max. surge current between L/N and PE		1.5 kA
Max. surge current between L and N	5 kA	
Protection level between L/N and PE		≤ 22 V
Protection level between L and N	≤ 59 V	
Response time between L/N and PE		≤ 10 ns
Response time between L and N	≤ 10 ns	
Through resistance / inductivity	20 mΩ / 2 x 7 μH	50 mΩ / 14 μH
Ambient operating temperature	-25 °C ... +85 °C	-25 °C ... +85 °C

**Accessories**

Item No.

Pack. Unit

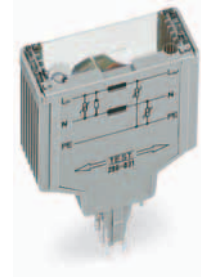
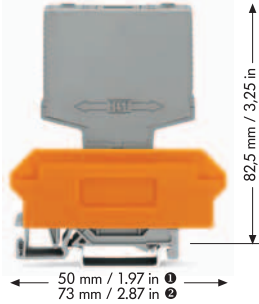
Item No.

Pack. Unit

Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	22 mm / 0.866 in	280-638	1	22 mm / 0.866 in	280-638	1
with 4-conductor terminal blocks, orange separator ②	22 mm / 0.866 in	280-628	1	22 mm / 0.866 in	280-628	1
with 4-conductor terminal blocks, marker plate ③	25 mm / 0.984 in	280-764	1	25 mm / 0.984 in	280-764	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in						

# Pluggable Modules for Terminal Blocks - Surge Suppression Devices

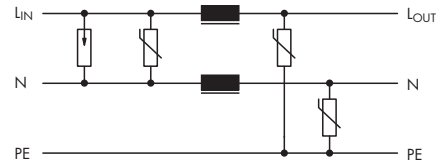
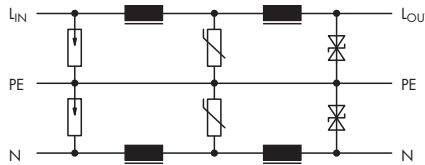
	<b>Three-stage suppression for 3-wire data, measuring and control circuits 24 V DC</b>  <b>Module width 20 mm / 0.787 in</b>	<b>Two-stage suppression for 3-wire control, signal or power circuits 24 V AC/DC</b>  <b>Module width 20 mm / 0.787 in</b>
--	--	--



Note:  
For isolation measurements the ground (earth) contact at the transient suppression module must be disconnected.  
WSB marker card  

- Marking F; Item No.: 209-791
- Marking 1 ... 10; Item No.: 209-702
- Marking Lin, PE, PE, N, Lout, PE, PE, N; Item No.: 249-652
- Marking PE, N, Lin, PE, N, Lout; Item No.: 209-911

 5 cards, each containing 10 strips with 10 markers

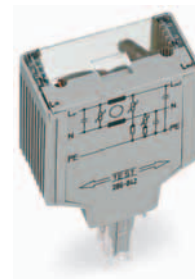
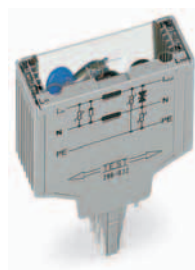
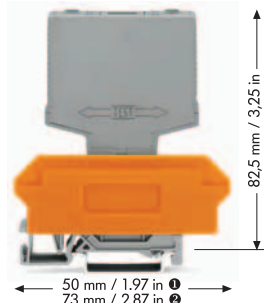


Description	V <sub>BN</sub>	Item No.	Pack. Unit	V <sub>BN</sub>	Item No.	Pack. Unit
Surge suppression module	24 V DC	286-834/024-000	1	24 V AC/DC	286-831	1

Technical Data	Accessories see pages 99 ... 100		Accessories see pages 99 ... 100	
Nominal operating voltage V <sub>BN</sub>	24 V DC		24 V AC/DC	
Operating voltage	30 V DC		30 V AC / 38 V DC	
Nominal current	6 A		6 A	
Nominal discharge current between L/N and PE	1.5 kA		200 A	
Nominal discharge current between L and N	1.5 kA		1.5 kA	
Max. surge current between L/N and PE	1.5 kA		500 A	
Max. surge current between L and N	1.5 kA		1.5 kA	
Protection level between L/N and PE	≤ 59 V		≤ 93 V	
Protection level between L and N	≤ 93 V		≤ 93 V	
Response time between L/N and PE	≤ 10 ns		≤ 25 ns	
Response time between L and N	≤ 25 ns		≤ 25 ns	
Through resistance / inductivity	50 mΩ / 14 μH		25 mΩ / 2 x 7 μH	
Nominal voltage to EN 60664-1	-25 °C ... +85 °C		250 V / 4 kV / 2	
Ambient operating temperature	-25 °C ... +85 °C		-25 °C ... +85 °C	

Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	22 mm / 0.866 in 280-638	1	22 mm / 0.866 in 280-638	1
with 4-conductor terminal blocks, orange separator ②	22 mm / 0.866 in 280-628	1	22 mm / 0.866 in 280-628	1
with 4-conductor terminal blocks, marker plate ③	25 mm / 0.984 in 280-764	1	25 mm / 0.984 in 280-764	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				

	<b>Two-stage suppression for 3-wire control, signal or power circuits</b> <b>24 V AC/DC</b>  <b>Module width 20 mm / 0.787 in</b>	<b>Two-stage suppression for 3-wire control, signal or power circuits with filter</b> <b>110 V DC, 220 V DC,</b> <b>115 V AC, 230 V AC/DC</b>  <b>Module width 25 mm / 0.984 in</b>
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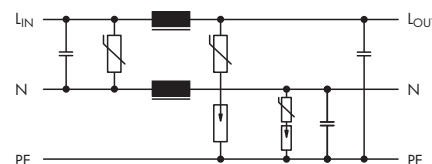
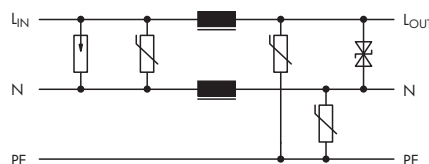

**Note:**

For isolation measurements the ground (earth) contact at the transient suppression module must be disconnected.

WSB marker card

- Marking F; Item No.: 209-791
- Marking 1 ... 10; Item No.: 209-702
- Marking PE, N, Lin, PE, N, Lout;  
Item No.: 209-911

5 cards, each containing 10 strips with 10 markers



Description	U <sub>BN</sub>	Item No.	Pack. Unit	U <sub>BN</sub>	Item No.	Pack. Unit
Surge suppression module	24 V AC/DC	286-832	1	110 V DC	286-844	1
				115 V AC	286-843	1
				220 V DC	286-841	1
				230 V AC	286-842	1

**Technical Data**

Accessories see pages 99 ... 100

Accessories see pages 99 ... 100

Nominal operating voltage V <sub>BN</sub>	24 V AC/DC	110 V DC; 115 V AC 220 V DC; 230 V AC
Operating voltage	AC 30 V / 38 V DC	180 V DC; 140 V AC 320 V DC; 250 V AC
Nominal current	6 A	6 A
Nominal discharge current between L/N and PE	200 A	600 A
Nominal discharge current between L and N	1.5 kA	600 A
Max. surge current between L/N and PE	500 A	1.5 kA
Max. surge current between L and N	1.5 kA	1.5 kA
Protection level between L/N and PE	≤ 93 V	≤ 900 V
Protection level between L and N	≤ 59 V	≤ 650 V
Response time between L/N and PE	≤ 25 ns	≤ 1 μs
Response time between L and N	≤ 5 ns	≤ 25 ns
Through resistance / inductivity	25 mΩ / 2 × 7 μH	- / 2 × 0.8 mH
Nominal voltage to EN 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2
Ambient operating temperature	-25 °C ... +85 °C	-25 °C ... +85 °C
Insertion loss		20 dB ... 40 dB / 0.15 MHz ... 30 MHz

**Accessories**

	Item No.	Pack. Unit	Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ①	22 mm / 0.866 in 280-638	1	27 mm / 1.063 in 280-639	1
with 4-conductor terminal blocks, orange separator ②	22 mm / 0.866 in 280-628	1	27 mm / 1.063 in 280-629	1
with 4-conductor terminal blocks, marker plate ③	25 mm / 0.984 in 280-764	1	30 mm / 1.181 in 280-765	1
wire range 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				



Serie  
Block A  
N  
PE

# 11



**Shield Connecting System, 790 and 791 Series**

**484 - 491**



**Marking Systems**

ProServe®

492 - 497

Printer, Plotter and Accessories

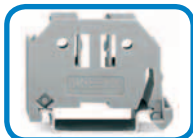
498 - 505

Marking Accessories

506 - 517

**End Stops for DIN 35 Rails**

**518**



**Group Marker Carriers and Marker Cards with Self-Adhesive Marking Strip**

**519 - 525**



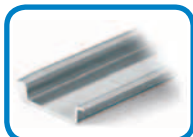
**Wire Marking**

**526 - 531**



**Carrier Rails, Collective Carriers for Jumpers and Covers for Rail-Mounted Terminal Blocks**

**532 - 537**



**Operating Tools**

**538 - 539**



**Stripping Tools, Crimping Tools for Ferrules, Cable Cutter**

**540 - 547**



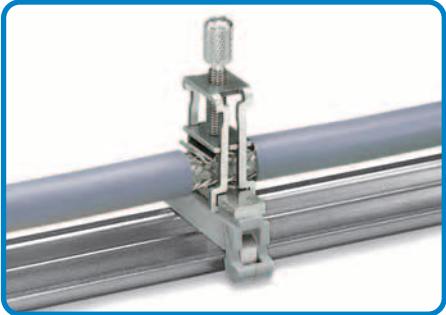
**Test and Measurement Tools**

**548 - 549**

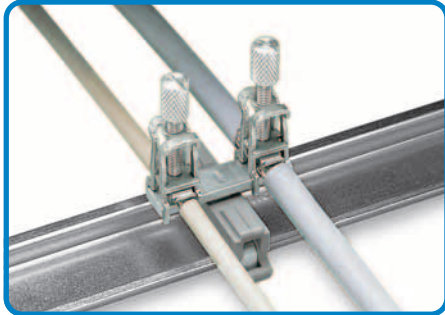




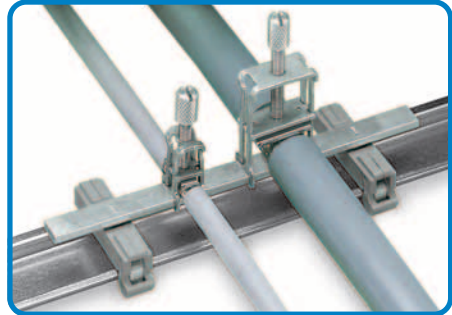
# Shield Connecting System, 790 Series - Description and Handling -



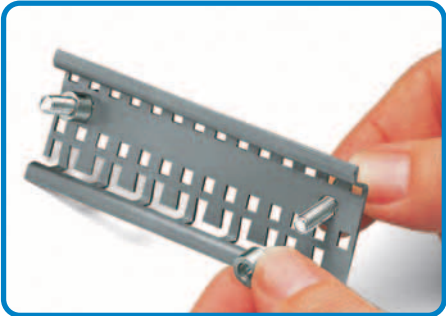
Carrier with grounding foot\*  
45 mm long, busbar 90° to the rail  
Item No. 790-113



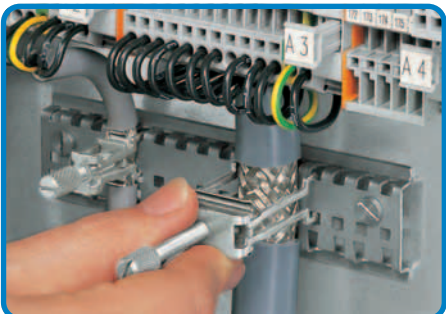
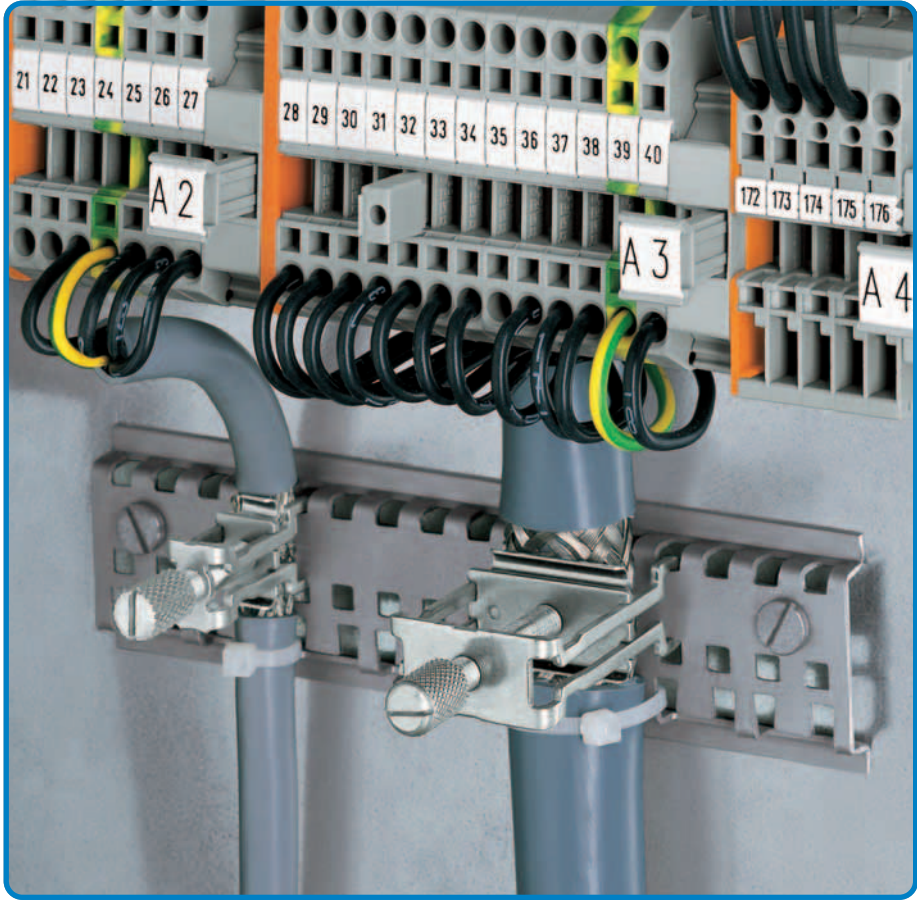
Carrier with grounding foot\*  
45 mm long, busbar parallel to the rail  
Item No. 790-114



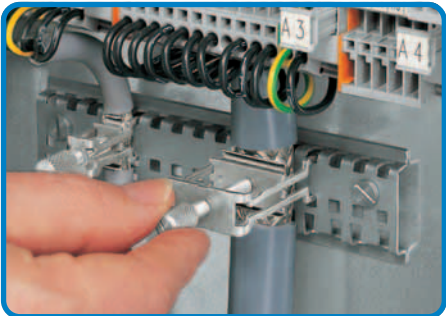
Carrier with 2 grounding feet\*  
125 mm long, busbar parallel to the rail  
Item No. 790-115  
\* for all sizes of shield clamping saddles



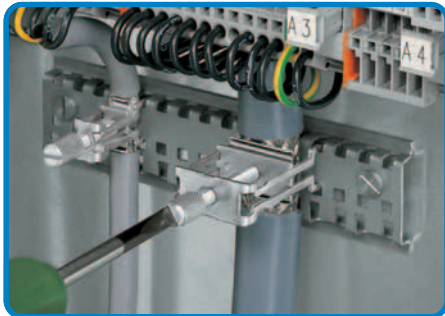
Fitting spacer sleeve to a specialty slotted carrier rail.



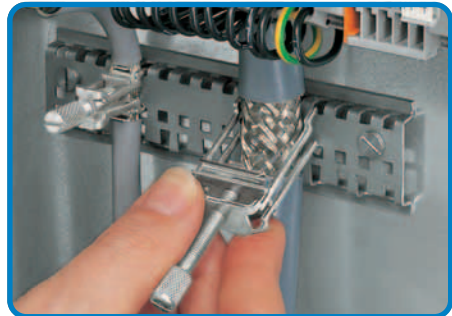
Fitting an additional clamping saddle.



Tightening/Removing a clamping saddle.

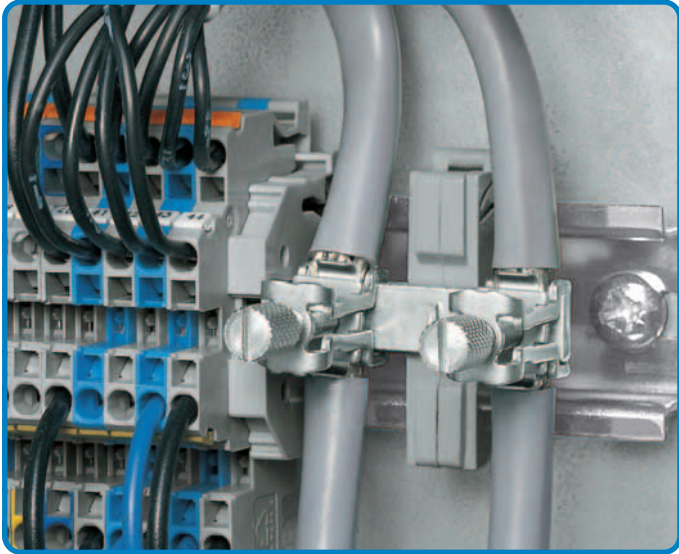


After connection, tighten the knurled screw to complete the installation.  
Recommended tightening torque: 0.5 Nm



To remove the clamping saddle, unscrew until ratcheted mechanism is released, then slightly tip saddle and remove the clamping saddle.

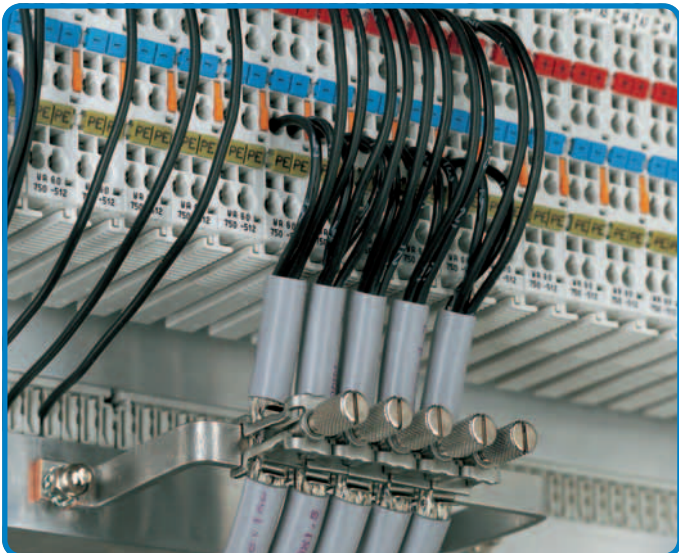




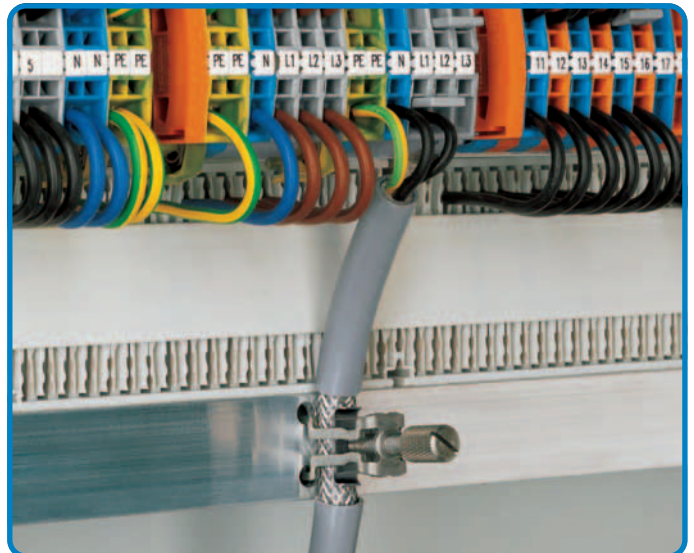
Carrier with grounding foot, busbar parallel to the rail.



Insulated mounting carriers for a common shield reference potential, independent of the housing potential.

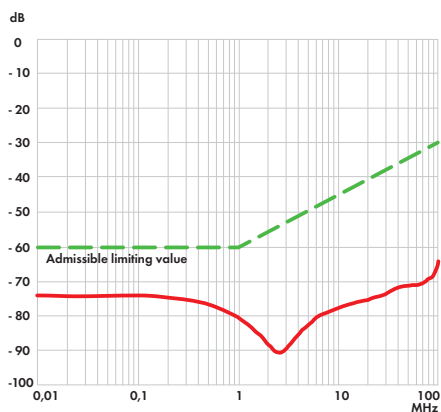


U-shaped copper busbar 10 mm x 3 mm.



Snap into any metal plate up to max. thickness 3 mm.

## Negative shield attenuation



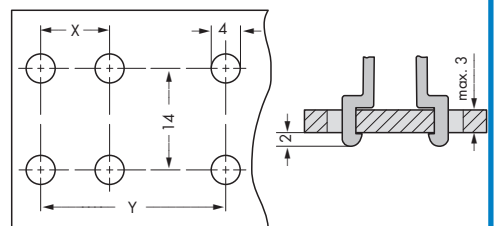
### Hole dimensions for panel mounting

The WAGO shield connecting system is highly effective because the clamping unit can be brought very close to the unshielded part of the cable.

## Hole dimensions for panel mounting

Shield (screen)  
clamping saddle size

Distance X	
11 mm	9.5 mm
Distance Y	
19 mm	17.5 mm
27 mm	25.5 mm
43 mm	41.5 mm



Additionally, the spring material is part of the clamping saddle, providing a good electrical connection (the system also acts as a partial strain relief). The spring element integrated in the shield clamping saddle compensates deformation and settling that results from a connected shield.











# Shield Clamping Saddles

Shield clamping saddle diameter of compatible conductor up to 8 mm	Shield clamping saddle diameter of compatible conductor 7 to 16 mm	Shield clamping saddle diameter of compatible conductor 6 to 24 mm
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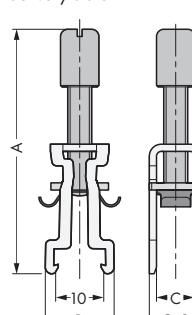


Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
Shield clamping saddle, 11 mm wide, Note: Cannot be used for connecting ground conductors.		Shield clamping saddle, 19 mm wide, Note: Cannot be used for connecting ground conductors.		Shield clamping saddle, 27 mm wide, Note: Cannot be used for connecting ground conductors.	
<b>790-108</b>	50 (5x10)	<b>790-116</b>	50 (5x10)	<b>790-124</b>	50 (5x10)

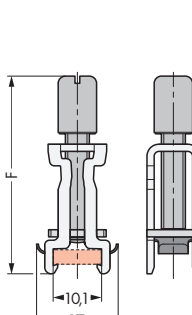
## Accessories for Shield Clamping Saddles

<b>Carrier with grounding foot,</b>  parallel to the rail, Cu 10 x 3 mm, 15 mm long, suitable for 790-108 shield clamping saddle <b>790-110</b> 25	<b>Carrier with grounding foot,</b>  90° to carrier rail, Cu 10 x 3 mm, 45 mm long, suitable for 790 Series shield clamping saddles <b>790-113</b> 25	<b>Carrier with 2 grounding feet,</b>  parallel to the rail, Cu 10 x 3 mm, 125 mm long <b>790-115</b> 25
<b>Carrier with grounding foot,</b>  parallel to the rail, Cu 10 x 3 mm, 25 mm long, suitable for 790-108 and 790-116 shield clamping saddles, as well as for 791-111 and 791-117 shield clamps <b>790-112</b> 25	<b>Carrier with grounding foot,</b>  parallel to the rail, Cu 10 x 3 mm, 45 mm long, suitable for 790 Series shield clamping saddles and 791 Series shield clamps <b>790-114</b> 25	<b>Busbar, tin-plated,</b>  Cu 10 x 3 mm, 1000 mm long <b>210-133</b> 1
<b>Carrier rail, with special perforations, Tin-plated,</b>  1000 mm long (Special lengths upon request) <b>790-145</b> 1	<b>Spacer sleeve, for specialty slotted carrier rail,</b>  use M5-size screw <b>790-144</b> 200 (2x100)	<b>Busbar, tin-plated,</b>  Cu 10 x 3 mm, 30 mm long <b>790-133</b> 20
		<b>Busbar, tin-plated,</b>  Cu 10 x 3 mm, 50 mm long <b>790-134</b> 20

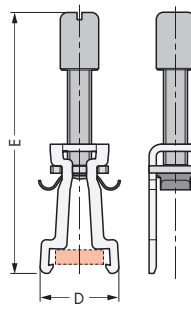
Installation position  
delivery state



Closed position



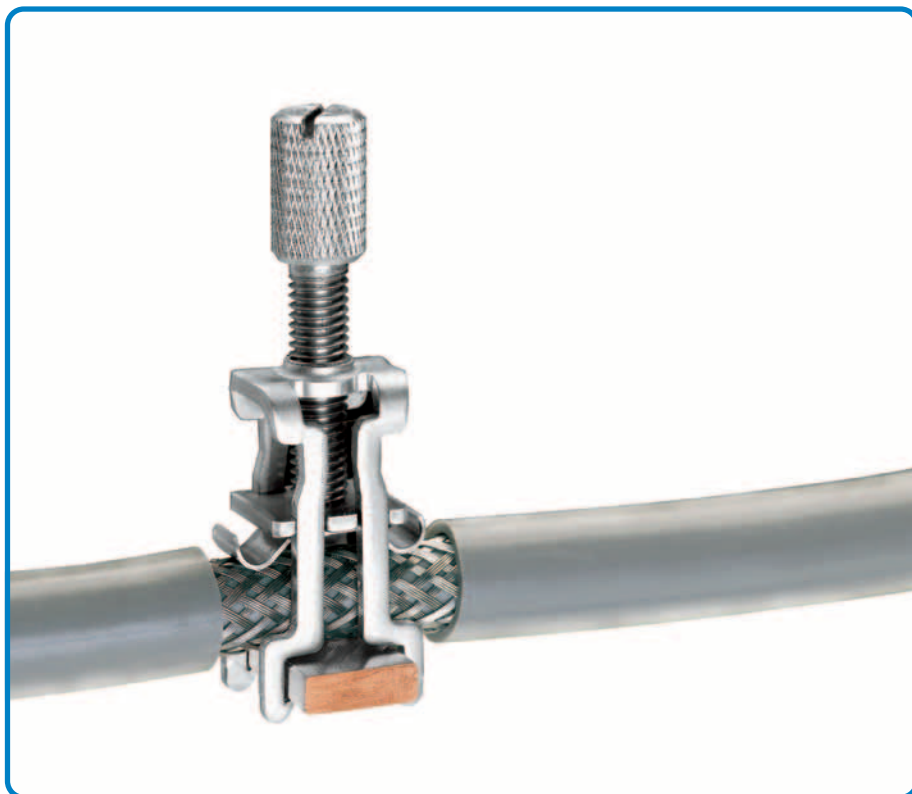
Removal position



Dimensions in mm

Item No.	A	B	C	D	E	F
790-108	51	15	8	16	55	42
790-116	53	15	16	16	57	45
790-124	78	15	24	16	83	58
790-140	97	15	40	16	100	73

Shield clamping saddle  
diameter of compatible conductor  
22 to 40 mm



Item No.	Pack. Unit
Shield clamping saddle, 43 mm wide, Note: Cannot be used for connecting ground conductors.	
<b>790-140</b>	50 (5x10)

**Accessories for Shield Clamping Saddles**

<b>Insulated mounting foot,</b> for busbar with screw M4 x 8 mm	
gray	<b>790-100</b> 50 (2x25)

<b>Insulated mounting foot,</b> for busbar with sheet metal screw (3.5 x 9) mm	
gray	<b>790-101</b> 50 (2x25)

<b>U-shaped busbar,</b> Cu 10 x 3 mm, suitable for 750 Series I/O modules for 5 I/O	
	<b>790-190</b> 25 (5x5)

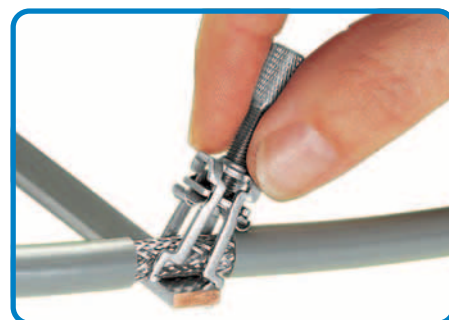
<b>U-shaped busbar,</b> Cu 10 x 3 mm, suitable for 750 Series I/O modules for 8 I/O	
	<b>790-191</b> 25

<b>U-shaped busbar,</b> Cu 10 x 3 mm, suitable for 750 Series I/O modules for 5 I/O	
	<b>790-192</b> 25

<b>U-shaped busbar,</b> Cu 10 x 3 mm, suitable for 750 Series I/O modules for 8 I/O	
	<b>790-193</b> 25



Assembly

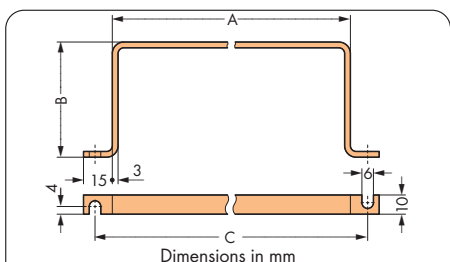


Removal

The shield clamping saddle is shipped ready for direct connection to the busbar 10 mm x 3 mm or to a drilled mounting plate. After connection, tighten the knurled screw to complete the installation.

**Maximum tightening torque: 0.5 Nm**

To remove the clamping saddle, unscrew until ratcheted mechanism is released, then slightly tip saddle and remove the clamping saddle.



Item No.	A	B	C	Item No.	A	B	C
suitable for I/O module series 750 (5 E/A)							
<b>790-190</b>	63	60	83	<b>790-192</b>	63	35	83
suitable for I/O module series 750 (8 E/A)							
<b>790-191</b>	100	60	118	<b>790-193</b>	100	35	118

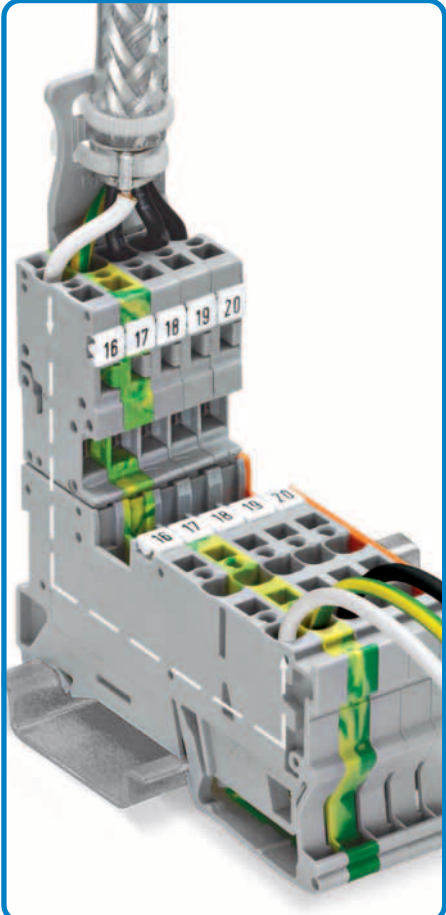
Dimensions in mm

# Shield Clamps and Shield Termination 791 and 709 Series

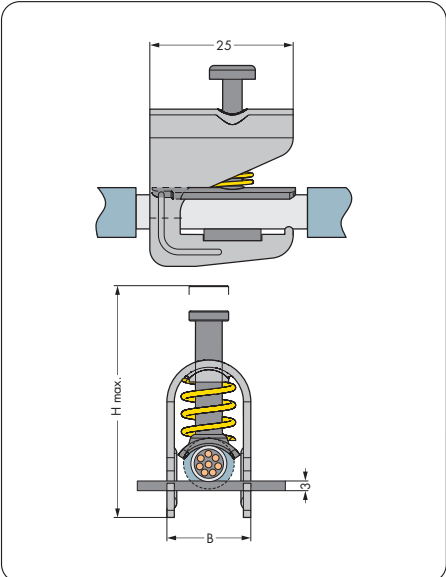
<b>Shield clamp</b>	<b>Shield termination</b>
---------------------	---------------------------



Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Shield clamp,</b> diameter of compatible conductor 10 to 17 mm, height max. 63 mm, 23 mm wide, Note: Cannot be used for connecting ground conductors. <b>791-117</b>	50	<b>Shield termination,</b> includes cable ties for shield 5 mm and 10 mm Ø 55 mm long <b>709-350</b>	100 (4x25)
<b>Shield clamp,</b> diameter of compatible conductor 1.5 mm to 6.5 mm, height max. 40 mm, 10 mm wide, Note: Cannot be used for connecting ground conductors. <b>791-107</b>	50	<b>Shield termination,</b> includes cable ties for shield 5 mm and 10 mm Ø 150 mm long <b>709-352</b>	100 (4x25)
<b>Shield clamp,</b> diameter of compatible conductor 5 to 11 mm, height max. 47 mm, 17 mm wide, Note: Cannot be used for connecting ground conductors. <b>791-111</b>	50		
<b>Shield clamp,</b> diameter of compatible conductor 16 to 24 mm, height max. 78 mm, 30 mm wide, Note: Cannot be used for connecting ground conductors. <b>791-124</b>	50		



Shield termination (picture shows X-COM® connectors)



Dimensions in mm



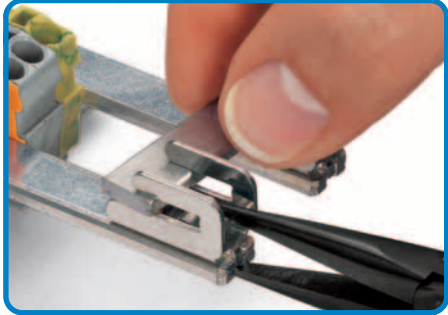


# Busbar Carriers 790 Series

Busbar carrier	Busbar carrier
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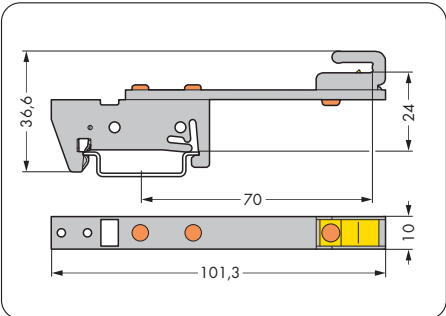
Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Busbar carrier, single side, straight,</b> for busbars Cu 10 mm x 3 mm, distance between center of DIN rail and busbar carrier: 70 mm		<b>Busbar carrier, single side, angled,</b> for busbars Cu 10 mm x 3 mm, distance between center of DIN rail and busbar carrier: 70 mm	
<b>790-300</b>	10	<b>790-301</b>	10
<b>Busbar carrier, single side, straight,</b> for busbars Cu 10 mm x 3 mm, distance between center of DIN rail and busbar carrier: 80 mm			
<b>790-302</b>	10		



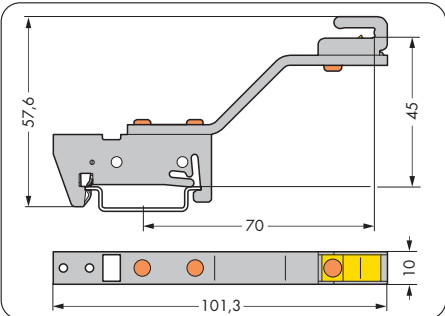
To remove the busbar, compress the spring using pliers.



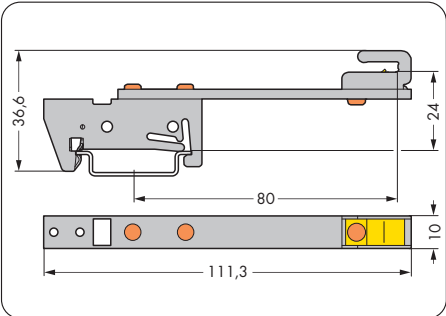
Remove the busbar carrier using an operating tool, type 3, blade (5.5 x 0.8) mm.



Dimensions in mm



Dimensions in mm



Dimensions in mm

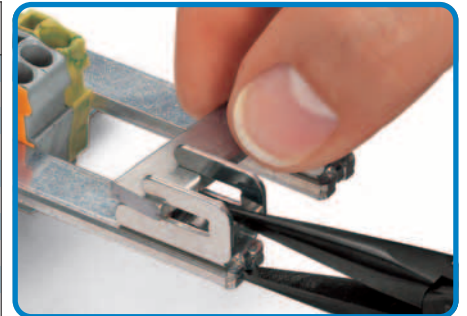


# Busbar Carriers 790 Series

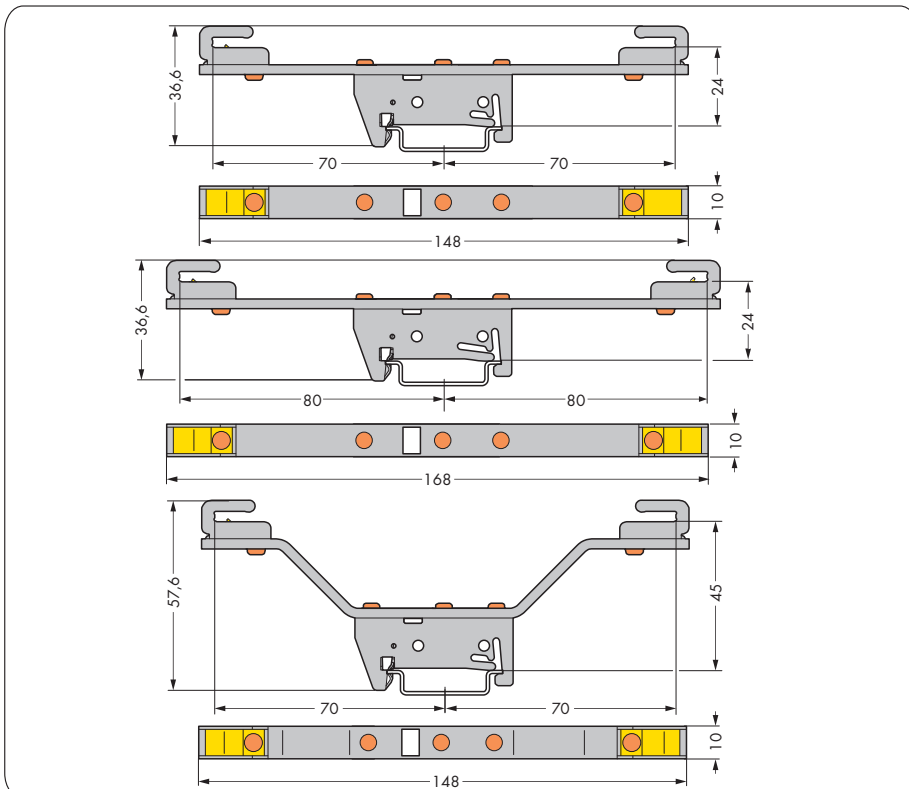
Busbar carrier	Busbar carrier
----------------	----------------



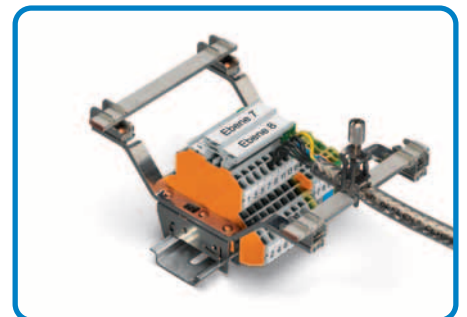
Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Busbar carrier, both sides, straight,</b> for busbars Cu 10 mm x 3 mm, distance between center of DIN rail and busbar carrier: 70 mm		<b>Busbar carrier, both sides, angled,</b> for busbars Cu 10 mm x 3 mm, distance between center of DIN rail and busbar carrier: 70 mm	
<b>790-310</b>	10	<b>790-311</b>	10
<b>Busbar carrier, both sides, straight,</b> for busbars Cu 10 mm x 3 mm, distance between center of DIN rail and busbar carrier: 80 mm			
<b>790-312</b>	10		



To remove the busbar, compress the spring using pliers.



Dimensions in mm

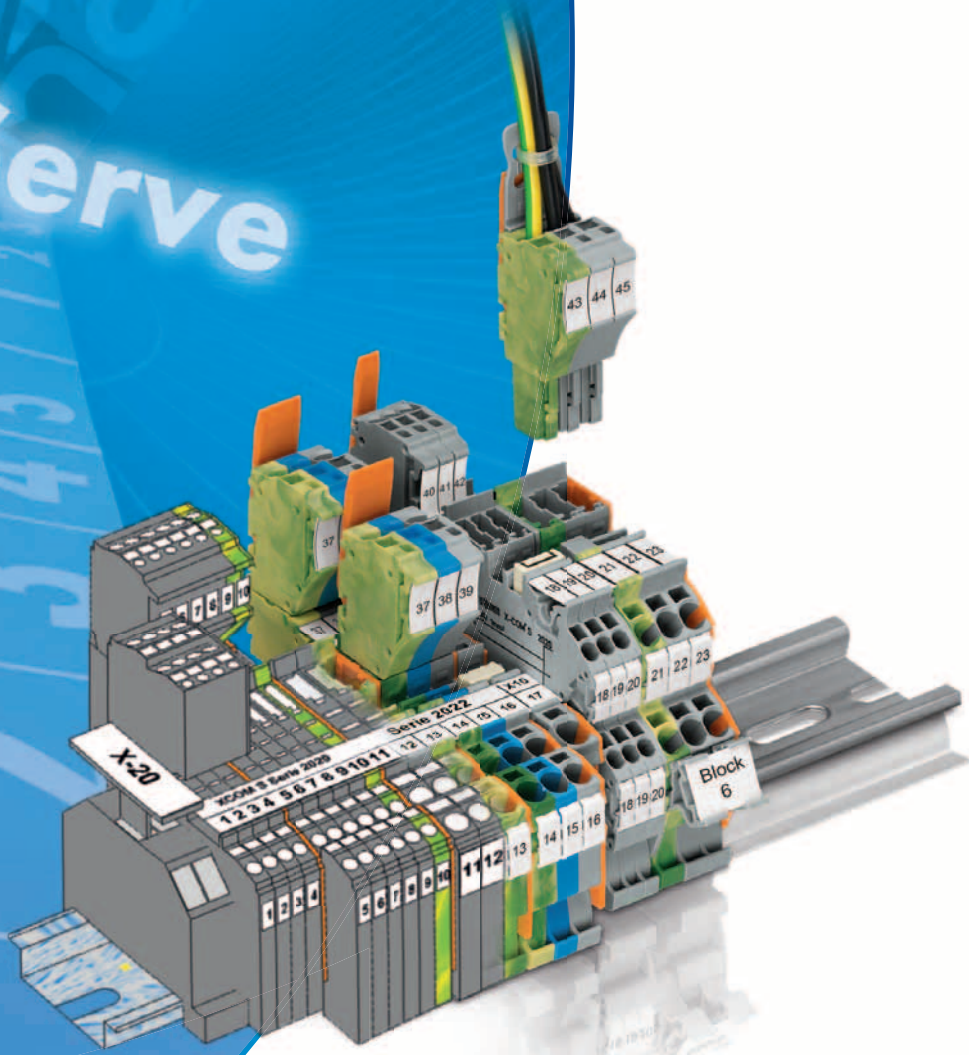


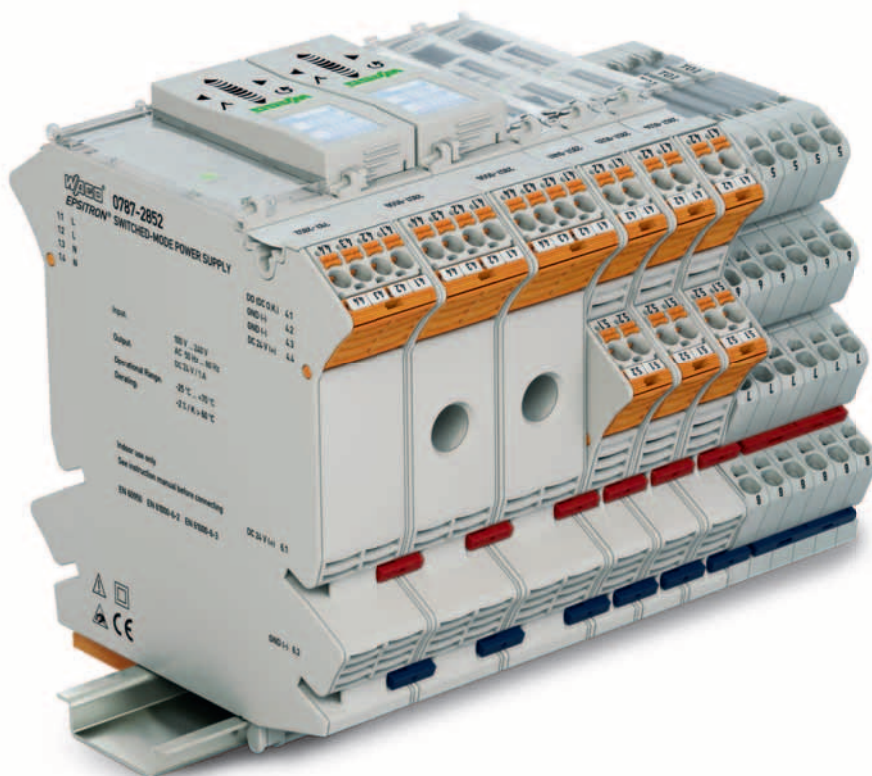
Application example

# WAGO ProServe®

Designing, Assembling and Marking

ProServe





The advantages of ProServe are at your disposal every day. With unique features such as AutoAudit accuracy checking, ProServe performs much of the work for you, saving time and money.

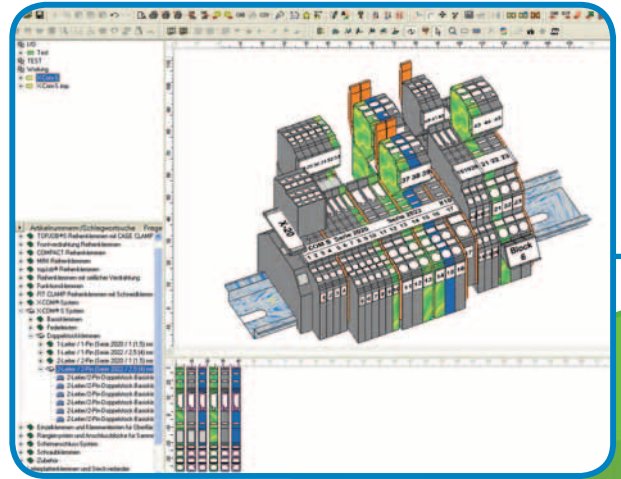
Immediate access to professional and sophisticated features allows for error-free applications, greater flexibility in your daily business and better customer service. With 50 years of WAGO expertise at your disposal, put ProServe to work for you in your next application.



**Benefits:**

- Quick design
- Quick ordering
- User-friendly
- Extensive and user-specific documentation
- Network compatibility
- Different software products on a single CD (smartDESIGNER, productLOCATOR, smartSCRIPT)
- A price list is included

...all for free!



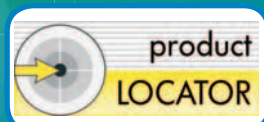
**ProServe® – Planning**

at a New Level



smartDESIGNER

productLOCATOR



RUPLAN



Engineering Base



ELCAD



## smartDESIGNER and productLOCATOR

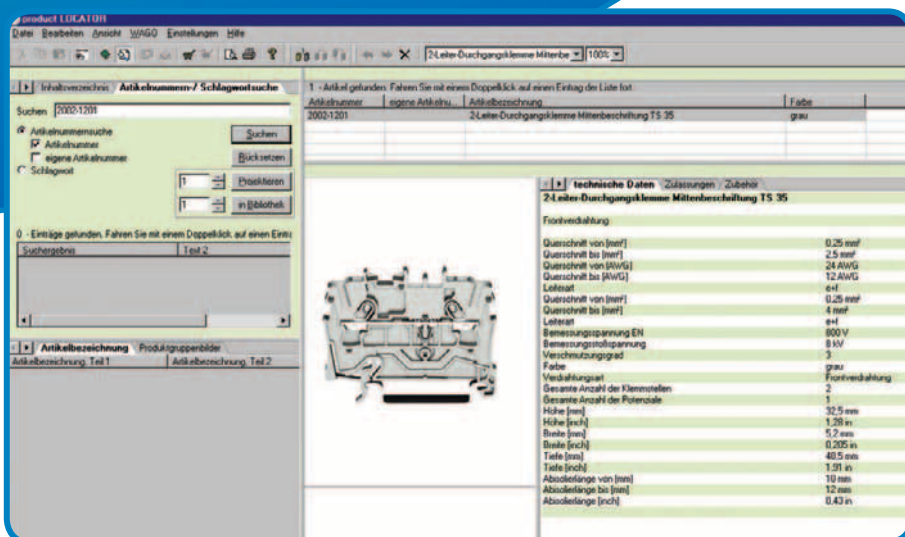
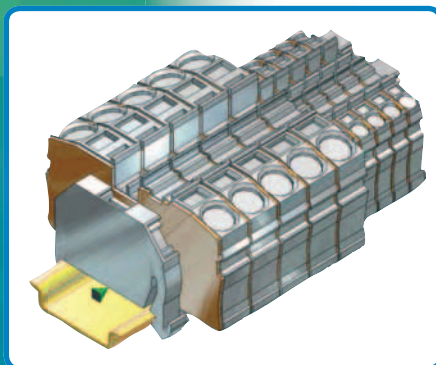
- Interfaces to CAE and M-CAD programs
- Output in PDF and HTML
- Different search functions provide quick item selection
- Creation of part lists including product pictures and custom part numbers
- Complex rail assemblies can be easily designed in 3D
- Easy creation of custom part numbers
- Creation of custom items to design third-party products
- Default parts (favorites) can be defined individually, streamlining design time
- Intelligent, user-optimized accuracy check features
- 18 languages available
- 25.000 sales items

### Marking:

- Direct creation and output of marking data to plotter or thermal transfer printer

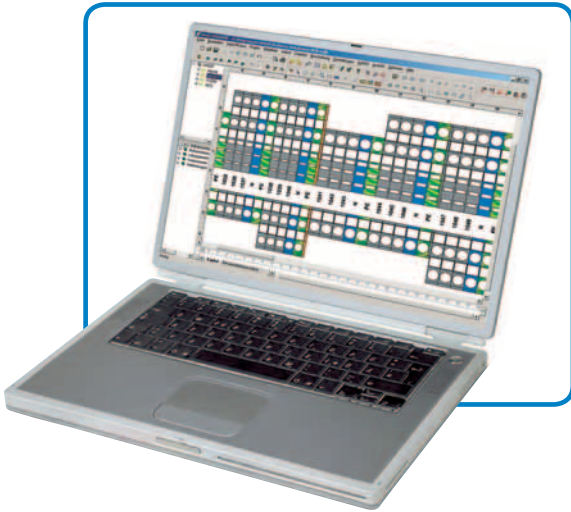


## STEP – IGES – DXF – DWG



# ProServe: Planning at a New Level

Configuration and marking of rail assemblies and I/O nodes, stand-alone or combined with CAE systems.



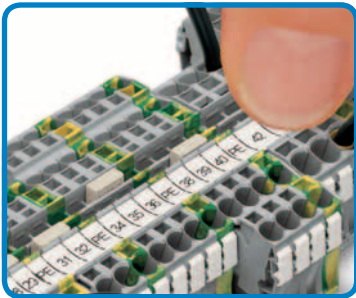
### Designing:

Both custom rail assembly and marking can be easily designed via WAGO ProServe® Software.



### Snapping:

The marking strip is snapped into the center marker receptacle profile.



Combining marking strips with individual WMB markers

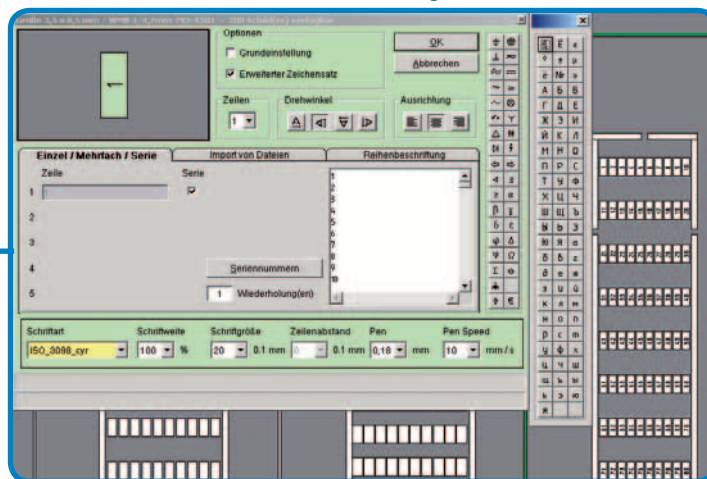


Alternative: Miniature WSB markers can be printed on a plotter



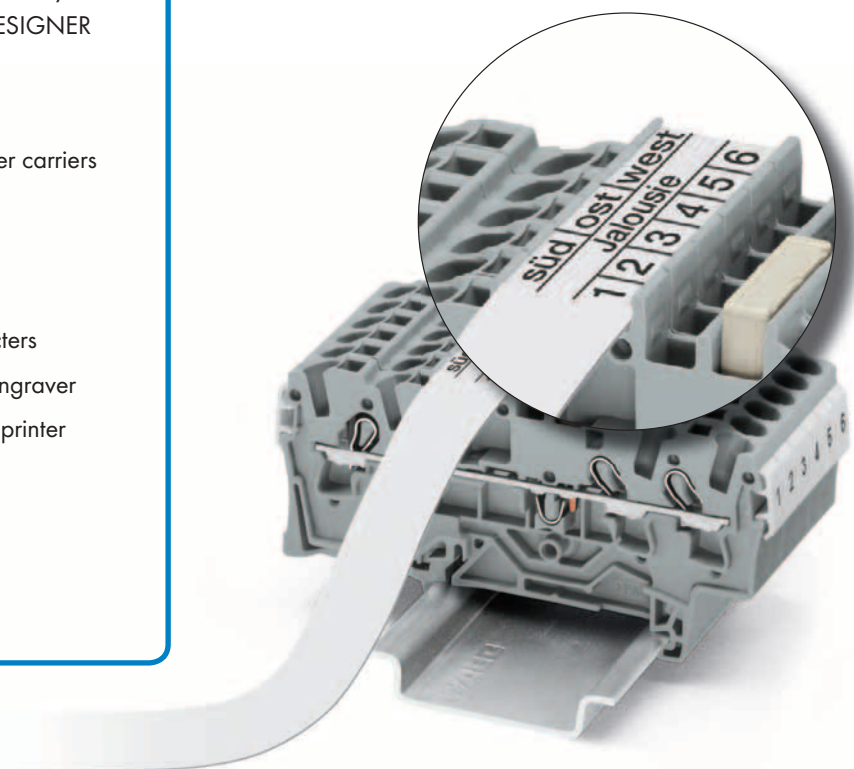
WMB Inline markers on continuous reel can be used in three positions: In the center and on each side





### smartMARKING

- Extensive import functions from CAE systems, MS Office and WAGO smartDESIGNER
- WYSIWYG marking
- Automatic plotter calibration
- Extensive library including marker carriers
- Symbol library
- Text length verification
- Several languages available
- Output of East European characters
- Fully compatible with EG 450 Engraver
- Direct output to thermal transfer printer
- Creation of custom markers for engraver/plotter



### Printing:

Marking strips (2009 Series) or WMB Inline markers on continuous reel are printed on a thermal transfer printer.






### Three-Line Printing:

... for clear marking.  
This makes it immediately clear which function corresponds with each terminal block.



# Thermal Transfer Printer *smart*PRINTER



Description	Item No.	Pack. Unit
<b>smart</b> PRINTER		
includes:		
- Power supply unit and cable		
- USB cable		
- 1 x marking strip roll and WMB Inline markers		
- 2 x rollers		
- 1 x roll holder		
- 1 x ink ribbon		
- <i>smart</i> SCRIPT marking software and driver		
	<b>258-5000</b>	1
<b>Accessories</b>		
<b>Ink ribbon for <i>smart</i>PRINTER</b>		
	<b>258-5005</b>	1
<b>Roller for <i>marking</i>STRIP</b>		
	<b>258-5006</b>	1
<b>Roller for WMB Inline</b>		
	<b>258-5007</b>	1
<b>Roller for Mini-WSB Inline</b>		
	<b>258-5008</b>	1
<b>Carrying case for <i>smart</i>PRINTER</b>		
light gray, with foam padding for printer		
Dimensions (W x H x D): 50 x 26 x 33 cm		
	<b>258-5015</b>	1

Technical Data	
Printing method	Thermal transfer
Print head	Glass layer, spring-mounted
Print speed	max. 127 mm/s (WAGO recommends 50.8 mm/s)
Print width (max.)	47 mm
Print length (max.)	762 mm
Print resolution	300 dpi (12 pixels/mm)
Transmissive/Reflective sensor	yes, centrally fixed
Operating display	Color TFT LCD with navigation button
Memory	8 MB Flash, 16 MB SDRAM
Interfaces	USB, RS-232, ETHERNET 10/100 Mbps
Operating voltage	100 ... 240 VAC, 50 ... 60 Hz (automatic adjustment)
Dimensions (W x H x D)	135 x 175 x 245 mm
Weight	2,000 g (without printing material)
Operating temperature	5 °C ... 40 °C (41 °F ... 104 °F)
Storage temperature	-20 °C ... 50 °C (-4 °F ... 122 °F)
Safety approvals	CE (EMC)
Ink ribbon	External roll diameter: 40 mm; Internal core diameter: 0.5" (12.7 mm); Max. length: 110 m; Max. width: 58 mm

# Thermal Transfer Printer WAGO TP 298



Description	Item No.	Pack. Unit	Technical Data	
<b>TP 298 Thermal Transfer Printer</b>			Printing method	Thermal/thermal transfer
Resolution 300 dpi, incl. ProServe software and 258-178 print roller for WMB Inline and 2009 and 709 Series marking strips	<b>258-298</b>	1	Printhead system	Thick-film
			Print resolution	300 dpi
			Print speed	100 mm/sec.
			Print width	108.4 mm
			See-through/reflective sensor	standard
			Processor 32 Bit ColdFire/clock rate	64 MHz
			RAM memory	8 MB RAM
			Program memory	4 MB Flash
			Slot for memory card	CompactFlash Type 1
			Interfaces	ETHERNET 10/100 Base T, RS-232 (COM), USB
			Accessories (optional)	Cutter, external unwinder, external rewriter, CompactFlash memory card
				16-512 MB
			Operating voltage	100 V ... 240 V AC / 50 Hz ... 60 Hz, PFC
			Dimensions (W x H x D)	242 x 274 x 446 mm
			Weight	10000 g
			Operating temperature	10°C ... 35°C
			Rel. humidity	30 % ... 85 %
			Safety approvals	CE, FCC class 1
			Ink ribbon	1 x USB cable; 1 x serial cable; marking strips (1 x 2009-110); ink ribbon (1 x 258-149)

Item No.	Width	Ink Ribbon	Marking Accessories	Printer
258-143	60 mm	resin/wax	Labels (paper)	all types
258-144	100 mm	resin/wax	Labels (paper) for cable marking 211-155 / 211-156	all types
258-145	38 mm	resin	2009 Series marking strip 2009-xxx 709 Series marking strip 709-xx WMB Inline	TP 298+
258-149	50 mm	resin	2009 Series marking strip 2009-xxx 709 Series marking strip 709-xx WMB Inline	TP 298+
258-150	76 mm	resin	Marking cards for wire marking 211-111 and 211-121 Labels (polyester) up to 76 mm	all types
258-157	100 mm	resin	Labels (polyester) up to 100 mm	all types





# Accessories

Accessories for DYMO RHINO 6000

Marking strips

Self-adhesive marking

Self-adhesive marking

Heat shrink tube

Heat shrink tube



Description		Item No.
Marking strips	white, 11 mm width x 5.5 m	258-611
Self-adhesive marking	white, 9 mm width x 7 m	258-612
Self-adhesive marking	white, 19 mm width x 7 m	258-613
Heat shrink tube	white, 9 mm width x 1.5 m	258-614
Heat shrink tube	white, 19 mm width x 1.5 m	258-615

Ink ribbon for labels

Ink ribbon for marker strips



Description		Item No.
Ink ribbon for marker strips and WMB Inline	resin, 38 mm x 300 m	258-145
	resin, 50 mm x 300 m	258-149
Ink ribbon for cable marking	76 mm wide x 300 m	258-150
	100 mm wide x 300 m	258-157
Ink ribbon for labels	resin/wax, width 60 mm x 300 m	258-143
	resin/wax, width 100 mm x 300 m	258-144

All ink ribbons are suitable for TP 298 printer. For detailed ordering information, please refer to the

“Application table for ink ribbon/marketing accessories/printer”

External coil mounting system

Cutter TP 298

Spare roller TP 298



Description		Item No.
External coil mounting system	for 8.000 WMB Inline markers (2009-135)	258-169
Cutter TP 298		258-161
Spare roller TP 298 for labels	(up to device series no. 40,000)	258-162
Spare roller TP 298 for labels	(from device series no. 40,000)	258-177
Spare roller TP 298 for WMB Inline	(up to device series no. 40,000)	258-166
Spare roller TP 298 for WMB Inline	(from device series no. 40,000)	258-178
Carrying case for TP 298		258-171
Retractable handle for carrying case TP 298		258-173

WMB Inline

Marking strips



Description		Item No.
WMB Inline, pitch 4 mm , stretchable 4 mm ... 4.2 mm, on roll	white, 2,000 markers	2009-114
WMB Inline, pitch 5 mm , stretchable 5 mm ... 5.2 mm, on roll	white, 1,500 markers	2009-115
WMB Inline, pitch 5 mm , stretchable 5 mm ... 5.2 mm, on roll	white, 8,000 markers	2009-135
Marking strips for TOPJOB®S Series, white, plain, 11 mm wide	50 m coil	2009-110
Marking strips for 870, 869, 862, 270 Series, white, plain, 7.5 mm wide	50 m coil	709-178
Marking strips for 870, 869, 862, 270 Series, transparent, plain, 7,5 mm wide	50 m coil	709-177

# Accessories

Marker card



Marker card (12 mm) for plotters



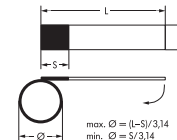
Labels on roll



Labels on DIN A4 sheets



Dimensions of self-laminating label



Description		Item No.
Marker card for therminal printer	12 mm	211-111
	23 mm	211-121
Marker card for TT Printer (258-370 carrier plates are required for plotting)	12 mm	211-110
	23 mm	211-120
Labels on roll for therminal transfer printer	Marker surface: "S"=8 mm, ", "B"=18 mm, "L"=35 mm for max. 9 mm cable Ø, 9,000 labels per roll	211-155
	Marker surface: "S"=13 mm, ", "B"=23 mm, "L"=51 mm for max. 12 mm cable Ø, 5,000 labels per roll	211-156
Labels on DIN A4 sheets for laser printer (258-383 carrier plates are required for plotting)	Marker surface: "S"=9 mm, ", "B"=17 mm, "L"=35 mm for max. 8 mm cable Ø, 70 labels per roll	211-150
	Marker surface: "S"=13 mm, ", "B"=21 mm, "L"=56 mm for max. 14 mm cable Ø, 70 labels per roll	211-151
Marking sleeve 12 mm, for wire Ø	1.6 mm ... 3.2 mm or 0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>	211-112
	2.2 mm ... 4.5 mm or 0.5 mm <sup>2</sup> ... 4 mm <sup>2</sup>	211-113
	3.7 mm ... 5.9 mm or 2.5 mm <sup>2</sup> ... 6 mm <sup>2</sup>	211-114
	4.8 mm ... 7.5 mm or 6 mm <sup>2</sup> ... 16 mm <sup>2</sup>	211-115
Marking sleeve 23 mm, for wire Ø	1.6 mm ... 3.2 mm or 0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>	211-122
	2.2 mm ... 4.5 mm or 0.5 mm <sup>2</sup> ... 4 mm <sup>2</sup>	211-123
	3.7 mm ... 5.9 mm or 2.5 mm <sup>2</sup> ... 6 mm <sup>2</sup>	211-124
	4.8 mm ... 7.5 mm or 6 mm <sup>2</sup> ... 16 mm <sup>2</sup>	211-125
Marking sleeve for cable tie	23 mm, for 10 mm <sup>2</sup> wires and larger	211-129
Cable tie (2.5 x 100) mm		807-090/101-100
Label for I/O Marking (258-371 carrier plates are required for plotting)	Plotter, 12 x 7 mm	211-211
Marking strips	15 mm, white 50 m roll	210-701
Receptacle for marking strips	transp. 1 m long	709-120
Carrier through element	adjustable in height	709-118
Carrier end element	adjustable in height	709-119
Contonuous label	3 mm, white 12 lengths at 25 m	210-732
Label roll	70 x 100 mm, white 500 labels/reel	210-703
Label roll	70 x 100 mm, silver 500 labels/reel	210-704
Label roll	6 x 15 mm, white 3000 labels/reel	210-705
Label roll	6 x 15 mm, yellow 3000 labels/reel	210-705/000-002
Label roll	9 x 15 mm, white 3000 labels/reel	210-706
Label roll	9 x 15 mm, yellow 3000 labels/reel	210-706/000-002
Label roll	8 x 20 mm, white 3000 labels/reel	210-707
Label roll	8 x 20 mm, yellow 3000 labels/reel	210-707/000-002
Label roll	9.5 x 25 mm, white 3000 labels/reel	210-708
Label roll	35 x 5 mm, white 4000 labels/reel	210-710

# Accessories

WAGO plotter pen  
(disposable)  
0.18 mm line width



WAGO plotter pen  
(disposable)  
0.25 mm line width



WAGO plotter pen  
(disposable)  
0.35 mm line width



Service Kit



Graver set



Description		Item No.
WAGO plotter pen (disposable)	0.18 mm line width	258-226
	0.25 mm line width	258-227
	0.35 mm line width	258-228
	0.5 mm line width	258-229
WAGO ink cartridges	black, for permanent marking, not refillable (5 x 1 ml)	258-141
WAGO plotter pen	0.18 mm line width	258-326
	0.25 mm line width	258-327
	0.35 mm line width	258-328
	0.5 mm line width	258-329
Cover		258-146
Service kit	(4 spare pen stations)	258-147
Cleaning set	suitable for cleaning all EK pens	258-139
WAGO pen cleaner		258-140
Calibration aid		258-453
Graver set	0.2/0.3/0.4/0.5/0.7/1 mm line width	258-452
Graver	0.2 mm graver width	258-452/000-002
	0.3 mm graver width	258-452/000-003
	0.4 mm graver width	258-452/000-004
	0.5 mm graver width	258-452/000-005
	0.7 mm graver width	258-452/000-007
	1 mm graver width	258-452/000-010
Vacuum cleaner bag for Engraver EG 450		258-457
Graver (stainless steel)	0.2 mm graver width	258-458/000-002
	0.4 mm graver width	258-458/000-004
WAGO plotter pen (disposable, black)	0.18 mm line width, for inside marking only	258-426
WAGO plotter pen (disposable, black)	0.25 mm line width, for inside marking only	258-427
WAGO plotter pen (disposable, black)	0.35 mm line width, for inside marking only	258-428
WAGO plotter pen (disposable, black)	0.5 mm line width, for inside marking only	258-429
WAGO plotter pen (disposable, red)	0.18 mm line width, for inside marking only	258-426/000-005
WAGO plotter pen (disposable, red)	0.25 mm line width, for inside marking only	258-427/000-005
WAGO plotter pen (disposable, red)	0.35 mm line width, for inside marking only	258-428/000-005
WAGO plotter pen (disposable, red)	0.5 mm line width, for inside marking only	258-429/000-005



## Accessories

Marker card carrier plates  
for plotter IP 350

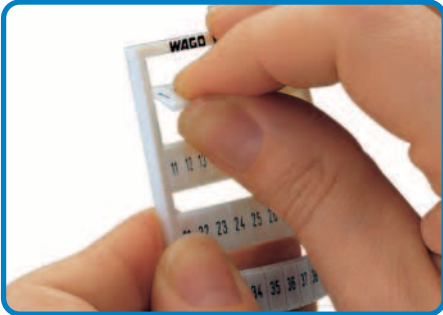


Description		Item No.	
Carrier plates for marker cards	WSB 5 mm/0.197 in (209-501)	258-361	
	WSB 4 mm/0.157 in (209-701)	258-362	
	Miniature WSB (248-501)	258-363	
	WCB (249-200)	258-366	
	WMB 5/5.2 mm (793-5501); WMB 4/4.2 mm (793-4501); WMB 3.5 mm (793-3501)	258-368	
	T-marking strips 209-290	258-365	
	Marking strips (2009-110 + 2009-130 and 790-...)	258-410	
	WTB (799-501)	258-367	
	Group marking carriers (209-112)	258-364	
	Marker tags (209-199 + 209-200)	258-369	
	Carrier plates for murrplastik	MP-400; KS 4/12, 4/18, 4/23, 4/30	258-370
		MP-401; KES, KLG, KMR, KPX, KS 15x17/27/49/67, KSA, KSF, KSI, KSK, KSO, KSS, KTE, KWI, SKS, WGO, KAB	258-371
BS 5/6		258-397	
KSEX; 10/500		258-470	
KPX		258-396	
KSEX; 18/500		258-471	
Universal engraver and plotter carrier plates		90 mm x 100 mm x 3	258-454
	60 mm x 100 mm x 4	258-455	
	30 mm x 100 mm x 9	258-456	
Carrier plates for Phoenix	ZBM	258-372	
	ZB	258-373	
	ZBN	258-374	
	ZBFM	258-375	
	BNZ	258-377	
	BN-ZB	258-378	
	SS-ZB	258-379	
	LBHZ	258-380	
	PAB	258-381	
GPE	258-382		
Universal engraver and plotter carrier plates	DIN A4	258-383	
	DIN A3	258-472	
Carrier plates for Weidmüller	MC Universal	258-387	
	MC SF4-6	258-388	
Carrier plates for Wörtz/Allen Bradley	Universal	258-389	
Carrier plates for Möller	XB M22-XST	258-390	
Carrier plates for Partex	PA+1	258-391	
	PA+2	258-392	
Carrier plates for ABB Entrelec	Universal	258-394	
	Siemens SPS	258-473	
Carrier plates for Contra-Clip	Universal	258-398	
	PK2 PVC	258-393	
	PA+ 2	258-399	

# 11 Marking Accessories – Description and Handling –

506

## WMB Multi marking system



Separating a strip from the WMB or WMB marker card.



Stretching a strip.



Separating an individual marker from the strip, for larger terminal blocks.

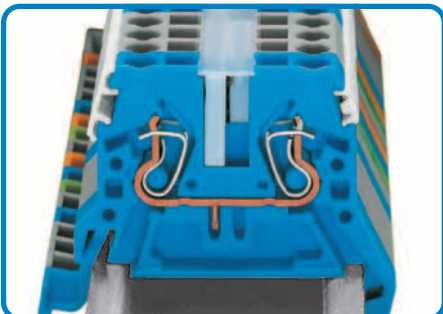
## Miniature WSB (WAGO Quick marking system)



Marking with miniature WSB Quick marking system.



## Miniature WSB or WMB marking



WMB markers in miniature WSB marker receptacles  
Marking strips, translucent  
Miniature WSB markers

## WFB (WAGO continuous marking strips)



Customized ink pen marking



Carrier for WFB Continuous marking strip; to be secured every 10th terminal block.

## Group marking



Group marking on N-busbar carrier used as end stop

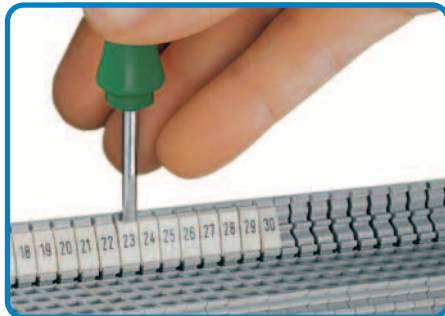


**WMB Multi marking system**



Snapping a strip into the marker slot.

**Double marker carrier**

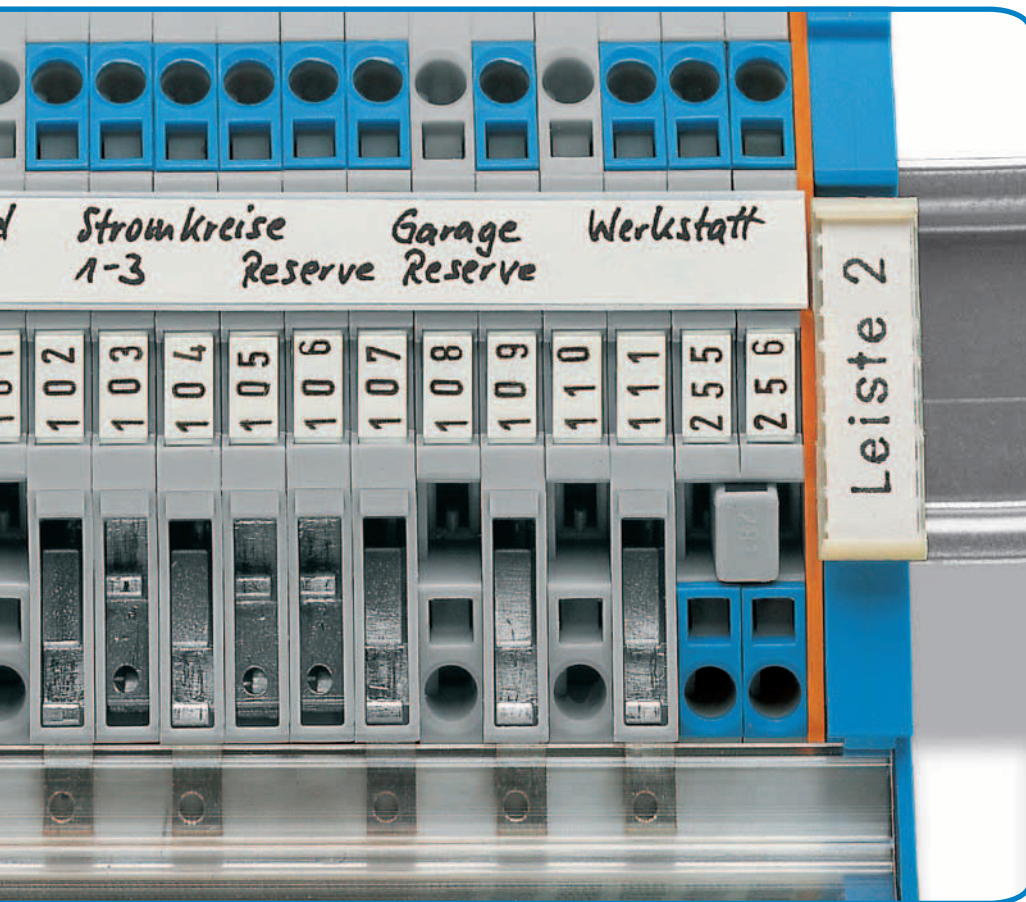


Snapping a strip into the marker slot of the double marker carrier.

**"Decade" marking**



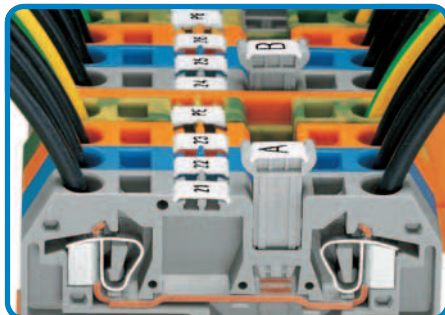
WMB "decade" marking carrier



**Group marker carriers**



Group marker carrier adjustable in height



Additional group marking

**Movable marking system**

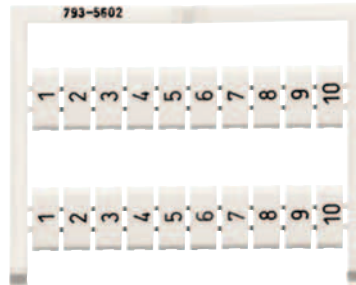
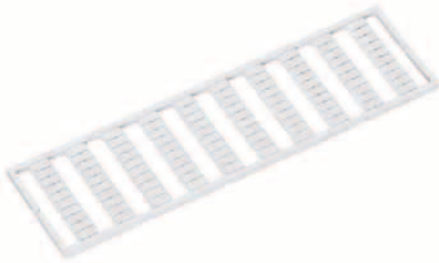


Additional continuous marking strips



# WAGO WMB Multi Marking System for Terminal Block Width 3.5 mm, 4 – 4.2 mm, 5 mm and Higher

vertical marking  
consecutive numbers on each strip  
10 strips with 10 markers per card  
for terminal widths 5 - 17.5 mm and  
5 - 5.2 mm and 4 - 4.2 mm and 3.5 mm

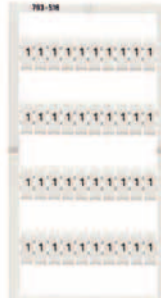
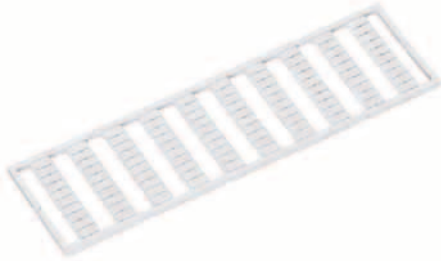


- ① For continuous marking of 270, 280, 780, 869, 870 and 880 Series terminal blocks  
Individual marking of 281 – 285, 781 – 785, 2002, 2003, 2022, 2004, 2006, 2010 and 2016 Series terminal blocks
- ② For continuous marking of 270, 280, 780, 869, 870, 880, 2002, 2003 and 2022 Series terminal blocks  
Individual marking of terminal blocks larger than 5 / 5.2 mm
- ③ For continuous marking of 279 and 2001 Series terminal blocks
- ④ For continuous marking of 2000 and 2020 Series terminal blocks

Marking	Marker Width 5 mm ①	Marker Width 5 – 5.2 mm ②	Marker Width 4 – 4.2 mm ③	Marker Width 3.5 mm ④
1 ... 10 (10x)	793-602	793-5602	793-4602	upon request
11 ... 20 (10x)	793-603	793-5603	793-4603	
21 ... 30 (10x)	793-604	793-5604	793-4604	
31 ... 40 (10x)	793-605	793-5605	793-4605	
41 ... 50 (10x)	793-606	793-5606	793-4606	
51 ... 60 (10x)	794-601	794-5601	794-4601	
61 ... 70 (10x)	794-602	794-5602	794-4602	
71 ... 80 (10x)	794-603	794-5603	794-4603	
81 ... 90 (10x)	794-604	794-5604	794-4604	
91 ... 100 (10x)	794-605	794-5605	794-4605	
1 ... 50 (2x)	793-666	793-5666	793-4666	
51 ... 100 (2x)	793-607	793-5607	793-4607	
101 ... 150 (2x)	793-608	793-5608	793-4608	
151 ... 200 (2x)	793-609	793-5609	793-4609	
201 ... 300 (1x)	793-610	793-5610	793-4610	
301 ... 400 (1x)	793-611	793-5611	793-4611	
401 ... 500 (1x)	793-612	793-5612	793-4612	
501 ... 600 (1x)	793-613	793-5613	793-4613	
601 ... 700 (1x)	793-614	793-5614	793-4614	
701 ... 800 (1x)	793-615	793-5615	793-4615	
801 ... 900 (1x)	793-616	793-5616	793-4616	
901 ... 1000 (1x)	793-617	793-5617	793-4617	
1001 ... 1100 (1x)	793-688	793-5688	793-4688	
1101 ... 1200 (1x)	793-669	793-5669	793-4669	
1201 ... 1300 (1x)	793-670	793-5670	793-4670	
1301 ... 1400 (1x)	793-671	793-5671	793-4671	
1401 ... 1500 (1x)	793-672	793-5672	793-4672	
1501 ... 1600 (1x)	793-901	793-5901	793-4901	
1601 ... 1700 (1x)	793-902	793-5902	793-4902	
1701 ... 1800 (1x)	793-903	793-5903	793-4903	
1801 ... 1900 (1x)	793-912	793-5912	793-4912	
1901 ... 2000 (1x)	793-913	793-5913	793-4913	
101, 101, 101, 102, ..., 130, 130, 130 (1x)	793-667	793-5667	793-4667	
131, 131, 131, 132, ..., 160, 160, 160 (1x)	793-668	793-5668	793-4668	
<b>for double-deck terminal blocks,</b>				
1, 3, 5, ..., 99 and 2, 4, 6, ..., 100 (1x)	793-699	793-5699	793-4699	
101, 103, 105, ..., 149 and 102, 104, 106, ..., 150 (2x)	793-900	793-5900	793-4900	
<b>for triple-deck terminal blocks,</b>				
1, 4, 7, ..., 88 and 2, 5, 8, ..., 89 and 3, 6, 9, ..., 90 and 91, 94, 97, 92, 95, 98, 93, 96, 99, ; (1x)	794-657	794-5657		
100, 103, 106, ..., 187 and 101, 104, 107, ..., 188 and 102, 105, 108, ..., 189 and 190, 193, 196, 191, 194, 197, 192, 195, 198, ; (1x)	794-658	794-5658		

# WAGO WMB Multi Marking System for Terminal Block Width 3.5 mm, 4 – 4.2 mm, 5 mm and Higher

horizontal marking  
same numbers per strip  
10 strips with 10 markers per card  
for terminal widths 5 - 17.5 mm and  
5 - 5.2 mm und 4 - 4.2 mm und 3.5 mm



- ① For continuous marking of 270, 280, 780, 869, 870 and 880 Series terminal blocks  
Individual marking of 281 – 285, 781 – 785, 2002, 2003, 2022, 2004, 2006, 2010 and 2016 Series terminal blocks
- ② For continuous marking of 270, 280, 780, 869, 870, 880, 2002, 2003 and 2022 Series terminal blocks  
Individual marking of terminal blocks larger than 5 / 5.2 mm
- ③ For continuous marking of 279 and 2001 Series terminal blocks
- ④ For continuous marking of 2000 and 2020 Series terminal blocks

Marking	Marker Width 5 mm ①	Marker Width 5 – 5.2 mm ②	Marker Width 4 – 4.2 mm ③	Marker Width 3.5 mm ④
1/2 (50 each)	793-518	793-5518	793-4518	upon request
3/4 (50 each)	793-519	793-5519	793-4519	
5/6 (50 each)	793-520	793-5520	793-4520	
7/8 (50 each)	793-521	793-5521	793-4521	
9/10 (50 each)	793-522	793-5522	793-4522	
11/12 (50 each)	793-523	793-5523	793-4523	
13/14 (50 each)	793-524	793-5524	793-4524	
15/16 (50 each)	793-525	793-5525	793-4525	
17/18 (50 each)	793-526	793-5526	793-4526	
19/20 (50 each)	793-527	793-5527	793-4527	
21/22 (50 each)	793-528	793-5528	793-4528	
23/24 (50 each)	793-529	793-5529	793-4529	
25/26 (50 each)	793-530	793-5530	793-4530	
27/28 (50 each)	793-531	793-5531	793-4531	
29/30 (50 each)	793-532	793-5532	793-4532	
31/32 (50 each)	793-533	793-5533	793-4533	
33/34 (50 each)	793-534	793-5534	793-4534	
35/36 (50 each)	793-535	793-5535	793-4535	
37/38 (50 each)	793-536	793-5536	793-4536	
39/40 (50 each)	793-537	793-5537	793-4537	
41/42 (50 each)	793-538	793-5538	793-4538	
43/44 (50 each)	793-539	793-5539	793-4539	
45/46 (50 each)	793-540	793-5540	793-4540	
47/48 (50 each)	793-541	793-5541	793-4541	
49/50 (50 each)	793-542	793-5542	793-4542	
51/52 (50 each)	793-400	793-5400	793-4400	
53/54 (50 each)	793-401	793-5401	793-4401	
55/56 (50 each)	793-402	793-5402	793-4402	
57/58 (50 each)	793-403	793-5403	793-4403	
59/60 (50 each)	793-404	793-5404	793-4404	
61/62 (50 each)	793-405	793-5405	793-4405	
63/64 (50 each)	793-406	793-5406	793-4406	
65/66 (50 each)	793-407	793-5407	793-4407	
67/68 (50 each)	793-408	793-5408	793-4408	
69/70 (50 each)	793-409	793-5409	793-4409	
71/72 (50 each)	793-410	793-5410	793-4410	
73/74 (50 each)	793-411	793-5411	793-4411	
75/76 (50 each)	793-412	793-5412	793-4412	
77/78 (50 each)	793-413	793-5413	793-4413	
79/80 (50 each)	793-414	793-5414	793-4414	
81/82 (50 each)	793-415	793-5415	793-4415	
83/84 (50 each)	793-416	793-5416	793-4416	
85/86 (50 each)	793-417	793-5417	793-4417	
87/88 (50 each)	793-418	793-5418	793-4418	
89/90 (50 each)	793-419	793-5419	793-4419	
91/92 (50 each)	793-420	793-5420	793-4420	
93/94 (50 each)	793-421	793-5421	793-4421	
95/96 (50 each)	793-422	793-5422	793-4422	
97/98 (50 each)	793-423	793-5423	793-4423	
99/100 (50 each)	793-424	793-5424	793-4424	

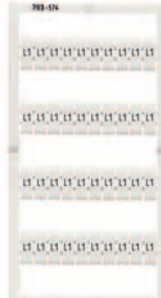
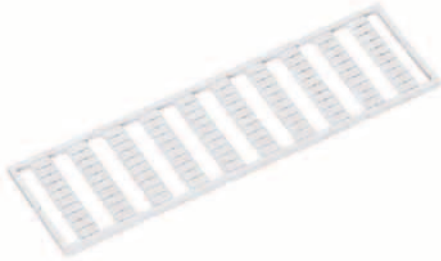






# WAGO WMB Multi Marking System for Terminal Block Width 3.5 mm, 4 – 4.2 mm, 5 mm and Higher

horizontal marking  
same letters/symbols each strip  
10 strips with 10 markers per card  
for terminal widths 5 - 17.5 mm and  
5 - 5.2 mm und 4 - 4.2 mm und 3.5 mm

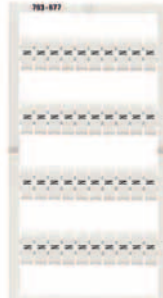
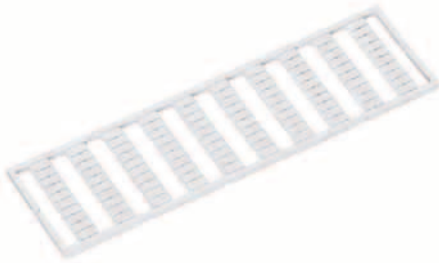


- ① For continuous marking of 270, 280, 780, 869, 870 and 880 Series terminal blocks  
Individual marking of 281 – 285, 781 – 785, 2002, 2003, 2022, 2004, 2006, 2010 and 2016 Series terminal blocks
- ② For continuous marking of 270, 280, 780, 869, 870, 880, 2002, 2003 and 2022 Series terminal blocks  
Individual marking of terminal blocks larger than 5 / 5.2 mm
- ③ For continuous marking of 279 and 2001 Series terminal blocks
- ④ For continuous marking of 2000 and 2020 Series terminal blocks

Marking	Marker Width 5 mm ①	Marker Width 5 – 5.2 mm ②	Marker Width 4 – 4.2 mm ③	Marker Width 3.5 mm ④
L1 (100x)	793-574	793-5574	793-4574	upon request
L2 (100x)	793-575	793-5575	793-4575	
L3 (100x)	793-576	793-5576	793-4576	
N (100x)	793-577	793-5577	793-4577	
PE (100x)	793-578	793-5578	793-4578	
PEN (100x)	793-579	793-5579	793-4579	
Ground (100x)	793-580	793-5580	793-4580	
R (100x)	793-581	793-5581	793-4581	
S (100x)	793-582	793-5582	793-4582	
T (100x)	793-583	793-5583	793-4583	
+/- (50x)	793-552	793-5552	793-4552	
a, b, c, e, u, v, w, x, y, z (10x)	793-543	793-5543	793-4543	
R, S, T, U, V, W, X, Y, Z, Mp (10x)	793-544	793-5544	793-4544	793-3544
A, B, P, N, PE, PEN, L1, L2, L3, Ground (10x)	793-545	793-5545	793-4545	793-3545
U, V, W, N, PE, U, V, W, N, PE (10x)	793-474	793-5474	793-4474	
L1, L2, L3, N, PE, L1, L2, L3, N, PE (10x)	793-472	793-5472	793-4472	
U1, V1, W1, U1, V1, W1, U1, V1, W1,... (10x)	793-487	793-5487	793-4487	
U2, V2, W2, U2, V2, W2, U2, V2, W2,... (10x)	793-494	793-5494	793-4494	
U3, V3, W3, U3, V3, W3, U3, V3, W3,... (10x)	793-495	793-5495	793-4495	
U4, V4, W4, U4, V4, W4, U4, V4, W4,... (10x)	793-496	793-5496	793-4496	
U5, V5, W5, U5, V5, W5, U5, V5, W5,... (10x)	793-497	793-5497	793-4497	
U6, V6, W6, ..., U6, V6, W6,... to U9, V9, W9, ..., U9, V9, W9, (2 each)	793-498	793-5498	793-4498	
R1, S1, T1, U1, V1, W1, X1, Y1, Z1, SL (10x)	793-546	793-5546	793-4546	
R2, S2, T2, U2, V2, W2, X2, Y2, Z2, SL (10x)	793-547	793-5547	793-4547	
R3, S3, T3, U3, V3, W3, X3, Y3, Z3, SL (10x)	793-548	793-5548	793-4548	
R4, S4, T4, ..., Y4, Z4, SL and R5, S5, T5, ..., Y5, Z5, SL (5 each)	793-549	793-5549	793-4549	
R6, S6, T6, ..., Y6, Z6, SL to R10, S10, T10, ..., Y10, Z10, SL (2 each)	793-550	793-5550	793-4550	
<b>“decade” marking with red printing,</b>				
2 strips, with same numbers				
10, 20 ... 50 (20 each)	793-553	793-5553	793-4553	
60, 70 ... 100 (20 each)	793-554	793-5554	793-4554	
110, 120 ... 150 (20 each)	793-555	793-5555	793-4555	
160, 170 ... 200 (20 each)	793-556	793-5556	793-4556	
1 strip, each with same numbers				
210, 220 ... 300 (10 each)	793-557	793-5557	793-4557	
310, 320 ... 400 (10 each)	793-558	793-5558	793-4558	
410, 420 ... 500 (10 each)	793-559	793-5559	793-4559	
510, 520 ... 600 (10 each)	793-560	793-5560	793-4560	
610, 620 ... 700 (10 each)	793-561	793-5561	793-4561	
710, 720 ... 800 (10 each)	793-562	793-5562	793-4562	
810, 820 ... 900 (10 each)	793-563	793-5563	793-4563	
910, 920 ... 1000 (10 each)	793-564	793-5564	793-4564	

# WAGO WMB Multi Marking System for Terminal Block Width 3.5 mm, 4 – 4.2 mm, 5 mm and Higher

vertical marking  
same letters/symbols each strip  
10 strips with 10 markers per card  
for terminal widths 5 - 17.5 mm and  
5 - 5.2 mm und 4 - 4.2 mm und 3.5 mm

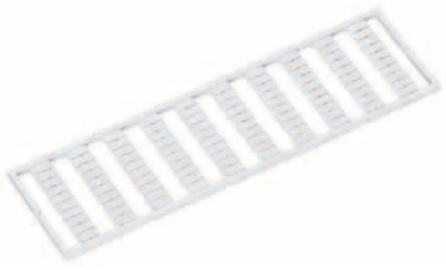


- ① For continuous marking of 270, 280, 780, 869, 870 and 880 Series terminal blocks  
Individual marking of 281 – 285, 781 – 785, 2002, 2003, 2022, 2004, 2006, 2010 and 2016 Series terminal blocks
- ② For continuous marking of 270, 280, 780, 869, 870, 880, 2002, 2003 and 2022 Series terminal blocks  
Individual marking of terminal blocks larger than 5 / 5.2 mm
- ③ For continuous marking of 279 and 2001 Series terminal blocks
- ④ For continuous marking of 2000 and 2020 Series terminal blocks

Marking	Marker Width 5 mm ①	Marker Width 5 – 5.2 mm ②	Marker Width 4 – 4.2 mm ③	Marker Width 3.5 mm ④
N (100x)	793-674	793-5674	793-4674	upon request
L1 (100x)	793-675	793-5675	793-4675	
L2 (100x)	793-676	793-5676	793-4676	
L3 (100x)	793-677	793-5677	793-4677	
PE (100x)	793-678	793-5678	793-4678	
PEN (100x)	793-679	793-5679	793-4679	
Ground (100x)	793-580	793-5680	793-4680	
R (100x)	793-681	793-5681	793-4681	
S (100x)	793-682	793-5682	793-4682	
T (100x)	793-683	793-5683	793-4683	
+/- (50x)	793-652	793-5652	793-4652	
a, b, c, e, u, v, w, x, y, z (10x)	793-643	793-5643	793-4643	
R, S, T, U, V, W, X, Y, Z, Mp (10x)	793-644	793-5644	793-4644	
A, B, P, N, PE, PEN, L1, L2, L3, Ground (10x)	793-645	793-5645	793-4645	
U, V, W, N, PE, U, V, W, N, PE (10x)	794-674	794-5674	794-4674	
L1, L2, L3, N, PE, L1, L2, L3, N, PE (10x)	794-672	793-5672	794-4672	
U1, V1, W1, U1, V1, W1, U1, V1, W1,... (10x)	793-687	793-5687	793-4687	
U2, V2, W2, U2, V2, W2, U2, V2, W2,... (10x)	793-694	793-5694	793-4694	
U3, V3, W3, U3, V3, W3, U3, V3, W3,... (10x)	793-695	793-5695	793-4695	
U4, V4, W4, U4, V4, W4, U4, V4, W4,... (10x)	793-696	793-5696	793-4696	
U5, V5, W5, U5, V5, W5, U5, V5, W5,... (10x)	793-697	793-5697	793-4697	
U6, V6, W6, ..., U6, V6, W6,... to U9, V9, W9, ..., U9, V9, W9, (2 each)	793-698	793-5698	793-4698	
R1, S1, T1, U1, V1, W1, X1, Y1, Z1, SL (10x)	793-646	793-5646	793-4646	
R2, S2, T2, U2, V2, W2, X2, Y2, Z2, SL (10x)	793-647	793-5647	793-4647	
R3, S3, T3, U3, V3, W3, X3, Y3, Z3, SL (10x)	793-648	793-5648	793-4648	
R4, S4, T4, ..., Y4, Z4, SL and R5, S5, T5, ..., Y5, Z5, SL (5 each)	793-649	793-5649	793-4649	
R6, S6, T6, ..., Y6, Z6, SL to R10, S10, T10, ..., Y10, Z10, SL (2 each)	793-650	793-5650	793-4650	
<b>“decade” marking with red printing,</b>				
2 strips, with same numbers				
10, 20 ... 50 (20 each)	793-653	793-5653	793-4653	
60, 70 ... 100 (20 each)	793-654	793-5654	793-4654	
110, 120 ... 150 (20 each)	793-655	793-5655	793-4655	
160, 170 ... 200 (20 each)	793-656	793-5656	793-4656	
1 strip, each with same numbers				
210, 220 ... 300 (10 each)	793-657	793-5657	793-4657	
310, 320 ... 400 (10 each)	793-658	793-5658	793-4658	
410, 420 ... 500 (10 each)	793-659	793-5659	793-4659	
510, 520 ... 600 (10 each)	793-660	793-5660	793-4660	
610, 620 ... 700 (10 each)	793-661	793-5661	793-4661	
710, 720 ... 800 (10 each)	793-662	793-5662	793-4662	
810, 820 ... 900 (10 each)	793-663	793-5663	793-4663	
910, 920 ... 1000 (10 each)	793-664	793-5664	793-4664	

# WAGO WMB Multi Marking System for Terminal Block Width 3.5 mm, 4 – 4.2 mm, 5 mm and Higher

horizontal marking  
10 strips with 10 markers per card  
for terminal widths 5 - 17.5 mm and  
5 - 5.2 mm und 4 - 4.2 mm und 3.5 mm

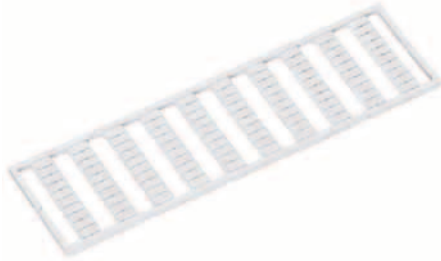


- ① For continuous marking of 270, 280, 780, 869, 870 and 880 Series terminal blocks  
Individual marking of 281 – 285, 781 – 785, 2002, 2003, 2022, 2004, 2006, 2010 and 2016 Series terminal blocks
- ② For continuous marking of 270, 280, 780, 869, 870, 880, 2002, 2003 and 2022 Series terminal blocks  
Individual marking of terminal blocks larger than 5 / 5.2 mm
- ③ For continuous marking of 279 and 2001 Series terminal blocks
- ④ For continuous marking of 2000 and 2020 Series terminal blocks

Marking	Marker Width 5 mm ①	Marker Width 5 – 5.2 mm ②	Marker Width 4 – 4.2 mm ③	Marker Width 3.5 mm ④
<b>for subdistribution boxes (power stations),</b>				
horizontal marking				
1A, 1B, ..., 1G, 1H, ... to 10A, 10B, ..., 10G, 10H, ; (1 each)	793-458	793-5458	793-4458	upon request
0, 2, 4, 6, , , 0, 2, 4, 6; (5x)/1, 3, 5, 7, , , 1, 3, 5, 7; (5x)				
vertical marking	793-500/793-134			
1A, 1B, ..., 1G, 1H, ... to 10A, 10B, ..., 10G, 10H, ; (1 each)				
0, 2, 4, 6, , , 0, 2, 4, 6; (5x)/1, 3, 5, 7, , , 1, 3, 5, 7; (5x)	793-958	793-5958	793-4958	
Symbol for shield terminal blocks per DIN 40771 (10x)	793-600/793-073			
<b>for relay</b>	793-993	793-5993	793-5993	
A1, A2, A2, 11, 12, 14, A1, A2, A2; (5x)				
12, A1, A2, 24, 11, 14, 21, 22, ; (10x)				
A1, A1, A2, A2, 12, 11, 11, 14, ; (10x)	793-994	793-5994	793-5994	
lin, lin, , lout, lout, 24V, 11, 12, 14, 0V; (10x)	793-995	793-5995	793-5995	
A1, A2, A1, A2, RL, -, RL, -, ; (10x)	793-996	793-5996	793-5996	
	793-997	793-5997	793-5997	
<b>for fuse terminal blocks 281-6..,</b>	793-998	793-5998	793-5998	
vertical marking				
F1, ..., F10 (10x)				
F11, ..., F20 (10x)				
F21, ..., F30 (10x)				
F31, ..., F40 (10x)	794-615	794-5615	794-4615	
F41, ..., F50 (10x)	794-616	794-5616	794-4616	
	794-617	794-5617	794-4617	
	794-618	794-5618	794-4618	
	794-619	794-5619	794-4619	

# WAGO WMB Multi Marking System for Terminal Block Width 3.5 mm, 4 – 4.2 mm, 5 mm and Higher

vertical marking  
for PLC input and output marking  
10 strips with 10 markers per card  
for terminal widths 5 - 17.5 mm and  
5 - 5.2 mm und 4 - 4.2 mm und 3.5 mm

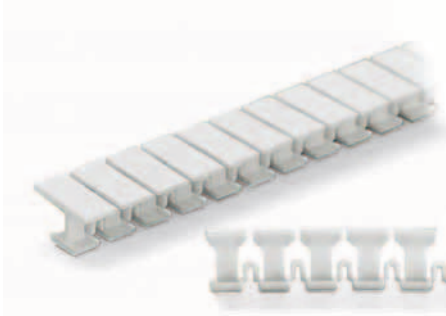
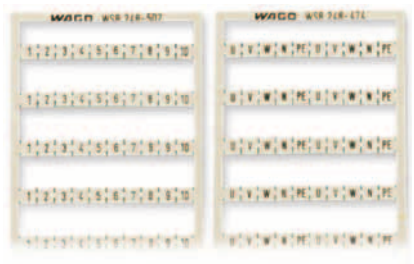


- ① For continuous marking of 270, 280, 780, 869, 870 and 880 Series terminal blocks  
Individual marking of 281 – 285, 781 – 785, 2002, 2003, 2022, 2004, 2006, 2010 and 2016 Series terminal blocks
- ② For continuous marking of 270, 280, 780, 869, 870, 880, 2002, 2003 and 2022 Series terminal blocks  
Individual marking of terminal blocks larger than 5 / 5.2 mm
- ③ For continuous marking of 279 and 2001 Series terminal blocks
- ④ For continuous marking of 2000 and 2020 Series terminal blocks

Marking	Marker Width 5 mm ①	Marker Width 5 – 5.2 mm ②	Marker Width 4 – 4.2 mm ③	Marker Width 3.5 mm ④
<b>for PLC input marking</b>				
E0.0, E0.1, ..., E9.6, E9.7 (1 each)	793-933	793-5933	793-4933	upon request
E10.0, E10.1, ..., E19.6, E19.7 (1 each)	793-934	793-5934	793-4934	
E20.0, E20.1, ..., E29.6, E29.7 (1 each)	793-935	793-5935	793-4935	
E30.0, E30.1, ..., E39.6, E39.7 (1 each)	793-936	793-5936	793-4936	
E40.0, E40.1, ..., E49.6, E49.7 (1 each)	793-937	793-5937	793-4937	
E50.0, E50.1, ..., E59.6, E59.7 (1 each)	793-938	793-5938	793-4938	
E60.0, E60.1, ..., E69.6, E69.7 (1 each)	793-939	793-5939	793-4939	
E70.0, E70.1, ..., E79.6, E79.7 (1 each)	793-940	793-5940	793-4940	
E80.0, E80.1, ..., E89.6, E89.7 (1 each)	793-941	793-5941	793-4941	
E90.0, E90.1, ..., E99.6, E99.7 (1 each)	793-942	793-5942	793-4942	
E100.0, E100.1, ..., E109.6, E109.7 (1 each)	793-943	793-5943		
E110.0, E110.1, ..., E119.6, E119.7 (1 each)	793-944	793-5944	793-4944	
E120.0, E120.1, ..., E129.6, E129.7 (1 each)	793-945	793-5945	793-4945	
E130.0, E130.1, ..., E139.6, E139.7 (1 each)	793-946	793-5946	793-4946	
E140.0, E140.1, ..., E149.6, E149.7 (1 each)	793-947	793-5947	793-4947	
E150.0, E150.1, ..., E159.6, E159.7 (1 each)	793-948	793-5948	793-4948	
E160.0, E160.1, ..., E169.6, E169.7 (1 each)	793-949	793-5949	793-4949	
E170.0, E170.1, ..., E179.6, E179.7 (1 each)	793-950	793-5950	793-4950	
E180.0, E180.1, ..., E189.6, E189.7 (1 each)	793-959	793-5959	793-4959	
E190.0, E190.1, ..., E199.6, E199.7 (1 each)	793-960	793-5960	793-4960	
E200.0, E200.1, ..., E209.6, E209.7 (1 each)	793-961	793-5961	793-4961	
<b>for PLC output marking</b>				
A0.0, A0.1, ..., A9.6, A9.7 (1 each)	793-967	793-5967	793-4967	
A10.0, A10.1, ..., A19.6, A19.7 (1 each)	793-968	793-5968	793-4968	
A20.0, A20.1, ..., A29.6, A29.7 (1 each)	793-969	793-5969	793-4969	
A30.0, A30.1, ..., A39.6, A39.7 (1 each)	793-970	793-5970	793-4970	
A40.0, A40.1, ..., A49.6, A49.7 (1 each)	793-971	793-5971	793-4971	
A50.0, A50.1, ..., A59.6, A59.7 (1 each)	793-972	793-5972	793-4972	
A60.0, A60.1, ..., A69.6, A69.7 (1 each)	793-973	793-5973	793-4973	
A60.0, A60.1, ..., A69.6, A69.7 (1 each)	793-974	793-5974	793-4974	
A80.0, A80.1, ..., A89.6, A89.7 (1 each)	793-975	793-5975	793-4975	
A90.0, A90.1, ..., A99.6, A99.7 (1 each)	793-976	793-5976	793-4976	
A100.0, A100.1, ..., A109.6, A109.7 (1 each)	793-977	793-5977	793-4977	
A110.0, A110.1, ..., A119.6, A119.7 (1 each)	793-978	793-5978	793-4978	
A120.0, A120.1, ..., A129.6, A129.7 (1 each)	793-979	793-5979	793-4979	
A130.0, A130.1, ..., A139.6, A139.7 (1 each)	793-980	793-5980	793-4980	
A140.0, A140.1, ..., A149.6, A149.7 (1 each)	793-981	793-5981	793-4981	
A150.0, A150.1, ..., A159.6, A159.7 (1 each)	793-982	793-5982	793-4982	
A160.0, A160.1, ..., A169.6, A169.7 (1 each)	793-983	793-5983	793-4983	
A170.0, A170.1, ..., A179.6, A179.7 (1 each)	793-984	793-5984	793-4984	
A180.0, A180.1, ..., A189.6, A189.7 (1 each)	793-985	-	793-4985	
A190.0, A190.1, ..., A199.6, A199.7 (1 each)	793-986	793-5986	793-4986	
A200.0, A200.1, ..., A209.6, A209.7 (1 each)	793-987	793-5987	793-4987	
A210.0, A210.1, ..., A219.6, A219.7 (1 each)	793-988	793-5988	793-4988	
A220.0, A220.1, ..., A229.6, A229.7 (1 each)	793-989	793-5989	793-4989	
A230.0, A230.1, ..., A239.6, A239.7 (1 each)	793-990	793-5990	793-4990	
A240.0, A240.1, ..., A249.6, A249.7 (1 each)	793-991	793-5991	793-4991	
A250.0, A250.1, ..., A259.6, A259.7 (1 each)	793-992	793-5992	793-4992	

# WAGO Miniature WSB Quick Marking System and T Marker Tag for Terminal Blocks with Miniature WSB Marker Slots

<p>Miniature WSB Quick marking system horizontal marking 10 strips with 10 markers per card</p>		<p>T marker tag plain</p>
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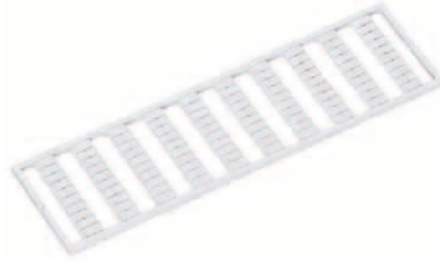
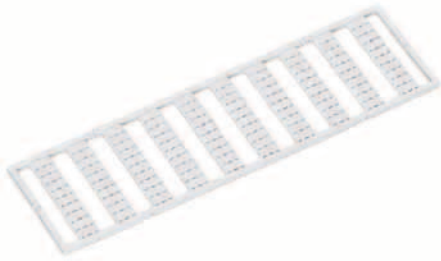
Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Miniature WSB Quick marking system</b>		<b>Mini-WSB Inline, plain,</b> stretchable 5 - 5.2 mm, 1,700 WMB markers, 5 mm, on roll		<b>T marker tag,</b> 30 markers each tag, up to 6 characters per marker , stretchable from 5 mm to 6 mm, factory inkjet marking upon request	
○ 1 ... 10 (10x)	248-502	5	○ white	2009-145	1
○ 11 ... 20 (10x)	248-503	5			
○ 21 ... 30 (10x)	248-504	5			
○ 31 ... 40 (10x)	248-505	5			
○ 41 ... 50 (10x)	248-506	5			
○ 51 ... 60 (10x)	248-569	5			
○ 61 ... 70 (10x)	248-570	5			
○ 71 ... 80 (10x)	248-571	5			
○ 81 ... 90 (10x)	248-572	5			
○ 91 ... 100 (10x)	248-573	5			
<b>Miniature WSB Quick marking system</b>					
○ 1 ... 50 (2x)	248-566	5			
<b>Miniature WSB Quick marking system</b>					
○ U, V, W, N, PE, U, V, W, N, PE (10x)	248-474	5			
<b>Miniature WSB Quick marking system</b>					
○ L1, L2, L3, N, PE, L1, L2, L3, N, PE (10x)	248-472	5			
<b>Miniature WSB Quick marking system</b>					
○ 1, , 2, , 3, , 4, , 5, ; to 46, , 47, , 48, , 49, , 50, ; (1 each)	264-900	5			
○ U, , V, , W, , N, , PE, ; (10x)	264-901	5			
○ L1, , L2, , L3, , N, , PE, ; (10x)	264-902	5			
○ 1, , 1, , 1, , 1, , 1, ; (10x)	264-903	5			
○ 2, , 2, , 2, , 2, , 2, ; (10x)	264-904	5			
○ 3, , 3, , 3, , 3, , 3, ; (10x)	264-905	5			



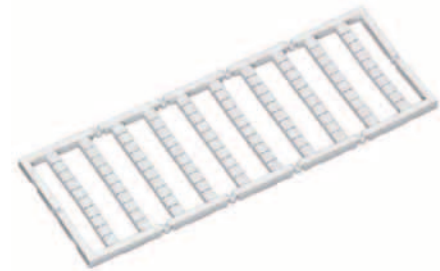
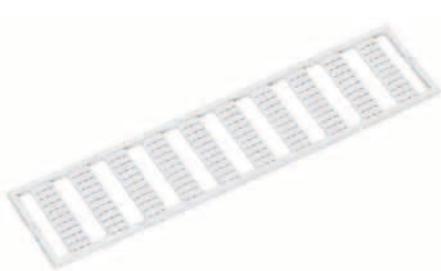
**6 characters per marker**  
The T marker tag fulfills customer requests for larger marking areas for 264 Series terminal strips. The T marker can be marked with up to 6 characters per marker and is snapped into the miniature WSB marker slot. Terminal strips in any combination of 2- and 4-conductor terminal blocks can be marked easily by stretching the tag.

# Marker Cards, Plain Marking Strips

<b>WMB Multi marking system</b>	<b>WMB Multi marking system</b>	<b>WMB Inline and marking strips</b>
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Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>WMB Multi marking system,</b> for terminal widths 5 - 17.5 mm, 10 strips with 10 markers per card		<b>WMB Multi marking system,</b> stretchable 5 - 5.2 mm, 10 strips with 10 markers per card		<b>WMB Inline, plain,</b> stretchable 5 - 5.2 mm, 1,500 WMB markers, 5 mm, on roll	
○ plain	793-501	5	○ plain	793-5501	5
<b>Marker cards in different colors:</b>		<b>Marker cards in different colors:</b>		<b>WMB Inline, plain,</b> stretchable 5 - 5.2 mm, 8,000 WMB markers, 5 mm, on roll	
● yellow	793-501/000-002	5	● yellow	793-5501/000-002	5
● red	793-501/000-005	5	● red	793-5501/000-005	5
● blue	793-501/000-006	5	● blue	793-5501/000-006	5
● gray	793-501/000-007	5	● gray	793-5501/000-007	5
● orange	793-501/000-012	5	● orange	793-5501/000-012	5
● light green	793-501/000-017	5	● light green	793-5501/000-017	5
● green	793-501/000-023	5	● green	793-5501/000-023	5
● violet	793-501/000-024	5	● violet	793-5501/000-024	5
				<b>WMB Inline, plain,</b> stretchable 4 - 4.2 mm, 2,000 WMB markers, 4 mm, on roll	
				○ white	2009-114
					1



Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>WMB Multi marking system,</b> stretchable 4 - 4.2 mm, 10 strips with 10 markers per card		<b>Miniature WSB Quick marking system,</b> 5 mm wide markers, 10 strips with 10 markers per card		<b>Marking strip, plain,</b> 11 mm wide, white	
○ plain	793-4501	5	○ plain	248-501	5
<b>Marker cards in different colors:</b>		<b>Marker cards in different colors:</b>		○ 50 m roll	
● yellow	793-4501/000-002	5	● yellow	248-501/000-002	5
● red	793-4501/000-005	5	● red	248-501/000-005	5
● blue	793-4501/000-006	5	● blue	248-501/000-006	5
● gray	793-4501/000-007	5	● gray	248-501/000-007	5
● orange	793-4501/000-012	5	● orange	248-501/000-012	5
● light green	793-4501/000-017	5	● light green	248-501/000-017	5
● green	793-4501/000-023	5	● green	248-501/000-023	5
● violet	793-4501/000-024	5	● violet	248-501/000-024	5
					1

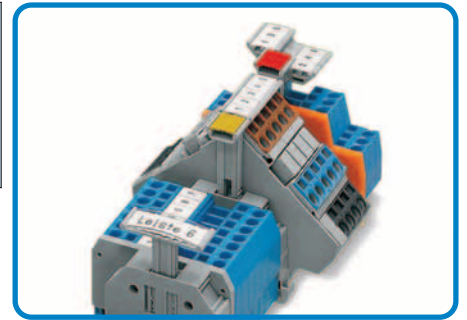






# Group Marker Carriers (Height-Adjustable) and Movable Marking System

Height-adjustable group marker carrier	Carrier-through element
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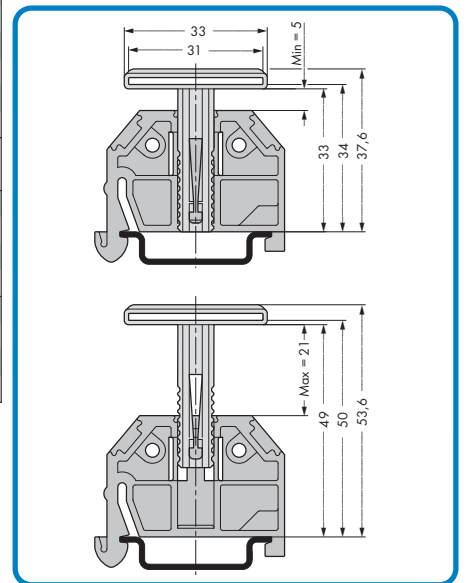
Receptacles for:  
 1 x marker  
 2 x WMB (Multi marking) or  
 3 x WCB (Combi marking) or  
 1 x WFB (Continuous marking strips)



Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Height-adjustable group marker carrier,</b> snap-on type and height-adjustable from 43.5 mm to 59.5 mm in 249-116 and 249-117 end stops, for 1 marker or self-adhesive label and transparent protection covers, 10 mm wide ● gray <b>249-119</b> 50 (2x25)		<b>Carrier-through element,</b> height-adjustable ● gray <b>709-118</b> 50 (2x25)	
snap-on type and height-adjustable from 43.5 mm to 59.5 mm in 249-116 and 249-117 end stops, for 2 WMB markers or 1 x continuous strip, 10 mm wide ● gray <b>249-118</b> 100 (4x25)		<b>Carrier-end element,</b> height-adjustable ● gray <b>709-119</b> 50 (2x25)	
snap-on type and height-adjustable from 42.2 mm to 58.2 mm in 249-116 and 249-117 end stops, with marker surface, 6 mm wide ○ white <b>249-120</b> 50 (2x25)			
snap-on type and height-adjustable from 45 mm to 61 mm in 249-116 and 249-117 end stops, for 2 WMB markers or 1 x TOPJOB®S marking strips, 12.2 mm wide ● gray <b>2009-163</b> 50 (2x25)		<b>Item-Specific Accessories</b>	
		<b>Marking strip carrier,</b> folded, 1 m long, 16 mm wide, 1.7 mm thick transparent <b>709-120</b> 1	
		<b>Marking card,</b> with 14 marking strips, DIN A4 plain <b>709-193</b> 1	

This system can be used as an additional group marker carrier or continuous marking strip carrier for terminal strips or single-deck rail-mount terminal blocks, for example:

- 264 Series terminal strips for DIN 35 rails
- 279 to 284 Series single-deck rail-mount terminal blocks, with a maximum height of 49 mm from the upper edge of the carrier rail (please observe conductor radius).



Dimensions in mm



Height-adjustable group marker carrier for TOPJOB®S marking strips

Group marker carrier	Group marker carrier	Group marker carrier
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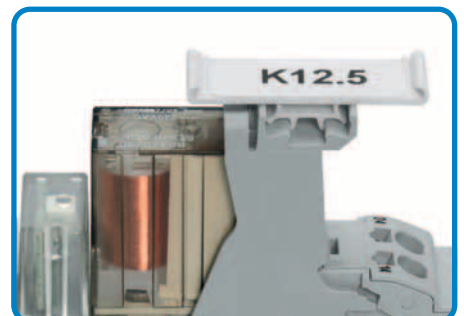
Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Group marker carrier,</b> to insert into jumper slots of terminal blocks, for terminal block width of 4 - 6 mm, for up to 3 WMB markers or 8 marker tags, 15 mm wide		<b>Group marker carrier,</b> for snapping into screwless end stops; for center or side mounting, 10 mm wide		<b>Group marker carrier,</b> for WMB and miniature WSB marker receptacles, 10 mm wide	
○ gray	<b>209-140</b>	50 (2x25)	○ white	<b>209-112</b>	100 (2x50)
for up to 2 WMB markers or 5 marker tags, 10 mm wide		<b>Marker,</b> from white cardboard, for self-marking, 100 markers per sheet			
○ gray	<b>209-141</b>	50 (2x25)	○ white	<b>209-113</b>	1
for up to 1 WMB marker or 2 marker tags, 5 mm wide		<b>Self-adhesive label,</b> for self-marking, 7 x 25 labels per sheet			
○ gray	<b>209-142</b>	50 (2x25)	○ white	<b>210-345</b>	1
		<b>Protection cover</b> transparent		<b>209-114</b>	50



Group marker carriers

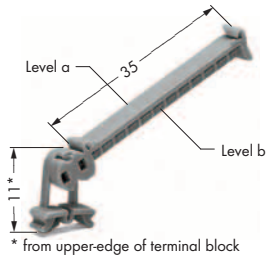



Group marker carrier with marker and protection cover

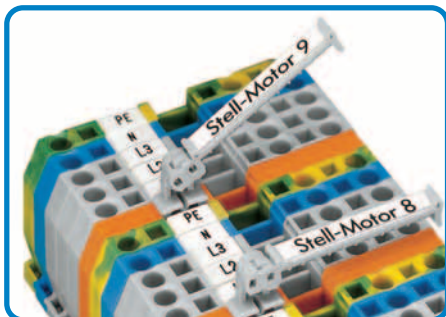


# Group Marker Carrier (Pivoting) WFB Continuous Marking Strip Mounting Carrier

Pivoting group marker carrier	WFB continuous marking strip	Mounting carrier
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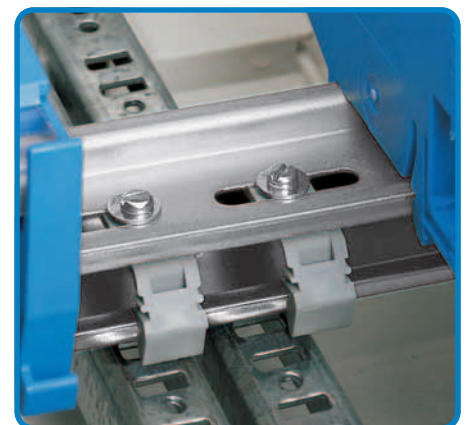
Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Pivoting group marker carrier</b>		<b>WFB continuous marking strip,</b> for self-marking, e.g., with felt-tip pen, 1000 mm long		<b>Mounting carrier,</b> for isolated mounting on DIN 3.5 rails	
● gray	249-105	50 (2x25)	transparent	210-612	10
<b>Marker card, 4 x 30 markers per sheet</b>		<b>Carrier for WFB continuous marking strip,</b> to be snapped into the marker slot			
○ white	209-183	1	● gray	209-185	200 (8x25)
<b>Protection cover</b> transparent		209-184	50		
<b>Item-Specific Accessories</b>					
		<b>Felt-tip pen,</b> for permanent marking			
					
		210-110		1	



This pivoting group marker carrier has been developed for group marking of rail-mount terminal blocks and readily satisfies several customer requirements.



Carrier for WFB Continuous marking strip; to be secured into every 10th terminal block.



Isolated mounting of a carrier rail in a distribution box for protection class 2.

- Can be used in all multiprofile marker slots for rail-mount terminal blocks from 5 mm/0.197 in on or in spacer housings as shown in the picture
- Can be pivoted in 7 different stable positions, providing the best visual angle in case of difficult mounting conditions
- Two levels for different marking systems  
Level a: for marker (4 x 34) mm (see picture)  
Level b: for 12 WCB-Combi markers (see [www.wagocatalog.com](http://www.wagocatalog.com))

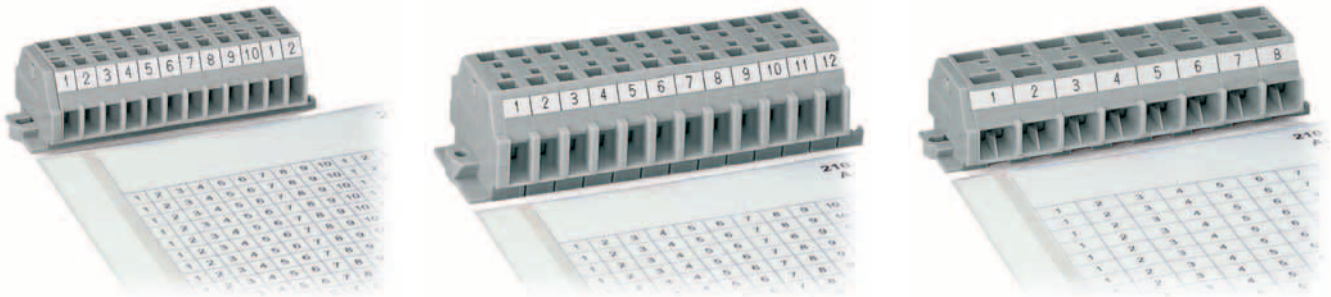






# Marker Cards – Self-Adhesive Marking Strips

<p><b>Self-adhesive marker strips computer-marked</b>                  40 self-adhesive strips per card                  Height of marking strip: 6 mm</p>	<p><b>Self-adhesive marker strips computer-marked</b>                  40 self-adhesive strips per card                  Height of marking strip: 6 mm</p>	<p><b>Self-adhesive marker strips computer-marked</b>                  40 self-adhesive strips per card                  Height of marking strip: 6 mm</p>
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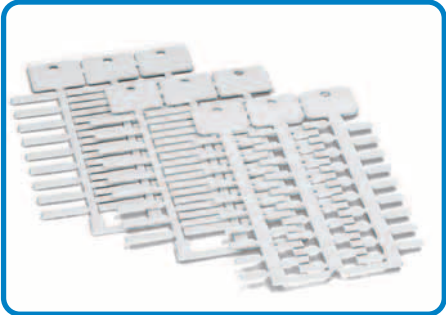
Marking	Item No.	Pack. Unit	Marking	Item No.	Pack. Unit	Marking	Item No.	Pack. Unit
<b>for 260 Series 2-conductor terminal strips</b>			<b>for 261 Series 2-conductor terminal strips</b>			<b>for 262 Series 2-conductor terminal strips</b>		
1 - 10 (120x)	210-333/500-002	1	1 - 12 (80x)	210-333/600-103	1	1 - 20 (40x)	210-333/700-020	1
11 - 20 (120x)	210-333/500-003	1	13 - 24 (80x)	210-333/600-104	1	21 - 40 (40x)	210-333/700-108	1
21 - 30 (120x)	210-333/500-004	1	25 - 36 (80x)	210-333/600-105	1	41 - 60 (40x)	210-333/700-109	1
31 - 40 (120x)	210-333/500-005	1	37 - 48 (80x)	210-333/600-106	1	1 - 50 (20x)	210-333/700-021	1
41 - 50 (120x)	210-333/500-006	1	41 - 50 (80x)	210-333/600-006	1	L1 (1040x)	210-333/700-074	1
51 - 60 (120x)	210-333/500-007	1	51 - 60 (80x)	210-333/600-007	1	L2 (1040x)	210-333/700-075	1
61 - 70 (120x)	210-333/500-008	1	61 - 70 (80x)	210-333/600-008	1	L3 (1040x)	210-333/700-076	1
71 - 80 (120x)	210-333/500-009	1	71 - 80 (80x)	210-333/600-009	1	N (1040x)	210-333/700-077	1
81 - 90 (120x)	210-333/500-010	1	81 - 90 (80x)	210-333/600-010	1	PE (1040x)	210-333/700-078	1
91 - 100 (120x)	210-333/500-011	1	91 - 100 (80x)	210-333/600-011	1	PEN (1040x)	210-333/700-079	1
1 - 50 (20x)	210-333/500-021	1	1 - 50 (20x)	210-333/600-021	1	only with grid spacing	210-333/700-001	1
L1 (1440x)	210-333/500-074	1	L1 (1200x)	210-333/600-074	1			
L2 (1440x)	210-333/500-075	1	L2 (1200x)	210-333/600-075	1			
L3 (1440x)	210-333/500-076	1	L3 (1200x)	210-333/600-076	1			
N (1440x)	210-333/500-077	1	N (1200x)	210-333/600-077	1			
PE (1440x)	210-333/500-078	1	PE (1200x)	210-333/600-078	1			
PEN (1440x)	210-333/500-079	1	PEN (1200x)	210-333/600-079	1			
only with grid spacing	210-333/500-001	1	only with grid spacing	210-333/600-001	1			
<b>for 260 Series 4-conductor terminal strips</b>			<b>for 261 Series 4-conductor terminal strips</b>			<b>for 262 Series 4-conductor terminal strips</b>		
1 - 10 (80x)	210-333/800-002	1	1 - 16 (40x)	210-333/1000-202	1	1 - 12 (40x)	210-333/1200-103	1
11 - 20 (80x)	210-333/800-003	1	17 - 32 (40x)	210-333/1000-204	1	13 - 24 (40x)	210-333/1200-104	1
21 - 30 (80x)	210-333/800-004	1	33 - 48 (40x)	210-333/1000-206	1	25 - 36 (40x)	210-333/1200-105	1
31 - 40 (80x)	210-333/800-005	1	49 - 64 (40x)	210-333/1000-110	1	37 - 48 (40x)	210-333/1200-106	1
41 - 50 (80x)	210-333/800-006	1	65 - 80 (40x)	210-333/1000-111	1	49 - 60 (40x)	210-333/1200-107	1
51 - 60 (80x)	210-333/800-007	1	81 - 96 (40x)	210-333/1000-112	1	1 - 24 (20x)	210-333/1200-203	1
61 - 70 (80x)	210-333/800-008	1	97 - 112 (40x)	210-333/1000-113	1	L1 (600x)	210-333/1200-074	1
71 - 80 (80x)	210-333/800-009	1	1 - 36 (20x)	210-333/1000-208	1	L2 (600x)	210-333/1200-075	1
81 - 90 (80x)	210-333/800-010	1	L1 (720x)	210-333/1000-074	1	L3 (600x)	210-333/1200-076	1
91 - 100 (80x)	210-333/800-011	1	L2 (720x)	210-333/1000-075	1	N (600x)	210-333/1200-077	1
1 - 40 (20x)	210-333/800-209	1	L3 (720x)	210-333/1000-076	1	PE (600x)	210-333/1200-078	1
L1 (880x)	210-333/800-074	1	N (720x)	210-333/1000-077	1	PEN (600x)	210-333/1200-079	1
L2 (880x)	210-333/800-075	1	PE (720x)	210-333/1000-078	1	only with grid spacing	210-333/1200-001	1
L3 (880x)	210-333/800-076	1	PEN (720x)	210-333/1000-079	1			
N (880x)	210-333/800-077	1	only with grid spacing	210-333/1000-001	1			
PE (880x)	210-333/800-078	1						
PEN (880x)	210-333/800-079	1						
only with grid spacing	210-333/800-001	1						





# Wire and Cable Marking – Description and Handling –

## Wire marking



The following markers are available:  
Markers for plotter marking.



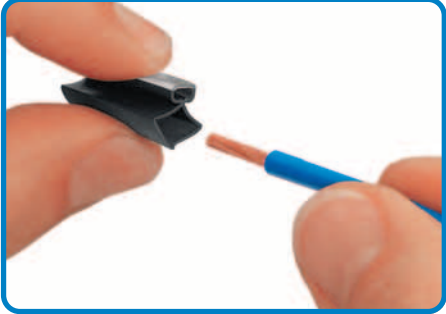
Markers on roll for thermal transfer printing.



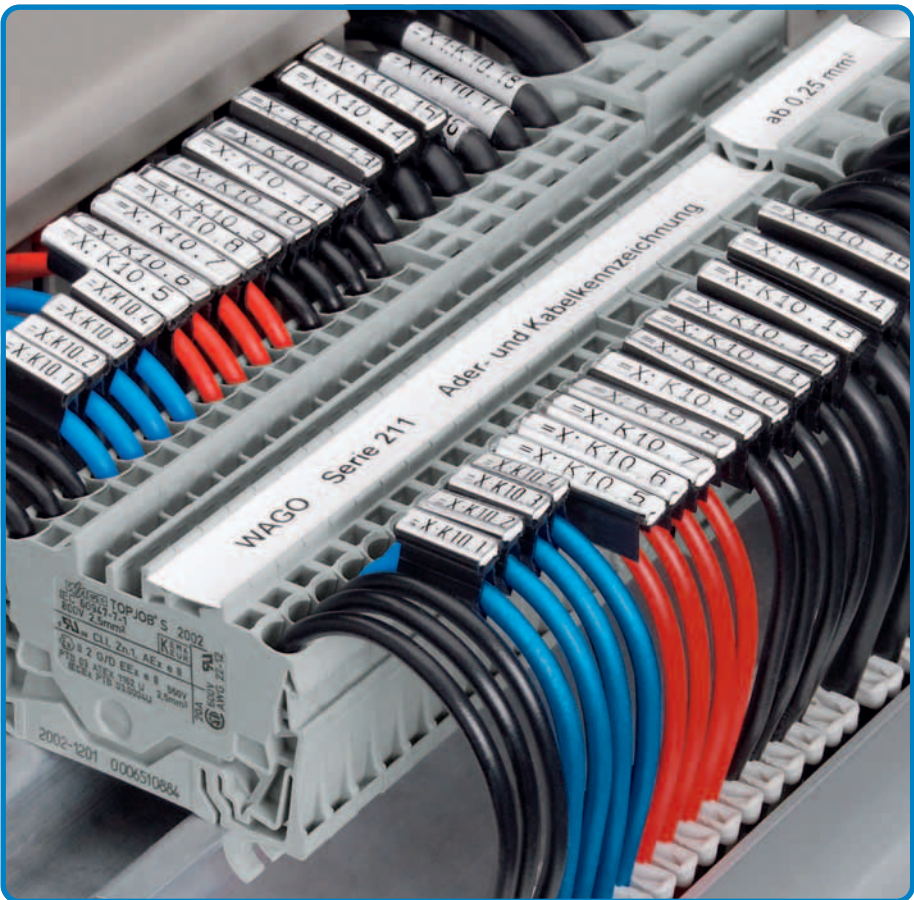
Remove the printed marker from the roll.



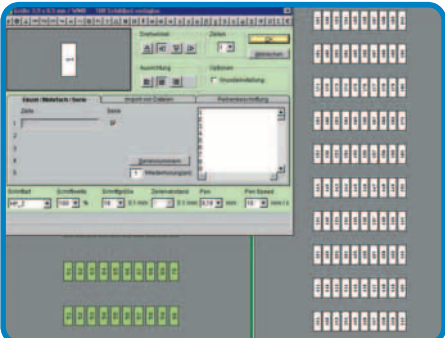
Slide the plotted marker into the marking sleeve receptacle. Exchanging the marker is also possible after the conductor has been terminated.



Compress the sleeve and slide it onto the conductor to be marked.



smartPrinter



WAGO smartMarking Software



TP 298+ Thermal Transfer Printer



Slide it through the marker receptacle up to the end of the sleeve.



Then remove the rest of the marker by twisting it off.



Attach the 211-129 marking sleeve to individual cables or conductors via cable ties.

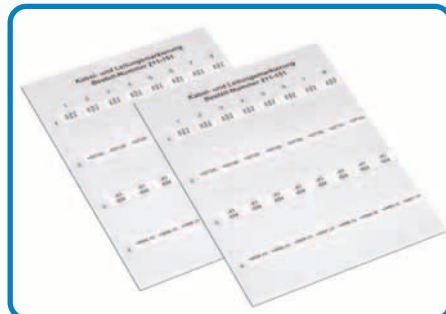


### Wire marking

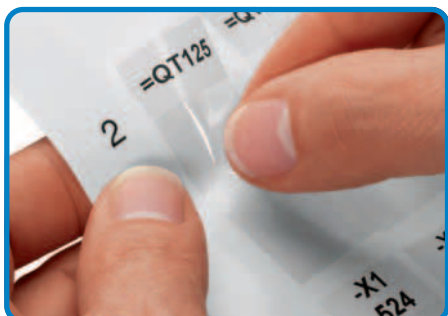


Wire marker for thread-on mounting for 2.5 - 6 mm<sup>2</sup>

### Wire marking



Self-laminating labels are available on A4 sheets for laser printers (plotters) are supplied on roll for thermal transfer printers.



Remove the printed label from the sheet or roll.



Wrap it around the conductor or cable.



The transparent laminate protects the marking.



# Wire and Cable Marking for Conductors from 0.25 to 25 mm<sup>2</sup>

Marking sleeve	Marking sleeve	Marking sleeve
----------------	----------------	----------------



Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Marking sleeve</b> , 12 mm long, halogene-free, for one marker, to be fitted prior to conductor termination, for wire Ø 1.6 - 3.2 mm or 0.25 - 1.5 mm <sup>2</sup>		<b>Marking sleeve</b> , 23 mm long, halogene-free, for one marker, to be fitted prior to conductor termination, for wire Ø 1.6 - 3.2 mm or 0.25 - 1.5 mm <sup>2</sup>		<b>Marking sleeve</b> , 23 mm long, halogene-free, for cable tie, can also be fitted after install, for one marker, for wires from 10 mm <sup>2</sup>	
211-112	2000	211-122	2000	211-129	1000
for wire Ø 2.2 - 4.5 mm or 0.5 - 4 mm <sup>2</sup>		for wire Ø 2.2 - 4.5 mm or 0.5 - 4 mm <sup>2</sup>			
211-113	2000	211-123	2000		
for wire Ø 3.7 - 5.9 mm or 2.5 - 6 mm <sup>2</sup>		for wire Ø 3.7 - 5.9 mm or 2.5 - 6 mm <sup>2</sup>			
211-114	1000	211-124	1000		
for wire Ø 5.5 - 10 mm or 10 - 25 mm <sup>2</sup>		for wire Ø 5.5 - 10 mm or 10 - 25 mm <sup>2</sup>			
211-115	1000	211-125	1000		

Item-Specific Accessories		Item-Specific Accessories		Item-Specific Accessories	
<b>Markers on roll</b> , for thermal transfer printer, 3,000 markers per roll, 12 mm long white <b>211-111</b> 1		<b>Markers on roll</b> , for thermal transfer printer, 3,000 markers per roll, 23 mm long white <b>211-121</b> 1		<b>Markers on roll</b> , for thermal transfer printer, 3,000 markers per roll, 23 mm long white <b>211-121</b> 1	
<b>Marker card</b> , for plotter, 57 markers per card, 12 mm long white <b>211-110</b> 18		<b>Marker card</b> , for plotter, 34 markers per card, 23 mm long white <b>211-120</b> 30		<b>Marker card</b> , for plotter, 34 markers per card, 23 mm long white <b>211-120</b> 30	
				<b>Cable tie</b> , 2.5 mm x 100 mm <b>807-090/101-100</b> 1	

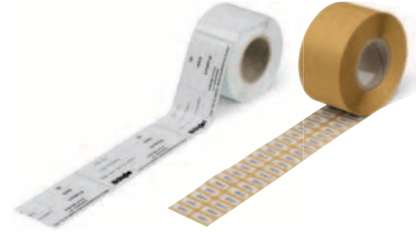
### 211 Series Accessories

<b>TP 298+ Thermal Transfer Printer</b> , 300 dpi print resolution <b>258-298</b> 1	<b>Ink pen</b> , 0.35 mm line width <b>258-228</b> 1	
<b>Ink ribbon for wire marker</b> , 76 mm wide x 300 m <b>258-150</b> 1	<b>WAGO disposable plotter pen</b> , 0.35 mm line width <b>258-328</b> 1	
<b>DIN A3 plotter</b> , IP 350 (110 V/230 V) <b>258-350</b> 1	<b>Carrier plate for marker cards for IP350 plotter</b> <b>258-370</b> 1	



# Markers, Cable Marking and Lables

<b>Cable Marking</b>	<b>Cable Marking</b>	<b>Label Rolls and Type Plates</b>
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Similar to picture

Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Marker for marking sleeve</b> 12 x 4 mm 2,500 pieces per roll white	<b>211-811</b> 1	<b>Cable tie marker</b> 500 pieces per roll 25 x 20 mm 25 x 10 mm write-on surface white	<b>211-835</b> 1	<b>Label roll</b> Polyester, self-adhesive 3,000 labels per roll 15 x 6 mm white	<b>210-805</b> 1
<b>Marking sleeve</b> Sleeve length: 12 mm 500 pcs for 1.4-5 mm wire diameter transparent	<b>211-812</b> 1	800 pieces per roll Inner wrap (write-on surface on the inner side) 117.5 x 15 mm 100 x 15 mm write-on surface white	<b>211-836</b> 1	yellow	<b>210-805/000-002</b> 1
for 5-11 mm wire diameter transparent	<b>211-813</b> 1	<b>Self-laminating labels (no illustration)</b> 1,000 pieces per roll 9 x 18 mm write-on surface white	<b>211-855</b> 1	15 x 9 mm white	<b>210-806</b> 1
<b>Marker for marking sleeve</b> 23 x 4 mm 2,500 pieces per roll white	<b>211-821</b> 1	<b>Self-laminating labels (no illustration)</b> 1,000 pieces per roll 15 x 22 mm write-on surface white	<b>211-856</b> 1	yellow	<b>210-806/000-002</b> 1
<b>Marking sleeve</b> Sleeve length: 23 mm 500 pcs for 1.4-5 mm wire diameter transparent	<b>211-823</b> 1	<b>Self-laminating labels (no illustration)</b> 1,000 pieces per roll 18 x 14 mm write-on surface white	<b>211-857</b> 1	20 x 8 mm white	<b>210-807</b> 1
for 5-11 mm wire diameter transparent	<b>211-824</b> 1	<b>Wire marker for thread-on mounting</b> 500 pieces per roll 0.75 ... 1.5 mm <sup>2</sup> white	<b>211-861</b> 1	yellow	<b>210-807/000-002</b> 1
<b>Marking sleeve</b> Sleeve length: 23 mm Mounting via cable tie 200 pcs transparent	<b>211-829</b> 1	2.5 ... 6 mm <sup>2</sup> white	<b>211-862</b> 1	9.5 x 25 mm white	<b>210-808</b> 1
		6 ... 16 mm <sup>2</sup> white	<b>211-863</b> 1	5 x 35 mm white	<b>210-810</b> 1
				<b>Type plates</b> Polyester 500 markers per roll 44 x 99 mm white	<b>210-801</b> 1
				silver	<b>210-802</b> 1
				44 x 99 mm white	<b>210-803</b> 1
				silver	<b>210-804</b> 1
				<b>Label roll</b> Fabric, self-adhesive 3,000 labels per roll 20 x 7 mm white	<b>210-811</b> 1
				yellow	<b>210-811/000-002</b> 1

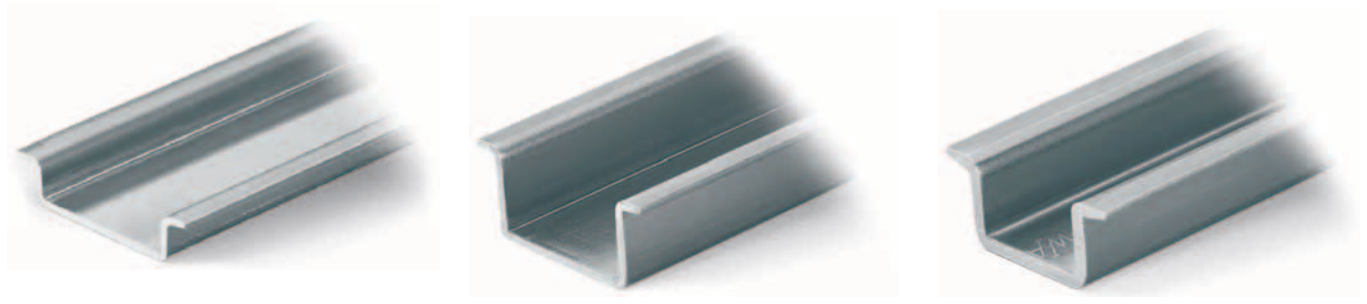
<b>Continuous Labels</b>	<b>Push-Button Markers</b>	<b>Push-Button Markers</b>
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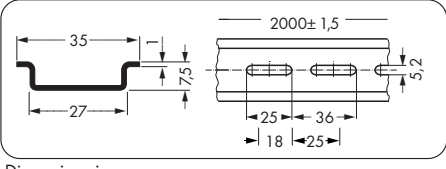
Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Continuous labels</b>		<b>Push-button markers</b>		<b>Push-button markers</b>	
Polyester, self-adhesive		semi-permanent adhesive		semi-permanent adhesive	
9 lengths at 25 m		1000 markers per roll		1000 markers per roll	
Width: 2.3 mm		26.5 x 18 mm		27 x 12.5 mm	
white	<b>210-831</b>	1	silver	<b>210-850</b>	1
Width: 3 mm		<b>Plastic cover</b>		<b>Plastic cover</b>	
white		100 covers		100 covers	
		26.5 x 18 mm		27 x 12.5 mm	
5 lengths at 25 m		transparent		transparent	
Width: 5 mm		<b>210-851</b>		<b>210-863</b>	
white		1		1	
Width: 6 mm		<b>Push-button markers</b>		<b>Push-button markers</b>	
white		semi-permanent adhesive		permanent adhesive	
		1000 markers per roll		350 markers per roll	
		27.5 x 17.5 mm		27 x 19 mm	
		silver		silver	
		<b>210-856</b>		<b>210-852</b>	
		1		1	
		<b>Plastic cover</b>		<b>Universal push-button frame</b>	
		100 covers		for 210-852 and 210-855	
		27.5 x 17.5 mm		100 pcs per bag	
		transparent		27 x 19 mm	
		<b>210-857</b>		black	
		1		<b>210-853</b>	
		1		1	
		<b>Push-button markers</b>		<b>Push-button markers</b>	
		semi-permanent adhesive		permanent adhesive	
		1000 markers per roll		350 markers per roll	
		22 x 22 mm		27 x 18 mm	
		silver		silver	
		<b>210-858</b>		<b>210-855</b>	
		1		1	
		<b>Plastic cover</b>		<b>Label roll DD (device designation)</b>	
		100 covers		Polyester	
		22 x 22 mm		500 labels per roll	
		transparent		28 x 28 mm	
		<b>210-859</b>		175 µm thick	
		1		silver	
		1		<b>210-854</b>	
		1		1	
		<b>Push-button markers</b>			
		semi-permanent adhesive			
		1000 markers per roll			
		27 x 27 mm			
		silver			
		<b>210-860</b>			
		1			
		<b>Plastic cover</b>			
		100 covers			
		27 x 27 mm			
		transparent			
		<b>210-861</b>			
		1			
		1			

# Mounting Accessories Carrier Rails, Rail End Cap, Angled Support Brackets and Collective Carriers

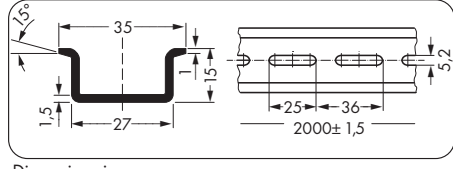
Carrier rail acc. to EN 60715	Carrier rail acc. to EN 60715	Carrier rail acc. to EN 60715
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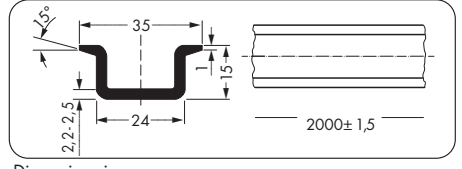
Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Steel carrier rail, I<sub>N</sub> 76 A</b> (reference length of 1m/3'3"), 35 x 7.5 mm, 1 mm, 2 m/6'6" long		<b>Steel carrier rail, I<sub>N</sub> 125 A</b> (reference length of 1m/3'3"), 35 x 15 mm, 1.5 mm, 2 m/6'6" long		<b>Steel carrier rail, I<sub>N</sub> 125 A</b> (reference length of 1m/3'3"), 35 x 15 mm, 2.3 mm, 2 m/6'6" long	
unslotted	<b>210-113</b>	10	unslotted	<b>210-114</b>	10
Hole width 25 mm; hole spacing 36 mm		slotted		<b>210-197</b>	10
slotted		<b>210-112</b>	10 (10x1)		
Hole width 18 mm; hole spacing 25 mm		slotted		<b>210-115</b>	1



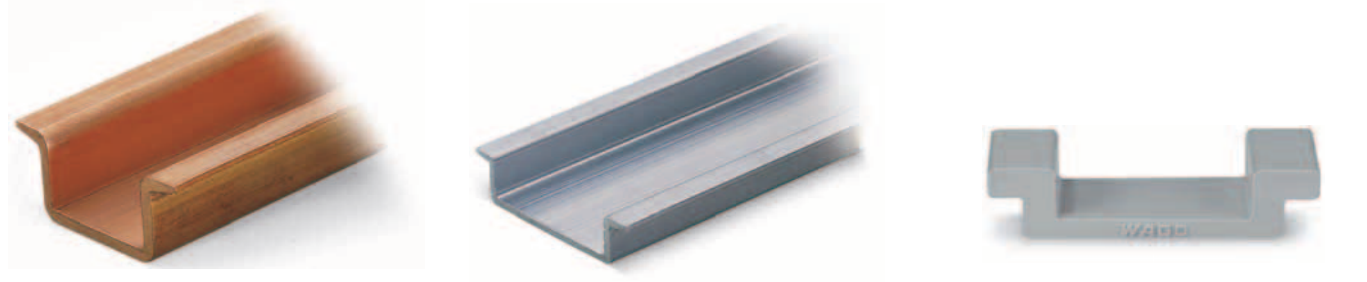
Dimensions in mm



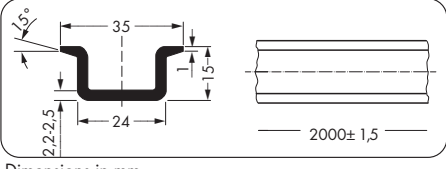
Dimensions in mm



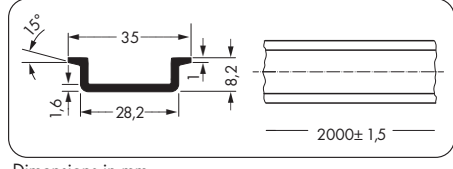
Dimensions in mm



Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Copper carrier rail, I<sub>N</sub> 309 A</b> (reference length of 1m/3'3"), 35 x 15 mm, 2.3 mm, 2 m/6'6" long		<b>Aluminum carrier rail, I<sub>N</sub> 76 A</b> (reference length of 1m/3'3"), 35 x 8.2 mm, 1.6 mm, 2 m/6'6" long		<b>Rail end cap, for DIN 35 rail (7.5 mm high)</b>	
unslotted	<b>210-198</b>	10	unslotted	<b>210-196</b>	10
				● gray	<b>209-109</b>
					50 (2x25)



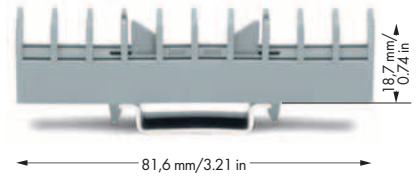
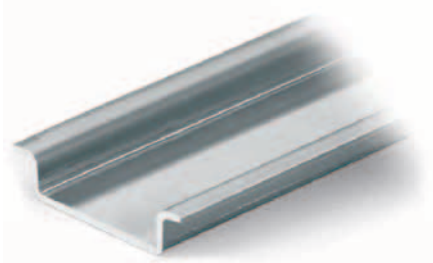
Dimensions in mm



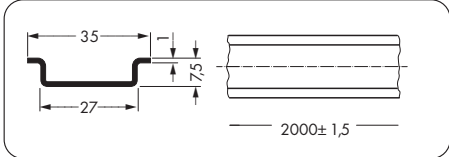
Dimensions in mm



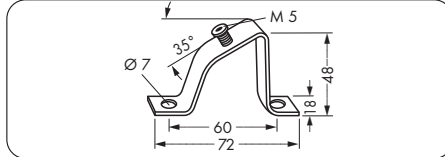
<b>Carrier rail</b> acc. to EN 60715	<b>Angled support bracket</b>	<b>Collective carrier for jumpers</b>
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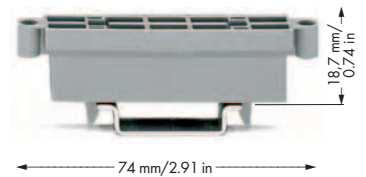
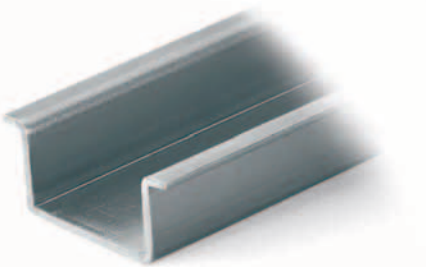
Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Steel carrier rail, I<sub>N</sub> 76 A</b> (reference length of 1 m/3'3"), 35 x 7.5 mm, 1 mm, 2 m/6'6" long		<b>Angled support bracket, without screw</b>		<b>Collective carrier for jumpers, for DIN 35 rail, for jumpers for transverse switching terminal block (282-811) and longitudinal switching disconnect terminal block (282-821)</b>	
unslotted <b>210-505</b>	1	<b>210-148</b>	10	○ gray <b>282-369</b>	25
slotted <b>210-504</b>	1	<b>Screw M 5 x 8</b>		The collective carrier can be snapped onto DIN 35 rails. It holds jumpers, e. g., during maintenance.	
		<b>210-149</b>	100 (5x20)		



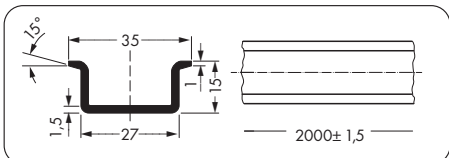
Dimensions in mm



Dimensions in mm



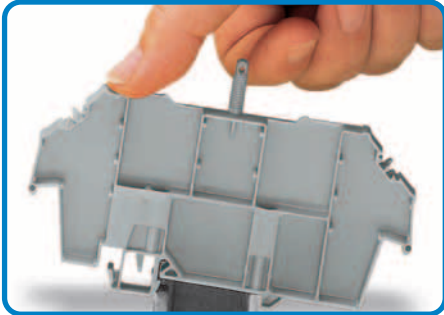
Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Steel carrier rail, I<sub>N</sub> 125 A</b> (reference length of 1 m/3'3"), 35 x 15 mm, 1.5 mm, 2 m/6'6" long		<b>Collective carrier for adjacent jumpers, for DIN 35 rail, for 279, 280, 281, 282 and 284 Series adjacent jumpers, as well as 215 Series banana plugs</b>	
unslotted <b>210-506</b>	1	○ gray <b>209-100</b>	50 (2x25)
slotted <b>210-508</b>	1	The collective carrier can be snapped onto DIN 35 rails. It holds adjacent jumpers and banana plugs, e. g., during maintenance.	



Dimensions in mm

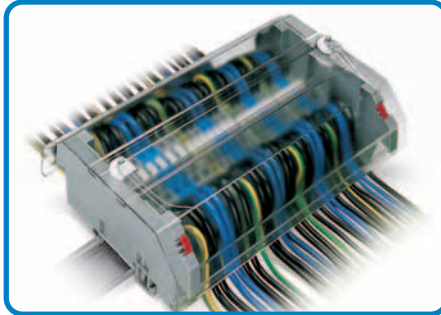
# Transparent Covers for Rail-Mounted Terminal Blocks, Usable with Lead Seals – Description and Handling –

## Assembly



Snapping a cover carrier onto the carrier rail.

## Application

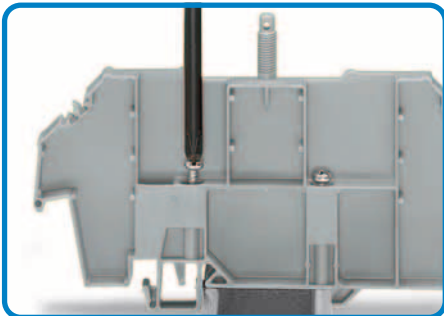


Application examples: cover (Type 1) without safety warning and lead seals.



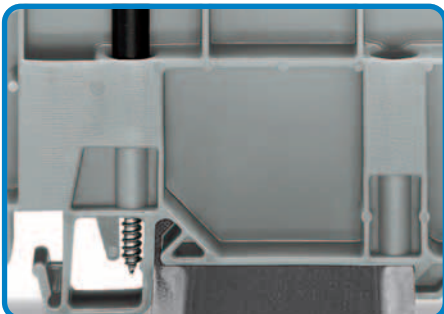
Cover with safety warning and lead seals.

## Assembly

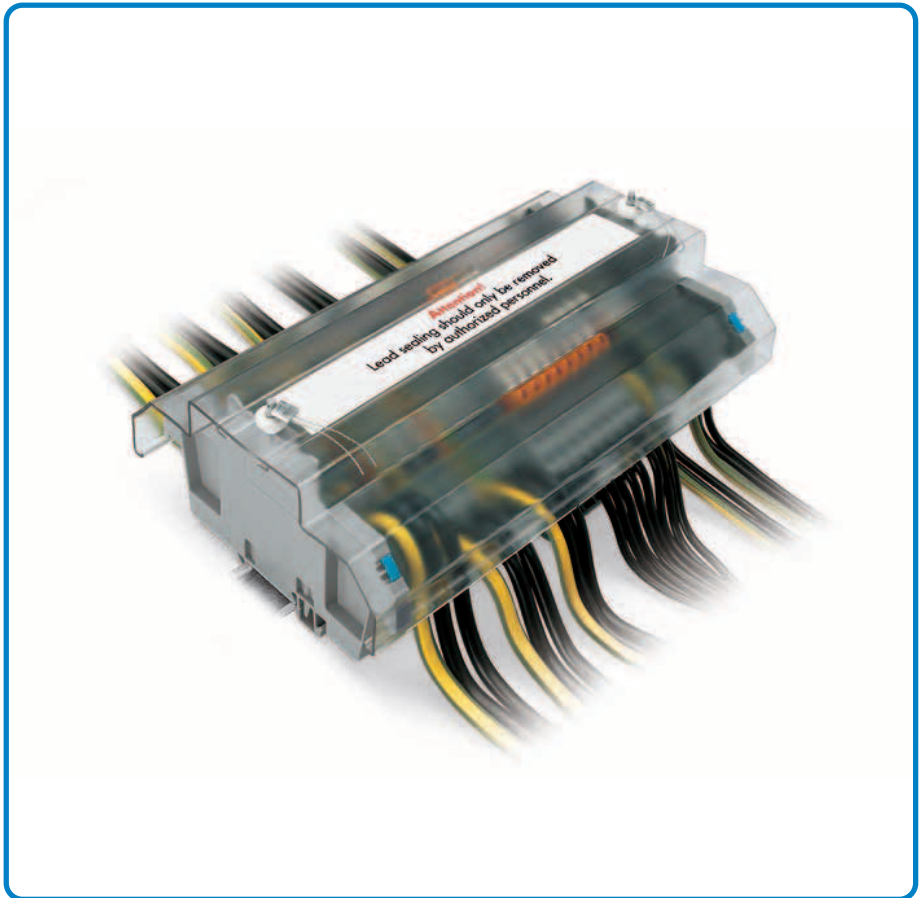


Tightening both securing screw (left) and mounting screw (right).

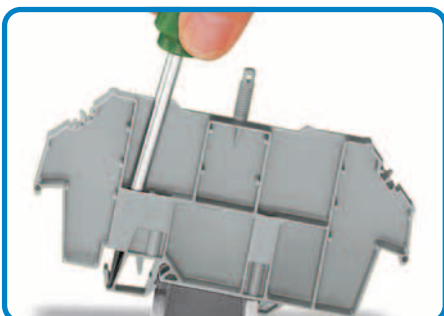
## Assembly



Securing screw – prevents lifting off from rail.  
Mounting screw – prevents the cover carrier from being moved on the rail.



## Removal



Removing a cover carrier from the carrier rail.

## Marking



Inserting a marking strip into the cover.

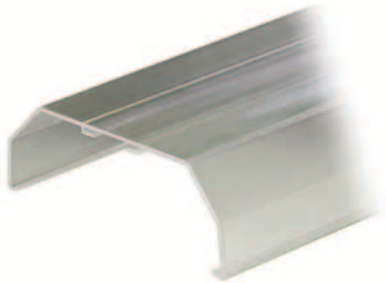
## Lead seal



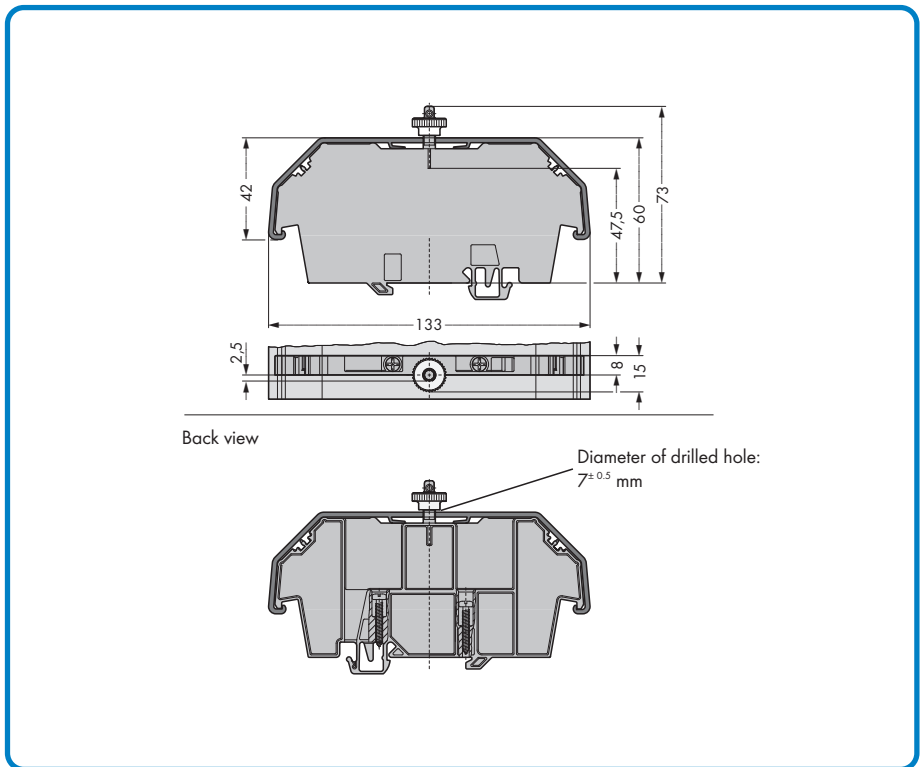
Cover with lead seals.  
Using covers without lead seals, the thread dome-head can be broken off.

# Transparent Covers for Rail-Mounted Terminal Blocks, Usable with Lead Seals 709 Series

Cover and cover carrier, type 1



Item No.	Pack. Unit
<b>Cover, type 1,</b> suitable for cover carrier, type 1, 1 m/3'3" long transparent	<b>709-153</b> 10



Back view

Diameter of drilled hole:  
7<sup>±0.5</sup> mm

Dimensions in mm

Item No.	Pack. Unit
<b>Cover carrier, type 1,</b> incl. mounting/securing screws and knurled nut, for 279 to 282 Series and 880 Series rail-mount terminal blocks, for 264 Series miniature terminal blocks, for 270 Series sensor and acuator blocks ● gray	<b>709-167</b> 10

## Accessories

<b>Marking card with 6 marking strips,</b> for group marking or safety instructions plain	<b>709-183</b>	1
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<b>Spare mounting/securing screw,</b> for cover	<b>209-196</b>	200 (8x25)
--	----------------	------------

<b>Spare knurled nut,</b> for cover	<b>210-549</b>	100 (4x25)
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# Transparent Covers for Rail-Mounted Terminal Blocks, Usable with Lead Seals 709 Series

Cover and cover carrier, type 2



Item No.	Pack. Unit
<b>Cover, type 2,</b> suitable for cover carrier, type 2, 1 m/3'3" long transparent	<b>709-154</b> 1



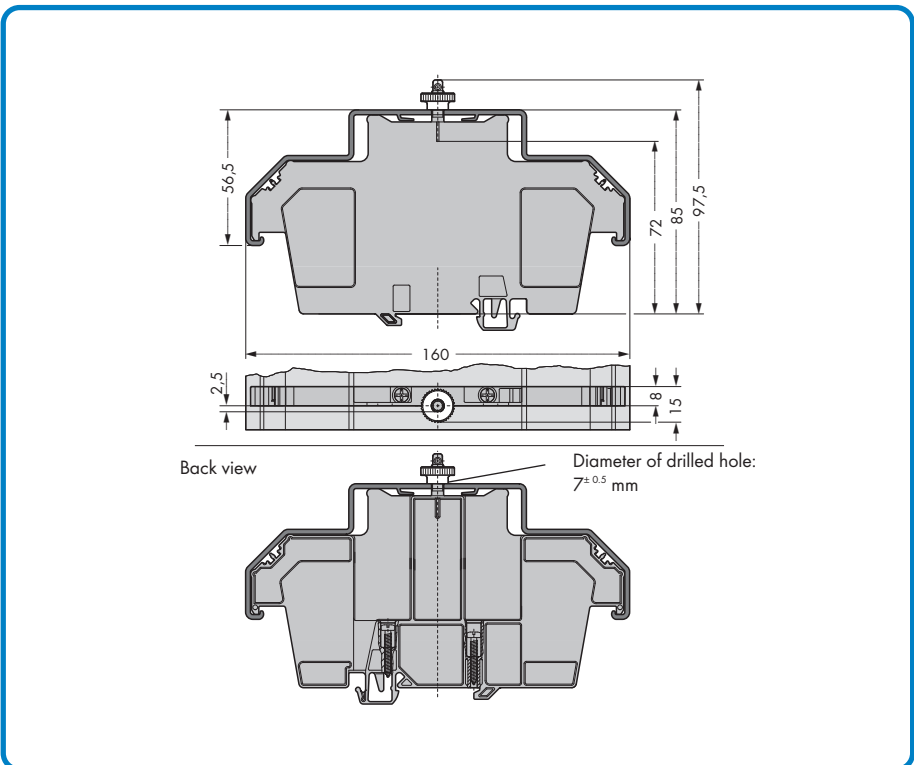
Item No.	Pack. Unit
<b>Cover carrier, type 2,</b> incl. mounting/securing screws and knurled nut, for 283 to 285 Series rail-mount terminal blocks, for 279 to 281 Series double- and triple-deck blocks, for 780 to 785, 775, 776 and 777 Series TOPJOB® terminals, for 280 Series sensor and actuator blocks, for 282 Series disconnect terminals for test and measurement for transformer circuits	
gray	<b>709-168</b> 10

**Accessories**

<b>Marking card with 6 marking strips,</b> for group marking or safety instructions	
plain	<b>709-183</b> 1

<b>Spare mounting/securing screw,</b> for cover	
	<b>209-196</b> 200 (8x25)

<b>Spare knurled nut,</b> for cover	
	<b>210-549</b> 100 (4x25)



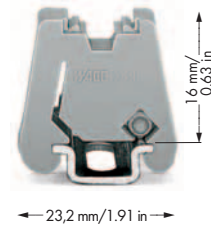
Back view

Diameter of drilled hole:  
7 $\pm$ 0.5 mm

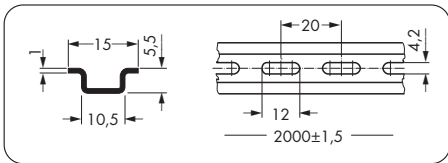
# Mounting Accessories

## Carrier Rails and End Stops

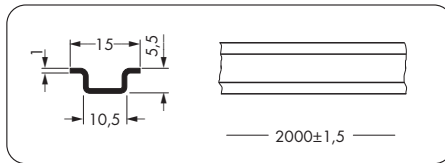
Carrier rail acc. to EN 60715	Carrier rail acc. to EN 60715	Screwless end stop
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Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Steel carrier rail, I<sub>N</sub> 57 A</b> (reference length of 1 m/3'3"), 15 x 5.5 mm, 1 mm, 2 m/6'6" long slotted	1	<b>Steel carrier rail, I<sub>N</sub> 57 A</b> (reference length of 1 m/3'3"), 15 x 5.5 mm, 1 mm, 2 m/6'6" long unslotted	1
210-111		210-295	1
		<b>Screwless end stop</b> , for DIN 15 rail, 6 mm wide	25
		249-101	25
		gray	



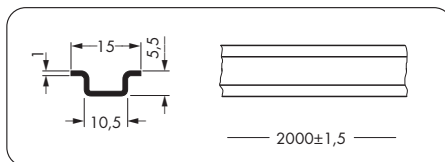
Dimensions in mm



Dimensions in mm



	Item No.	Pack. Unit
	<b>Aluminum carrier rail, I<sub>N</sub> 57 A</b> (reference length of 1 m/3'3"), 15 x 5.5 mm, 1 mm, 2 m/6'6" long	
	unslotted	10
	210-296	

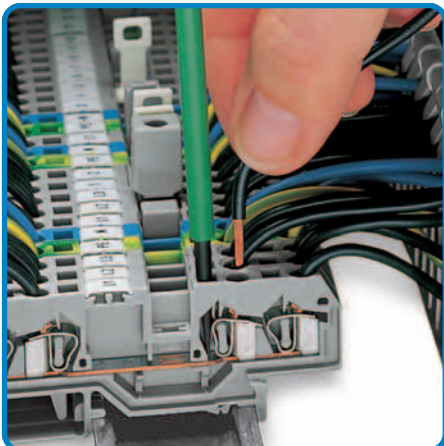


Dimensions in mm

Operating tool with partially insulated shaft	Operating tool set with partially insulated shafts	Operating tool with partially insulated shaft
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Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit			
Operating tool with partially insulated shaft, type 1, (2.5 x 0.4) mm blade, for 279, 726, 727, 2000, 2001 and 2020 Series	210-719	1	Operating tool set with partially insulated shafts, type 1, (2.5 x 0.4) mm blade, type 2, (3.5 x 0.5) mm blade, type 3, (5.5 x 0.8) mm blade	210-722	1	Operating tool with partially insulated shaft, (2.5 x 0.4) mm blade, short, for 279, 726, 727, 2000, 2001 and 2020 Series	210-647	1
Operating tool with partially insulated shaft, type 2, (3.5 x 0.5) mm blade, for 260, 261, 262, 264, 270, 280, 281, 290, 775, 776, 777, 769, 780, 781, 869, 870, 880, 2002, 2003, 2004, 2005 and 2022 Series	210-720	1				Operating tool with partially insulated shaft, (2.5 x 0.4) mm blade, short angled, for 279, 2000, 2001 and 2020 Series	210-648	1
Operating tool with partially insulated shaft, type 3, (5.5 x 0.8) mm blade, for 282, 283, 284, 285, 782, 783, 784, 785, 2006, 2010 and 2016 Series	210-721	1						



The blade dimensions of the above-listed operating tools with partially insulated shaft are ideal for easy operation of front-entry terminal blocks.

Set of operating tools



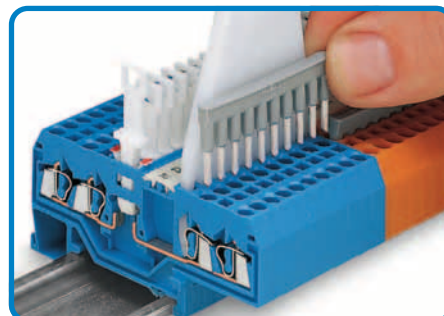
Operating tool with partially insulated shaft	Operating tool	Plunger
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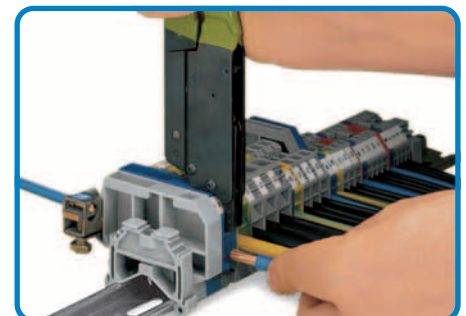
Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Operating tool with partially insulated shaft,</b> (3.5 x 0.5) mm blade, short, for 260, 261, 262, 264, 270, 280, 281, 869, 870, 880 Series		<b>Operating tool, of insulating material,</b> for 279 Series rail-mounted terminal blocks		<b>Plunger,</b> for 279 and 280 Series rail-mounted terminal blocks for side-entry	
<b>210-657</b>	1	1-way <b>209-129</b>	1	<b>210-143</b>	1
		2-way <b>279-432</b>	1		
		3-way <b>279-433</b>	1		
		10-way <b>279-440</b>	1		
<b>Operating tool with partially insulated shaft,</b> (3.5 x 0.5) mm blade, short angled, ideal for 280 Series actuator and sensor terminal blocks, along with 260, 261, 262, 264, 280, 281, 869, 870, 880, 2002 and 2004 Series		<b>Operating tool, of insulating material,</b> for 264 (1- and 2-way only), 280, 281 (up to 3-way only) Series rail-mounted terminal blocks		<b>Plunger,</b> for 281, 282, 283 and 284 Series rail-mounted terminal blocks for side-entry	
<b>210-658</b>	1	1-way <b>209-130</b>	1	<b>210-141</b>	1
		2-way <b>280-432</b>	1		
		3-way <b>280-433</b>	1		
		4-way <b>280-434</b>	1		
		5-way <b>280-435</b>	1		
		6-way <b>280-436</b>	1		
		7-way <b>280-437</b>	1		
		8-way <b>280-438</b>	1		
		9-way <b>280-439</b>	1		
		10-way <b>280-440</b>	1		
		for 281 Series rail-mounted terminal blocks		The plunger is placed into the upper operating slot of the side-entry rail-mount terminal block and the clamp is hooked into the lateral operating slot. The contact is fully opened by pressing the handles together until they engage – both hands are then free for conductor prepara- tion and insertion into the terminal block.	
		5-way <b>281-440</b>	1		



The blade dimensions of the above-listed operating tool (DIN 5264) are ideal for easy operation of 280 Series front-entry sensor and actuator terminal blocks.



Commoning front-entry disconnect terminal blocks with comb-style jumper bars via 10-way operating tool.





When operating the handles beyond the locked position, the ratchet allows the tool to open and be removed from the terminal block.

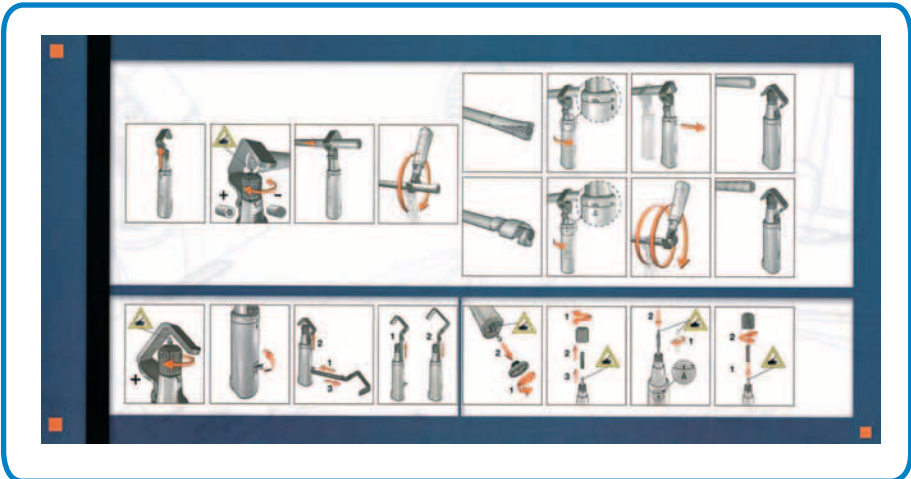
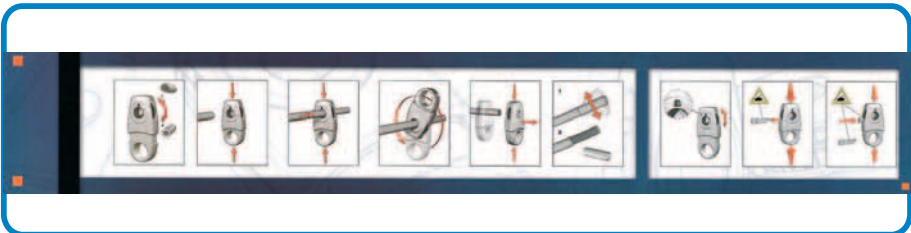


Cable stripper for round cables with an outer Ø from 2.5 mm to 11 mm

Cable stripper for round cables with an outer Ø from 4.5 mm to 45 mm



Item No.	Pack. Unit	Item No.	Pack. Unit
Cable stripper, for round cables with an outer Ø from 2.5 mm to 11 mm		Cable stripper, for round cables with an outer Ø from 4.5 mm to 45 mm	
206-171	1	206-174	1
<b>Item-Specific Accessories</b>		<b>Item-Specific Accessories</b>	
Replacement blade, from 2.5 mm to 11 mm		Replacement blade, from 4.5 mm to 45 mm	
	206-170 1		206-173 1






- 206-171 Cable Stripper**
- 10-position adjustment wheel ensures repeatable stripping results
  - Fine adjustability via 10-position blade cutting depth adjustment
  - Strips the sheath from multi-core and fiber optic cables up to 11 mm diameter
  - Safe and easy to use through closed stripping cavity
- 206-174 Cable Stripper**
- Safe and easy to use: Three locking positions for circular, longitudinal and spiral cuts
  - High cable stripping capacity of up to 40 mm diameter
  - Well balanced, ergonomic design features rests for thumb, index and pinky fingers to ease raising of the cable retention hook
  - Spare blades can be stored within the tool body

Operating instructions for 206-171 cable stripper (top) and 206-174 cable stripper (bottom)

<p>“Quickstrip 10” wire stripper                  0.02 mm<sup>2</sup> - 10 mm<sup>2</sup> “f-st” (6 mm<sup>2</sup> “s”)                  Cutter for conductors up to 10 mm<sup>2</sup> “f-st”                  (1.5 mm<sup>2</sup> “s”)</p>	<p>“Quickstrip 16” wire stripper                  4 mm<sup>2</sup> - 16 mm<sup>2</sup>                  Cutter for conductors up to 10 mm<sup>2</sup> “f-st”                  (1.5 mm<sup>2</sup> “s”)</p>	
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Item No.	Pack. Unit	Item No.	Pack. Unit
“Quickstrip 10” wire stripper 206-124	1	“Quickstrip 16” wire stripper 206-125	1
<b>Item-Specific Accessories</b>		<b>Item-Specific Accessories</b>	
“Standard” blade cassette, 0.02 mm <sup>2</sup> to 10 mm <sup>2</sup>  206-126	1	“Standard” blade cassette, 4 mm <sup>2</sup> - 16 mm <sup>2</sup>  206-128	1
“V” blade cassette, 0.1 mm <sup>2</sup> to 4 mm <sup>2</sup> for PTFE  206-127	1		



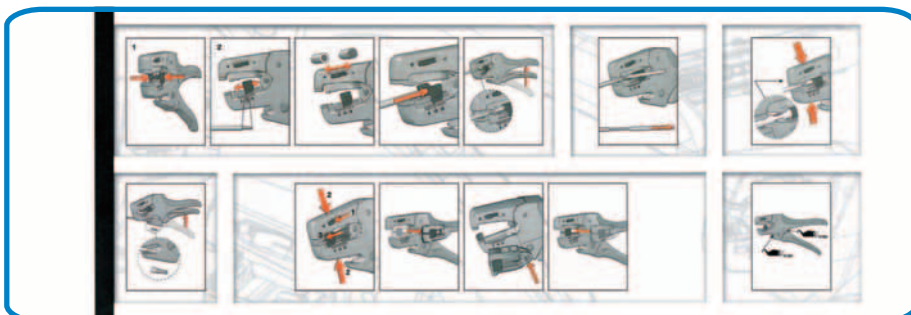
Cutting



Stripping

- Automatically adjusts to conductor size.
- No damage to conductor strands.
- Gripping pressure of jaws automatically adjusts to conductor insulation diameter.
- Clamping jaws and stripping blades automatically open once the stripping process is completed, ensuring no damage to the conductor strands.
- Exact strip length may be set by sliding red setting stop.
- Stripping blades can be replaced.
- Self-sharpening, fully protected cutter, also replaceable.\*
- The complete body is made of glass fiber-reinforced polyamide.

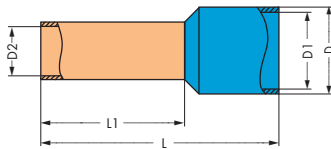
\* applies for Microstrip



Handling description included

# Insulated Ferrules and Crimping Tools










Ferrule, insulated, tin plated, electrolytic copper, gastight crimped	Variocrimp 4 crimping tool for insulated and uninsulated ferrules 0.25 mm <sup>2</sup> - 4 mm <sup>2</sup> /AWG 24 - 12	Variocrimp 16 crimping tool for insulated and uninsulated ferrules 6 mm <sup>2</sup> - 16 mm <sup>2</sup> /AWG 10 - 6
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Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
Ferrule, insulated, according to DIN 46228, part 4/09.90		Variocrimp 4 crimping tool, 0.25 mm <sup>2</sup> - 4 mm <sup>2</sup> /AWG 24 - 12		Variocrimp 16 crimping tool, 6 mm <sup>2</sup> - 16 mm <sup>2</sup> /AWG 10 - 6	
● yellow 216-321	1000	206-204	1	206-216	1
● yellow 216-301	1000				
● green 216-322	1000				
● green 216-302	1000				
○ white 216-221	1000				
○ white 216-201	1000				
● gray 216-222	1000				
● gray 216-202	1000				
● red 216-223	1000				
● red 216-203	1000				
● black 216-224	1000				
● black 216-204	1000				
● yellow 216-205	1000				
● blue 216-206	1000				
● gray 216-207	1000				
● yellow 216-208	100				
● red 216-209	100				
● blue 216-210	100				

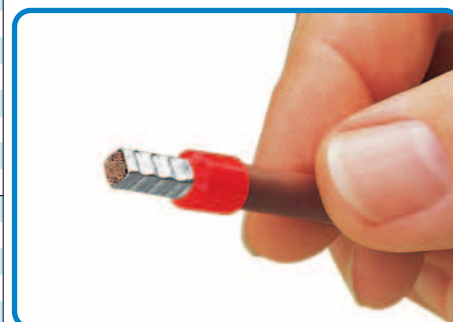
## Ferrules

### Technical Data










Ferrule, insulated,	Ferrule, insulated,	Ferrule, insulated,
 sleeve for 0.25 mm <sup>2</sup> /AWG 24, 7 mm strip length, L: 10.5 mm, L1: 6 mm, D: 2.5 mm, D1: 2 mm, D2: 0.8 mm yellow <b>216-321</b>	 sleeve for 0.34 mm <sup>2</sup> /AWG 24, 9 mm strip length, L: 12.5 mm, L1: 8 mm, D: 2.5 mm, D1: 2 mm, D2: 0.8 mm green <b>216-302</b>	 sleeve for 0.75 mm <sup>2</sup> /AWG 20, 8 mm strip length, L: 12 mm, L1: 6 mm, D: 3.3 mm, D1: 2.8 mm, D2: 1.3 mm gray <b>216-222</b>
 sleeve for 0.25 mm <sup>2</sup> /AWG 24, 9 mm strip length, L: 12.5 mm, L1: 8 mm, D: 2.5 mm, D1: 2 mm, D2: 0.8 mm yellow <b>216-301</b>	 sleeve for 0.5 mm <sup>2</sup> /AWG 22, 7 mm strip length, L: 11.5 mm, L1: 6 mm, D: 3 mm, D1: 2.5 mm, D2: 1.1 mm white <b>216-221</b>	 sleeve for 0.75 mm <sup>2</sup> /AWG 20, 10 mm strip length, L: 14 mm, L1: 8 mm, D: 3.3 mm, D1: 2.8 mm, D2: 1.3 mm gray <b>216-202</b>
 sleeve for 0.35 mm <sup>2</sup> /AWG 24, 7 mm strip length, L: 10.5 mm, L1: 6 mm, D: 2.5 mm, D1: 2 mm, D2: 0.8 mm green <b>216-322</b>	 sleeve for 0.5 mm <sup>2</sup> /AWG 22, 9 mm strip length, L: 13.5 mm, L1: 8 mm, D: 3 mm, D1: 2.5 mm, D2: 1.1 mm white <b>216-201</b>	 sleeve for 1 mm <sup>2</sup> /AWG 18, 8 mm strip length, L: 12 mm, L1: 6 mm, D: 3.6 mm, D1: 3 mm, D2: 1.5 mm red <b>216-223</b>

**Application notes:**

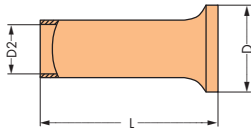
- With "Variocrimp 4," the built-in crimping pressure control automatically adjusts force to the conductor cross section used. With "Variocrimp 16," it is necessary to select the wire gauge on the tool before crimping.
- Only one crimping station is needed to handle the specified conductor size range.
- Uniform compact crimping from all four sides for high conductor retention.
- No need to center the conductor into the ferrule.
- Conductor and ferrule insertion possible from both sides (for left- and right-handers).
- Built-in ratchet mechanism ensures gastight crimp connection.
- Crimping tools open automatically after crimping operation is complete.
- Comfortable handles for operator.


















A perfect gastight crimp, both electrically and mechanically reliable.

Ferrules	
Technical Data	
<p><b>Ferrule, insulated,</b></p>  <p>sleeve for 1 mm<sup>2</sup>/AWG 18, 10 mm strip length, L: 14 mm, L1: 8 mm, D: 3.6 mm, D1: 3 mm, D2: 1.5 mm red <b>216-203</b></p>	<p><b>Ferrule, insulated,</b></p>  <p>sleeve for 6 mm<sup>2</sup>/AWG 10, 14 mm strip length, L: 20 mm, L1: 12 mm, D: 6.8 mm, D1: 6.2 mm, D2: 3.5 mm yellow <b>216-208</b></p>
<p><b>Ferrule, insulated,</b></p>  <p>sleeve for 1.5 mm<sup>2</sup>/AWG 16, 8 mm strip length, L: 12 mm, L1: 6 mm, D: 4 mm, D1: 3.4 mm, D2: 1.8 mm black <b>216-224</b></p>	<p><b>Ferrule, insulated,</b></p>  <p>sleeve for 10 mm<sup>2</sup>/AWG 8, 16 mm strip length, L: 21 mm, L1: 12 mm, D: 8.1 mm, D1: 7.5 mm, D2: 4.6 mm red <b>216-209</b></p>
<p><b>Ferrule, insulated,</b></p>  <p>sleeve for 1.5 mm<sup>2</sup>/AWG 16, 10 mm strip length, L: 14 mm, L1: 8 mm, D: 4 mm, D1: 3.4 mm, D2: 1.8 mm black <b>216-204</b></p>	<p><b>Ferrule, insulated,</b></p>  <p>sleeve for 16 mm<sup>2</sup>/AWG 6, 23 mm strip length, L: 29 mm, L1: 18 mm, D: 9.6 mm, D1: 8.8 mm, D2: 5.8 mm blue <b>216-210</b></p>
<p><b>Ferrule, insulated,</b></p>  <p>sleeve for 2.08 mm<sup>2</sup>/AWG 14, 10 mm strip length, L: 14.5 mm, L1: 8 mm, D: 4.2 mm, D1: 3.6 mm, D2: 2.05 mm yellow <b>216-205</b></p>	
<p><b>Ferrule, insulated,</b></p>  <p>sleeve for 2.5 mm<sup>2</sup>/AWG 14, 10 mm strip length, L: 15 mm, L1: 8 mm, D: 4.8 mm, D1: 4.2 mm, D2: 2.3 mm blue <b>216-206</b></p>	
<p><b>Ferrule, insulated,</b></p>  <p>sleeve for 4 mm<sup>2</sup>/AWG 12, 12 mm strip length, L: 16.8 mm, L1: 9.5 mm, D: 5.4 mm, D1: 4.8 mm, D2: 2.9 mm gray <b>216-207</b></p>	

Ferrule, uninsulated,  
tin plated,  
electrolytic copper,  
gastight crimped



Item No.	Pack. Unit	Ferrules		
<b>Ferrule, uninsulated,</b> according to DIN 46228, part 1/08.92		Technical Data		
216-151	1000	 sleeve for 0.34 mm <sup>2</sup> /AWG 24, 7 mm strip length, L: 7 mm, D: 1.7 mm, D2: 0.85 mm <b>216-132</b>	 sleeve for 1 mm <sup>2</sup> /AWG 18, 8 mm strip length, L: 8 mm, D: 2.5 mm, D2: 1.4 mm <b>216-103</b>	
216-131	1000			
216-152	1000			
216-132	1000			
216-121	1000			
216-101	1000			
216-122	1000			
216-102	1000	 sleeve for 0.5 mm <sup>2</sup> /AWG 22, 6 mm strip length, L: 6 mm, D: 2.1 mm, D2: 1 mm <b>216-121</b>	 sleeve for 1.5 mm <sup>2</sup> /AWG 16, 6 mm strip length, L: 6 mm, D: 2.8 mm, D2: 1.7 mm <b>216-124</b>	
216-123	1000			
216-103	1000			
216-124	1000			
216-104	1000			
216-106	1000			
216-107	1000			
216-108	250			
216-109	250			
216-110	250			
<b>Ferrules</b>		<b>Ferrule, uninsulated,</b>  sleeve for 0.5 mm <sup>2</sup> /AWG 22, 8 mm strip length, L: 8 mm, D: 2.1 mm, D2: 1 mm <b>216-101</b>		
Technical Data		<b>Ferrule, uninsulated,</b>  sleeve for 1.5 mm <sup>2</sup> /AWG 16, 8 mm strip length, L: 8 mm, D: 2.8 mm, D2: 1.7 mm <b>216-104</b>		
 sleeve for 0.25 mm <sup>2</sup> /AWG 24, 5 mm strip length, L: 5 mm, D: 1.7 mm, D2: 0.75 mm <b>216-151</b>		 sleeve for 0.75 mm <sup>2</sup> /AWG 20, 6 mm strip length, L: 6 mm, D: 2.3 mm, D2: 1.2 mm <b>216-122</b>	 sleeve for 2.5 mm <sup>2</sup> /AWG 14, 10 mm strip length, L: 10 mm, D: 3.4 mm, D2: 2.2 mm <b>216-106</b>	
 sleeve for 0.25 mm <sup>2</sup> /AWG 24, 7 mm strip length, L: 7 mm, D: 1.7 mm, D2: 0.75 mm <b>216-131</b>		 sleeve for 0.75 mm <sup>2</sup> /AWG 20, 8 mm strip length, L: 8 mm, D: 2.3 mm, D2: 1.2 mm <b>216-102</b>	 sleeve for 4 mm <sup>2</sup> /AWG 12, 10 mm strip length, L: 10 mm, D: 4 mm, D2: 2.8 mm <b>216-107</b>	
 sleeve for 0.34 mm <sup>2</sup> /AWG 24, 5 mm strip length, L: 5 mm, D: 1.7 mm, D2: 0.85 mm <b>216-152</b>		 sleeve for 1 mm <sup>2</sup> /AWG 18, 6 mm strip length, L: 6 mm, D: 2.5 mm, D2: 1.4 mm <b>216-123</b>	 sleeve for 6 mm <sup>2</sup> /AWG 10, 12 mm strip length, L: 12 mm, D: 4.7 mm, D2: 3.5 mm <b>216-108</b>	





**Crimping tool 25**  
for insulated and uninsulated ferrules  
crimping range: 10 mm<sup>2</sup>/AWG 8, 16 mm<sup>2</sup>/  
AWG 6 and 25 mm<sup>2</sup>/AWG 4

**Crimping tool 50**  
for insulated and uninsulated ferrules  
crimping range: 35 mm<sup>2</sup>/AWG 2 and  
50 mm<sup>2</sup>/AWG 1/0

**Application notes**

- Improved crimping for higher conductor retention
- The crimping can be done from either side (for left- or right-handed users)
- Built-in ratchet mechanism ensures gastight crimp connection
- The crimping tool automatically opens once the crimping process is completed
- Ergonomically designed handles



Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Crimping tool 25,</b> crimping range: 10 mm <sup>2</sup> /AWG 8, 16 mm <sup>2</sup> /AWG 6 and 25 mm <sup>2</sup> /AWG 4		<b>Crimping tool 50,</b> crimping range: 35 mm <sup>2</sup> /AWG 2 and 50 mm <sup>2</sup> /AWG 1/0	
206-225	1	206-250	1



Insert ferruled conductor into crimping station.



Squeeze handles until ratchet mechanism is released.

**What is "gas-tight?"**

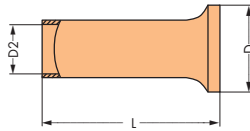
In a gas-tight connection, the conductor and the ferrule are compressed together, eliminating all spaces. Under normal atmospheric conditions, neither a liquid nor a gaseous medium can penetrate into the crimped connection. Oxidation between crimped single conductors is prevented, ruling out nearly any increase in the crimped connection resistance. In some exceptional cases, minute, isolated spaces may be present. These instances can be considered as closed off due to twisted wires, however. Inadequate crimping can allow the conductor to be pulled out of the connection. Hollow spaces also remain in which oxidation can form and lead to an increase in contact resistance.





Elevated resistance is detrimental for signal transmission, as the signal flow is damped (weakened), and for power transmission, as power loss and, hence a temperature increase due to contact (risk of fire) can result. Crimping tools with built-in ratchets are recommended, such as the WAGO Variocrimp tools. These tools only open after the crimping process has been fully completed. Space-saving crimping from all four sides is ideal for spring clamp termination. Cross section data for ferruled conductors indicated for WAGO products is based on this crimping method.



# Cable Cutter and Uninsulated Ferrules

Cable cutter	Ferrule, uninsulated, tin plated, electrolytic copper, gastight crimped
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Item No.	Pack. Unit	Item No.	Pack. Unit	Ferrules
Cable cutter, cutting Cu and Al conductors up to 35 mm <sup>2</sup>		Ferrule, uninsulated		Technical Data
206-118	1	216-413	50	 Ferrule, uninsulated, sleeve for 25 mm <sup>2</sup> /AWG 4, 25 mm strip length, L: 25 mm, D: 9.5 mm, D2: 7.3 mm <b>216-413</b>
		216-414	50	
		216-424	50	
		216-425	50	
		216-435	50	
				 Ferrule, uninsulated, sleeve for 35 mm <sup>2</sup> /AWG 2, 25 mm strip length, L: 25 mm, D: 11 mm, D2: 8.3 mm <b>216-414</b>
				 Ferrule, uninsulated, sleeve for 35 mm <sup>2</sup> /AWG 2, 30 mm strip length, L: 30 mm, D: 11 mm, D2: 8.3 mm <b>216-424</b>
				 Ferrule, uninsulated, sleeve for 50 mm <sup>2</sup> /AWG 1, 30 mm strip length, L: 30 mm, D: 13 mm, D2: 10.3 mm <b>216-425</b>



Cutting a conductor.



A perfect gastight crimp, both electrically and mechanically reliable.

				 Ferrule, uninsulated, sleeve for 50 mm <sup>2</sup> /AWG 1, 35 mm strip length, L: 35 mm, D: 13 mm, D2: 10.3 mm <b>216-435</b>

Profi LCD+	Profi LED+
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Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Profi LCD+,</b> 2-pole voltage tester with LCD display, removable test probes, 4 mm Ø Measuring range: 6 V ... 1000 V AC/DC Degree of protection: IP65 Resistance measurement: up to 2000 Ω		<b>Profi LED+,</b> 2-pole voltage tester with LED display, removable test probes, 4 mm Ø Measuring range: 6 V ... 1000 V AC/DC Degree of protection: IP65 Resistance measurement: up to 2000 Ω	
<b>206-807</b>	1	<b>206-806</b>	1
<b>Item-Specific Accessories</b>		<b>Item-Specific Accessories</b>	
<b>Spare test probes,</b> 4 mm Ø (2 pieces)		<b>Spare test probes,</b> 4 mm Ø (2 pieces)	
<b>206-808</b>	25	<b>206-808</b>	25



**Profi LCD+ and Profi LED+**

- Improved socket contact via 4 mm Ø test probes
- Removable test probes for small test ports (suitable for all WAGO terminal blocks)




- Additional product features for Profi LCD+:**
- Automatic measurement range selection
  - Single-pole phase testing AC >100 V
  - Two-pole sequence testing (R and L)
  - Continuity testing
  - FI/RCD testing (30 mA) via buttons
  - One-hand operation for SCHUKO and CEE sockets
  - LED torch lamp function
  - Automatic backlight
  - Auto power-Off function
  - CAT IV 1000 V
  - IEC/EN 61243-3 (DIN VDE 0682-401)



- Additional product features for Profi LED+:**
- Automatic measurement range selection
  - Single-pole phase testing AC >100 V
  - Two-pole sequence testing (R and L)
  - Continuity testing
  - FI/RCD testing (30 mA) via buttons
  - One-hand operation for SCHUKO and CEE sockets
  - LED torch lamp function
  - CAT IV 1000 V
  - TÜV/GS tested and approved
  - IEC/EN 61243-3 (DIN VDE 0682-401)

Multi-Tester	Clamp-Multi-Tester	Testboy
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Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
<b>Multi-Tester,</b> Digital multimeter with contact-less voltage tester, Includes: carrying case Measuring range: AC/DC 600 V AC/DC 10 A Resistance measurement: up to 20 MΩ		<b>Clamp-Multi-Tester,</b> digital clamp meter DC and AC current up to 600 A - True RMS and min./max. value measurement - DC and AC voltage up to 600 V - Manual or automatic selection of measurement range - Resistance up to 60 MΩ, Capacitance measurement - Acoustical continuity test - Diode test, Data hold function - Large LCD with backlight, LED measuring point lighting - CAT III 600 V overvoltage protection, IEC/EN 61010-1 (DIN VDE 0411) - Including batteries - measurement leads and carrying bag		<b>Testboy,</b> with integrated flashlight Voltage range: 12 - 1000 V AC	
206-810	1	206-816	1	206-804	1
<b>Item-Specific Accessories</b>					
<b>Replacement test leads,</b> red/black					
 206-811	1				



- Additional product features for Multi Tester:**
- Contact-less voltage test AC >100 V (optical and acoustical)
  - Resistance measurement up to 20 MΩ
  - Acoustical continuity test
  - Diode test
  - Data hold function
  - Auto power-off function
  - LED torch lamp function
  - CAT IV 600 V
  - TÜV/GS tested and approved
  - IEC/EN 61010-1 (DIN VDE 0411)



Voltage testing in switchgear cabinet



A device that will reliably detect AC voltage in cables, sockets, fuses, switches, outlets, etc.



Current measurement in switchgear cabinet

- Testboy can detect the following:**
- live conductors
  - cable breaks
  - blown fuses (in cartridge or holder)
  - defective switches
  - defective lamps

Unterzeichner der Multilateralen Abkommen von  
EA und ILAC zur gegenseitigen Anerkennung

vertreten im

# Deutschen Akkreditierungsrat



## Akkreditierung

Die **DGA Deutsche Gesellschaft für Akkreditierung mbH** bestätigt hiermit, dass das  
Prüflaboratorium

**WAGO Kontakttechnik GmbH & Co. KG**  
Hansastraße 27  
D-32423 Minden / Germany

die Kompetenz nach DIN EN ISO/IEC 17025 besitzt, Prüfungen in den Bereichen

**Elektrische und mechanische Prüfungen an Klemmen und Steckverbinder  
sowie Umweltsimulation**

ausz... teil der Urkunde und besteht aus 6 Seiten.

Di... 9-12-22 bis 2014-12-31

DA... 2/09-00

Fr... **Seminare**





# 12



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# Product Support From

## Consulting Services

- Selection of the fieldbus
- Use of components
- Combination of components
- Cooperation with other suppliers



## Contact

Your national WAGO company  
or distributor.

# The Very Beginning...

## Experienced

- Trained staff
- PLC & PC control
- Multiple fieldbuses
- Programming languages
- Projects:
  - Automotive industry
  - Machine building
  - Chemical industry
  - Food processing
  - Building automation
  - Process engineering
  - Process control
  - and many more



## We will help you

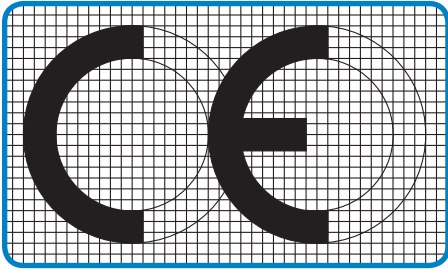
- Product documentation
- Manuals
- Application notes
- By telephone
- On-site



## CE Marking and EC Directives

### CE conformity marking:

The CE conformity marking consists of the characters "CE", with the following script:



Communauté Européenne (European Community)

The CE marking shall be affixed to the electrical equipment, or if that is not possible, to the smallest packing unit. With the CE marking, manufacturers attest conformity of their products to the relevant directives.

In addition to the CE marking, the manufacturer provides an EC "Declaration of Conformity" for the product. This EC "Declaration of Conformity" must be retained and submitted to a national surveillance authority upon request. EC directives are binding legal regulations of the European Community. Their goal is the harmonization of legal and administrative regulations in the various EC member states, in order to prevent trade obstructions due to different national regulations. In order to "market" a product, it must comply with the relevant directives. The product may be subject to several directives, e.g. the EMC and the low voltage directives.

The **EC directives** are legally binding specifications of the European Union. Their aim is the alignment of legal and administrative specifications in the various EC member states, in order to prevent trading hindrances arising from different national specifications. In order to launch a product on the market it has to comply with the relevant directives. Several directives may apply to a product, for example the EMC and the low voltage directives.

### 2006/95/EC

#### - Low Voltage Directive

The safety of electrical equipment is guaranteed by the Low Voltage Directive. This directive covers 'complete' electrical equipment designed for use with a voltage rating of between 50 and 1000V for alternating current and between 75 and 1500V for direct current. Products falling within the scope of the Low Voltage Directive that are designed in such a way that they can be used in other electrical devices and whose safety, for the most part, is dependant on how these components were built into the end product and what features the end product has are defined as basic components in accordance with the Low Voltage Directive.\* The Low Voltage Directive doesn't apply to basic components.

### 2004/108/EC

#### - EMC Directive

The EMC Directive implies that a product must meet the limits of the radiated electromagnetic disturbance and also requires that a product must be immune to electromagnetic interference. Electromagnetic passive components or components with no direct function, like resistors, diodes, capacitors, switching relays or cables (in the form of passive printed circuit boards) are not considered as apparatus within the meaning of the EMC Directive.

### Machinery Directive

The Machinery Directive does not apply to WAGO products.

### 94/9/EC Ex Protection Directive, ATEX 100a

General technical information for electrical equipment in hazardous environments.

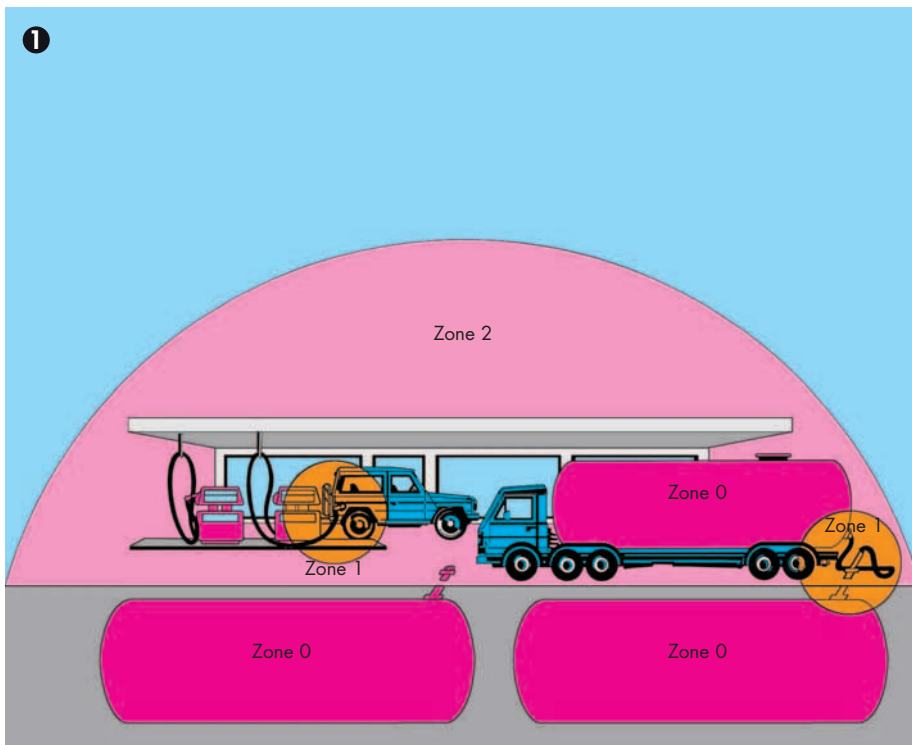
# General Technical Information for Electrical Equipment in Hazardous Environments

## Hazardous Environments

Hazardous environments are areas in which the atmosphere may become explosive. Explosive atmosphere is defined as a mixture of ignitable substances in the form of gases,

vapors or mixtures with air under atmospheric conditions in critically mixed ratios such that excessive high temperature, arcs or sparks may cause an explosion.

DIN EN 1127-1 and all other related standards that are commonly known divide up hazardous areas according to the likelihood of the occurrence of an explosive atmosphere into the following zones:



❶ Hazardous environments as a result of combustible gases, vapors or mist.

### Zone 0:

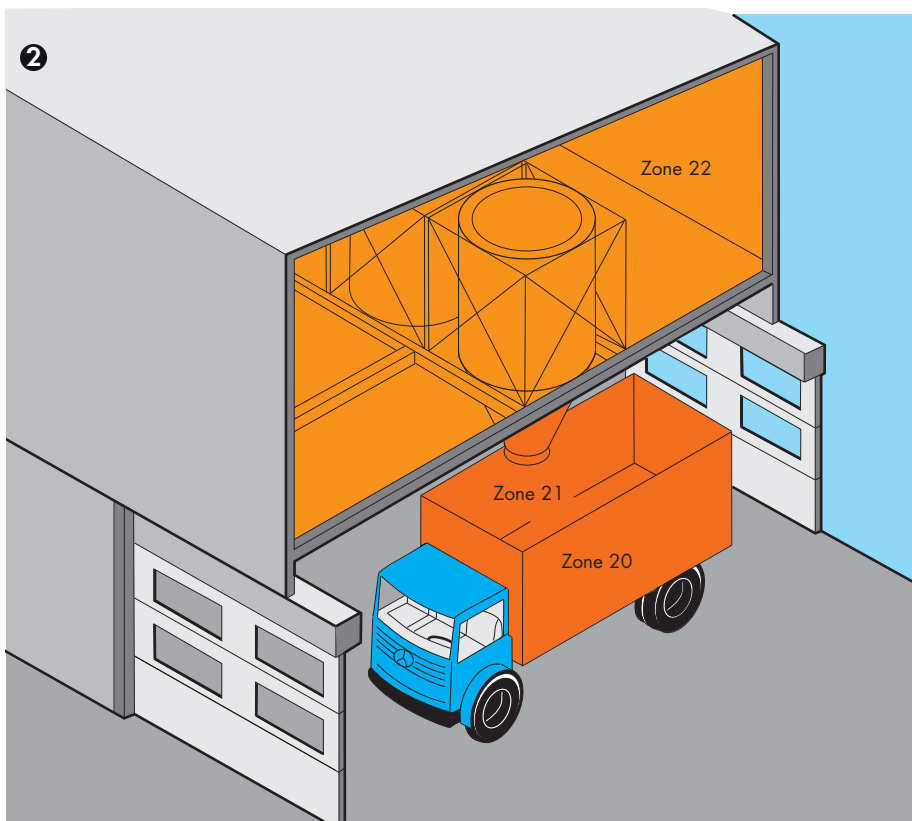
Area in which an explosive gas/air mixture is continuously present or present for long periods.

### Zone 1:

Area in which an explosive atmosphere can occur during normal operation.

### Zone 2:

Area in which an explosive atmosphere is unlikely to occur under normal operation and if it does it will be for a short period.



❷ Hazardous areas caused by combustible dust

### Zone 20:

Area in which an explosive dusty atmosphere is present "permanently", for "long periods" or "frequently" and in which deposits of combustible dust of unknown or excessive thickness may be formed. Dust deposits alone are not grounds for classification as Zone 20.

### Zone 21:

Area in which an explosive dusty atmosphere is present "occasionally" under normal operating conditions and in which deposits or layers of combustible dust can generally be present.

### Zone 22:

Area in which an explosive dusty atmosphere is not likely to occur during normal operation and, if it occurs, will only exist for a "short period", or in which accumulations or layers of combustible dust are present.

Please refer to the manuals for more information on explosion protection.

# Electromagnetic Compatibility and Mechanical Strength (Industrial and Residential Areas)

## Immunity to interference for industrial areas acc. to EN 61000-6-2 (2005)

Test Specification		Test Values	Evaluation Criteria *)
EN 61000-4-2	ESD	4 kV/8 kV (contact/air)	B
EN 61000-4-3	electromagnetic fields	10 V/m: 80 MHz ... 1 GHz	A
		3V/m: 1.4 GHz ... 2.0 GHz	A
		1V/m: 2.0 GHz ... 2.7 GHz	A
EN 61000-4-4	burst	1 kV/2 kV (data/supply)	B
EN 61000-4-5	surge	Data: - / 1 kV (line : line / line : earth)	B
		DC supply: 0.5 kV / 0.5 kV (line : line / line : earth)	B
		AC supply: 1 kV / 2 kV (line : line / line : earth)	B
EN 61000-4-6	RF disturbances	10 V/m 80 % AM (0.15 MHz ... 80 MHz)	A
EN 61000-4-8	Magnetic field	30 A/m 50/60Hz	A
*) Criteria A: The device must work in accordance with the regulations during and after the test. Criteria B: The device must work in accordance with the regulations after the test.			

## Emission of interference for residential areas acc. to EN 61000-6-3 (2007)

Test Specification		Limit Values/ Quasi Peak	Frequency Range	Distance
EN 55016-2-1	AC supply, conducted	66 ... 56 dB(µV)	150 kHz ... 500 kHz	
EN 55016-1-2		56 dB(µV)	500 kHz ... 5 MHz	
		60 dB(µV)	5 MHz ... 30 MHz	
EN 55016-2-1	DC supply/ data, conducted	79 dB(µV)	150 kHz ... 500 kHz	
EN 55016-1-2		73 dB(µV)	500 kHz ... 30 MHz	
EN 55016-2-3	radiated	30 dB(µV/m)	30 MHz ... 230 MHz	10 m
		37 dB(µV/m)	230 MHz ... 1 GHz	10 m
EN 55022	Telecommunications/ Mains connection	84 ... 74 dB(µV)	150 kHz ... 500 kHz	
		74 dB(µV)	500 kHz ... 30 MHz	

## Emission of interference for industrial areas acc. to EN 61000-6-4 (2007)

Test Specification		Limit Values/ Quasi Peak	Frequency Range	Distance
EN 55016-2-1	AC supply, conducted	79 dB(µV)	150 kHz ... 500 kHz	
EN 55016-1-2		73 dB(µV)	500 kHz ... 30 MHz	
EN 55016-2-3	radiated	40 dB(µV/m)	30 MHz ... 230 MHz	10 m
		47 dB(µV/m)	230 MHz ... 1 GHz	10 m
EN 55022	Telecommunications/ Mains connection	97 ... 87 dB(µV)	150 kHz ... 500 kHz	
		87 dB(µV)	500 kHz ... 30 MHz	

## Mechanical strength acc. to IEC 61131-2 (2007)

Test Specification	Frequency Range	Limit Values
IEC 60068-2-6 vibration	5 Hz ≤ f < 9 Hz	1.75 mm amplitude (permanent)
		3.5 mm amplitude (short term)
	9 Hz ≤ f < 150 Hz	0.5 g (permanent)
		1 g (short term)
	Note on vibration test: a) Frequency change: max. 1 octave/minute b) Vibration direction: 3 axes	
IEC 60068-2-27 shock		15 g
	Note on shock test: a) Type of shock: half sine b) Shock duration: 11 ms c) Shock direction: 3x in positive and 3x in negative direction for each of the three mutually perpendicular axes of the test specimen	

# Electromagnetic Compatibility and Mechanical Strength (Ship Building Area)

## Immunity to interference acc. to Germanischer Lloyd (2003)

Test Specification		Test Values	Evaluation Criteria *)
IEC 61000-4-2	ESD	6 kV/8 kV (contact/air)	B
IEC 61000-4-3	electromagnetic fields	10 V/m 80 MHz ... 2 GHz	A
IEC 61000-4-4	burst	1 kV /2 kV (data/supply)	A
IEC 61000-4-5	surge, DC supply	0,5 kV /1 kV (line : line / line : earth)	A
	surge, AC supply	0,5 kV /1 kV (line : line / line : earth)	A
IEC 61000-4-6	RF disturbances	10 V 80 % AM (0.15 ... 80 MHz)	A
Type Test	AF disturbances (harmonic waves)	3 V, 2 W	A
Type Test	high voltage	755 V DC	-
		1500 V AC	-
*) Criteria A: The device must work in accordance with the regulations during and after the test.			
Criteria B: The device must work in accordance with the regulations after the test.			

## Emission of interference acc. to Germanischer Lloyd (2003)

Test Specification	Limit Values/ Quasi Peak	Frequency Range	Distance
Type Test EMC 1, conducted (allows for ship bridge control applications)	96 ... 50 dB(µV)	10 kHz ... 150 kHz	
	60 ... 50 dB(µV)	150 kHz ... 350 kHz	
	50 dB(µV)	350 kHz ... 30 MHz	
Type Test EMC 1, radiated (allows for ship bridge control applications) except for:	80 ... 52 dB(µV/m)	150 kHz ... 300 kHz	3 m
	52 ... 34 dB(µV/m)	300 kHz ... 30 MHz	3 m
	54 dB(µV/m)	30 MHz ... 2 GHz	3 m
	24 dB(µV/m)	156 MHz ... 165 MHz	3 m
Type Test EMC 2, conducted (allows for machine room applications)	120 ... 69 dB(µV)	10 kHz ... 150 kHz	
	79 dB(µV)	150 kHz ... 350 kHz	
	73 dB(µV)	350 kHz ... 30 MHz	
Type Test EMC 2, radiated (allows for machine room applications) except for:	80 ... 50 dB(µV/m)	150 kHz ... 30 MHz	3 m
	60 ... 54 dB(µV/m)	30 MHz ... 100 MHz	3 m
	54 dB(µV/m)	100 MHz ... 2 GHz	3 m
	24 dB(µV/m)	156 MHz ... 165 MHz	3 m

## Mechanical strength acc. to Germanischer Lloyd (2003)

Test Specification	Frequency Range	Limit Values
IEC 60068-2-6 vibration (category A, C)	$2 \text{ Hz} \leq f < 13,2 \text{ Hz}$	±1.0 mm Amplitude (permanent)
	$13,2 \text{ Hz} \leq f < 100 \text{ Hz}$	0.7 g (permanent)
	Note on vibration test: a) Frequency change: max. 1 octave/minute b) Vibration direction: 3 axes	
IEC 60068-2-6 vibration (category A-D)	$2 \text{ Hz} \leq f < 25 \text{ Hz}$	±1.6 mm Amplitude (permanent)
	$25 \text{ Hz} \leq f < 100 \text{ Hz}$	4 g (permanent)
	Note on vibration test: a) Frequency change: max. 1 octave/minute b) Vibration direction: 3 axes	

In particular the following standards apply to the design and the application of the terminal blocks and connectors contained in this catalog:

DIN VDE 0100:1982-11 Construction of high current installations with nominal voltages up to 1000V	IEC 60529:1989 + A1:1999 EN 60529:1991 + A1:2000 VDE 0470-1:2000-09 Degrees of protection provided by enclosures (IP code)	IEC 60998-2-2:2002, modified EN 60998-2-2:2004 VDE 0613-2-2:2005-03 Connecting devices for low-voltage circuits for household and similar purposes - Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units
EN 50110-1:2004 VDE 0105-1:2005-06 Operation of electrical installations	IEC 60603-1:1991 + A1:1992 EN 60603-1:1998 Connectors for frequencies below 3 MHz for use with printed boards - Part 1: Generic specification: General requirements and guide for the preparation of detail specifications, with assessed quality	IEC 60947-1:2007 EN 60947-1:2007 VDE 0660-100:2008-04 Low-voltage switchgear and controlgear - Part 1: General rules
IEC 61140:2001/A1:2004 (modified) EN 61140:2002/A1:2006 VDE 0140-1:2007-03 Protection against electric shock - Common aspects for installation and equipment	IEC 61984:2001 EN 61984:2001 VDE 0627:2002-09 Connectors - Safety requirements and tests	IEC 60947-5-6:1999 EN 60947-5-6:2000 VDE 0660-212:2000-12 Low-voltage switchgear and controlgear - Part 5-6: Control circuit devices and switching elements, DC interface for proximity sensors and switching amplifiers (NAMUR)
IEC 60664-1:2007 EN 60664-1:2007 VDE 0110-1:2008-01 Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	IEC 60999-1:1999 EN 60999-1:2000 VDE 0609-1:2000-12 Connecting devices - Electrical copper conductors; Safety requirements for screw-type and screwless-type clamping units - Part 1: General requirements and particular requirements for clamping units for conductors 0.2 mm <sup>2</sup> up to 35 mm <sup>2</sup>	IEC 60439-1:1999 + A1:2004 EN 60439-1:1999 + A1:2004 VDE 0660-500:2005-01 Low-voltage switchgear and controlgear assemblies - Part 1: Type-tested and partially type-tested assemblies
IEC 60204-1:2005 (modified) EN 60204-1:2006 VDE 0113-1:2007-06 Safety of machinery - Electrical equipment of machines - Part 1: General requirements	IEC 60617-2:1996 EN 60617-2:1996 Graphical symbols for diagrams - Part 2: Symbol elements, qualifying symbols and other symbols having general application	IEC 60555-1:1982 - 1st edition EN 60555 part 1, edition 1987 VDE 0838-1:1987-06 Disturbances in supply systems caused by household appliances and similar electrical equipment; part 1: definitions
EN 50178:1997 VDE 0160:1998-04 Electronic equipment for use in power installations	IEC 61558-1:2005 EN 61558-1:2005 VDE 0570-1:2006-07 Safety of power transformers, power supplies, reactors and similar products - Part 1: General requirements and tests	IEC 60715:1981 + A1:1995 EN 60715:2001 Dimensions of low-voltage switchgear and controlgear - Standardized mounting on rails for mechanical support of electrical devices in switchgear and controlgear installations
IEC 62305-1:2006 EN 62305-1:2006 VDE 0185-305-1:2006-10 Protection against lightning - Part 1: General principles	IEC 60669-2-1:2002 EN 60669-2-1:2004 VDE 0632-2-1:2005-08 Switches for household and similar fixed electrical installations - Part 2-1: Particular requirements - Electronic switches	IEC 60950-1:2005, modified EN 60950-1:2006 VDE 0805-1:2006-11 Information technology equipment - Safety - Part 1: General requirements
IEC 60060-1:1989 + corrigendum March 1990 HD 588.1 S1:1991 VDE 0432-1:1994-06 High voltage test techniques; part 1: general specifications and test requirements	IEC 60947-7-1:2002 + Corrigendum 1:2003 EN 60947-7-1:2002 VDE 0611-1:2003-07 Low-voltage switchgear and controlgear - Part 7-1: Ancillary equipment - Terminal blocks for copper conductors	IEC 60127-6:1994 + A1:1996 + A2:2002 EN 60127-6:1994 + A1:1996 + A2:2003 VDE 0820-6:2003-10 Miniature fuses - Part 6: Fuse-holders for miniature fuse-links
IEC 60085:2007 EN 60085:2008 VDE 0301-1:2008-08 Electrical insulation - Thermal evaluation and designation		

EN 50155:2007  
VDE 0115-200:2008-03  
Railway applications - Electronic equipment used on rolling stock

EN 50090-2-2:1996 + Corrigendum:1997 + A1:2002 + A2:2007  
VDE 0829-2-2:2007-11  
Home and Building Electronic Systems (HBES) - Part 2-2: System overview - General technical requirements; German version

IEC 60099-1:1991 + A1:1999  
EN 60099-1:1994 + A1:1999  
VDE 0675-1:2000-08  
Surge arresters - Part 1: Non-linear resistor type gapped surge arresters for a.c. systems

IEC 61643-1:1998 + Corrigendum 1998, modified  
EN 61643-11:2002 + A11:2007  
VDE 0675-6-11:2007-08  
Low-voltage surge protective devices - Part 11: Surge protective devices connected to low-voltage power systems - Requirements and tests

IEC 61643-21:2000 + Corrigendum: 2001  
EN 61643-21:2001  
VDE 0845-3-1:2002-03  
Low voltage surge protective devices - Part 21: Surge protective devices connected to telecommunications and signalling networks; Performance requirements and testing methods

IEC 61508-1:1998 + Corrigendum 1999  
EN 61508-1:2001  
VDE 0803-1:2002-11  
Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 1: General requirements

IEC 62061:2005  
EN 62061:2005  
VDE 0113-50:2005-10  
Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems

## Interfaces - Fieldbuses

DIN 66259-1:1981-05  
Electrical characteristics for unbalanced double-current interchange circuits

EN 50325-1:2002  
Industrial communications subsystem based on ISO 11898 (CAN) for controller-device interfaces - Part 1: General requirements

IEC 61784-1:2007  
EN 61784-1:2008  
Industrial communication networks - Profiles - Part 1: Fieldbus profiles

IEC 61158-2:2007  
EN 61158-2:2008  
Industrial communication networks - Fieldbus specifications - Part 2: Physical layer specification and service definition

IEC 61158-6-x  
EN 61158-6-x  
DIN EN 61158-6-x  
Industrial communication networks - Fieldbus specifications - Part 6-x

## Explosion Protection

IEC 60079-0:2004, modified  
EN 60079-0:2006  
VDE 0170-1:2007-05  
Electrical apparatus for explosive gas atmospheres - Part 0: General requirements

IEC 60079-7:2006  
EN 60079-7:2007  
VDE 0170-6:2007-08  
Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

IEC 60079-11:2006  
EN 60079-11:2007  
VDE 0170-7:2007-08  
Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

IEC 60079-14:2007  
EN 60079-14:2008  
VDE 0165-1:2009-05  
Explosive atmospheres - Part 14: Electrical installations design, selection and erection

IEC 60079-15:2005  
EN 60079-15:2005  
VDE 0170-16:2006-05  
Electrical apparatus for explosive gas atmospheres - Part 15: Construction, test and marking of type of protection "n" electrical apparatus

IEC 61241-0:2004, modified + Corrigendum Nov. 2005  
EN 61241-0:2006  
VDE 0170-15-0:2007-07  
Electrical apparatus for use in the presence of combustible dust - Part 0: General requirements

IEC 61241-1:2004  
EN 61241-1:2004  
VDE 0170-15-1:2005-06  
Electrical apparatus for use in the presence of combustible dust - Part 1: Protection by enclosures "tD"

IEC 61241-11:2005 + Corrigendum February 2006  
EN 61241-11:2006  
VDE 0170-15-11:2007-07  
Electrical apparatus for use in the presence of combustible dust - Part 11: Protection by intrinsic safety "iD"



## Specifications and Test Results (continued)

### Environmental Testing

IEC 60068-2-6:2007  
EN 60068-2-6:2008  
VDE 0468-2-6:2008-10  
Environmental testing - Part 2-6: Tests -  
Test Fc: Vibration (sinusoidal)

IEC 60068-2-27:1987  
EN 60068-2-27:1993  
Basic environmental testing procedures -  
Part 2: Tests; test Ea and guidance: Shock

IEC 60068-2-42:2003  
EN 60068-2-42:2003  
Environmental testing - Part 2-42: Tests -  
Test Kc: Sulphur dioxide test for contacts  
and connections

IEC 60068-2-43:2003  
EN 60068-2-43:2003  
Environmental testing - Part 2-43: Tests -  
Test Kd: Hydrogen sulphide test for contacts  
and connections

### EMC Requirements

IEC 61000-6-1:2005  
EN 61000-6-1:2007  
VDE 0839-6-1:2007-10  
Electromagnetic compatibility (EMC) -  
Part 6-1: Generic standards - Immunity for  
residential, commercial and light-industrial  
environments

IEC 61000-6-2:2005  
EN 61000-6-2:2005  
VDE 0839-6-2:2006-03  
Electromagnetic compatibility (EMC) -  
Part 6-2: Generic standards - Immunity for  
industrial environments

IEC 61000-6-3:2006  
EN 61000-6-3:2007  
VDE 0839-6-3:2007-09  
Electromagnetic compatibility (EMC) -  
Part 6-3: Generic standards - Emission  
standard for residential, commercial and  
light-industrial environments

IEC 61000-6-4:2006  
EN 61000-6-4:2007  
VDE 0839-6-4:2007-09  
Electromagnetic compatibility (EMC) -  
Part 6-4: Generic standards - Emission  
standard for industrial environments

IEC 61000-3-2:2005  
EN 61000-3-2:2006  
VDE 0838-2:2006-10  
Electromagnetic compatibility (EMC) -  
Part 3-2: Limits - Limits for harmonic current  
emissions (equipment input current  $\leq 16$  A  
per phase)

IEC/CISPR 11:2003 + A1:2004,  
modified + A2:2006  
EN 55011:2007 + A2:2007  
VDE 0875-11:2007-11  
Industrial scientific and medical (ISM) radio-  
frequency equipment -  
Electromagnetic disturbance characteristics -  
Limits and methods of measurement

IEC/CISPR 22:2005, modified + A1:2005  
EN 55022:2006 + A1:2007  
VDE 0878-22:2008-05  
Information technology equipment - Radio  
disturbance characteristics - Limits and  
methods of measurement

IEC/CISPR 24:1997, modified + A1:2001  
+ A2:2002  
EN 55024:1998 + A1:2001 + A2:2003  
VDE 0878-24:2003-10  
Information technology equipment -  
Immunity characteristics - Limits and  
methods of measurement

IEC 61326-3-1:2008  
EN 61326-3-1:2008  
VDE 0843-20-3-1:2008-11  
Electrical equipment for measurement,  
control and laboratory use - EMC  
requirements - Part 3-1: Immunity  
requirements for safety-related systems and  
for equipment intended to perform  
safety-related functions (functional safety) -  
General industrial applications



**PLC**

IEC 61131-1:2003  
EN 61131-1:2003  
Programmable controllers -  
Part 1: General information

IEC 61131-2:2007  
EN 61131-2:2007  
VDE 0411-500:2008-04  
Programmable controllers -  
Part 2: Equipment requirements and tests

IEC 61131-3:2003  
EN 61131-3:2003  
Programmable controllers -  
Part 3: Programming languages

**Relays**

IEC 61810-1:2008  
EN 61810-1:2008  
VDE 0435-201:2009-02  
Electromechanical elementary relays -  
Part 1: General requirements

IEC 61810-2:2005  
EN 61810-2:2005  
VDE 0435-120:2006-01  
Electromechanical elementary relays -  
Part 2: Reliability

IEC 61810-5:1998  
EN 50205:2002  
VDE 0435-2022:2003-01  
Electromechanical non-specified time  
all-or-nothing relays - Part 5: Insulation  
coordination

IEC 60255-5:2000  
EN 60255-5:2001  
VDE 0435-130:2001-12  
Electrical relays - Part 5: Insulation  
coordination for measuring relays and  
protection equipment - Requirements and  
tests

**UL Directives**

UL 1059; ANSI 1059:2001-12  
Terminal blocks

UL 486E:2009-05  
Equipment wiring terminals for use with  
aluminum and/or copper conductors

UL 508:1999-01  
Industrial control equipment

ANSI/ISA12.12.01:2007  
Nonincendive electrical equipment for use  
in Class I and Class II, Division 2 and Class  
III, Divisions 1 and 2 hazardous (classified)  
locations

**Ship Classifications**

ABS (American Bureau of Shipping)  
Steel Vessels 2008  
Part 4: Vessel Systems and Machinery

BV (Bureau Veritas)  
Rules for the classification of steel ships and  
offshore units

DNV (Det Norsk Veritas)  
Det Norsk Veritas' Rules for Classification of  
Ships, High Speed & Light Craft and  
Det Norsk Veritas' Offshore Standards:  
2007

GL (Germanischer Lloyd) 2003  
Rules for Classification and Construction  
VI Additional Rules and Guidelines  
7 Guidelines for the Performance of Type  
Test  
2 Test Requirements for Electrical/Electronic  
Devices and Systems

LR (Lloyds Register) 2002  
Type Approval System  
Test Specification Number 1-1996

RINA (Registro Italiano Navale)  
Rules for the classification of ships  
Part C - Machinery, systems and fire  
protection Ch.3, Sect.6, Table 1  
Edition 2008

BSH (Federal Maritime and Hydrographic  
Agency) 2005  
Certificate on measurement of safe distance  
to the standard magnetic and steering  
magnetic compass in accordance with ISO  
R 695 and DIN EN 60945 Section 11.2

KR (Korean Register of Shipping)  
List of Approved Manufacturers and Type  
Approved Equipment; Pt. 6, Ch. 1, Sec. 3 of  
the Rules for Classification of Steel Ships

NKK (Nippon Kaiji Kyokai) Edition 2009  
Guidance for the Approval and Type  
Approval of Materials and Equipment for  
Marine Use

PRS (Polski Rejestr Statkow) 2002  
Publication No. 11/P  
Environmental Tests on Marine Equipment

## Electrical Engineering Laboratory: Product Safety for Our Customers

The WAGO laboratory in Minden is an “accredited test lab for electrical and mechanical tests on terminal blocks and connectors, as well as for environment simulations.”

Accreditation, as ISO/IEC 17011:2004 defines, is a third party-attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks.

Accreditation, according to DIN EN ISO/IEC 17025, is granted by the Deutsche Akkreditierungsstelle GmbH DAkkS (German Accreditation Office GmbH DAkkS). This national accreditation office, which was established by the German Federal Ministry for Economics and Technology (BMWi), certifies that our test laboratory is officially recognized as possessing the necessary expertise to conduct defined tests and types of tests independently and objectively.

Through obtaining the accreditation, the following objectives were achieved:

- Customer requirements
- Workflow optimization
- Clearly defined processes
- Clear organization and structure
- Greater transparency
- Consistent, high-quality laboratory testing
- Maximum traceability
- Traceable measurement results
- Sustainable quality awareness



• Visitor center



• Conductor retention force testing

• High-voltage test



• Vibration- and shock-resistance testing



Deutsche  
Gesellschaft für  
Akkreditierung mbH **DGA** Deutsche Gesellschaft für Akkreditierung mbH

Unterzeichner der Multilateralen Abkommen von  
EA und ILAC zur gegenseitigen Anerkennung

vertreten im

# Deutschen Akkreditierungsrat



## Akkreditierung

Die **DGA Deutsche Gesellschaft für Akkreditierung mbH** bestätigt hiermit, dass das  
Prüflaboratorium

**WAGO Kontakttechnik GmbH & Co. KG**  
Hansastraße 27  
D-32423 Minden / Germany

die Kompetenz nach DIN EN ISO/IEC 17025 besitzt, Prüfungen in den Bereichen

**Elektrische und mechanische Prüfungen an Klemmen und Steckverbinder  
sowie Umweltsimulation**

auszuführen. Die Anlage ist Bestandteil der Urkunde und besteht aus **6** Seiten.

Die Akkreditierung ist gültig vom **2009-12-22** bis **2014-12-21**.

DAR- Registriernummer: **DGA-PL-302/09-00**

Frankfurt, 2009-12-22

Dipl.-Ing. (FH) Ralf Egner  
Leiter der Abteilung Elektrotechnik/IT

Mitglied in EA, ILAC, IAF

Siehe Hinweise auf der Rückseite



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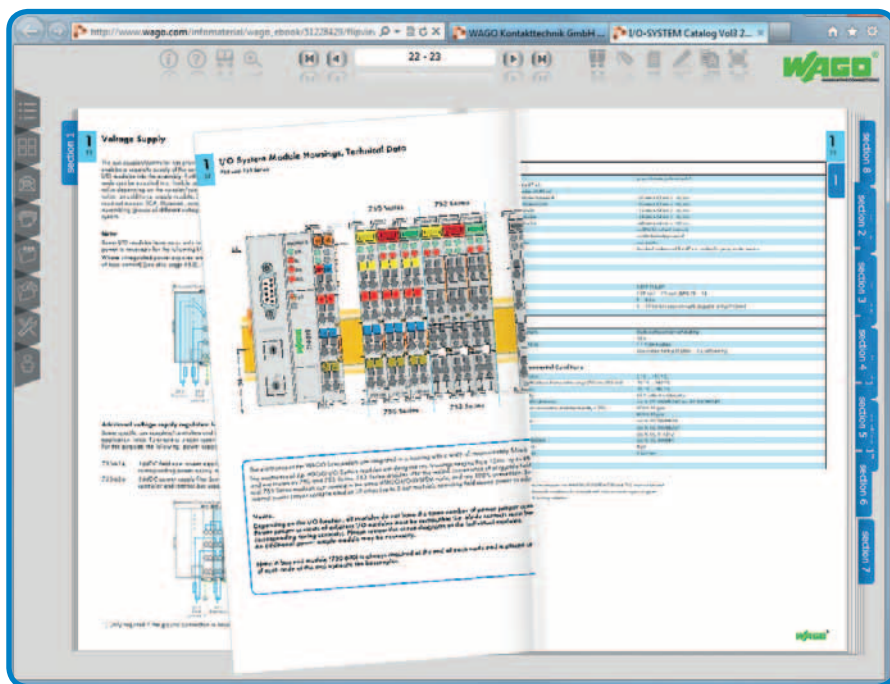


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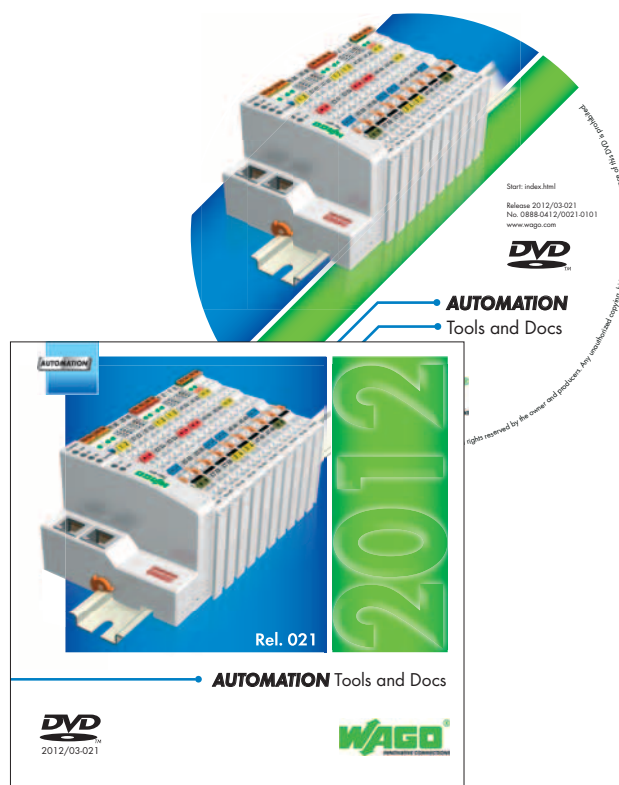
## DVD **AUTOMATION** Tools and Docs

In addition to the latest technical documentation, this DVD-ROM also contains our AUTOMATION product catalogs and brochures as interactive eBooks.

The technical documentation includes short descriptions, application notes, data sheets and manuals for all our AUTOMATION products.

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**AUTOMATION**  
Tools and Docs





Innovative ideas and advanced technology are the driving forces behind the development and creation of WAGO’s market-leading products.

**Maximize the benefits** of WAGO products **through optimal application knowledge** gained at WAGO training seminars. The skills and expertise gained in our effective, user-oriented presentations will save you time and help you use our products to their fullest capacity.



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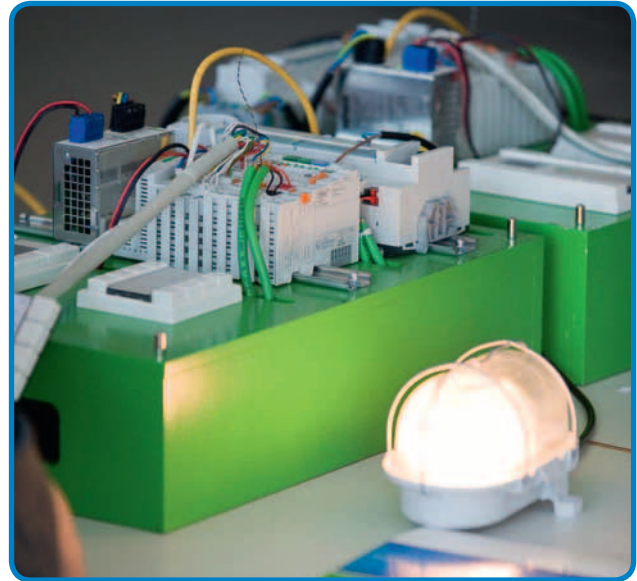
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*Special  
company seminars*





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790-133	486	793-4403	510	793-4542	510	793-4639	511
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790-140	487	793-4405	510	793-4543	512	793-4641	511
790-144	486	793-4406	510	793-4544	512	793-4642	511
790-145	486	793-4407	510	793-4545	512		
790-190	487	793-4408	510	793-4546	512	793-4643	513
790-191	487	793-4409	510	793-4547	512	793-4644	513
790-192	487	793-4410	510	793-4548	512	793-4645	513
790-193	487	793-4411	510	793-4549	512	793-4646	513
		793-4412	510	793-4550	512	793-4647	513
		793-4413	510	793-4552	512	793-4648	513
		793-4414	510	793-4553	512	793-4649	513
790-300	490	793-4415	510	793-4554	512	793-4650	513
790-301	490	793-4416	510	793-4555	512	793-4652	513
790-302	490	793-4417	510	793-4556	512	793-4653	513
790-310	491	793-4418	510	793-4557	512	793-4654	513
790-311	491	793-4419	510	793-4558	512	793-4655	513
790-312	491	793-4420	510	793-4559	512	793-4656	513
790-400	489	793-4421	510	793-4560	512	793-4657	513
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		793-4423	510	793-4562	512	793-4659	513
		793-4424	510	793-4563	512	793-4660	513
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		793-4472	512			793-4662	513
		793-4474	512	793-4565	508	793-4663	513
		793-4487	512	793-4566	508	793-4664	513
		793-4494	512	793-4569	508		
		793-4495	512	793-4570	508	793-4666	509
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		793-4505	508	793-4602	509	793-4687	513
		793-4506	508	793-4603	509	793-4688	509
		793-4507	508	793-4604	509	793-4694	513
		793-4508	508	793-4605	509	793-4695	513
		793-4509	508	793-4606	509	793-4696	513
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		793-4512	508	793-4609	509	793-4699	509
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		793-4516	508	793-4613	509	793-487	512
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		793-4519	510	793-4617	509	793-4902	509
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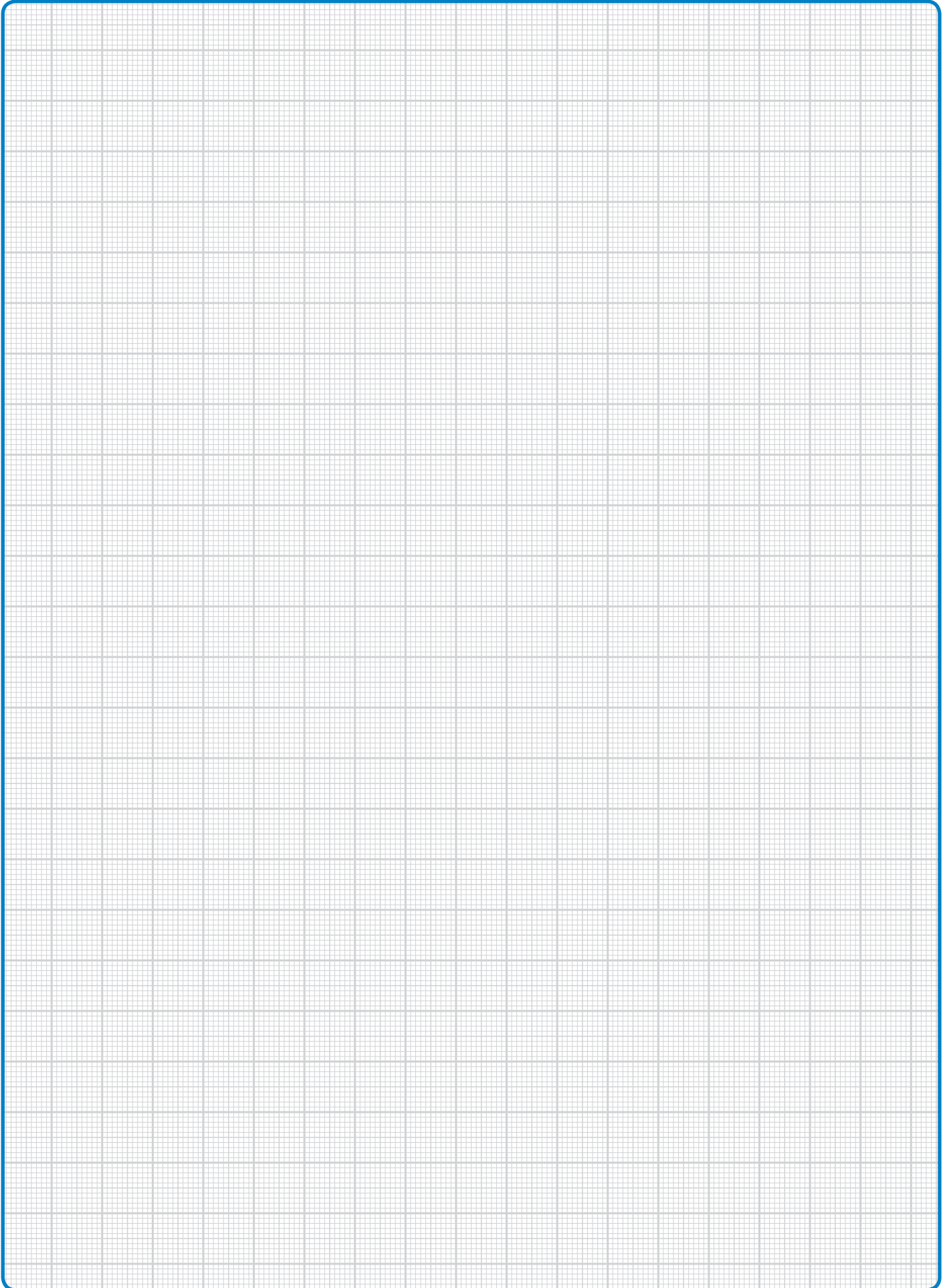
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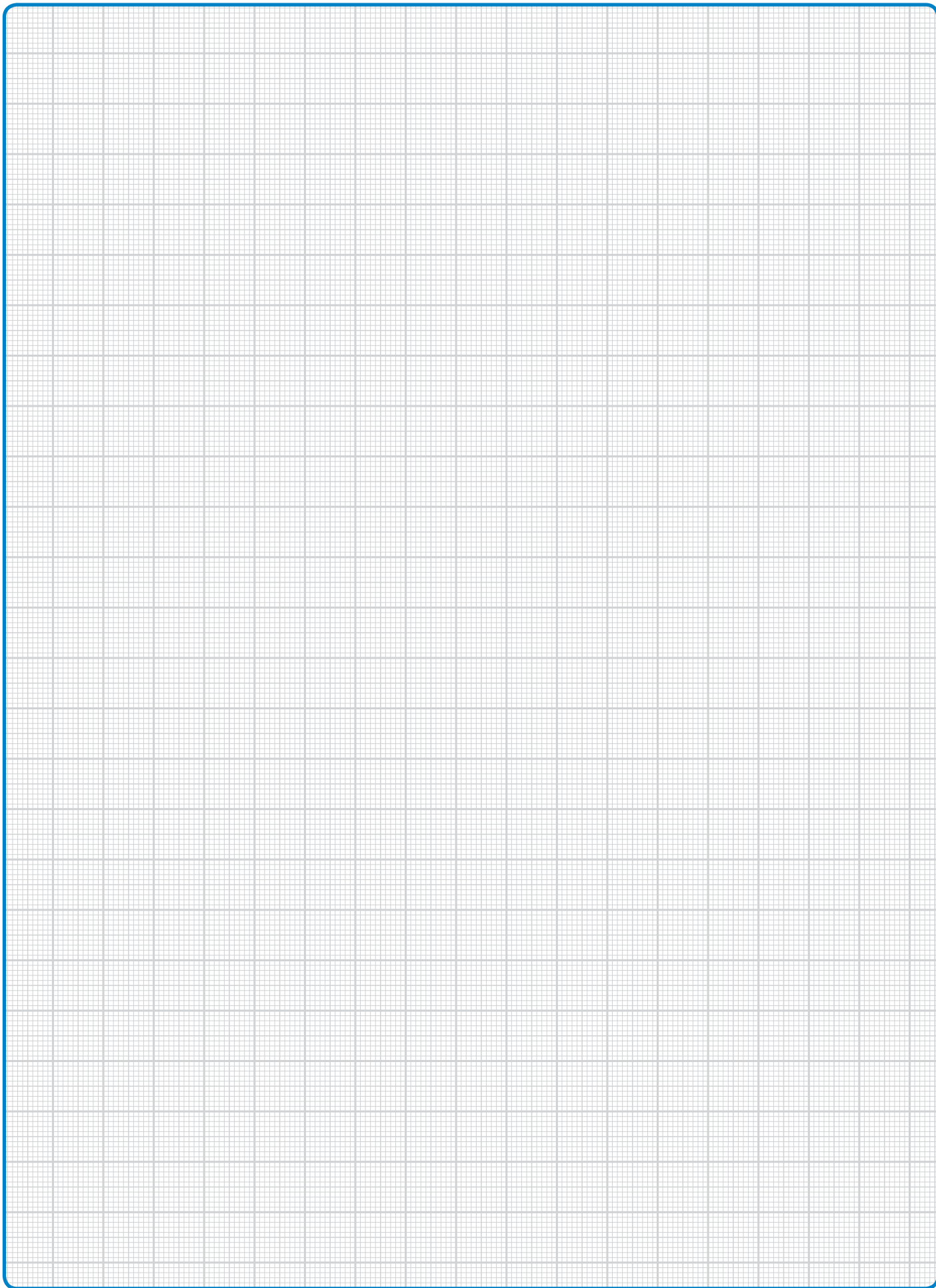
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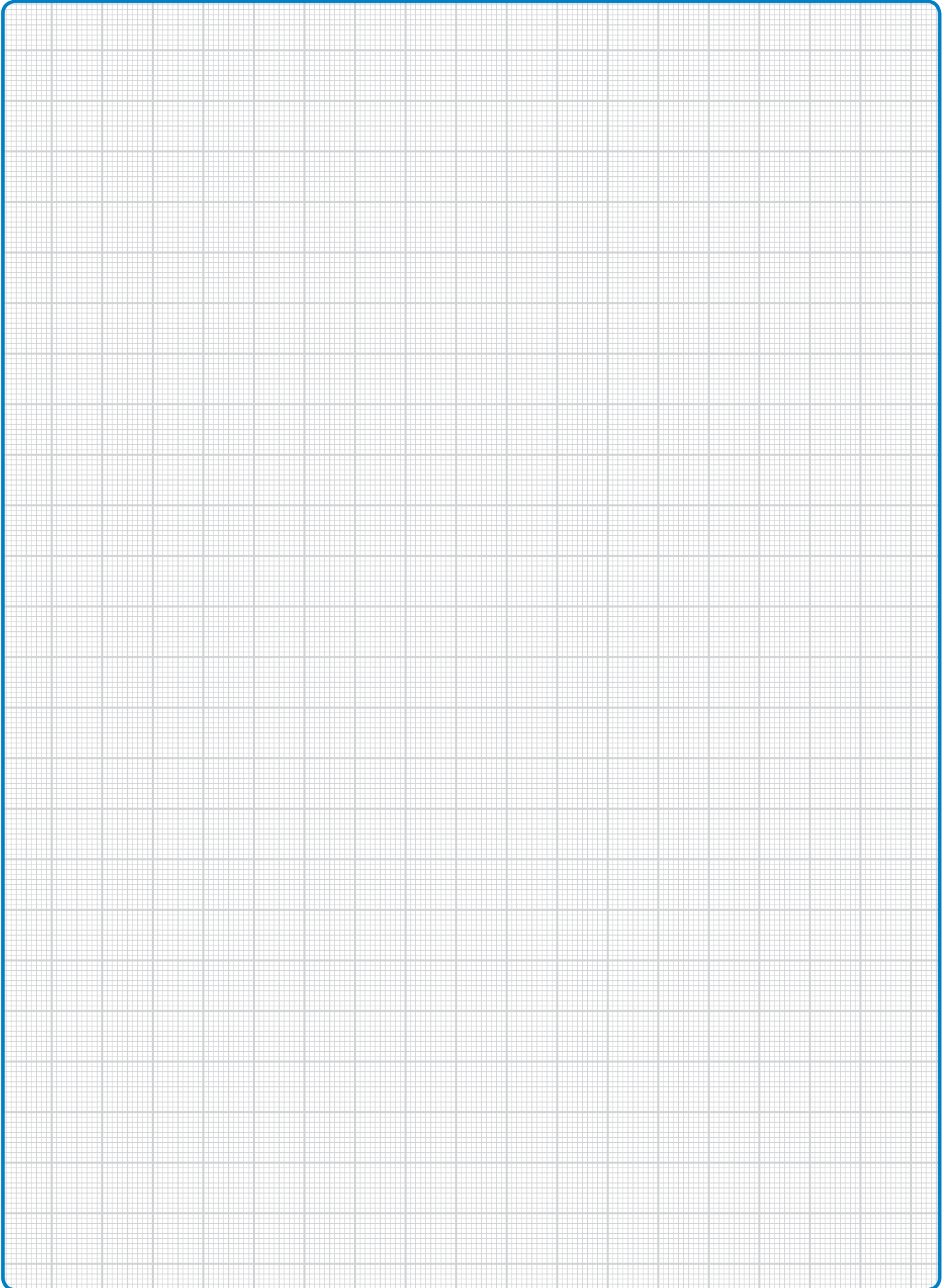
**Vietnam**

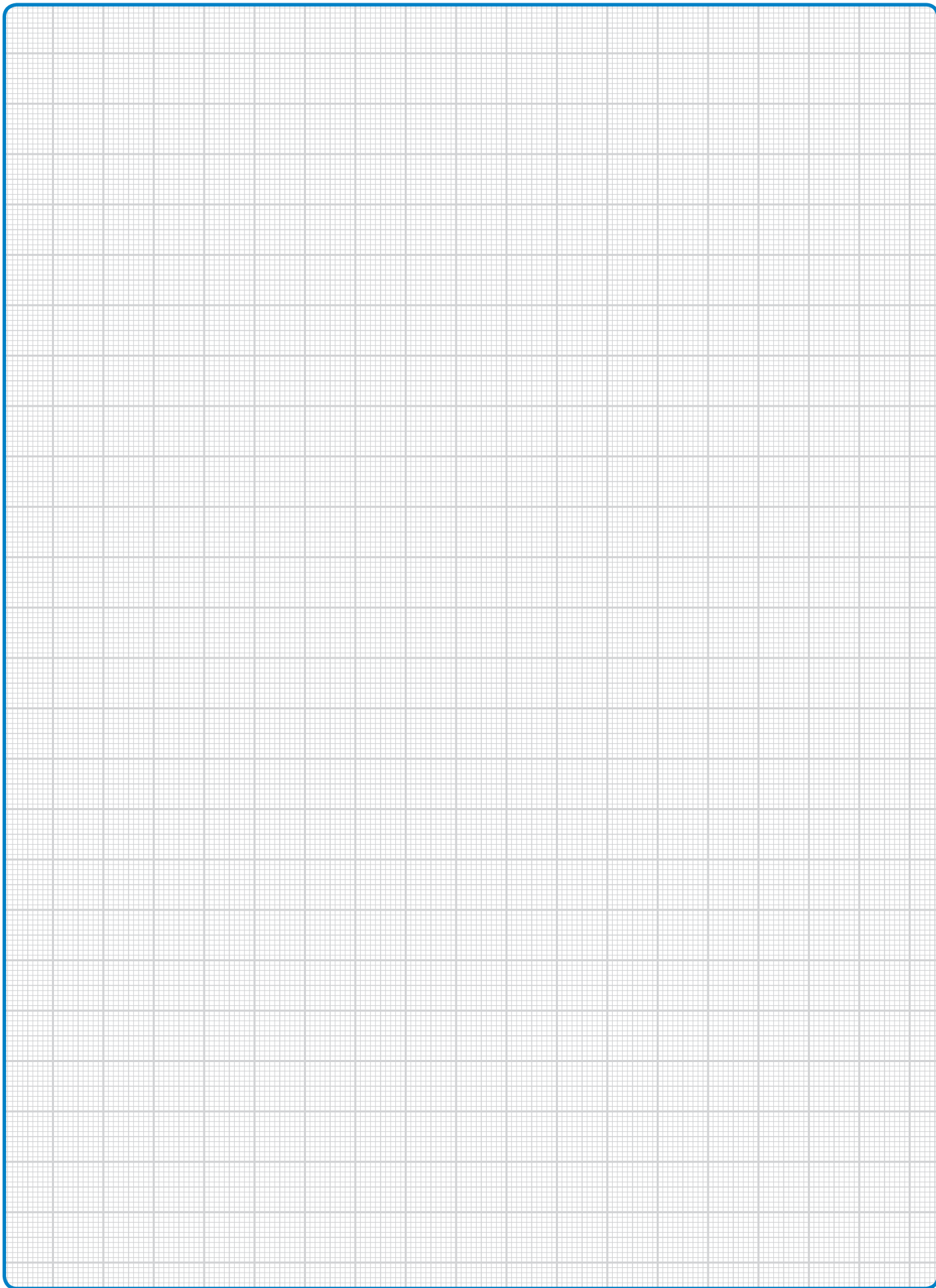
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